

OpenTP1 Version 7
System Definition

3000-3-D52-30(E)

■ Relevant program products

Note: In the program products listed below, those marked with an asterisk (*) might be released later than the other program products.

For AIX 5L V5.1, AIX 5L V5.2, AIX 5L V5.3, and AIX V6.1

P-1M64-2131 uCosminexus TP1/Server Base 07-03*
P-1M64-2331 uCosminexus TP1/FS/Direct Access 07-03*
P-1M64-2431 uCosminexus TP1/FS/Table Access 07-03*
P-1M64-2531 uCosminexus TP1/Client/W 07-02
P-1M64-2631 uCosminexus TP1/Offline Tester 07-00
P-1M64-2731 uCosminexus TP1/Online Tester 07-00
P-1M64-2831 uCosminexus TP1/Multi 07-00
P-1M64-2931 uCosminexus TP1/High Availability 07-00
P-1M64-3131 uCosminexus TP1/Message Control 07-03
P-1M64-3231 uCosminexus TP1/NET/Library 07-04
P-1M64-8131 uCosminexus TP1/Shared Table Access 07-00
P-1M64-8331 uCosminexus TP1/Resource Manager Monitor 07-00
P-1M64-8531 uCosminexus TP1/Extension 1 07-00
P-1M64-C371 uCosminexus TP1/Message Queue 07-01
P-1M64-C771 uCosminexus TP1/Message Queue - Access 07-01
P-F1M64-31311 uCosminexus TP1/Message Control/Tester 07-00
P-F1M64-32311 uCosminexus TP1/NET/User Agent 07-00
P-F1M64-32312 uCosminexus TP1/NET/HDLC 07-00
P-F1M64-32313 uCosminexus TP1/NET/X25 07-00
P-F1M64-32314 uCosminexus TP1/NET/OSI-TP 07-00
P-F1M64-32315 uCosminexus TP1/NET/XMAP3 07-01
P-F1M64-32316 uCosminexus TP1/NET/HSC 07-00
P-F1M64-32317 uCosminexus TP1/NET/NCSB 07-00
P-F1M64-32318 uCosminexus TP1/NET/OSAS-NIF 07-01
P-F1M64-3231B uCosminexus TP1/NET/Secondary Logical Unit - TypeP2 07-00
P-F1M64-3231C uCosminexus TP1/NET/TCP/IP 07-02
P-F1M64-3231D uCosminexus TP1/NET/High Availability 07-00
P-F1M64-3231U uCosminexus TP1/NET/User Datagram Protocol 07-00
R-1M45F-31 uCosminexus TP1/Web 07-00

For AIX 5L V5.3 and AIX V6.1

P-1M64-1111 uCosminexus TP1/Server Base(64) 07-03*
P-1M64-1311 uCosminexus TP1/FS/Direct Access(64) 07-03*
P-1M64-1411 uCosminexus TP1/FS/Table Access(64) 07-03*
P-1M64-1911 uCosminexus TP1/High Availability(64) 07-00
P-1M64-1L11 uCosminexus TP1/Extension 1(64) 07-00
For HP-UX 11i V1 (PA-RISC) and HP-UX 11i V2 (PA-RISC)
P-1B64-3F31 uCosminexus TP1/NET/High Availability 07-00
P-1B64-8531 uCosminexus TP1/Extension 1 07-00
P-1B64-8931 uCosminexus TP1/High Availability 07-00
R-18451-41K uCosminexus TP1/Client/W 07-00
R-18452-41K uCosminexus TP1/Server Base 07-00

R-18453-41K uCosminexus TP1/FS/Direct Access 07-00
R-18454-41K uCosminexus TP1/FS/Table Access 07-00
R-18455-41K uCosminexus TP1/Message Control 07-03*
R-18456-41K uCosminexus TP1/NET/Library 07-04*
R-18459-41K uCosminexus TP1/Offline Tester 07-00
R-1845A-41K uCosminexus TP1/Online Tester 07-00
R-1845C-41K uCosminexus TP1/Shared Table Access 07-00
R-1845D-41K uCosminexus TP1/Resource Manager Monitor 07-00
R-1845E-41K uCosminexus TP1/Multi 07-00
R-1845F-41K uCosminexus TP1/Web 07-00
R-F18455-411K uCosminexus TP1/Message Control/Tester 07-00
R-F18456-411K uCosminexus TP1/NET/User Agent 07-00
R-F18456-415K uCosminexus TP1/NET/XMAP3 07-01*
R-F18456-41CK uCosminexus TP1/NET/TCP/IP 07-02*
For HP-UX 11i V2 (IPF) and HP-UX 11i V3 (IPF)
P-1J64-3F21 uCosminexus TP1/NET/High Availability 07-00
P-1J64-4F11 uCosminexus TP1/NET/High Availability(64) 07-00
P-1J64-8521 uCosminexus TP1/Extension 1 07-00
P-1J64-8611 uCosminexus TP1/Extension 1(64) 07-00
P-1J64-8921 uCosminexus TP1/High Availability 07-00
P-1J64-8A11 uCosminexus TP1/High Availability(64) 07-00
P-1J64-C371 uCosminexus TP1/Message Queue 07-01
P-1J64-C571 uCosminexus TP1/Message Queue(64) 07-01
P-1J64-C871 uCosminexus TP1/Message Queue - Access(64) 07-00
R-18451-21J uCosminexus TP1/Client/W 07-02
R-18452-21J uCosminexus TP1/Server Base 07-03*
R-18453-21J uCosminexus TP1/FS/Direct Access 07-03*
R-18454-21J uCosminexus TP1/FS/Table Access 07-03*
R-18455-21J uCosminexus TP1/Message Control 07-03*
R-18456-21J uCosminexus TP1/NET/Library 07-04*
R-18459-21J uCosminexus TP1/Offline Tester 07-00
R-1845A-21J uCosminexus TP1/Online Tester 07-00
R-1845C-21J uCosminexus TP1/Shared Table Access 07-00
R-1845D-21J uCosminexus TP1/Resource Manager Monitor 07-00
R-1845E-21J uCosminexus TP1/Multi 07-00
R-1845F-21J uCosminexus TP1/Web 07-00
R-1B451-11J uCosminexus TP1/Client/W(64) 07-02
R-1B452-11J uCosminexus TP1/Server Base(64) 07-03*
R-1B453-11J uCosminexus TP1/FS/Direct Access(64) 07-03*
R-1B454-11J uCosminexus TP1/FS/Table Access(64) 07-03*
R-1B455-11J uCosminexus TP1/Message Control(64) 07-03*
R-1B456-11J uCosminexus TP1/NET/Library(64) 07-04*
R-F18455-211J uCosminexus TP1/Message Control/Tester 07-00
R-F18456-215J uCosminexus TP1/NET/XMAP3 07-01*

R-F18456-21CJ uCosminexus TP1/NET/TCP/IP 07-02*
 R-F1B456-11CJ uCosminexus TP1/NET/TCP/IP(64) 07-02*
 For Solaris 8, Solaris 9, and Solaris 10
 P-9D64-3F31 uCosminexus TP1/NET/High Availability 07-00
 P-9D64-8531 uCosminexus TP1/Extension 1 07-00
 P-9D64-8931 uCosminexus TP1/High Availability 07-00
 R-19451-216 uCosminexus TP1/Client/W 07-00
 R-19452-216 uCosminexus TP1/Server Base 07-00
 R-19453-216 uCosminexus TP1/FS/Direct Access 07-00
 R-19454-216 uCosminexus TP1/FS/Table Access 07-00
 R-19455-216 uCosminexus TP1/Message Control 07-03*
 R-19456-216 uCosminexus TP1/NET/Library 07-04*
 R-19459-216 uCosminexus TP1/Offline Tester 07-00
 R-1945A-216 uCosminexus TP1/Online Tester 07-00
 R-1945C-216 uCosminexus TP1/Shared Table Access 07-00
 R-1945D-216 uCosminexus TP1/Resource Manager Monitor 07-00
 R-1945E-216 uCosminexus TP1/Multi 07-00
 R-F19456-2156 uCosminexus TP1/NET/XMAP3 07-01*
 R-F19456-21C6 uCosminexus TP1/NET/TCP/IP 07-02*
 For Red Hat Enterprise Linux AS 4 (AMD64 & Intel EM64T), Red Hat Enterprise Linux AS 4 (x86), Red Hat Enterprise Linux ES 4 (AMD64 & Intel EM64T), and Red Hat Enterprise Linux ES 4 (x86)
 P-9S64-2161 uCosminexus TP1/Server Base 07-00
 P-9S64-2351 uCosminexus TP1/FS/Direct Access 07-00
 P-9S64-2451 uCosminexus TP1/FS/Table Access 07-00
 P-9S64-2551 uCosminexus TP1/Client/W 07-00
 P-9S64-3151 uCosminexus TP1/Message Control 07-00
 P-9S64-3251 uCosminexus TP1/NET/Library 07-00
 P-9S64-C371 uCosminexus TP1/Message Queue 07-01
 P-F9S64-3251C uCosminexus TP1/NET/TCP/IP 07-00
 P-F9S64-3251U uCosminexus TP1/NET/User Datagram Protocol 07-00
 R-1845F-A15 uCosminexus TP1/Web 07-00
 For Red Hat Enterprise Linux AS 4 (AMD64 & Intel EM64T), Red Hat Enterprise Linux AS 4 (x86), Red Hat Enterprise Linux ES 4 (AMD64 & Intel EM64T), Red Hat Enterprise Linux ES 4 (x86), Red Hat Enterprise Linux 5 (AMD/Intel 64), Red Hat Enterprise Linux 5 (x86), Red Hat Enterprise Linux 5 Advanced Platform (AMD/Intel 64), and Red Hat Enterprise Linux 5 Advanced Platform (x86)
 P-9S64-2951 uCosminexus TP1/High Availability 07-00
 P-9S64-8551 uCosminexus TP1/Extension 1 07-00
 P-9S64-C771 uCosminexus TP1/Message Queue - Access 07-01
 P-F9S64-3251D uCosminexus TP1/NET/High Availability 07-00
 For Red Hat Enterprise Linux 5 (AMD/Intel 64), Red Hat Enterprise Linux 5 (x86), Red Hat Enterprise Linux 5 Advanced Platform (AMD/Intel 64), and Red Hat Enterprise Linux 5 Advanced Platform (x86)
 P-9S64-2171 uCosminexus TP1/Server Base 07-03
 P-9S64-2361 uCosminexus TP1/FS/Direct Access 07-03
 P-9S64-2461 uCosminexus TP1/FS/Table Access 07-03
 P-9S64-2561 uCosminexus TP1/Client/W 07-02
 P-9S64-3161 uCosminexus TP1/Message Control 07-03*

P-9S64-3261 uCosminexus TP1/NET/Library 07-04*

P-9S64-C571 uCosminexus TP1/Message Queue 07-01

P-F9S64-32611 uCosminexus TP1/NET/User Agent 07-00

P-F9S64-3261C uCosminexus TP1/NET/TCP/IP 07-02

P-F9S64-3261U uCosminexus TP1/NET/User Datagram Protocol 07-00

For Red Hat Enterprise Linux 5 (AMD/Intel 64) and Red Hat Enterprise Linux 5 Advanced Platform (AMD/Intel 64)

P-9W64-2111 uCosminexus TP1/Server Base(64) 07-03

P-9W64-2311 uCosminexus TP1/FS/Direct Access(64) 07-03

P-9W64-2411 uCosminexus TP1/FS/Table Access(64) 07-03

P-9W64-2911 uCosminexus TP1/High Availability(64) 07-02

P-9W64-8511 uCosminexus TP1/Extension 1(64) 07-02

For Red Hat Enterprise Linux AS 4 (IPF)

P-9V64-2121 uCosminexus TP1/Server Base 07-00

P-9V64-2321 uCosminexus TP1/FS/Direct Access 07-00

P-9V64-2421 uCosminexus TP1/FS/Table Access 07-00

P-9V64-2521 uCosminexus TP1/Client/W 07-00

P-9V64-3121 uCosminexus TP1/Message Control 07-00

P-9V64-3221 uCosminexus TP1/NET/Library 07-00

P-9V64-C371 uCosminexus TP1/Message Queue(64) 07-01

P-9V64-C771 uCosminexus TP1/Message Queue - Access(64) 07-00

P-F9V64-3221C uCosminexus TP1/NET/TCP/IP 07-00

P-F9V64-3221U uCosminexus TP1/NET/User Datagram Protocol 07-00

For Red Hat Enterprise Linux AS 4 (IPF), Red Hat Enterprise Linux 5 (Intel Itanium), and Red Hat Enterprise Linux 5 Advanced Platform (Intel Itanium)

P-9V64-2921 uCosminexus TP1/High Availability 07-00

P-9V64-8521 uCosminexus TP1/Extension 1 07-00

P-F9V64-3221D uCosminexus TP1/NET/High Availability 07-00

For Red Hat Enterprise Linux 5 (Intel Itanium) and Red Hat Enterprise Linux 5 Advanced Platform (Intel Itanium)

P-9V64-2131 uCosminexus TP1/Server Base 07-02

P-9V64-2331 uCosminexus TP1/FS/Direct Access 07-02

P-9V64-2431 uCosminexus TP1/FS/Table Access 07-02

P-9V64-2531 uCosminexus TP1/Client/W 07-02

P-9V64-3131 uCosminexus TP1/Message Control 07-03*

P-9V64-3231 uCosminexus TP1/NET/Library 07-04*

P-F9V64-3231C uCosminexus TP1/NET/TCP/IP 07-02*

P-F9V64-3231U uCosminexus TP1/NET/User Datagram Protocol 07-00

For Windows 2000, Windows Server 2003, Windows Server 2003 x64 Editions, Windows Server 2003 R2, Windows Server 2003 R2 x64 Editions, Windows XP, Windows Vista, and Windows Vista x64

P-2464-2144 uCosminexus TP1/Client/P 07-02

For Windows 2000, Windows Server 2003, Windows Server 2003 x64 Editions, Windows Server 2003 R2, Windows Server 2003 R2 x64 Editions, and Windows XP

R-1845F-8134 uCosminexus TP1/Web 07-00

For Windows 2000, Windows Server 2003, Windows Server 2003 x64 Editions, Windows Server 2003 R2, Windows Server 2003 R2 x64 Editions, Windows XP, Windows Vista, Windows Vista x64, Windows Server 2008, and Windows Server 2008 x64

P-2464-7824 uCosminexus TP1/Client for .NET Framework 07-03

R-15451-21 uCosminexus TP1/Connector for .NET Framework 07-03

For Windows Server 2003, Windows Server 2003 x64 Editions, Windows Server 2003 R2, Windows Server 2003 R2 x64 Editions, Windows XP, Windows Vista, Windows Vista x64, Windows Server 2008, and Windows Server 2008 x64

P-2464-2274 uCosminexus TP1/Server Base 07-03*

P-2464-2374 uCosminexus TP1/FS/Direct Access 07-03*

P-2464-2474 uCosminexus TP1/FS/Table Access 07-03*

P-2464-2544 uCosminexus TP1/Extension 1 07-00

P-2464-3154 uCosminexus TP1/Message Control 07-03*

P-2464-3254 uCosminexus TP1/NET/Library 07-04*

P-2464-3354 uCosminexus TP1/Messaging 07-00

P-2464-C374 uCosminexus TP1/Message Queue 07-01

P-2464-C774 uCosminexus TP1/Message Queue - Access 07-00

P-F2464-3254C uCosminexus TP1/NET/TCP/IP 07-02*

R-15452-21 uCosminexus TP1/Extension for .NET Framework 07-00

R-1945B-24 uCosminexus TP1/LiNK 07-02

For Windows Server 2003, Windows Server 2003 x64 Editions, Windows Server 2003 R2, Windows Server 2003 R2 x64 Editions, and Windows XP

P-F2464-32545 uCosminexus TP1/NET/XMAP3 07-01*

For Windows Server 2003, Windows Server 2003 x64 Editions, Windows Server 2003 R2, Windows Server 2003 R2 x64 Editions, Windows Server 2008, and Windows Server 2008 x64

P-2464-2934 uCosminexus TP1/High Availability 07-00

P-F2464-3254D uCosminexus TP1/NET/High Availability 07-00

For Java VM

P-2464-7394 uCosminexus TP1/Client/J 07-02

P-2464-73A4 uCosminexus TP1/Client/J 07-02

This manual can be used for products other than the products shown above. For details, see the *Release Notes*.

This product was developed under a quality management system that has received ISO9001 and TickIT certification.

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■ Copyright

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Summary of amendments

The following table lists changes in this manual (3000-3-D52-30(E)) and product changes related to this manual for uCosminexus TP1/Server Base 07-03, uCosminexus TP1/Server Base(64) 07-03, uCosminexus TP1/Message Control 07-03, uCosminexus TP1/Message Control(64) 07-03, uCosminexus TP1/NET/Library 07-04, and uCosminexus TP1/NET/Library(64) 07-04.

Changes	Location
<p>The journal service is now able to output performance verification trace information (JNL performance verification trace).</p> <p>With this change, the following operands and definition have been added:</p> <ul style="list-style-type: none"> • System common definition jnl_prf_event_trace_level • JNL performance verification trace definition <p>The description for the following operand has also been changed:</p> <ul style="list-style-type: none"> • Performance verification trace definition prf_trace_backup 	<p>1.1, 1.2, 1.2.1, 2.1.1, 2.2(4), 2.2(36)</p> <p><i>System common definition in Chapter 3</i> jnl_prf_event_trace_level</p> <p><i>Performance verification trace definition in Chapter 3</i> prf_trace_backup</p> <p><i>JNL performance verification trace definition in Chapter 3, 7.2, Appendix D</i></p>
<p>Performance verification trace information for various lock events used by the lock service (LCK performance verification trace) can now be output.</p> <p>With this change, the following operands and definition have been added:</p> <ul style="list-style-type: none"> • User service definition lck_prf_trace_level • LCK performance verification trace definition <p>The description for the following operand has also been changed:</p> <ul style="list-style-type: none"> • Performance verification trace definition prf_trace_backup 	<p>1.1, 1.2, 1.2.1, 2.1.1, 2.2(5), 2.2(37)</p> <p><i>Lock service definition in Chapter 3</i> lck_prf_trace_level</p> <p><i>Performance verification trace definition in Chapter 3</i> prf_trace_backup, LCK performance verification trace definition in Chapter 3, 7.2, Appendix D</p>
<p>A note has been added about creating definitions.</p>	<p>1.3</p>
<p>The explanation about the maximum length of a definition line has been changed.</p>	<p>1.4.2(6)</p>

Changes	Location
<p>UAP trace information (UAP trace data file) can now be acquired without having to abort the process.</p> <p>With this change, the following operands have been added:</p> <ul style="list-style-type: none"> • System common definition uap_trace_file_put • User service default definition uap_trace_file_put • User service definition uap_trace_file_put 	<p>2.2(4), 2.2(41), 2.2(42)</p> <p><i>System common definition in Chapter 3</i></p> <p style="padding-left: 40px;"><i>uap_trace_file_put</i></p> <p><i>User service default definition in Chapter 3</i></p> <p style="padding-left: 40px;"><i>uap_trace_file_put</i></p> <p><i>User service definition in Chapter 3</i></p> <p style="padding-left: 40px;"><i>uap_trace_file_put</i></p> <p><i>Specification of operands in user service definition for UAPs in Chapter 3</i></p>
<p>A function for specifying whether to use service information of specific nodes in a prioritized fashion has been added (service information prioritizing function).</p> <p>With this change, the descriptions for the following operands have been changed.</p> <ul style="list-style-type: none"> • System common definition all_node name_domain_file_use <p>The following operand has also been added:</p> <ul style="list-style-type: none"> • Name service definition name_cache_validity_time 	<p>2.2(4), 2.2(7)</p> <p><i>System common definition in Chapter 3</i></p> <p style="padding-left: 40px;"><i>all_node,</i> <i>name_domain_file_use</i></p> <p><i>Name service definition in Chapter 3</i></p> <p style="padding-left: 40px;"><i>name_cache_validity_time,</i> <i>7.2, Appendix D</i></p>
<p>Explanations have been added for the following operands about the timing at which RPC processing is retried.</p> <ul style="list-style-type: none"> • System common definition rpc_retry rpc_retry_count rpc_retry_interval 	<p>2.2(4)</p> <p><i>System common definition in Chapter 3</i></p> <p style="padding-left: 40px;"><i>rpc_retry,</i> <i>rpc_retry_count,</i> <i>rpc_retry_interval</i></p>
<p>Event trace information (FIL event trace) can now be output in OpenTP1 file access requests.</p> <p>With this change, the following operands have been added.</p> <ul style="list-style-type: none"> • System common definition fil_prf_trace_option fil_prf_trace_delay_time <p>The description for the following operand has also been changed.</p> <ul style="list-style-type: none"> • Performance verification trace definition prf_trace_backup 	<p>2.2(4)</p> <p><i>System common definition in Chapter 3</i></p> <p style="padding-left: 40px;"><i>fil_prf_trace_option,</i> <i>fil_prf_trace_delay_time</i></p> <p><i>Performance verification trace definition in Chapter 3</i></p> <p style="padding-left: 40px;"><i>prf_trace_backup</i></p> <p>7.2</p>

Changes	Location
<p>Explanations about the default values for the following operands have been changed.</p> <ul style="list-style-type: none"> • Transaction service definition thread_stack_size • TAM service definition tam_pool_attri 	<p>2.2(10), 2.2(23) Transaction service definition in Chapter 3 thread_stack_size TAM service definition in Chapter 3 tam_pool_attri</p>
<p>Explanations have been added for the following operands.</p> <ul style="list-style-type: none"> • System common definition ipc_sockctl_highwater ipc_sockctl_watchtime • RAP-processing listener service definition ipc_sockctl_highwater ipc_sockctl_watchtime 	<p>2.2(32) System common definition in Chapter 3 ipc_sockctl_highwater, ipc_sockctl_watchtime RAP-processing listener service definition in Chapter 3 ipc_sockctl_highwater ipc_sockctl_watchtime 7.2</p>
<p>Explanations about the fixed specification have been changed for the following operands.</p> <ul style="list-style-type: none"> • System environment definition shmpool_attribute • DAM service definition dam_cache_attribute • TAM service definition tam_pool_attri 	<p>System environment definition in Chapter 3 shmpool_attribute DAM service definition in Chapter 3 dam_cache_attribute TAM service definition in Chapter 3 tam_pool_attri</p>
<p>The explanation about global domains has been changed for the following operand.</p> <ul style="list-style-type: none"> • System common definition rpc_multi_tpl_in_same_host 	<p>System common definition in Chapter 3 rpc_multi_tpl_in_same_host</p>
<p>Formulas for calculating the maximum size of record data acquired in the journal when the MQA service is used have been added to the description for the following operand.</p> <ul style="list-style-type: none"> • System journal service definition jnl_max_datasize 	<p>System journal service definition in Chapter 3 jnl_max_datasize</p>

Changes	Location
<p>Explanations about system behavior when <code>Y</code> is specified have been added for the following operands.</p> <ul style="list-style-type: none"> • System journal service definition <code>jnl_unload_check</code> • Archive journal service definition <code>jnl_unload_check</code> • User service definition <code>service_hold</code> <code>service_priority_control</code> 	<p><i>System journal service definition in Chapter 3</i> <i>jnl_unload_check</i></p> <p><i>Archive journal service definition in Chapter 3</i> <i>jnl_unload_check</i></p> <p><i>User service definition in Chapter 3</i> <i>service_hold,</i> <i>service_priority_control</i></p>
<p>Explanations about output of messages to syslog have been added for the following operands.</p> <ul style="list-style-type: none"> • Log service definition <code>log_syslog_out</code> <code>DCSYSLOGOUT</code> 	<p><i>Log service definition in Chapter 3</i> <i>log_syslog_out,</i> <i>DCSYSLOGOUT</i></p>
<p>The formula for determining the assumed buffer area size has been changed for the following operands.</p> <ul style="list-style-type: none"> • DAM service definition <code>dam_cache_size</code> <code>dam_cache_size_fix</code> 	<p><i>DAM service definition in Chapter 3</i> <i>dam_cache_size,</i> <i>dam_cache_size_fix</i></p>
<p>Notes for the RAP-processing listener service definition have been added or changed.</p>	<p><i>RAP-processing listener service definition in Chapter 3</i></p>
<p>An explanation has been changed about the <code>rtspout</code> definition command options and the acquisition-target objects that can be specified.</p>	<p><i>Real-time statistics service definition in Chapter 3</i> <i>rtspout</i></p>
<p>Explanations about when specification of the following operands is omitted have been changed.</p> <ul style="list-style-type: none"> • User service default definition <code>rpc_trace</code> <code>rpc_trace_name</code> <code>rpc_trace_size</code> • User service definition <code>rpc_trace</code> 	<p><i>User service default definition in Chapter 3</i> <i>rpc_trace,</i> <i>rpc_trace_name,</i> <i>rpc_trace_size</i></p> <p><i>User service definition in Chapter 3</i> <i>rpc_trace</i></p>
<p>A note has been added about specifying the <code>-i</code> option with the <code>trnrmid</code> definition command.</p>	<p><i>User service default definition in Chapter 3</i> <i>trnrmid</i></p> <p><i>User service definition in Chapter 3</i> <i>trnrmid</i></p>

Changes	Location
<p>An explanation about specifying the <code>status_change_when_termining</code> operand has been added to the description for the following operand.</p> <ul style="list-style-type: none"> User service definition <code>node_down_restart</code> 	<p><i>User service definition in Chapter 3</i> <i>node_down_restart</i></p>
<p>The maximum value that can be specified with the <code>-j</code> option has been increased for the following definition commands:</p> <ul style="list-style-type: none"> <code>mcfmcomn</code> <code>mcfmuap</code> <code>mcftcomn</code> 	<p><i>4.2(1), 4.2(2)</i> <i>MCF communication configuration definition in Chapter 5</i> <i>mcfmcomn,</i> <i>mcfmuap,</i> <i>mcftcomn</i></p>
<p>An explanation about timer start request messages has been added to the description for the <code>-t</code> option of the <code>mcfttim</code> definition command.</p>	<p><i>MCF communication configuration definition in Chapter 5</i> <i>mcfttim</i></p>
<p>The number of messages that are output has been changed when 0 is specified in the <code>-m</code> option of the <code>mcftalcle</code> definition command, or when specification of the <code>-m</code> option is omitted.</p>	<p><i>MCF communication configuration definition in Chapter 5</i> <i>mcftalcle</i></p>
<p>An explanation has been added about how to specify the <code>-n</code> option of the <code>mcfaalcap</code> definition command when the application start function is being used.</p>	<p><i>MCF application definition in Chapter 5</i> <i>mcfaalcap</i></p>
<p>Notes and definition examples have been added for the <code>-g</code> option and the <code>-v</code> option of the <code>mcfaalcap</code> definition command.</p>	<p><i>MCF application definition in Chapter 5</i> <i>mcfaalcap</i></p>
<p>A step and a note have been added in the section on how to change definitions.</p>	<p><i>7.1</i></p>
<p>The following status inheritance definitions have been added as definitions that are affected by changes in an OpenTP1 system:</p> <ul style="list-style-type: none"> The <code>-g</code> option of the <code>mcfmsts</code> definition command The <code>-v</code> option of the <code>mcfmsts</code> definition command 	<p><i>7.3.1</i></p>
<p><code>scd_hold_recovery_count</code> has been added in the <code>scd</code> file as a definition that is affected by changes in an OpenTP1 system.</p>	<p><i>7.3.1, 7.3.2</i></p>
<p>A procedure for changing host names and IP addresses has been added.</p>	<p><i>7.3.5(2)</i></p>
<p>Formulas for estimating the amount of static shared memory required for TP1/Server Base have been changed.</p>	<p><i>B.1(1)(g), B.1(1)(n), B.1(2)(f)</i></p>
<p>The formula for estimating the size of the shared memory pool has been changed.</p>	<p><i>B.1(8)</i></p>

Changes	Location
Formulas have been added for estimating the amount of static shared memory for the MCF service, and the relationships between the specified definition values.	<i>B.2(1)</i>
Formulas for estimating the amount of static shared memory required for the MCF service have been changed.	<i>B.2(1)(a), B.2(1)(b)</i>
OpenTP1 service start and OpenTP1 service stop have been added as audit events.	<i>Appendix C</i>
Messages and problem identification codes output during definition checking have been added and changed.	<i>Appendix D</i>
Notes have been added about migrating to OpenTP1 Version 7 from OpenTP1 Version 5 or earlier.	<i>Appendix E</i>

The following table lists changes in this manual (3000-3-D52-30(E)) and product changes related to this manual for uCosminexus TP1/Message Control 07-02 and uCosminexus TP1/NET/Library 07-03

Changes	Location
MHP can now use the facility for dynamic loading of services. With this change, the description for the following operand has been changed. <ul style="list-style-type: none"> User service definition service 	<i>User service definition in Chapter 3 service</i>
When MCF static shared memory is insufficient, additional memory from an unused area is automatically secured. With this change, the following option has been added: <ul style="list-style-type: none"> The <code>-i</code> option of the <code>mcfmconn</code> definition command 	<i>4.3.3(4) MCF manager definition in Chapter 5 mcfmconn</i>

The following table lists changes in this manual (3000-3-D52-30(E)) and product changes related to this manual for uCosminexus TP1/Message Control 07-01 and uCosminexus TP1/NET/Library 07-01

Changes	Location
<p>Performance verification information (MCF performance verification trace) can now be output for important events during message exchange processing.</p> <p>With this change, the following definitions and operands have been added:</p> <ul style="list-style-type: none"> • User service default definition mcf_prf_trace • User service definition mcf_prf_trace • MCF performance verification trace definition • System service information definition mcf_prf_trace • System service common information definition mcf_prf_trace_level <p>The description for the following operand has also been changed.</p> <ul style="list-style-type: none"> • Performance verification trace definition prf_trace_backup 	<p>1.1, 1.2, 1.2.2, 2.2(41), 2.2(42)</p> <p><i>Performance verification trace definition in Chapter 3</i></p> <p><i>prf_trace_backup</i></p> <p><i>User service default definition in Chapter 3</i></p> <p><i>mcf_prf_trace</i></p> <p><i>User service definition in Chapter 3</i></p> <p><i>mcf_prf_trace</i></p> <p><i>Specification of operands in user service definition for UAPs in Chapter 3, Table 4-2 in subsection 4.1.1, 4.2(4), 4.2(5), 4.2(6)</i></p> <p><i>MCF performance verification trace definition in Chapter 5</i></p> <p><i>System service information definition in Chapter 5</i></p> <p><i>mcf_prf_trace</i></p> <p><i>System service common information definition in Chapter 5</i></p> <p><i>mcf_prf_trace_level</i></p> <p>7.2, B.2(1)(a)</p>

Changes	Location
<p>MCF information can now be acquired as real-time statistics acquisition items. With this change, the following definition and operands have been added:</p> <ul style="list-style-type: none"> Real-time statistics acquisition-item definition <ul style="list-style-type: none"> <code>rts_mcf_ap_scd_stay</code> <code>rts_mcf_ap_usr_srvc</code> <code>rts_mcf_in_msg_scd_wait</code> <code>rts_mcf_out_msg_sync_scd_wait</code> <code>rts_mcf_out_msg_resp_scd_wait</code> <code>rts_mcf_out_msg_prio_scd_wait</code> <code>rts_mcf_out_msg_norm_scd_wait</code> <code>rts_mcf_que_scd_wait_num</code> 	<p>2.2(40) <i>Real-time statistics acquisition-item definition in Chapter 3</i> <i>rts_mcf_ap_scd_stay,</i> <i>rts_mcf_ap_usr_srvc,</i> <i>rts_mcf_in_msg_scd_wait,</i> <i>rts_mcf_out_msg_sync_scd_wait,</i> <i>rts_mcf_out_msg_resp_scd_wait,</i> <i>rts_mcf_out_msg_prio_scd_wait,</i> <i>rts_mcf_out_msg_norm_scd_wait,</i> <i>rts_mcf_que_scd_wait_num</i></p>

In addition to the above changes, minor editorial corrections have been made.

The following table lists changes in the manual (3000-3-D52-20(E)) and product changes related to that manual for uCosminexus TP1/Server Base 07-02, uCosminexus TP1/Message Control 07-01, and uCosminexus TP1/NET/Library 07-01.

Changes
<p>The XA resource service can now be used to output the performance verification trace (prf trace). With this modification, the following definitions and an operand have been added:</p> <ul style="list-style-type: none"> XAR performance verification trace definition XAR resource service definition <code>xar_prf_trace_level</code> operand
<p>The description of the maximum length of a definition line has been changed.</p>
<p>Functionality that allows the system to operate without using the system journal file (journal fileless mode) has been added.</p> <p>With this addition, the following items have been added:</p> <ul style="list-style-type: none"> The <code>jnl_fileless_option</code> operand in the system common definition Notes in the journal service definition and system journal service definition The number of definition files that contain system service definitions Notes on the <code>atomic_update</code> operand in the user service definition The formula for estimating the amount of shared memory required on a node running in journal fileless mode <p>In addition, the description indicating that the XA resource service is unavailable in journal fileless mode has been added.</p>

Changes

The functionality for setting a timeout for a thread waiting for a resource to be unlocked by another thread has been expanded.

With this expansion, the specifiable range for the `thdlock_sleep_time` operand in the following definitions has been changed:

- System common definition
- System service common information definition

Notes on specification have also been added.

In addition, the `thdlock_sleep_time` operand has been deleted from the user service definition and user service default definition.

The user authentication facility can now be used in Linux and AIX.

With this modification, the default value of the `client_uid_check` operand in the system common definition has been changed.

The name service can now be used to output the event trace.

With this modification, the `nam_prf_trace_level` operand has been added to the system common definition.

The process service can now be used to output an event trace.

With this modification, the explanation of the `prc_prf_trace` operand in the process service has been changed.

A specifiable range for the `trn_tran_process_count` operand in the transaction service definition that applies when the MCF service is used has been added.

A parallel access facility for system journal files has been added.

With this modification, the following operands and an option have been added to the system journal service definition:

- `jnl_max_file_dispersion` operand
- `jnl_min_file_dispersion` operand
- `-e` option in the `jnladdpf` definition command

In addition, the explanations of the following operands and an option in the archive journal service definition have been changed:

- `jnl_max_file_dispersion` operand
- `jnl_min_file_dispersion` operand
- `-e` option in the `jnladdpf` definition command

Changes

An audit log output facility has been added.

With this modification, the following operands have been added:

Log service definition:

- log_audit_out
- log_audit_path
- log_audit_size
- log_audit_count
- log_audit_message

RAP-processing listener service definition:

- log_audit_out_suppress
- log_audit_message

RAP-processing client manager service definition:

- log_audit_out_suppress
- log_audit_message

User service default definition:

- log_audit_out_suppress
- log_audit_message

User service definition:

- log_audit_out_suppress
- log_audit_message

An explanation of the remote API facility has been added for the following items:

RAP-processing listener service definition:

- rap_term_disconnect_time
- rap_stay_watch_time
- rap_stay_warning_interval
- watch_time

System service definitions that can be changed at restart:

- RAP-processing listener service definition
- RAP-processing client manager service definition

In addition, the explanations of the following items have been changed:

RAP-processing listener service definition:

- rap_connect_interval
- rap_recovery_server

Notes on the RAP-processing listener service definition

Functionality that suppresses backing up of PRF trace files has been added.

With this modification, the `prf_trace_backup` operand has been added to the performance verification trace definition.

Functionality that allows the real-time statistics service to back up RTS log files has been added.

With this modification, the `rts_log_file_backup` operand has been added to the real-time statistics service definition.

Changes

Items that can be acquired by using the real-time statistics service have been added.
With this modification, the following operands have been added to the real-time statistics acquisition-item definition:

- `rts_scd_svc_scd_wait` operand
- `rts_scd_svc_using_buf` operand
- `rts_scd_parallel` operand

Operation of the schedule service can now be specified on a service basis.
With this modification, the `scdsvcdef` definition command has been added to the following definitions:

- User service definition
- User service default definition

Notes that apply when the `scdsvcdef` definition command is specified in any of the following operands in the user service definition have also been added:

- `message_store_buflen` operand
- `message_cell_size` operand

In addition, the formula for calculating the memory for the scheduler in the formulas for calculating static shared memory for TPI/Server Base has been changed.

Functionality that dynamically loads service functions has been added.

With this modification, the UAP shared library name can now be specified for the `service` operand in the user service definition.

In addition, notes on the `rtspout` definition command has been added to the real-time statistics service definition.

In the Linux version, an attempt to output a message to syslog can now be retried if the attempt fails.

With this modification, the explanations of the following operands have been changed:

- `log_syslog_elist`
- `log_syslog_elist_rint`

Notes on specifying the time zone have been added.

Examples of defining the acquisition items for real-time statistics have been added.

RAP has been removed from the service group types that can be specified in the `type` operand.

Functionality that monitors the message queues remaining in the input queue has been added.

With this modification, the service group attribute definition has been added to the MCF manager definition.

The specifiable range for the `mcfmmsg` definition command has been changed.

Functionality that can reuse a model definition when an application attribute definition is specified has been added.

With this modification, the `-N` option has been added to the `mcfaalcap` definition command in the MCF application definition.

The explanation of the `-o` option for the MCF definition object creation utility startup command has been changed.

The explanation of what is inherited has been changed for the following options:

- `-g` option of the `mcfmsts` definition command
- `-v` option of the `mcfmsts` definition command
- `-a` option of the `mcfmsts` definition command

Changes
A list of definitions that must be reviewed with regard to the changes to the OpenTP1 system has been added.
An explanation of the shared memory requirements when the <code>prf_trace</code> operand is specified in the system common definition has been added.
The method of calculating the amount of dynamic shared memory for TP1/Server Base when there is only a memory queue has been added.
Messages and problem identification codes that are output during definition checking have been added or changed.

The following table lists changes in the manual (3000-3-D52-20(E)) and product changes related to that manual for uCosminexus TP1/Server Base 07-01.

Changes
<p>The following operands have been added:</p> <ul style="list-style-type: none"> • <code>rap_message_id_change_level</code> operand in the RAP-processing listener service definition, user service default definition, and user service definition • <code>user_command_online_tplmng_r_id</code> operand in the system environment definition
<p>Duplication of the <code>node_id</code> operand in the system common definition in the OpenTP1 system can now be checked.</p> <p>With this modification, the <code>name_nodeid_check_message</code> operand has been added to the name service definition.</p>
<p>The MSDTC linkage facility, which enables transaction linkage on a two-phase commit basis between OpenTP1 and an application running on .NET Framework, has been added.</p> <p>With this modification, the <code>xar_msdtc_use</code> operand has been added to the XA resource service definition.</p>
<p>The timeout for receiving the response to a service request in communication performed by the journal service can now be specified.</p> <p>With this modification, the <code>jnl_watch_time</code> operand has been added to the journal service definition and global archive journal service definition.</p>
<p>The message transmission order and application startup order can now be selected.</p> <p>With this modification, the <code>-c</code> option has been added to the <code>mcfmuap</code> definition command in the MCF manager definition.</p>
Whether the values specified in definitions are appropriate for OpenTP1 operation can now be checked in detail.

Preface

This manual explains how to define parameters for the Distributed Transaction Processing Facility OpenTP1 program.

Products described in this manual, other than those for which the manual is released, may not work with OpenTP1 Version 7 products. You need to confirm that the products you want to use work with OpenTP1 Version 7 products.

In this manual, Job Management Partner 1/System Event Service is abbreviated to JP1/SES.

Intended readers

This manual is intended for system managers and system designers. As a pre-requisite, readers are referred to the manual, *OpenTP1 Description*.

Organization of this manual

This manual is organized into the following chapters and appendixes:

1. Overview

Explains the OpenTP1 system definition set, composition of definitions, procedures for creating the definitions, and definition rules.

2. Overview of the System Service Definitions

Explains the system service definitions.

3. System Service Definitions

Explains the system service definitions.

4. Overview of the Network Communication Definitions

Explains the network communication definitions.

5. Network Communication Definitions

Explains the network communication definitions.

6. Definitions of Multi-OpenTP1 System

Explains the multi-OpenTP1 system definitions.

7. Changing OpenTP1 System Definitions

Explains how to change the OpenTP1 system definitions.

8. Definition Examples

Shows examples of OpenTP1 system definitions.

A. Relationship between UAPs and OpenTP1 System Environment

Explains the relationship between UAPs and the system environment settings.

B. Estimating Shared Memory Requirements

Explains calculation formulas for estimating the shared memory requirements for TP1/Server Base and the MCF service.

C. Definition for Acquiring Audit Events

Explains the definition for acquiring audit events.

D. Details of Definition Checking

Explains definition checking in detail.

E. Notes on Migrating from Earlier Products

Provides notes on migrating to OpenTP1 Version 7 from OpenTP1 Version 5 or earlier.

Related publications

This manual is part of a related set of manuals. The manuals in the set are listed below (with the manual numbers):

OpenTP1 products

- *OpenTP1 Version 7 Description* (3000-3-D50(E))
- *OpenTP1 Version 7 Programming Guide* (3000-3-D51(E))
- *OpenTP1 Version 7 System Definition* (3000-3-D52(E))
- *OpenTP1 Version 7 Operation* (3000-3-D53(E))
- *OpenTP1 Version 7 Programming Reference C Language* (3000-3-D54(E))
- *OpenTP1 Version 7 Programming Reference COBOL Language* (3000-3-D55(E))
- *OpenTP1 Version 7 Messages* (3000-3-D56(E))
- *OpenTP1 Version 7 Tester and UAP Trace User's Guide* (3000-3-D57(E))
- *OpenTP1 Version 7 TP1/Client User's Guide TP1/Client/W, TP1/Client/P* (3000-3-D58(E))
- *OpenTP1 Version 7 TP1/Client User's Guide TP1/Client/J* (3000-3-D59(E))
- *OpenTP1 Version 7 TP1/LiNK User's Guide* (3000-3-D60(E))^{#1}

- *OpenTP1 Version 7 Protocol TP1/NET/TCP/IP* (3000-3-D70(E))
- *OpenTP1 Version 7 TP1/Message Queue User's Guide* (3000-3-D90(E))^{#1}
- *OpenTP1 Version 7 TP1/Message Queue Messages* (3000-3-D91(E))^{#1}
- *OpenTP1 Version 7 TP1/Message Queue Application Programming Guide* (3000-3-D92(E))^{#1}
- *OpenTP1 Version 7 TP1/Message Queue Application Programming Reference* (3000-3-D93(E))^{#1}

Other OpenTP1 products

- *TP1/Web User's Guide and Reference* (3000-3-D62(E))^{#1}

Other related products

- *Indexed Sequential Access Method ISAM* (3000-3-046(E))
- *XP/W* (3000-3-047(E))
- *Extended Mapping Service 2/Workstation XMAP2/W DESCRIPTION/USER'S GUIDE* (3000-7-421(E))
- *SEWB 3 General Information* (3000-7-450(E))
- *Job Management Partner 1/Base User's Guide* (3020-3-K06(E))
- *Job Management Partner 1/Base Messages* (3020-3-K07(E))
- *Job Management Partner 1/Base Software Developer's Guide* (3020-3-K08(E))

For OpenTP1 protocol manuals, please check whether English versions are available.

#1

If you want to use this manual, confirm that it has been published. (Some of these manuals might not have been published yet.)

Conventions: Abbreviations for product names

This manual uses the following abbreviations for product names:

Abbreviation	Full name or meaning
AIX	AIX 5L V5.1
	AIX 5L V5.2
	AIX 5L V5.3
	AIX V6.1

Abbreviation		Full name or meaning	
Client .NET	TP1/Client for .NET Framework	uCosminexus TP1/Client for .NET Framework	
Connector .NET	TP1/Connector for .NET Framework	uCosminexus TP1/Connector for .NET Framework	
DPM		JP1/ServerConductor/Deployment Manager	
HI-UX/WE2		HI-UX/workstation Extended Version 2	
HP-UX	HP-UX (IPF)	HP-UX 11i V2 (IPF)	
		HP-UX 11i V3 (IPF)	
	HP-UX (PA-RISC)	HP-UX 11i V1 (PA-RISC)	
		HP-UX 11i V2 (PA-RISC)	
IPF		Itanium(R) Processor Family	
Java		Java™	
JP1	JP1/AJS2	JP1/AJS2 - Agent	JP1/Automatic Job Management System 2 - Agent
		JP1/AJS2 - Manager	JP1/Automatic Job Management System 2 - Manager
		JP1/AJS2 - View	JP1/Automatic Job Management System 2 - View
	JP1/AJS2 - Scenario Operation	JP1/AJS2 - Scenario Operation Manager	JP1/Automatic Job Management System 2 - Scenario Operation Manager
		JP1/AJS2 - Scenario Operation View	JP1/Automatic Job Management System 2 - Scenario Operation View
		JP1/NETM/Audit	JP1/NETM/Audit - Manager
Linux		Linux(R)	
Linux (AMD64/Intel EM64T/x86)		Red Hat Enterprise Linux AS 4 (AMD64 & Intel EM64T)	
		Red Hat Enterprise Linux AS 4 (x86)	
		Red Hat Enterprise Linux ES 4 (AMD64 & Intel EM64T)	
		Red Hat Enterprise Linux ES 4 (x86)	
		Red Hat Enterprise Linux 5 (AMD/Intel 64)	
		Red Hat Enterprise Linux 5 (x86)	

Abbreviation		Full name or meaning
		Red Hat Enterprise Linux 5 Advanced Platform (AMD/Intel 64)
		Red Hat Enterprise Linux 5 Advanced Platform (x86)
Linux (IPF)		Red Hat Enterprise Linux AS 4 (IPF)
		Red Hat Enterprise Linux 5 (Intel Itanium)
		Red Hat Enterprise Linux 5 Advanced Platform (Intel Itanium)
MS-DOS		Microsoft ^(R) MS-DOS ^(R)
NETM/DM		JP1/NETM/DM Client
		JP1/NETM/DM Manager
		JP1/NETM/DM SubManager
Oracle		Oracle 10g
		Oracle9i
Solaris		Solaris 8
		Solaris 9
		Solaris 10
TP1/Client	TP1/Client/J	uCosminexus TP1/Client/J
	TP1/Client/P	uCosminexus TP1/Client/P
	TP1/Client/W	uCosminexus TP1/Client/W
		uCosminexus TP1/Client/W(64)
TP1/EE		uCosminexus TP1/Server Base Enterprise Option
		uCosminexus TP1/Server Base Enterprise Option(64)
TP1/Extension 1		uCosminexus TP1/Extension 1
		uCosminexus TP1/Extension 1(64)
TP1/FS/Direct Access		uCosminexus TP1/FS/Direct Access
		uCosminexus TP1/FS/Direct Access(64)
TP1/FS/Table Access		uCosminexus TP1/FS/Table Access

Abbreviation		Full name or meaning
		uCosminexus TP1/FS/Table Access(64)
TP1/High Availability		uCosminexus TP1/High Availability
		uCosminexus TP1/High Availability(64)
TP1/LiNK		uCosminexus TP1/LiNK
TP1/Message Control		uCosminexus TP1/Message Control
		uCosminexus TP1/Message Control(64)
TP1/Message Control/Tester		uCosminexus TP1/Message Control/Tester
TP1/Message Queue		uCosminexus TP1/Message Queue
		uCosminexus TP1/Message Queue(64)
TP1/Message Queue - Access		uCosminexus TP1/Message Queue - Access
		uCosminexus TP1/Message Queue - Access(64)
TP1/Messaging		uCosminexus TP1/Messaging
TP1/Multi		uCosminexus TP1/Multi
TP1/NET/HDLC		uCosminexus TP1/NET/HDLC
TP1/NET/High Availability		uCosminexus TP1/NET/High Availability
		uCosminexus TP1/NET/High Availability(64)
TP1/NET/HSC		uCosminexus TP1/NET/HSC
TP1/NET/Library		uCosminexus TP1/NET/Library
		uCosminexus TP1/NET/Library(64)
TP1/NET/NCSB		uCosminexus TP1/NET/NCSB
TP1/NET/OSAS-NIF		uCosminexus TP1/NET/OSAS-NIF
TP1/NET/OSI-TP		uCosminexus TP1/NET/OSI-TP
TP1/NET/SLU - TypeP2	TP1/NET/ Secondary Logical Unit - TypeP2	uCosminexus TP1/NET/Secondary Logical Unit - TypeP2
TP1/NET/TCP/IP		uCosminexus TP1/NET/TCP/IP
		uCosminexus TP1/NET/TCP/IP(64)
TP1/NET/UDP		uCosminexus TP1/NET/User Datagram Protocol

Abbreviation	Full name or meaning
TP1/NET/User Agent	uCosminexus TP1/NET/User Agent
TP1/NET/X25	uCosminexus TP1/NET/X25
TP1/NET/X25-Extended	uCosminexus TP1/NET/X25-Extended
TP1/NET/XMAP3	uCosminexus TP1/NET/XMAP3
TP1/Offline Tester	uCosminexus TP1/Offline Tester
TP1/Online Tester	uCosminexus TP1/Online Tester
TP1/Resource Manager Monitor	uCosminexus TP1/Resource Manager Monitor
TP1/Server Base	uCosminexus TP1/Server Base
	uCosminexus TP1/Server Base(64)
TP1/Shared Table Access	uCosminexus TP1/Shared Table Access
TP1/Web	uCosminexus TP1/Web
Windows 2000	Microsoft ^(R) Windows ^(R) 2000 Advanced Server Operating System
	Microsoft ^(R) Windows ^(R) 2000 Datacenter Server Operating System
	Microsoft ^(R) Windows ^(R) 2000 Professional Operating System
	Microsoft ^(R) Windows ^(R) 2000 Server Operating System
Windows Server 2003	Microsoft ^(R) Windows Server ^(R) 2003, Datacenter Edition
	Microsoft ^(R) Windows Server ^(R) 2003, Enterprise Edition
	Microsoft ^(R) Windows Server ^(R) 2003, Standard Edition
Windows Server 2003 R2	Microsoft ^(R) Windows Server ^(R) 2003 R2, Enterprise Edition
	Microsoft ^(R) Windows Server ^(R) 2003 R2, Standard Edition
Windows Server 2003 x64 Editions	Microsoft ^(R) Windows Server ^(R) 2003, Datacenter x64 Edition
	Microsoft ^(R) Windows Server ^(R) 2003, Enterprise x64 Edition
	Microsoft ^(R) Windows Server ^(R) 2003, Standard x64 Edition

Abbreviation	Full name or meaning
Windows Server 2003 R2 x64 Editions	Microsoft ^(R) Windows Server ^(R) 2003 R2, Enterprise x64 Edition
	Microsoft ^(R) Windows Server ^(R) 2003 R2, Standard x64 Edition
Windows Server 2008	Microsoft ^(R) Windows Server ^(R) 2008 Datacenter (x86)
	Microsoft ^(R) Windows Server ^(R) 2008 Enterprise (x86)
	Microsoft ^(R) Windows Server ^(R) 2008 Standard (x86)
Windows Server 2008 x64 Editions	Microsoft ^(R) Windows Server ^(R) 2008 Datacenter (x64)
	Microsoft ^(R) Windows Server ^(R) 2008 Enterprise (x64)
	Microsoft ^(R) Windows Server ^(R) 2008 Standard (x64)
Windows Vista	Microsoft ^(R) Windows Vista ^(R) Business (x86)
	Microsoft ^(R) Windows Vista ^(R) Enterprise (x86)
	Microsoft ^(R) Windows Vista ^(R) Ultimate (x86)
Windows Vista x64 Editions	Microsoft ^(R) Windows Vista ^(R) Business (x64)
	Microsoft ^(R) Windows Vista ^(R) Enterprise (x64)
	Microsoft ^(R) Windows Vista ^(R) Ultimate (x64)
Windows XP	Microsoft ^(R) Windows ^(R) XP Professional Operating System

- The term Windows is used to indicate Windows Server 2003, Windows XP and Windows Vista if the difference in functions among them need not be considered.
- The term UNIX is used to indicate AIX, HP-UX, Linux, and Solaris.

Conventions: Acronyms

This manual also uses the following acronyms:

Acronym	Full name
AP	Application Program
API	Application Programming Interface
CPU	Central Processing Unit

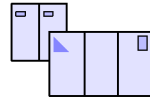
Acronym	Full name
CRM	Communication Resource Manager
CUP	Client User Program
DAM	Direct Access Method
DBMS	Database Management System
DID	Distributed Identifier
DNS	Domain Name System
FIFO	First-In-First-Out
HA	High Availability
ID	Identifier
IP	Internet Protocol
ISAM	Indexed Sequential Access Method
IST	Internode Shared Table
J2EE	Java 2 Enterprise Edition
LAN	Local Area Network
MCF	Message Control Facility
MHP	Message Handling Program
MQ	Message Queue
MQA	Message Queue Access
MSDTC	Microsoft Distributed Transaction Coordinator
OS	Operating System
OSI	Open Systems Interconnection
OSI TP	Open Systems Interconnection Transaction Processing
PRF	Performance
RI	Recovery Information
RM	Resource Manager
RPC	Remote Procedure Call
RTS	Real Time Statistic

Acronym	Full name
SPP	Service Providing Program
SUP	Service Using Program
TAM	Table Access Method
TCP/IP	Transmission Control Protocol/Internet Protocol
TP	Transaction Processing
UAP	User Application Program
UID/GID	User Identifier/Group Identifier
UOC	User Own Coding
VM	Virtual Machine
XA	Extended Architecture
XAR	Extended Architecture Resource

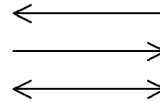
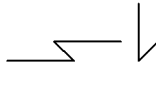
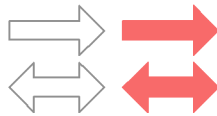
Conventions: Diagrams

This manual uses the following conventions in diagrams:

- Workstation, terminal
- Logical terminal
- Host computer
- File



- Data flow
- Communication line
- Control flow
- Other flows



- Program



Conventions: Differences between JIS and ASCII keyboards

The JIS code and ASCII code keyboards are different in the input characters represented by the following codes. In this manual, the use of a JIS keyboard is assumed for these characters.

Code	JIS keyboard	ASCII keyboard
(5c) ₁₆	¥ (yen symbol)	\ (backslash)
(7e) ₁₆	— (overline)	~ (tilde)

Conventions: Fonts and symbols

The following table explains the fonts used in this manual:

Font	Convention
Bold	Bold type indicates text on a window, other than the window title. Such text includes menus, menu options, buttons, radio box options, or explanatory labels. For example: <ul style="list-style-type: none">• From the File menu, choose Open.• Click the Cancel button.• In the Enter name entry box, type your name.
<i>Italics</i>	<i>Italics</i> are used to indicate a placeholder for some actual text to be provided by the user or system. For example: <ul style="list-style-type: none">• Write the command as follows: <i>copy source-file target-file</i>• The following message appears: A file was not found. (file = <i>file-name</i>) <i>Italics</i> are also used for emphasis. For example: <ul style="list-style-type: none">• Do <i>not</i> delete the configuration file.
Code font	A code font indicates text that the user enters without change, or text (such as messages) output by the system. For example: <ul style="list-style-type: none">• At the prompt, enter <code>dir</code>.• Use the <code>send</code> command to send mail.• The following message is displayed: <code>The password is incorrect.</code>

The following table explains the symbols used in this manual:

Symbol	Convention
	In syntax explanations, a vertical bar separates multiple items, and has the meaning of OR. For example: <code>A B C</code> means A, or B, or C.

Symbol	Convention
{ }	In syntax explanations, curly brackets indicate that only one of the enclosed items is to be selected. For example: {A B C} means only one of A, or B, or C.
[]	In syntax explanations, square brackets indicate that the enclosed item or items are optional. For example: [A] means that you can specify A or nothing. [B C] means that you can specify B, or C, or nothing.
...	In coding, an ellipsis (...) indicates that one or more lines of coding are not shown for purposes of brevity. In syntax explanations, an ellipsis indicates that the immediately preceding item can be repeated as many times as necessary. For example: A, B, B, ... means that, after you specify A, B, you can specify B as many times as necessary.

Conventions: KB, MB, GB, and TB

This manual uses the following conventions:

- 1 KB (kilobyte) is 1,024 bytes.
- 1 MB (megabyte) is 1,024² bytes.
- 1 GB (gigabyte) is 1,024³ bytes.
- 1 TB (terabyte) is 1,024⁴ bytes.

Conventions: Platform-specific notational differences

For the Windows version of OpenTP1, there are some notational differences from the description in the manual. The following table describes these differences.

Item	Description in the manual	Change to:
Environment variable	<i>\$aaaaaa</i> Example: \$DCDIR	%aaaaaa% Example: %DCDIR%
Path name separator	Colon (:)	Semicolon (;)
Directory name separator	Slash (/)	Backslash (\)
Absolute path name	A path from the root directory Example: /tmp	A path name from a drive letter and the root directory Example: C:\tmp
Executable file name	File name only (without an extension) Example: mcfmngrd	File name with an extension Example: mcfmngrd.exe

Item	Description in the manual	Change to:
make command	make	nmake

Conventions: Version numbers

The version numbers of Hitachi program products are usually written as two sets of two digits each, separated by a hyphen. For example:

- Version 1.00 (or 1.0) is written as 01-00.
- Version 2.05 is written as 02-05.
- Version 2.50 (or 2.5) is written as 02-50.
- Version 12.25 is written as 12-25.

The version number might be shown on the spine of a manual as *Ver. 2.00*, but the same version number would be written in the program as *02-00*.

Important note

Please check the availability of the products and manuals for HAmonitor, ServerConductor/DeploymentManager, Cosminexus, and Job Management Partner 1/ Automatic Job Management System 2.

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Chapter

1. Overview

This chapter explains the OpenTP1 system definition set, composition of definitions, procedures for creating the definitions, and definition rules.

This chapter contains the following sections:

- 1.1 Definition set
- 1.2 Composition of definitions
- 1.3 Procedures to create definitions
- 1.4 Definition rules

1.1 Definition set

There are the following three types of OpenTP1 definitions.

1. Systems service definitions

The information about TP1/Server Base is defined.

These definitions determine the configuration of services that operate in the system and the system-common execution environment.

2. Network communication definitions

The information about TP1/Message Control is defined.

These definitions determine the logical configuration of the system and the execution environment, such as the application programs and services to be used, for communicating with remote systems using the message control facility of TP1/Message Control.

For details about a protocol, see the applicable *OpenTP1 Protocol* manual.

The message control facility is called *MCF* hereafter in this manual.

3. Message queue definitions

The information about TP1/Message Queue is defined.

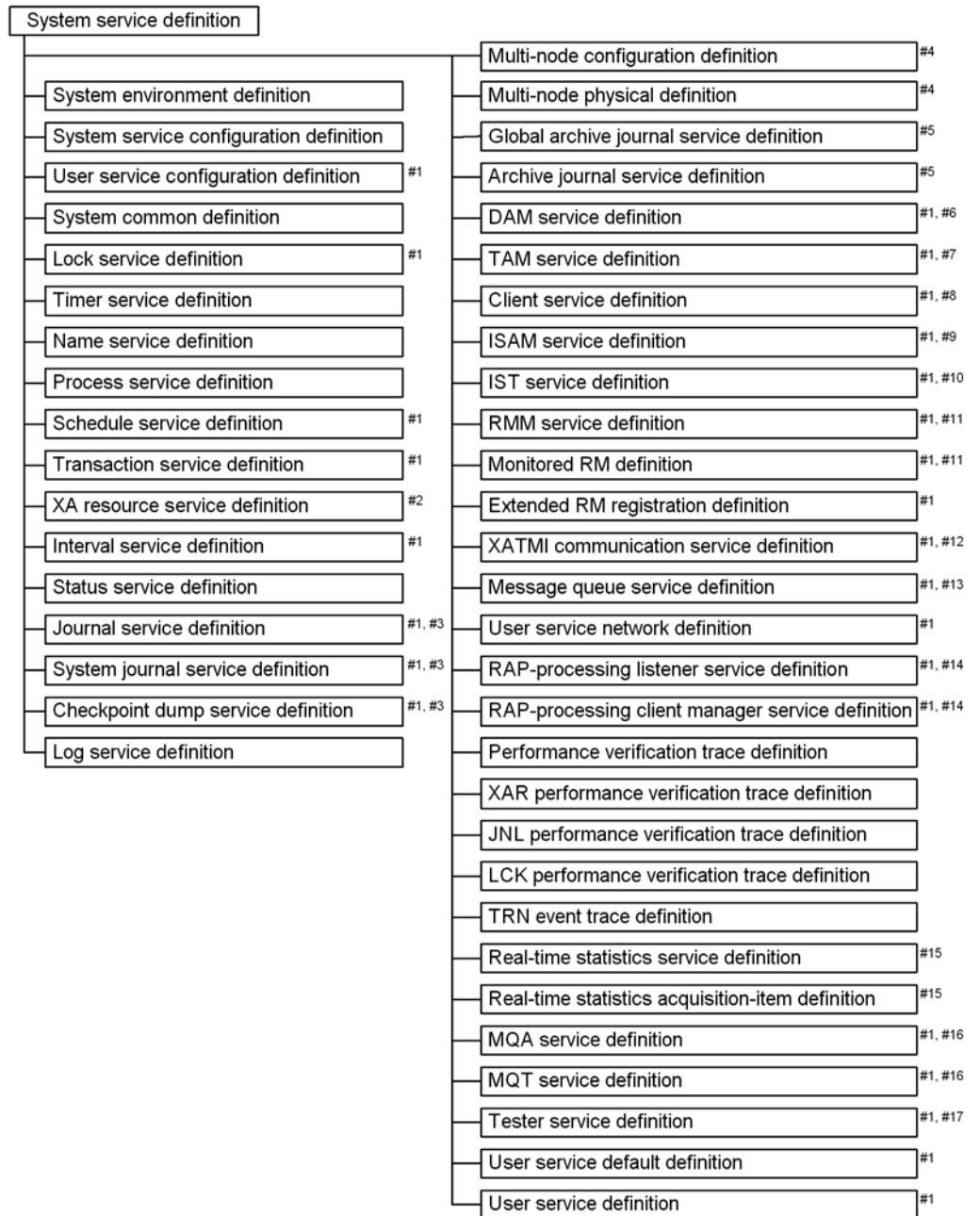
These definitions determine the execution environment for communicating with remote systems using the message queuing facility of TP1/Message Queue.

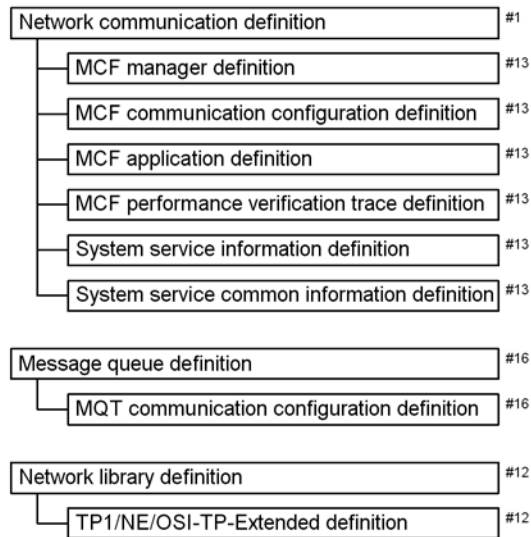
Note that this manual does not describe the details about the message queue definitions (MQT communication configuration definition). For the MQT communication configuration definition, see the *OpenTP1 TP1/Message Queue User's Guide*.

Note that this manual does not describe the details about the network library definitions (TP1/NET/OSI-TP-Extended definition).

The following figure shows how OpenTP1 system definitions are organized. Table 1-1 to 1-3 give overviews of the definitions.

Figure 1-1: OpenTP1 system definition set





- #1: Do not define this for OpenTP1 nodes that use the global archive journal service.
- #2: Define this when using the XA resource service facility.
- #3: Do not define this for OpenTP1 nodes that use the journal fileless mode.
- #4: Define this when using TP1/Multi.
- #5: Define this when using the global archive journal service.
- #6: Define this when using TP1/FS/Direct Access.
- #7: Define this when using TP1/FS/Table Access.
- #8: Define this when using TP1/Client/W or TP1/Client/P.
- #9: Define this when using the ISAM file transaction facility (ISAM/B).
For definition details, see the manual *Indexed Sequential Access Method ISAM*.
- #10: Define this when using TP1/Shared Table Access.
- #11: Define this when using TP1/Resource Manager Monitor.
- #12: Define this when executing OSI TP communication that uses TP1/NET/OSI-TP-Extended.
For definition details, see the manual *OpenTP1 Protocol TP1/NET/OSI-TP-Extended*.
- #13: Define this when using the message exchange facility (TP1/Message Control).
- #14: Define this when using the remote API facility.
- #15: Define this when using the real-time statistics service.
- #16: Define this when using the message queuing facility (TP1/Message Queue).
For definition details, see the manual *Open TP1 TP1/Message Queue User's Guide*.
- #17: Define this when using TP1/Online Tester. For definition details, see the manual *OpenTP1 Tester and UAP Trace User's Guide*.

Table 1-1: Summary of system service definitions

No.	Definition	Information
1	System environment definition	Defines the execution environment for an OpenTP1 system.
2	System service configuration definition	Defines the configuration of service groups to be started together on one machine as one OpenTP1 system.

No.	Definition	Information
3	User service configuration definition	Defines the configuration of user server groups to be started together on one machine as one OpenTP1 system.
4	System common definition	Defines the common execution environment for an OpenTP1 system.
5	Lock service definition	Defines the execution environment to use the OpenTP1 exclusive control function.
6	Timer service definition	Defines the execution environment to use the time check service.
7	Name service definition	Defines the execution environment to manage the service name and corresponding address which enables RPC.
8	Process service definition	Defines the execution environment to manage the server process executed under the OpenTP1 environment.
9	Schedule service definition	Defines the execution environment to schedule service requests to a server operating under the OpenTP1 environment.
10	Transaction service definition	Defines the execution environment to manage transactions.
11	XA resource service definition	Defines the execution environment for managing transactions using the XA resource service.
12	Interval service definition	Defines the execution environment for the interval timer function to be provided for each system service.
13	Status service definition	Defines the execution environment to manage the status of each system service operating under the OpenTP1 environment.
14	Journal service definition	Defines the execution environment to use the system journal service and checkpoint dump service.
15	System journal service definition	Defines the execution environment to collect a journal in the system journal file.
16	Checkpoint dump service definition	Defines the execution environment to collect a checkpoint dump in the checkpoint dump file.
17	Log service definition	Defines the environment for message log output.
18	Multinode configuration definition	Defines the configuration of a multinode area or multinode subarea.
19	Multinode physical definition	Defines the name of a host where OpenTP1 nodes exist and the port number of a process server demon (prcd).
20	Global archive journal service definition	Defines the execution environment for using the global archive journal service.

1. Overview

No.	Definition	Information
21	Archive journal service definition	Defines the file group name and attribute of an archive journal file.
22	DAM service definition ^{#1}	Defines the execution environment to manage direct access files having the file restoration function.
23	TAM service definition ^{#2}	Defines the execution environment to manage TAM files.
24	Client service definition	Defines the execution environment for a server to support the OpenTP1 client functions.
25	IST service definition ^{#3}	Defines the execution environment for using the IST service.
26	RMM service definition ^{#4}	Defines the resource manager that uses the RMM service.
27	Monitored RM definition ^{#5}	Defines the RMM service command.
28	Extended RM registration definition ^{#5}	Defines the execution environment to register the resource manager provided by other than OpenTP1.
29	XATMI communication service definition	Defines the execution environment to perform OSI TP communication with XATMI interface using TP1/NET/OSI-TP-Extended.
30	Message queue service definition	Defines the execution environment to manage queuing of input/output messages.
31	User service network definition	Defines the service information for the destination.
32	RAP-processing listener service definition	Defines the rap listener when using the remote API facility.
33	RAP-processing client manager service definition	Defines the execution environment to use the remote API client manager facility.
34	Performance verification trace definition	Defines the file for storing the performance verification trace.
35	XAR performance verification trace definition	Defines the execution environment for acquiring an XAR performance verification trace.
36	JNL performance verification trace definition	Defines the execution environment for acquiring a JNL performance verification trace.
37	LCK performance verification trace definition	Defines the execution environment for acquiring an LCK performance verification trace.
38	TRN event trace definition	Defines the execution environment for acquiring TRN event trace information.

No.	Definition	Information
39	Real-time statistics service definition	Defines the execution environment for the real-time statistics service.
40	Real-time statistics acquisition-item definition	Defines the real-time statistics items that are to be acquired.
41	MQA service definition ^{#6}	Defines the MQA server that manages the queue of TPI/Message Queue.
42	MQT service definition ^{#7}	Defines the MQT server that controls TPI/Message Queue communications.
43	Tester service definition	Defines the execution environment for online testing of a UAP.
44	User service default definition	Defines the value assumed when the user service definition is omitted.
45	User service definition	Defines the execution environment for a user server.

#1: Direct Access Method

#2: Table Access Method

#3: Internode Shared Table

#4: Resource Manager Monitor

#5: Resource Manager

#6: Message Queue Access

#7: Message Queue Transfer

Table 1-2: Summary of network communication definitions

No.	Definition	Information
1	MCF manager definition	Defines the execution environment for resources shared by MCFs.
2	MCF communication configuration definition	Defines the execution environment for each connected MCF terminal, the input/output queues for sending and receiving messages, and other network parameters.
3	MCF application definition	Defines the execution environment for MCF applications such as the user application name, or service name corresponding to a MCF event.
4	MCF performance verification trace definition	Defines the execution environment for acquiring an MCF performance verification trace.

1. Overview

No.	Definition	Information
5	System service information definition	Defines the environment for starting the MCF communication service.
6	System service common information definition	Defines the information that is common to multiple MCF communication services.

Table 1-3: Summary of the message queue definition

No.	Definition	Information
1	MQT communication configuration definition [#]	Defines the MQT server that communicates using the message queuing mode of TP1/Message Queue.

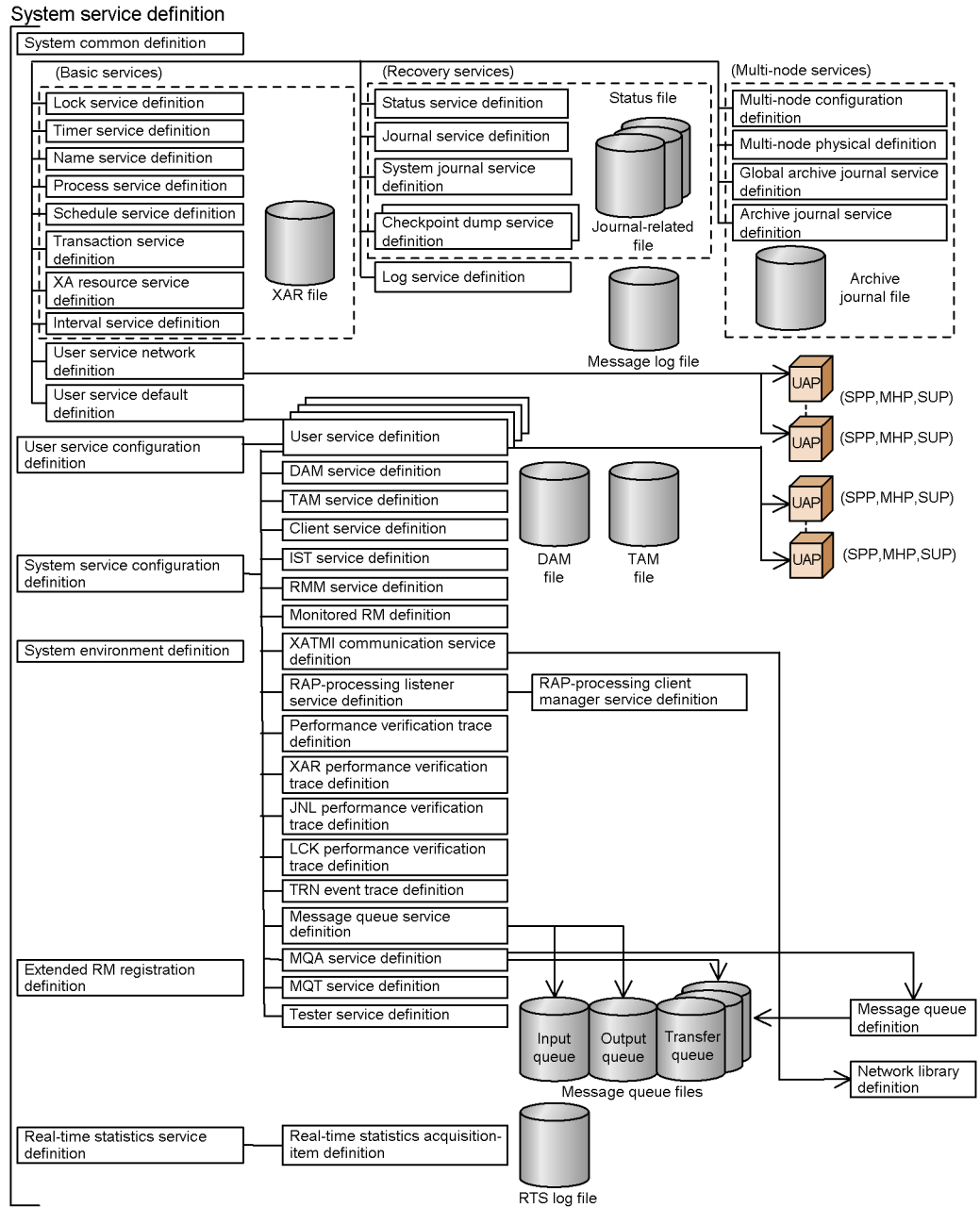
[#]: Message Queue Transfer

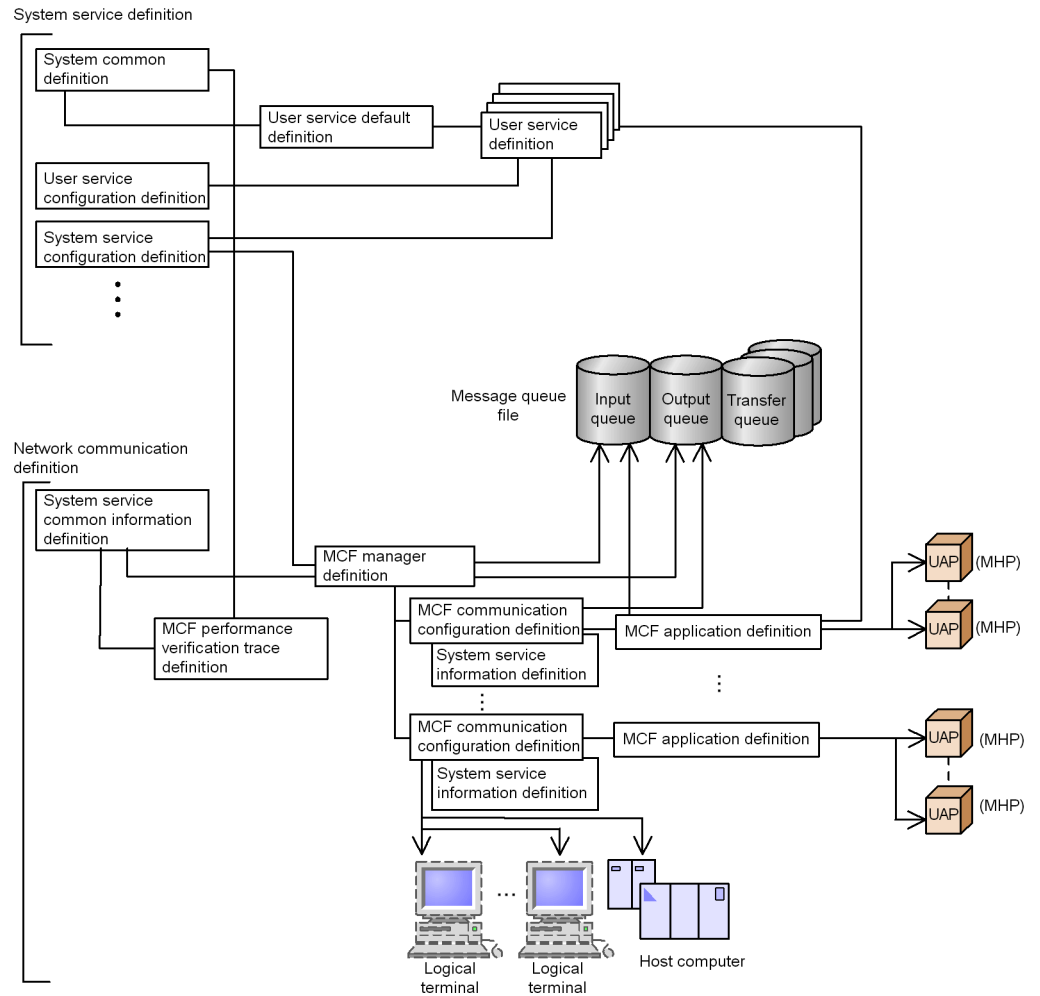
1.2 Composition of definitions

The environment for running an OpenTP1 system must be defined for each machine. This operating environment for a given machine is to be defined with the respective machine.

The composition of an OpenTP1 system definition is shown in Figure 1-2.

Figure 1-2: Organization of OpenTP1 system definition





1.2.1 Composition of system service definitions

The system service definitions define the overall configuration and execution environment of an OpenTP1 system. Included are the system environment definition, system service configuration definition, user service configuration definition, and others.

Definitions common to an OpenTP1 system as a whole are also included. The system common definition defines, for example, the system services within the node and the execution environment for the user servers. The user service default definition is also common to an OpenTP1 system.

Other definitions delineate the resources and execution options for each system service which operates as an independent process (space). A system service definition defines the execution environment such as the journal service or schedule service.

Where the multinode service is used, some definitions are needed and others are not for each node depending on whether or not it uses the global archive journal service. Table 1-4 shows the relationship between the global archive journal service and definitions.

Table 1-4: Global archive journal service and definitions

No.	Definition name	Node without global journal service	Node with global journal service
1	System environment definition	M	O
2	System service configuration definition	M	M
3	User service configuration definition	M	N
4	System common definition	M	M
5	Lock service definition	O	N
6	Timer service definition	O	O
7	Name service definition	O	O
8	Process service definition	M	O
9	Schedule service definition	O	N
10	Transaction service definition	M	N
11	XA resource service definition	O	N
12	Interval service definition	O	N
13	Status service definition	M	M
14	Journal service definition	M	N
15	System journal service definition	M	N
16	Checkpoint dump service definition	M	N
17	Log service definition	M	M
18	Multinode configuration definition	M [#]	M [#]
19	Multinode physical definition	M [#]	M [#]
20	Global archive journal service definition	N	M

No.	Definition name	Node without global journal service	Node with global journal service
21	Archive journal service definition	N	M
22	DAM service definition	M [#]	N
23	TAM service definition	M [#]	N
24	Client service definition	M [#]	N
25	IST service definition	M [#]	N
26	RMM service definition	M [#]	N
27	Monitored RM definition	M [#]	N
28	Extended RM registration definition	O	N
29	XATMI communication service definition	M [#]	N
30	Message queue service definition	O	N
31	User service network definition	O	N
32	RAP-processing listener service definition	M	N
33	RAP-processing client manager service definition	M	N
34	Performance verification trace definition	O	O
35	XAR performance verification trace definition	O	O
36	JNL performance verification trace definition	O	O
37	LCK performance verification trace definition	O	O
38	TRN event trace definition	O	O
39	Real-time statistics service definition	O	N
40	Real-time statistics acquisition-item definition	O	N
41	MQA service definition	M [#]	N
42	MQT service definition	M [#]	N

No.	Definition name	Node without global journal service	Node with global journal service
43	Tester service definition	M [#]	N
44	User service default definition	M	N
45	User service definition	M	N

Legend:

M: A definition file is mandatory.

O: Definition file is optional. The system operates on defaults. If any definition file exists, the system operates depending on its contents.

N: No definition file is needed. The system ignores any existing definition file.

#: This definition is mandatory if an applicable program product is used.

Similarly, the resources and execution options are defined for each user server. When you use the MCF, one application corresponds to one service. A user server can provide a number of services, which are collectively referred to as a service group. Thus there is one service group for one user server. The user service definition defines the execution environment for a service group.

1.2.2 Composition of network communication definitions

The network communication definitions are comprised of six definitions, applicable as follows:

- MCF manager definition which defines the environment to manage and operate the MCF,
- The MCF communication configuration definition which defines the environment for each communication service,
- The MCF application definition which defines the attributes of an application,
- The MCF performance verification trace definition that defines the execution environment for acquiring an MCF performance verification trace.
- The system service information definition which defines the environment for starting the MCF communication service, and
- The system service common information definition which defines the information that is common to multiple MCF communication services.

For details about a protocol, see the applicable *OpenTPI Protocol* manual.

1.2.3 Composition of message queue definitions

There is only MQT communication configuration definition for the message queue definition. For details about the MQT communication configuration definition, see the *OpenTP1 TP1/Message Queue User's Guide*.

1.2.4 Composition of network library definitions

There is only TP1/NET/OSI-TP-Extended for the network library definition.

1.3 Procedures to create definitions

A definition file is generated using the text editor to create the system service definitions and network communication definitions.

For the network communication definitions, an object file must be generated before an on-line startup. This object file is created by using the appropriate utility to convert the source file created by the text editor.

The MCF manager definition, MCF communication configuration definition, and MCF application definition are to be created in individual source files, from which individual object files are to be created. However, the MCF communication configuration definition requires two source files because it consists of the common definition and the data communication definition.

For details about a protocol in the network communication definitions, see the applicable *OpenTP1 Protocol* manual.

For the creation procedure of the message queue definition (MQT communication configuration definition), see the *OpenTP1 TP1/Message Queue User's Guide*.

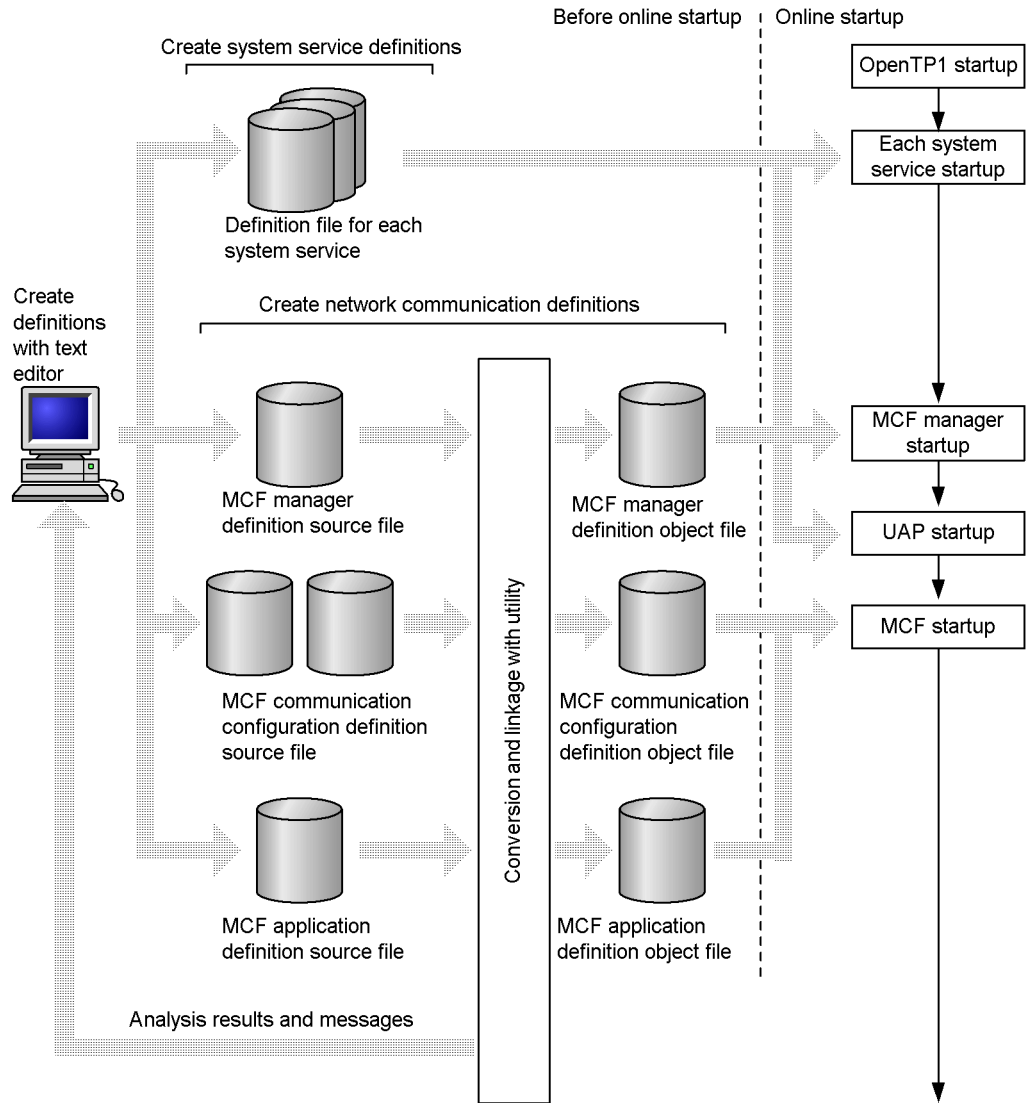
For details about how to create the network library definition (TP1/NET/OSI-TP-Extended definition), see the manual *OpenTP1 Protocol TP1/NET/OSI-TP-Extended*.

Note:

The definitions under `$DCDIR/lib/sysconf` are definition files used by the OpenTP1 system service. Therefore, do not create definitions by copying the files under `$DCDIR/lib/sysconf`. Otherwise, OpenTP1 may stop working normally.

Procedures to create the definitions, and the processing flow when starting on-line are shown in Figure 1-3. Once the definitions are created, register the OpenTP1 system in the operating system.

Figure 1-3: Definition procedures and online processing flow



1.4 Definition rules

This section explains the basic items and notational format for each definition.

1.4.1 Basic items

(1) *System service definitions*

The system service definitions can be notated, in any order, in either the set, command, putenv, or dcputenv format. Any of these formats are stored in the same definition file. But within a single definition, follow the order of set format, command format, putenv format, and dcputenv format.

With a set format, the specified value is determined at startup of the OpenTP1 system. The same applies to a command format, but the value determined at startup can be changed during an on-line session by entering an operating command. The putenv format and the dcputenv format enable an environment variable to be set.

Commands for system service definitions are described as definitions. Accordingly, restrictions differ on the use of a command as an actual operating command or as an option. For details, see the manual *OpenTP1 Operation*.

(2) *Network communication definitions*

The network communication definitions can be notated in any order, but the order of notation within any one definition is fixed. See 5. *Network Communication Definitions* for details.

For details about a protocol, see the applicable *OpenTP1 Protocol* manual.

(3) *Message queue definition*

For the rules of the message queue definition (MQT communication configuration definition), see the *OpenTP1 TP1/Message Queue User's Guide*.

(4) *Network library definition*

For the rules of the network library definition (TP1/NET/OSI-TP-Extended definition), observe the specifications of TP1/NET/OSI-TP-Extended.

(5) *Maintenance of definition information*

The definition information can be maintained using a text editor. However, do not change or delete the definition that is being used online. If a definition is changed or deleted during an online operation, that operation is not guaranteed.

The changes made in some definitions can be reflected in OpenTP1 by entering the `dcreset` command after OpenTP1 is terminated. This eliminates the need to delete a registered definition or re-register a definition using the `dcsetup` command.

For details about the `dcreset` command, see *7.1 Procedures*.

(6) Same operand in more than one system definition

When the same operand can be specified in the system common definition, user service default definition, and user service definition, the priority is as follows (1. > 2. > 3.):

1. User service definition
2. User service default definition
3. System common definition

1.4.2 Notational formats

(1) set format

A definition specified in the set format is called an *operand*. The set format establishes a value for an operand as follows.

```
set operand=value
```

(2) Command format

A definition specified in the command format is called a *definition command*. The command format establishes the option and argument as follows.

```
command-name option command-argument
```

command-name is the command name.

option is a character string starting with a hyphen, and can be in format 1 with no argument, or format 2 with a required argument, as follows:

Format 1

```
-option-flag
```

Format 2

```
-option-flag flag-argument
```

Legend:

option-flag is a single alphanumeric character following a hyphen; the alphabetic character must be in lowercase. *flag-argument* is a character string subtending to an option flag.

command-argument is an argument starting with any character other than a hyphen. It identifies the operation of the command.

(3) putenv format

The putenv format establishes the user's environment variables as follows. When an environment variable name is specified in the environment variable value operand, the environment variable is not extended.

```
putenv environment-variable-name environment-variable-value
```

(4) dcputenv format

The dcputenv format establishes the user's environment variables as follows. When an environment variable name is specified in the environment variable value operand, the environment variable is extended and the extended value is set as the user's environment variable.

```
dcputenv environment-variable-name environment-variable-value
```

(5) Comments

Any comment must be preceded by a hash mark (#). This symbol notated at the start of a line renders that whole line to be treated as a comment. Thus a comment can be of two formats:

Format 1

```
definition # comment
```

Format 2

```
# comment
```

(6) Rules

In a definition consisting of multiple items separated by a comma (,), do not place a space before or after a comma.

The values for the maximum length of each definition line are shown below.

- System service definition: The maximum length of each definition line is 80 bytes, including comments.
- Network communication definition[#]: The maximum length of each definition line is 1024 bytes, including comments.

#

For a network communication definition that is a system service information definition or system service common information definition, the maximum length is 80 bytes, including comments.

If the specification exceeds the maximum length of each line, startup of OpenTP1 may fail or an error message may be issued.

If a definition is longer than the maximum length, write the definition on multiple lines by appending a continuation symbol (\) to each line that will be followed by a continuation line. Do not specify anything after the continuation symbol (\). When specifying multiple items separated by commas (,) on multiple lines, specify a comma (,) after the last item on the line on which a continuation symbol (\) is specified.

In the network communication definition, be careful when you specify an option with an operand enclosed in double quotation marks (") and the option is followed by another option on the next continuation line. In such a case, place at least one space character between the right quotation mark and the continuation symbol (\) on the first line, as shown in the example below. In the example, **Δ** indicates a space character.

```
-y "mode=client" Δ \
-r "portno=10002"
```

- System service definitions

A line notated with a comment symbol cannot be continued. The hash mark (#) renders the remainder of the line to be treated as a comment; hence the continuation symbol simply becomes part of the comment.

- Network communication definitions

Enclose the comment with two hash marks, then add a continuation symbol at the end of that line.

(7) Cautions when establishing environment variables

In the dcputenv format, the getenv function extends an environment variable name specified in the environment variable value operand. Any environment variable name must be preceded by a dollar sign (\$). Alphanumerics and underscores can be specified in environment variable names.

Notes on specifying an environment variable value that includes an environment variable name:

- If the value of an expanded environment variable contains an environment variable name, the environment variable name is not expanded.
- To treat the environment variable name contained in an environment variable value as a character string, enclose the entire value in double quotation marks (").
- Double quotation marks (") included in an environment variable value are treated as part of the value.

Example: When the /OpenTP1 directory is specified in the environment variable \$DCDIR

putenv	TMPPATH	\$DCDIR/tmp	1
dputenv	FILEPATH	\$DCDIR/tmp	2
dputenv	TEMPDIR	\$TMPPATH/file	3
dputenv	REALPATH	\$FILEPATH:\$DCDIR/file	4
dputenv	ENVPATH	"\$TMPPATH/file"	5
dputenv	DIRTMP	\$DCDIR:"\$FILEPATH":/tmp	6

1. The character string "\$DCDIR/tmp" is set in TMPPATH (\$DCDIR is not expanded).
2. "/OpenTP1/tmp" is set in FILEPATH (\$DCDIR is expanded to "/OpenTP1").
3. "\$DCDIR/tmp/file" is set in TEMPDIR (\$TMPPATH is expanded to "\$DCDIR/tmp/", however \$DCDIR is not expanded).
4. "/OpenTP1/tmp:/OpenTP1/file" is set in REALPATH (when \$FILEPATH: is specified, the character string up to the colon (excluding the colon) is recognized as an environment variable name).
5. "\$TMPPATH/file" is set in ENVPATH (\$TMPPATH is not expanded).
6. /OpenTP1:"/OpenTP1/tmp":/tmp is set in DIRTMP. The double quotation marks are also set because they are treated as part of the environment variable value. Since these double quotation marks are not treated as quotation marks preventing the expansion of an environment variable name, \$FILEPATH is expanded.

If the same environment variable is specified in both the putenv and dputenv formats, the last specified one becomes valid.

1.4.3 Explanation of symbols

The meaning of syntax description symbols, attribute symbols, and syntax symbols used to explain a definition are summarized in the following tables. Note that these symbols are not themselves used in the notation of a definition.

(1) *Syntax description symbols*

Syntax description symbols are symbols used to explain options and command arguments. The meaning of each symbol is shown in Table 1-5.

Table 1-5: Syntax description symbols

Syntax description symbol	Meaning
[]	An item enclosed by this symbol can be omitted. Example: [prcsvpath <i>path-name</i>] This indicates that <code>prcsvpath <i>path-name</i></code> can be specified; or a specification can be omitted. Example: [-c <i>cid</i>] This indicates that <code>cid</code> becomes the value for the item specified as <code>-c</code> option; or a specification can be omitted.
...	The item immediately preceding this symbol can be specified repeatedly. Example: <code>dcsvstart -u <i>server-name</i> [,<i>server-name</i>] ...</code> This indicates that several individual names can be notated as the service group name to be specified with <code>dcsvstart</code> command. Example: <code>-1 "<i>le1 le2 ... len</i>"</code> This indicates that several character strings, each separated by a blank, can be specified as part of the <code>-1</code> option.
{{ }}	Multiple items enclosed within this symbol become one repeatable item. Example: <code>{{dcsvstart -u <i>server-name</i> [,<i>server-name</i>] ...}}</code> can be specified as: <code>dcsvstart -u <i>server-name</i> [,<i>server-name</i>] ...</code> <code>dcsvstart -u <i>server-name</i> [,<i>server-name</i>] ...</code>
	One of the two values separated by the bar can be selected as the value for specification. Example: <code>set hold=Y N</code> This indicates that <code>Y</code> or <code>N</code> can be specified.
<u> </u> (Underline)	The value underlined is the default if the said operand, option, or command argument is omitted. Example: <code>set type=<u>other</u> MHP</code> This indicates that <code>other</code> is the assumed value if the <code>type</code> operand is omitted.

(2) Attribute display symbols

Attribute display symbols explain the range and other attributes which the user can specify for an operand. The meaning of each symbol is shown in Table 1-6.

Table 1-6: Attribute display symbols

Attribute display symbol	Meaning
~	Specifiable attributes for the operand value follow this symbol.
<< >>	Indicates the default if the operand is not specified.
< >	Indicates the required syntax for the operand.

Attribute display symbol	Meaning
(())	Indicates the specifiable range of operand values.

(3) Syntax symbols

Syntax symbols explain the nature of an operand value. The meaning of each symbol is explained in Table 1-7.

Table 1-7: Syntax symbols

Syntax symbol	Meaning
Alphabetic	Any letter of the alphabet from A-Z (uppercase) or a-z (lowercase) or the underscore '_':
Alphabetic symbol	Any letter of the alphabet (A-Z, a-z) and the following symbols: #, @, \, \$, and %
Alphanumeric	A combination of any alphabetic or any numeral from 0-9 inclusive.
Alphanumeric symbol	A combination of any alphabetic symbol and numeral (0-9).
Unsigned integer	A numeric (0-9) string.
Hexadecimal number	A numeral (0-9) and (A-F, a-f) Note that when lower case (a-f) and numeral (0-9) are used for hexadecimal numbers, upper case (A-F) cannot be included.
Identifier	Alphanumeric string starting with an alphabetic.
Symbolic name	Alphanumeric symbol string starting with an alphabetic symbol.
Character string	A character array consisting of alphanumeric-symbol characters.
Path name	'/' followed by symbolic name

Note

Path names depend on the operating system in use.

Chapter

2. Overview of the System Service Definitions

This chapter explains the system service definitions.

This chapter contains the following sections:

- 2.1 Overview
- 2.2 Types of definitions

2.1 Overview

2.1.1 System service definitions and file names

Table 2-1 shows the names of the system service definition files and the number of files.

A node shown in Table 2-1 refers to an OpenTP1 system.

Table 2-1: System service definition files and number of files

Definition	Definition file (Full path name)	Number of files (per online system)
System environment definition	\$DCDIR/conf/env	0-1
System service configuration definition	\$DCCONFPATH/sysconf	1
User service configuration definition	\$DCCONFPATH/usrconf	1
System common definition	\$DCCONFPATH/betranrc	1
Lock service definition	\$DCCONFPATH/lck	0-1
Timer service definition	\$DCCONFPATH/tim	0-1
Name service definition	\$DCCONFPATH/nam	0-1
Process service definition	\$DCCONFPATH/prc	0-1
Schedule service definition	\$DCCONFPATH/scd	0-1
	\$DCCONFPATH/dcsdmlt ^{#1}	0-1
	\$DCCONFPATH/ <i>multi-scheduler-group-name</i> ^{#1}	0- <i>n</i> (<i>n</i> : Number of multi-scheduler groups)
Transaction service definition	\$DCCONFPATH/trn	1
XA resource service definition	\$DCCONFPATH/xar	0-1
Interval service definition	\$DCCONFPATH/itv	0-1
Status service definition	\$DCCONFPATH/sts	1
Journal service definition	\$DCCONFPATH/jnl	0-1 ^{#2}

Definition	Definition file (Full path name)	Number of files (per online system)
System journal service definition	\$DCCONFPATH/ <i>any-name</i> ^{#3}	0-1 ^{#2}
Checkpoint dump service definition	\$DCCONFPATH/ <i>any-name</i> ^{#3}	0 to the number of system services for which a checkpoint dump will be acquired ^{#2, #4}
Log service definition	\$DCCONFPATH/log	0-1
Multinode configuration definition	\$DCCONFPATH/nodeconf	0-1
Multinode physical definition	\$DCCONFPATH/nodeaddr	0-1
Global archive journal service definition	\$DCCONFPATH/jar	0-1
Archive journal service definition	\$DCCONFPATH/ <i>any-name</i> ^{#5}	1-16 ^{#6}
DAM service definition	\$DCCONFPATH/dam	0-1
TAM service definition	\$DCCONFPATH/tam	0-1
Client service definition	\$DCCONFPATH/cltsrv	0-1 ^{#7}
IST service definition	\$DCCONFPATH/ist	0-1
RMM service definition	\$DCCONFPATH/rmm	0-1
Monitored RM definition	\$DCCONFPATH/ <i>any-name</i> ^{#8}	0-1
Extended RM registration definition	\$DCDIR/conf/extendRM	0-1
XATMI communication service definition	\$DCCONFPATH/_xatc	0-1
Message queue service definition	\$DCCONFPATH/que	Number of message queue servers ^{#9}
User service network definition	\$DCCONFPATH/usrnet	0-1
RAP-processing listener service definition	Any ^{#10}	Number of RAP-processing listeners
RAP-processing client manager service definition	Any ^{#10}	0-1

2. Overview of the System Service Definitions

Definition	Definition file (Full path name)	Number of files (per online system)
Performance verification trace definition	\$DCCONFPATH/prf	0-1
XAR performance verification trace definition	\$DCCONFPATH/_xr	0-1
JNL performance verification trace definition	\$DCDIR/conf/_jl	0-1
LCK performance verification trace definition	\$DCCONFPATH/_lk	0-1
TRN event trace definition	\$DCCONFPATH/_tr	0-1
Real-time statistics service definition	\$DCCONFPATH/rts	0-1
Real-time statistics acquisition-item definition	\$DCCONFPATH/ <i>any-name</i> ^{#11}	Number of specified <code>rtspu</code> definition commands ^{#12}
MQA service definition ^{#13}	\$DCCONFPATH/mqa	0-1
MQT service definition ^{#13}	\$DCCONFPATH/mqt	0-1
Tester service definition ^{#14}	\$DCCONFPATH/uto	0-1
User service default definition	\$DCCONFPATH/usrrc	0-1
User service definition	\$DCCONFPATH/ <i>user-server-name</i> ^{#15}	Number of user servers ^{#16}

#1: Create this definition file when you use the multi-scheduler facility and you must define the operation environment specific to the multi-scheduler daemon.

`dcscdmlt`

All the multi-scheduler daemons analyze the definition file that has the file name `dcscdmlt`. However, if a definition file that has the multi-scheduler group name exists, the information in the definition file prevails over `dcscdmlt`.

multi-scheduler-group-name

The same name as the name specified in the `-g` option of the `scdmulti` definition command in the schedule service definition. When the multi-scheduler group name is specified, a multi-scheduler daemon belonging to the specified multi-scheduler group analyzes the definition file

that has the specified multi-scheduler group name.

If both the `dcsdmlt` file and the file that has the multi-scheduler group name define the same item, the definition in the file that has the multi-scheduler group name prevails.

#2: When `Y` is specified in the `jnl_fileless_option` operand in the system common definition, specification of the definition file can be omitted.

#3: Each specified within a node must be unique. The file name specified here is to be defined in the journal service definition (`jnldfs` command). Note that a file name used in another definition file cannot be specified.

#4: Create for each service.

#5: Each specified within a node must be unique. The file name specified here is to be defined in the global archive journal service definition (`jnldfs` command). Note that a file name used in another definition file cannot be specified.

#6: Create only when the archive journal service definition is created.

#7: When the value is 0, the warning message appears, whereas the system assumes the default.

#8: Each specified within a machine must be unique. The file name specified here is to be defined in the RMM service definition (`rmm_check_services` operand).

#9: The number of message queue servers depends on the MCF manager definition.

#10: Specify a name other than `$DCCONFPATH`.

#11: Specify the name specified in the `-f` option of an `rtsp` definition command in the real-time statistics service definition.

#12: Create as many definition files as the number of times a definition file is specified in the `-f` option of the `rtsp` definition command in the real-time statistics service definition.

#13: For details about the MQA service definition and the MQT service definition, see *penTP1 TP1/Message Queue User's Guide*.

#14: For details about the tester service definition, see the *OpenTP1 Tester and UAP Trace User's Guide*.

#15: For the user server that starts upon starting the system, specify the same name as the user server name specified in the server activation command (`dcsvstart` command). Note that a file name used in another definition file cannot be specified.

#16: Create for each user server.

2.2 Types of definitions

(1) System environment definitions

Table 2-2 shows the system environment definitions.

Table 2-2: System environment definitions

Type	Operand/path	Definition	Specification
set	mode_conf	Specifies the system startup method.	AUTO MANUAL1 <<MANUAL2>>
	static_shmpool_size	Total amount of static shared memory	<unsigned integer> ((0-1945600)) <<4096>> (units: Kbytes)
	dynamic_shmpool_size	Total amount of dynamic shared memory at maximum usage	<unsigned integer> ((0-1945600)) <<4096>> (units: Kbytes)
	shmpool_attribute	Specifies whether shared memory pool is fixed in memory.	<<free>> fixed
	user_command	User environment setting command	<path name>
	server_count	Maximum number of servers	<unsigned integer> ((32-4096)) <<64>>
	user_server_ha	Specifies whether user servers are to be started after starting the system servers.	Y <<N>>
	system_terminate_watch_time	Watch time for system terminating process	<unsigned integer> ((0-65535)) <<3600>> (units: seconds)
	start_scheduling_timing	Specifies the time to start receiving RPCs when the system is started.	BEFORE <<AFTER>>
	system_init_watch_time	System initialization waiting time	<unsigned integer> ((0-65535)) (units: seconds)
user_command_online	Command of completion of starting system	<path name>	

Type	Operand/path	Definition	Specification
	preend_warning_watch_time	Monitor time to warn pre-termination	<unsigned integer> <<(0-65535)>> <<180>> (unit: seconds)
	user_command_online_tplmnggr_id	Specifies whether the system-startup completion command specified in user_command_online is executed with the UID or GID of the OpenTP1 administrator	Y <<N>>
putenv	DCCONFPATH	Directory of the definition file	<path name> <<\$DCDIR/conf>>
	DCADMDEBUG	Whether to acquire debug information	<<0>> 1
	DCUAPCONFPATH	Directory to store a user service definition file when you do not want to store it in the directory specified in DCCONFPATH	<path name>
dcputenv	DCCONFPATH	Directory of the definition file	<path name>
	DCUAPCONFPATH	Directory to store a user service definition file when you do not want to store it in the directory specified in DCCONFPATH	<path name>

(2) System service configuration definitions

Table 2-3 shows the system service configuration definitions.

Table 2-3: System service configuration definitions

Type	Operand/command	Option	Definition	Specification
set	uap_conf		Specifies whether user servers are to be executed on this node.	Y <<N>>
	dam_conf		Specifies whether DAM service is to be used on this node.	Y <<N>>
	tam_conf		Specifies whether TAM service is to be used on this node.	Y <<N>>
	que_conf		Specifies whether the message queue service (MCF service) is to be used on this node.	Y <<N>>

Type	Operand/ command	Option	Definition	Specification
	ha_conf		Specifies whether system switchover is to take place on this node.	Y <<N>>
	jar_conf		Specifies whether global archive journal service is to be used on this node.	Y <<N>>
	mrs_conf		Specifies whether remote MCF service is to be used on this node.	Y <<N>>
	clt_conf		Specifies whether client expansion service is to be used on this node.	Y <<N>>
	ist_conf		Specifies whether IST service is to be used on this node.	Y <<N>>
	rmm_conf		Specifies whether RMM service is to be used on this node.	Y <<N>>
	xat_conf		Specifies whether XATMI communication service is to be used on this node.	Y <<N>>
	mqa_conf		Specifies whether MQA service is to be used on this node.	Y <<N>>
Command	dcsvstart	-m	Starts MCF service.	<1-8 alphanumeric characters>

(3) User service configuration definitions

Table 2-4 shows the user service configuration definitions.

Table 2-4: User service configuration definitions

Type	Command	Option	Definition	Specification
Command	dcsvstart	-u	Starts user servers.	<1-8 alphanumeric characters>

(4) System common definitions

Table 2-5 shows the system common definitions.

Table 2-5: System common definitions

Type	Operand	Option	Definition	Specification	
set	rpc_trace		Specifies whether RPC trace is to be collected.	Y <<N>>	
	rpc_trace_name		Name of file for collecting RPC trace	<path name> <<\$DCDIR/spool/ rpctr>>	
	rpc_trace_size		Capacity of file for collecting RPC trace	<unsigned integer> ((1024-2147483648)) <<4096>> (units: bytes)	
	name_port		Port number for name service	<unsigned integer> ((5001-65535)) <<10000>>	
	system_id		OpenTPI identifier	<1-to-2-character identifier>	
	all_node			Names of all nodes existing in the name service	<1-to-255-character identifier>
				Port number for name server	<unsigned integer> ((5001-65535)) <<10000>>
				Specifies whether the service information prioritizing function is used.	:high
	node_id		Node identifier	<4-character identifier>	
	rpc_retry		Specifies whether RPC is to be retried.	Y <<N>>	
	rpc_retry_count		Maximum number of RPC processing retries	<unsigned integer> ((1-3600)) <<18>>	
	rpc_retry_interval		RPC processing retry interval	<unsigned integer> ((1-3600)) <<10>> (units: seconds)	
	multi_node_option		Specifies whether multinode facility is to be used.	Y <<N>>	
prc_port		Port number to be used for multinode linkage control facility	<unsigned integer> ((5001-49999))		
rpc_delay_statistics		Specifies whether to collect communication delay time statistics.	Y <<N>>		

2. Overview of the System Service Definitions

Type	Operand	Option	Definition	Specification
	my_host		Host name of the network adapter to be used	<1-to-255-character identifier>
	jpl_use		Specifies whether events are to be registered in Job Management Partner 1/Base.	Y <<N>>
	rpc_message_level		Display level for RPC troubleshooting messages	<unsigned integer> ((0-2) <<2>>)
	rpc_multi_tpl_in_same_host		Specifies whether more than one OpenTP1 within a host is assumed to be in the same global domain.	Y <<N>>
	max_socket_descriptors		Maximum number of file descriptors for sockets	<unsigned integer> ((32-2032) <<64>>)
	rpc_datacomp		Specifies whether to compress the user data to be sent when a service is requested or a response is returned to the service request.	Y <<N>>
	domain_masters_addr		Domain name of the communication destination	<identifier of at least 1 character>
			Host name 1 of the domain-alternate schedule service (priority 1)	<1-to-255-character identifier>
			Port number 1 of the domain-alternate schedule service (priority 1)	<unsigned integer> ((5001-65535))
			Host name 2 of the domain-alternate schedule service (priority 2)	<1-to-255-character identifier>
			Port number 2 of the domain-alternate schedule service (priority 2)	<unsigned integer> ((5001-65535))
			Host name 3 of the domain-alternate schedule service (priority 2)	<1-to-255-character identifier>
			Port number 3 of the domain-alternate schedule service (priority 2)	<unsigned integer> ((5001-65535))
	domain_masters_port		Port number of the domain-alternate schedule service	<unsigned integer> ((5001-65535))

Type	Operand	Option	Definition	Specification
	domain_use_dns		Specifies whether to inquire the domain name service when the domain-specified RPC is issued.	<<Y>> N
	client_uid_check		Specifies whether to use the user authentication facility for TP1/Client/W or TP1/Client/P.	HP-UX or Windows: <<Y>> N AIX, Linux, or Solaris: Y <<N>>
	rpc_port_base		Minimum port number	<unsigned integer> ((5001-65535))
	prf_trace		Specifies whether to acquire the performance verification trace.	<<Y>> N
	trn_prf_trace_level		Trace acquisition level	((00000001-00000003)) <<00000001>>
	core_suppress_watch_time		Time period during which to suppress outputting the core dump about a process monitored in real time for a timeout	<unsigned integer> ((0-3600)) <<0>> (units: seconds)
	rpc_netmask		Subnet mask value specified in the network definition file of TCP/IP	<Internet address that is represented using the dot (.) format>
	ipc_socketctl_highwater		Percentage of sockets at which temporary closing starts/percentage of sockets for which temporary closing is not performed	<unsigned integer> ((0-100))<<100,0>>
	ipc_socketctl_watchtime		Length of time to wait until the sockets are reusable	<unsigned integer> ((0-65535)) <<180>> (unit: seconds)
	ipc_conn_interval		Length of time to wait until the connection is established	<unsigned integer> ((8-65535)) <<8>> (unit: seconds)
	ipc_send_interval		Interval for monitoring data transmission	<unsigned integer> ((5-32767)) <<5>> (unit: seconds)
	ipc_send_count		Number of times data transmission is monitored	<unsigned integer> ((1-32767)) <<5>>
	ipc_header_rcv_time		Length of time to wait until the communication control data is received	<unsigned integer> ((5-32767)) <<10>> (unit: seconds)

2. Overview of the System Service Definitions

Type	Operand	Option	Definition	Specification
	name_notify		Specifies whether to perform a startup notification.	Y <<N>>
	all_node_ex		Names of all the nodes containing name services	<identifier of 1 to 255 characters>
			Port numbers of name servers	<unsigned integer> ((5001-65535)) <<10000>>
	rpc_server_busy_count		Number of bundles that output the KFCA00356-W message	<unsigned integer> ((0-32767)) <<20>>
	rpc_send_retry_count		Number of retries if an error occurs during TCP/IP connection	<unsigned integer> ((0-65535)) <<0>>
	rpc_send_retry_interval		Interval between retries if an error occurs during TCP/IP connection	<unsigned integer> ((0-300000)) <<0>> (unit: milliseconds)
	thdlock_sleep_time		Thread's waiting time if a lock conflict occurs among threads	<unsigned integer> ((1-32767)) <<15>> (unit: milliseconds)
	ipc_rcvbuf_size		Receive buffer size of TCP/IP	<unsigned integer> ((8192-1048576)) <<8192>> (unit: bytes)
	ipc_sndbuf_size		Send buffer size of TCP/IP	<unsigned integer> ((8192-1048576)) <<8192>> (unit: bytes)
	ipc_listen_sockbufset		Specifies whether to set the TCP/IP send and receive buffer sizes for the listen socket.	Y <<N>>
	rpc_router_retry_count		Number of retries if ENOBUFS or ENOMEM occurs	<unsigned integer> ((0-65535)) <<30>>
	rpc_router_retry_interval		Interval between retries if ENOBUFS or ENOMEM occurs	<unsigned integer> ((0-3600000)) <<0>> (unit: milliseconds)
	ipc_backlog_count		Length of queue storing connection establishment requests	<unsigned integer> ((0-4096)) <<0>>
	statistics		Specifies whether to acquire system statistics and place them in shared memory.	Y <<N>>

Type	Operand	Option	Definition	Specification
	name_domain_file_use		Specifies the domain configuration to be enabled when OpenTP1 is started or restarted.	Y <<N>>
	all_node_extend_number		Specifies the maximum number of nodes after domain reconfiguration.	<unsigned integer> <<(0-65535)>> <<64>>
	all_node_ex_extend_number		Specifies the maximum number of nodes after domain reconfiguration by using the domain definition files.	<unsigned integer> <<(0-65535)>> <<64>>
	prc_current_work_path		Specifies the path name of the directory under which the current working directory is created.	<path name> <<\$DCDIR>>
	rpc_max_message_size		Specifies the maximum size of a message sent or received using an RPC.	<unsigned integer> <<(1-8)>> <<1>> (units: MB)
	uap_trace_file_put		Specifies whether to acquire UAP trace information into a file.	Y <<N>>
	dcstart_wakeup_retry_count		Specifies the maximum number of retries for a startup notification error.	<unsigned integer> <<(0-60)>> <<0>>
	dcstart_wakeup_retry_interval		Specifies the retry interval for a startup notification error.	<unsigned integer> <<(0-60)>> <<0>> (units: seconds)
	nam_prf_trace_level		Specifies the NAM event trace acquisition level.	<<(00000000-00000007)>> <<00000003>>
	fil_prf_trace_option		Specifies whether to acquire the FIL event trace.	0 <<1>>
	fil_prf_trace_delay_time		File access processing time threshold which becomes the FIL event trace acquisition condition	<unsigned integer> <<(1-65535)>> <<10>> (units: seconds)
	jnl_prf_event_trace_level		Acquisition level for the JNL performance verification trace	<<(00000000-00000002)>> <<00000001>>
	jnl_fileless_option		Specifies whether to use journal fileless mode.	Y <<N>>
	watch_time		Specifies the maximum time to wait for a response.	<unsigned integer> <<(0-65535)>> <<180>> (units: seconds)

Type	Operand	Option	Definition	Specification
Command	dcbindht	-h	Host name for the network adapter	<1-to-255-character identifier>
		-n	Specifies the name of network to be communicated via network adapter.	<1-to-64-character identifier>
putenv	LANG		Sets environment variable LANG.	<character string>

(5) Lock service definitions

Table 2-6 shows the lock service definitions.

Table 2-6: Lock service definitions

Type	Operand	Definition	Specification
set	lck_limit_foruser	Maximum user server concurrent lock request count	<unsigned integer> ((0-327670)) <<512>>
	lck_limit_fordam	Maximum DAM service concurrent lock request count	<unsigned integer> ((0-327670)) <<512>>
	lck_limit_fortam	Maximum TAM service concurrent lock request count	<unsigned integer> ((0-327670)) <<512>>
	lck_limit_formqa	Maximum MQA service concurrent lock request count	<unsigned integer> ((0-327670)) <<0>>
	lck_wait_timeout	Lock wait timeout value	<unsigned integer> ((0-32767)) <<0>> (units: seconds)
	lck_deadlock_info	Specifies whether the deadlock information and time output information are to be output.	Y <<N>>
	lck_deadlock_info_remove	Specifies whether the deadlock information and time output information are to be deleted at the time of system startup.	normal force <<no>>
	lck_deadlock_info_remove_level	Delete level for the deadlock information and time output information	<unsigned integer> ((0-24855)) <<0>> (units: days)
lck_release_detect	Specifies how to check on when the process was unlocked.	interval <<pipe>>	

Type	Operand	Definition	Specification
	lck_release_detect_interval	Maximum interval time for detecting an unlock	<unsigned integer> ((10-60000)) <<250>> (units: milliseconds)
	lck_prf_trace_level	Acquisition level for the LCK performance verification trace information	((00000000-00000001)) <<00000000>>

(6) Timer service definitions

Table 2-7 shows the timer service definitions.

Table 2-7: Timer service definitions

Type	Operand	Definition	Specification
set	tim_watch_count	Maximum time-check service count	<unsigned integer> ((0-65535)) <<128>>

(7) Name service definitions

Table 2-8 shows the name service definitions.

Table 2-8: Name service definitions

Type	Operand	Definition	Specification
set	name_total_size	Service information area size	<unsigned integer> ((1-32767)) <<64>> (units: Kbytes)
	name_cache_size	Service information area size	<unsigned integer> ((1-32767)) <<16>> (units: Kbytes)
	max_socket_descriptors	Maximum number of file descriptors for sockets	<unsigned integer> ((32-2032))
	name_global_lookup	Specification of whether to use the global search facility	Y <<N>>
	name_service_extend	Specifies whether to increase the number of obtainable server UAPs that are managed by the name service.	1 <<0>>
	name_audit_conf	Specifies whether to use the node monitoring feature.	2 1 <<0>>

Type	Operand	Definition	Specification
	name_audit_interval	Length of time between the end of node monitoring by the monitoring service and the beginning of the next monitoring	<unsigned integer> <<(1-65535)>> <<60>> (units: seconds)
	name_audit_watch_time	Specifies the maximum time to wait until a node failure is detected.	<unsigned integer> <<(8-65535)>> <<8>> (units: seconds)
	name_rpc_control_list	Specifies whether to monitor the nodes registered in the RPC control list.	<<Y>> N
	name_nodeid_check_message	Specifies whether to output the KFCA00677-W message when communication is received from a node whose specified node ID is the same as the local node ID.	<<Y>> N
	name_cache_validity_time	Validity duration of service information of other nodes	<unsigned integer> <<(0-65535)>> <<1800>> (units: seconds)
	watch_time	Specifies the maximum time to wait for a response.	<unsigned integer> <<(0-65535)>> (units: seconds)

(8) Process service definitions

Table 2-9 shows the process service definitions.

Table 2-9: Process service definitions

Type	Operand	Definition	Specification
set	prc_process_count	Maximum number of server processes that are started concurrently	<unsigned integer> <<(1-10000)>> <<64>>
	prc_recovery_resident	Startup method for process to be partially recovered: resident or non-resident	<<Y>> N
	prc_take_over_svpath	Specifies whether the user server path and command path are to be inherited after rerun.	Y <<N>>

Type	Operand	Definition	Specification
	term_watch_time	Abnormal termination check expiration time	<unsigned integer> <<(0-32767)>> <<10>> (units: minutes)
	max_socket_descriptors	Maximum number of file descriptors for sockets	<unsigned integer> <<(32-2032)>>
	term_watch_count	Limit of consecutive abnormal terminations	<unsigned integer> <<(1-3)>> <<3>>
	prc_prf_trace	Specifies whether to acquire an event trace for the process service.	<<Y>> N
	prc_coresave_path	Core file storage path	<path name><<\$DCDIR/ spool/save>>
	prc_corecompress	Allows OpenTP1 to automatically compress the core file when storing it.	Y <<N>>
	watch_time	Specifies the maximum time to wait for a response.	<unsigned integer> <<(0-65535)>> (units: seconds)
Command	prcsvpath	Path name for user server started by the process service	<path name> <<\$DCDIR/aplib: \$DCDIR/bin>>

(9) Schedule service definitions

Table 2-10 shows the schedule service definitions.

Table 2-10: Schedule service definitions

Type	Operand/ command	Option	Definition	Specification
set	scd_server_count		Maximum number of user servers in operation using the schedule service	<unsigned integer> <<(0-4096)>> <<32>>
	scd_hold_recovery		Specifies whether to inherit the shutdown status of the user server.	<<Y>> F
	scd_hold_recovery_count		Total number of servers that requires inheriting shutdown status, and of services	<unsigned integer> <<(0-58240)>> <<64>>
	scd_port		Port number of schedule service	<unsigned integer> <<(5001-65535)>>

2. Overview of the System Service Definitions

Type	Operand/ command	Option	Definition	Specification
	scd_this_node_first		Specifies whether to schedule the server on your node first when the requested server is on your node.	Y <<N>>
	scd_announce_server_status		Specifies whether to report status of your node to all other nodes (not periodically).	<<Y>> N
	max_socket_descriptors		Maximum number of file descriptors for sockets	<unsigned integer> ((32-2032))
	schedule_rate		Percentage of schedules made to the nodes with the LEVEL0 server load level	<unsigned integer> ((50-100)) (unit: %)
	scd_retry_of_comm_error		Number of scheduled retries to nodes other than the failed node	<unsigned integer> ((0-128)) <<0>>
	scd_advertise_control		Allows you to change the time to report name information when the user server starts up. This information is reported to the nodes specified by the all_node operand in the system common definition.	<<BEFORE>> AFTER
	scd_message_level		Suppresses output of message KFCA00854-E that is output if the memory for the message storage buffer pool becomes insufficient.	1 <<2>>
	ipc_tcpnodelay		Specifies whether to disable the Nagle algorithm.	Y <<N>>
	watch_time		Specifies the maximum time to wait for a response.	<unsigned integer> ((0-65535)) (units: seconds)
Command	scdbufgrp	-g	Schedule buffer group name	<1-to-8-character identifier>
		-n	Number of message-storing buffer cells	<unsigned integer> ((1-61440)) <<16>>
		-l	Length of a message-storing buffer cell	<unsigned integer> ((512-31457280)) <<512>> (units: bytes)
	scdmulti	-m	Number of multi-scheduler daemons	<unsigned integer> ((1-4096)) <<1>>

Type	Operand/ command	Option	Definition	Specification
		-p	Port number	<unsigned integer> ((5001-65535))
		-g	Multi-scheduler group name	<1-to-8-character identifier> <<scdmltgp>>
		-t	Specifies whether to distribute the load of service requests among the user servers in other nodes.	None

(10) Transaction service definitions

Table 2-11 shows the transaction service definitions.

Table 2-11: Transaction service definitions

Type	Operand	Definition	Specification
set	trn_tran_process_count	Number of transaction branches to be started concurrently	<unsigned integer> ((0-8192)) When the MCF service is used, specifiable values differ according to the environment: <ul style="list-style-type: none"> • 32-bit environment: ((1-7484)) • 64-bit environment: ((1-6893))
	trn_recovery_process_count	Number of processes that perform transaction branch recovery in parallel	<unsigned integer> ((1-128)) <<4>>
	trn_expiration_time	Transaction branch expiration time	<unsigned integer> ((0-65535)) <<0>> (units: seconds)
	trn_expiration_time_suspend	Specifies the range of transaction branches for time check.	Y <<N>> F
	trn_tran_statistics	Specifies whether to collect statistics for each transaction branch.	Y <<N>>
	trn_tran_recovery_list	Specifies whether to collect information on undetermined transactions during a full recovery.	Y <<N>>

2. Overview of the System Service Definitions

Type	Operand	Definition	Specification
	trn_cpu_time	CPU time that can be used by a transaction branch until synchronous point processing	<unsigned integer> ((0-65535)) <<0>> (units: seconds)
	trn_statistics_item	Specifies the item of statistics on the transaction branch.	nothing base <<executiontime>> cputime
	trn_max_subordinate_count	Maximum number of childtransaction branches that can be generated from one transaction branch.	<unsigned integer> ((0-1024)) <<32>>
	trn_rm_open_close_scope	Specifies the issuing range for the xa_open and xa_close functions.	<<process>> transaction
	trn_optimum_item	Specifies the items to be optimized for the transaction.	<<base>> asyncprepare
	trn_processing_in_rm_error	Specifies the action if an error is returned with the code indicating that the XA function issued to the resource manager cannot be processed during transaction recovery.	<<down>> retry force
	trn_recovery_list_remove	Specifies whether to delete the undecided transaction information file at start of OpenTPI.	normal force <<no>>
	trn_recovery_list_remove_level	Delete level for undecided transaction information file	<unsigned integer> ((0-24855)) <<0>> (units: days)
	trn_crm_use	Specifies whether to use the CRM.	Y <<N>>
	trn_max_crm_subordinate_count	Maximum number of childtransaction branches through the CRM	M<unsigned integer> ((0-1024)) <<8>>
	trn_watch_time	Maximum communication wait time for synchronization point processing of transactions	<unsigned integer> ((1-65535)) <<120>> (units: seconds)
	trn_rollback_information_put	Specifies whether to collect rollback information when transaction branches are rolled back.	<<no>> self remote all <unsigned integer>
	trn_limit_time	Maximum time to execute a transaction branch	((0-65535)) <<0>> (units: seconds)

Type	Operand	Definition	Specification
	trn_rollback_response_receive	Specifies whether to receive a rollback completion report.	<<Y>> N
	trn_partial_recovery_type	Method of processing transaction synchronization point upon UAP error	<<type1>> type2 type3
	max_socket_descriptors	Maximum number of file descriptors for sockets	<unsigned integer> ((32-2032))
	trn_recovery_failmsg_interval	Minimum interval between issuing messages containing information about incomplete transactions	<unsigned integer> ((0-65535)) <<1800>> (units: seconds)
	trn_wait_rm_open	Action to be taken when an error occurs during the open processing of a resource manager	<<continue>> stop retry_continue retry_stop
	trn_retry_interval_rm_open	Retry interval for issuing the xa_open function	<unsigned integer> ((1-3600)) <<10>> (units: seconds)
	trn_retry_count_rm_open	Number of retries to issue the xa_open function	<unsigned integer> ((1-65535)) <<18>>
	thread_stack_size	Size of thread stack area used within OpenTP1	<unsigned integer> ((1024-524288)) <<49152#>> (units: bytes)
	polling_control_data	Checks whether a temporary closing request has arrived	Y <<N>>
	thread_yield_interval	Interval for issuing a trigger to receive a socket reuse instruction	<unsigned integer> ((1-86400)) <<90>> (units: seconds)
	groups	Sets a group access list of service groups	<unsigned integer> ((0-4294967294))
	trn_xar_use	Specifies whether to use the XA resource service.	Y <<N>>
	trn_start_recovery_mode	Specifies the recovery mode during OpenTP1 start processing.	<<stop>> wait continue
	trn_start_recovery_watch_time	Upper retry limit until the pre-online recovery processing completes	<unsigned integer> ((0-65535)) <<600>> (units: seconds)

2. Overview of the System Service Definitions

Type	Operand		Definition	Specification
	trn_start_recovery_interval		Retry interval until the pre-online recovery processing completes	<unsigned integer> ((0-65535)) <<3>> (units: seconds)
	trn_xa_commit_error		Specifies the processing to be performed if a resource manager becomes unable to commit a transaction accessing multiple resources after the transaction is determined to be committed.	<<down>> force
	trn_prf_event_trace_level		Acquisition level of the TRN event trace	((00000000-00000007)) <<00000007>>
	trn_prf_event_trace_condition		Type of the TRN event trace to be acquired	<<xafunc>> trnservice
	trn_completion_limit_time		Time limit for completing a transaction	<unsigned integer> ((0-65535)) <<0>> (units: seconds)
	trn_extend_function		Facility extension level of the transaction service	<hexadecimal number> ((00000000-00000001)) <<00000000>>
	watch_time		Specifies the maximum time to wait for a response.	<unsigned integer> ((0-65535)) (units: seconds)
Command	trnstring	-n	Resource manager name	<1-to-31-character identifier>
		-i	Resource manager extension	<1-to-2-character identifier>
		-o	Character string for xa_open function for transaction service	<1-to-256-character string>
		-c	Character string for xa_close function for transaction service	<1-to-256-character string>
		-O	Character string for xa_open function for user server	<1-to-256-character string>
		-C	Character string for xa_close function for user server	<1-to-256-character string>
		-d	This option is specified when the resource manager does not correspond to commit optimization and prepare optimization.	None

Type	Operand	Definition	Specification
	-e	This option is specified to retry issuing the <code>xa_close</code> function, the <code>xa_open</code> function, and the <code>xa_start</code> functions in this sequence to the resource manager if an error occurs in the <code>xa_start</code> function.	None
	-m	This option is specified to allow the resource manager to perform transaction recovery processing during OpenTP1 startup processing before OpenTP1 goes online.	None
	-r	This option is specified to suspend the transaction recovery processing until the resource manager reports the information about undetermined transactions if an error occurs in the resource manager during OpenTP1 startup processing or OpenTP1 online processing.	None
putenv	Any character strings	Environment variable name and value	<character strings>
dcputen v	Any character strings	Environment variable name and value	<character strings>

#

For the AIX version of uCosminexus TP1/Server Base(64), the default value is 65,536.

(11) XA resource service definitions

Table 2-12 shows the XA resource service definitions.

Table 2-12: XA resource service definitions

Type	Operand/ command	Option	Definition	Specification
set	<code>xa_eventtrace_level</code>		Output level of the XAR event trace information	<<ERR>> INF ALL
	<code>xa_eventtrace_record</code>		Maximum number of records that are output to the XAR event trace information file	<unsigned integer> ((1-65535)) <<8192>>

Type	Operand/ command	Option	Definition	Specification
	xar_session_time		Monitoring time for idle transaction branches	<unsigned integer> ((10-65535)) <<180>> (unit: seconds)
	xar_msdtc_use		Specifies whether to use the MSDTC linkage facility.	Y <<N>>
	xar_prf_trace_level		Acquisition level for XAR performance verification trace information	((00000000-00000003)) <<00000003>>
Command	xarfile	-t	XAR file type	online backup
		-a	Physical XAR file name	<path name consisting of 1 to 63 characters>

(12) Interval service definitions

Table 2-13 shows the interval service definitions.

Table 2-13: Interval service definitions

Type	Operand	Definition	Specification
set	watch_time	Specifies the maximum time to wait for a response.	M<unsigned integer> ((0-65535)) (units: seconds)

(13) Status service definitions

Table 2-14 shows the status service definitions.

Table 2-14: Status service definitions

Type	Operand	Definition	Specification
set	sts_file_name_1	Logical file name of status file	L<1-to-8-character identifier>
		Status file name of system A	<path name>
		Status file name of system B	<path name>
	sts_file_name_2	Logical file name of status file	<1-to-8-character identifier>
		Status file name of system A	<path name>
		Status file name of system B	<path name>

Type	Operand	Definition	Specification
	sts_file_name_3	Logical file name of status file	<1-to-8-character identifier>
		Status file name of system A	<path name>
		Status file name of system B	<path name>
	sts_file_name_4	Logical file name of status file	<1-to-8-character identifier>
		Status file name of system A	<path name>
		Status file name of system B	<path name>
	sts_file_name_5	Logical file name of status file	<1-to-8-character identifier>
		Status file name of system A	<path name>
		Status file name of system B	<path name>
	sts_file_name_6	Logical file name of status file	<1-to-8-character identifier>
		Status file name of system A	<path name>
		Status file name of system B	<path name>
	sts_file_name_7	Logical file name of status file	L<1-to-8-character identifier>
		Status file name of system A	<path name>
		Status file name of system B	<path name>
sts_initial_error_switch	Specifies action of status service switch in case of abnormality (if the status file has no entity or a status file error is detected).	<<stop>> continue excontinue	
sts_single_operation_switch	Specifies action of status service in case of abnormality (if an I/O error occurs with one active status file system and no journals can be swapped).	<<stop>> continue	
sts_last_active_file	Logical file name of last active file in previous online session	<1-to-8-character identifier>	

Type	Operand	Definition	Specification
	sts_last_active_side	Specifies the system that was active during one-system operation in previous online session	A B
	watch_time	Specifies the maximum time to wait for a response.	<unsigned integer> ((0-65535)) (units: seconds)

(14) Journal service definitions

Table 2-15 shows the journal service definitions.

Table 2-15: Journal service definitions

Type	Operand/ command	Option	Definition	Specification
set	jnl_tran_optimum_level		Optimum level for journal output mode	<unsigned integer> ((2-3) <<2>>)
	jnl_arc_terminate_timeo ut		Maximum waiting time to the halt of the archive service at node termination	<unsigned integer> ((0-3600) <<0>> (units: seconds)
	max_socket_descriptors		Maximum number of file descriptors for sockets	<unsigned integer> ((32-2032))
	jnl_arc_ipc_buff_size		TCP/IP send-and-receive buffer size	<unsigned integer> ((8192-1048576)) <<61440>> (units: bytes)
	jnl_watch_time		Maximum time that the journal service waits for a communication response	<unsigned integer> ((0-65535)<<180>> (units: seconds)
	watch_time		Maximum time to wait for a response	<unsigned integer> ((0-65535)) (units: seconds)
Command	jnl dfsv	-r	Name of file for system journal service definition	<1-to-8-character identifier>
		-c	Name of file for checkpoint dump service definition (several system services can be specified as required)	<1-to-8-character identifier>

(15) System journal service definitions

Table 2-16 shows the system journal service definitions.

Table 2-16: System journal service definitions

Type	Operand	Option	Definition	Specification
set	jnl_max_datasize		Maximum record data length	<unsigned integer> <<(32000-400000)>> <<32000>> (units: bytes)
	jnl_cdinterval		Number of journal blocks	<unsigned integer> <<(100-32000)>> <<1000>>
	jnl_rerun_swap		Specifies whether journals are to be swapped during a system restart.	Y <<N>>
	jnl_dual		Specifies whether journal file is to be duplicated.	Y <<N>>
	jnl_singleoperation		Specifies whether journal files should be swapped if only one system can be used.	Y <<N>>
	jnl_rerun_reserved_file_open		Specifies whether reserved file should be opened during a full recovery.	Y <<N>>
	jnl_arc_name		Resource-group-name-@-node-identifier for global archive journal service	<1-to-8-character identifier> @ <4-character identifier>
	jnl_arc_buff_size		Size of shared memory buffer for archive	<unsigned integer> <<(2-31)>> <<10>> (units: Mbytes)
	jnl_arc_max_datasize		Maximum size of data transferred during archiving	<unsigned integer> <<(1020-8188)>> <<1020>> (units: Kbytes)
	jnl_arc_terminate_check		Specifies whether all applicable journals are to be set for archive at normal termination or planned shutdown of the journal service	<<Y>> N
jnl_arc_rec_kind		Specifies the type of journal record to be archived.	<<a c f g i m o s u>>	

2. Overview of the System Service Definitions

Type	Operand	Option	Definition	Specification
	jnl_arc_uj_code		UJ code to be archived	<unsigned integer> <<(0-255)>> <<all of 1 to 255>>
	jnl_arc_check_level		Specifies the condition of assigning the file group as swap destination when global archive journal is used.	<<1>> 2
	jnl_arc_trn_stat		Specifies whether to archive the synchronization point journal and the journal for restoring the transaction service.	<<Y>> N
	jnl_unload_check		Specifies whether to check the unload wait status when determining the file group of the swap destination.	<<Y>> N
	jnl_auto_unload		Specifies whether to use the automatic unloading function.	Y <<N>>
	jnl_auto_unload_path		Specifies the name of the directory for storing unload journal files.	<path name> <<\$DCDIR/spool/ dcjnlinf/unload>>
	jnl_max_file_dispersion		Maximum degree of parallelism for parallel access	<unsigned integer> <<(1-8)>> <<1>>
	jnl_min_file_dispersion		Minimum degree of parallelism for parallel access	<unsigned integer> <<(1-8)>> <<1>>
	watch_time		Specifies the maximum time to wait for a response.	<unsigned integer> <<(0-65535)>> (units: seconds)
Command	jnladdfg	-g	Name of file group making up the system journal	<1-to-8-character identifier>
		ONL	Specifies whether this file group is used for online startup.	None
	jnladdpf	-g	Name of corresponding file group	<1-to-8-character identifier>
		-e	Element file name	<1-to-8-character identifier>
		-a	Path name of physical file	<path name>
		-b	Path name of physical file	<path name>

(16) Checkpoint dump service definitions

Table 2-17 shows the checkpoint dump service definitions.

Table 2-17: Checkpoint dump service definitions

Type	Operand	Option	Definition	Specification
set	jnl_objservername		Name of affected system service	<1-to-8-character identifier>
	jnl_max_datasize		Length of buffer to collect checkpoint dump	<unsigned integer> ((32000-400000)) <<32768>> (units: bytes)
	assurance_count		Number of guaranteed generations of checkpoint dump file	<unsigned integer> ((1-2)) <<1>> (units: generation files)
	jnl_reduced_mode		Fall-back operation	<unsigned integer> ((0-2)) <<0>>
	jnl_reserved_file_auto_open		Specifies whether a reserved file is to be automatically opened.	Y <<N>>
	jnl_dual		Specifies whether the checkpoint dump file is to be duplicated.	Y <<N>>
	jnl_singleoperation		Specifies whether to allocate the file group as overwritable one if either of the duplicate systems becomes non-overwritable when the checkpoint dump file is duplicated.	Y <<N>>
	watch_time		Specifies the maximum time to wait for a response.	<unsigned integer> ((0-65535)) (units: seconds)
Command	jnladdfg	-j	Server recovery journal file	<1-to-8-character identifier>
		-g	Name of file group making up the checkpoint dump or server recovery journal	<1-to-8-character identifier>
		ONL	Specifies whether this file group is used for online startup.	None
	jnladdpf	-j	Server recovery journal file	<1-to-8-character identifier>
		-g	Name of corresponding file group	<1-to-8-character identifier>

Type	Operand	Option	Definition	Specification
		-a	Path name of physical file	<path name>
		-b	Path name of physical file	<path name>

(17) Log service definitions

Table 2-18 shows the log service definitions.

Table 2-18: Log service definitions

Type	Operand	Definition	Specification
set	log_filesize	Maximum capacity of message log file	<unsigned integer> ((1-32767)) <<1024>> (units: Kbytes)
	log_msg_console	Specifies whether message log should be output using the real-time output facility.	<<Y>> N
	log_msg_allno	Specifies whether to add system-specific message sequence numbers to the entries in the message log.	Y <<N>>
	log_msg_prcid	Specifies whether the process ID of the requesting process is to be appended to the message log.	Y <<N>>
	log_msg_prcno	Specifies whether to add process-specific message sequence numbers to the entries in the message log.	Y <<N>>
	log_msg_sysid	Specifies whether the OpenTP1 identifier is to be appended.	<<Y>> N
	log_msg_date	Specifies whether the date of the output request is to be appended to the message log.	<<Y>> N
	log_msg_time	Specifies whether the time of the output request is to be appended to the message log.	<<Y>> N
	log_msg_hostname	Specifies whether the name of the host originating the output request is to be appended to the message log.	<<Y>> N

Type	Operand	Definition	Specification
	log_msg_pgmid	Specifies whether the ID of the program originating the output request is to be appended to the message log.	<<Y>> N
	log_netm_out	Specifies whether the message log should be output to NETM.	Y <<N>>
	log_netm_allno	Specifies whether the system sequence number is to be appended to the message log.	Y <<N>>
	log_netm_prcid	Specifies whether the process ID of the requesting process is to be appended to the message log.	Y <<N>>
	log_netm_prcno	Specifies whether the process number of the requesting process is to be appended to the message log.	Y <<N>>
	log_netm_sysid	Specifies whether the OpenTP1 identifier is to be appended.	<<Y>> N
	log_netm_date	Specifies whether the date of the output request is to be appended.	<<Y>> N
	log_netm_time	Specifies whether the time of the output request is to be appended to the message log.	<<Y>> N
	log_netm_hostname	Specifies whether the name of the host originating the output request is to be appended to the message log.	<<Y>> N
	log_netm_pgmid	Specifies whether the ID of the program originating the output request is to be appended to the message log.	<<Y>> N
	log_jpl_allno	Specifies whether system sequence number is to be appended to the message log.	Y <<N>>
	log_jpl_prcid	Specifies whether the process ID of the requesting process is to be appended to the message log.	Y <<N>>

2. Overview of the System Service Definitions

Type	Operand	Definition	Specification
	log_jpl_prcno	Specifies whether the process sequence number is to be appended to the message log.	Y <<N>>
	log_jpl_sysid	Specifies whether the OpenTP1 identifier is to be appended.	<<Y>> N
	log_jpl_date	Specifies whether the date of the output request is to be appended to the message log.	<<Y>> N
	log_jpl_time	Specifies whether the time of the output request is to be appended to the message log.	<<Y>> N
	log_jpl_hostname	Specifies whether the host name of the host originating the output request is appended to the message log.	<<Y>> N
	log_jpl_pgmid	Specifies whether the program ID of the program originating the output request is appended to the message log.	<<Y>> N
	log_notify_out	Specifies whether to use the message log notification facility.	Y <<N>>
	log_notify_allno	Specifies whether the system sequence number is appended to the message log.	Y <<N>>
	log_notify_prcid	Specifies whether the process ID of the request source is appended.	Y <<N>>
	log_notify_prcno	Specifies whether the process sequence number is appended to the message log.	Y <<N>>
	log_notify_sysid	Specifies whether the OpenTP1 identifier is appended.	<<Y>> N
	log_notify_date	Specifies whether the date of the output request is appended to the message log.	<<Y>> N
	log_notify_time	Specifies whether the time of the output request is appended to the message log.	<<Y>> N

Type	Operand	Definition	Specification
	log_notify_hostname	Specifies whether the name of the host originating the output request is appended to the message log.	<<Y>> N
	log_notify_pgmid	Specifies whether the ID of the program originating the output request is appended to the message log.	<<Y>> N
	log_jerr_rint	Specifies the number of suppressed message log outputs if an error occurs during message log output.	<unsigned integer> ((1-65536)) <<32>>
	log_syslog_out	Specifies the level that outputs the message to syslog.	<unsigned integer> ((0-2)) <<1>>
	log_syslog_allno	Specifies whether to assign serial numbers to the message logs in the system.	Y <<N>>
	log_syslog_prcid	Specifies whether to add the ID of the process that issues a request.	Y <<N>>
	log_syslog_prcno	Specifies whether to assign serial numbers to the message logs in the process.	Y <<N>>
	log_syslog_sysid	Specifies whether to add the OpenTP1 identifier.	Y <<N>>
	log_syslog_date	Specifies whether to add the date when the message log output is requested.	Y <<N>>
	log_syslog_time	Specifies whether to add the time when the message log output is requested.	Y <<N>>
	log_syslog_hostname	Specifies whether to add the name of the host that issues a request to output a message log.	Y <<N>>
	log_syslog_pgmid	Specifies whether to add the ID of the program that issues a request to output a message log.	Y <<N>>
	log_syslog_append_nodeid	Specifies whether to add the node identifier.	Y <<N>>

Type	Operand	Definition	Specification
	log_syslog_elist	Number of elements of the syslog error list	<unsigned integer> <<(0-65536)>> <<0>>
	log_syslog_elist_rint	Interval of regular output of the syslog error list	<unsigned integer> <<(0-65536)>> <<0>> (units: seconds)
	log_syslog_synchro	Specifies whether to synchronize the format of the message log to be output to <code>syslog</code> with the related operand if outputting the message log fails	Y <<N>>
	log_audit_out	Specifies whether to use audit logging.	Y <<N>>
	log_audit_path	Specifies the directory to which audit log files are output.	<1-to-63-character path name> <<\${DCDIR}/auditlog>>
	log_audit_size	Specifies the maximum size of an audit log file.	<unsigned integer> <<(1-2047)>> <<10>> (units: megabytes)
	log_audit_count	Specifies the maximum number of audit log files.	<unsigned integer> <<(1-256)>> <<2>>
	log_audit_message	Specifies the message ID for which audit log data is to be acquired.	<unsigned integer> <<(33400-99999)>>
	watch_time	Specifies the maximum time to wait for a response.	<unsigned integer> <<(0-65535)>> (units: seconds)
putenv	TZ	Time zone	<character string>
	DCSYSLOGOUT	Specifies whether to output messages to syslog.	1 character string other than 1

(18) Multinode configuration definitions

Table 2-19 shows the multinode configuration definitions.

Table 2-19: Multinode configuration definitions

Type	Operand/ command	Option	Definition	Specification
set	dcmstart_watch_time		dcmstart command expiration time	<unsigned integer> <<(0-65535)>> <<600>> (units: seconds)
			dcmstop command expiration time	<unsigned integer> <<(0-65535)>> <<600>> (units: seconds)
	watch_time		Specifies the maximum time to wait for a response.	<unsigned integer> <<(0-65535)>> <<180>> (units: seconds)
Command	dcmarea	-m	Multinode area identifier	<1-to-8-character identifier>
		-g	Multinode subarea identifier	<1-to-8-character identifier>
		-w	Node identifier	<4-character identifier>

(19) Multinode physical definitions

Table 2-20 shows the multinode physical definitions.

Table 2-20: Multinode physical definitions

Type	Command	Option	Definition	Specification
Command	dcpreport	-w	Node identifier	<4-character identifier>
		-h	Name of the host with an OpenTP1 node	<1-to-64-character identifier>
		-p	Value specified in the <code>pre_port</code> operand for the corresponding OpenTP1 node	<unsigned integer> <<(5001-49999)>>

(20) Global archive journal service definitions

Table 2-21 shows the global archive journal service definitions.

Table 2-21: Global archive journal service definitions

Type	Operand/ command	Option	Definition	Specification
set	jnl_arc_terminate_timeo ut		Maximum wait time until all the nodes to be archived area disconnected when terminating a node	<unsigned integer> <<(0-3600)>> <<0>> (units: seconds)
	max_socket_descriptors		Maximum number of file descriptors for sockets	<unsigned integer> <<(32-2032)>>
	jnl_arc_ipc_buff_size		TCP/IP send-and-receive buffer size	<unsigned integer> <<(8192-1048576)>> <<61440>> (units: bytes)
	jnl_watch_time		Maximum time that the global archive journal service waits for a communication response	<unsigned integer> <<(0-65535)>> <<180>> (units: seconds)
Command	jnl_dfsv	-a	File name of the archive journal service definition	<1-to-8-character identifier>

(21) Archive journal service definitions

Table 2-22 shows the archive journal service definitions.

Table 2-22: Archive journal service definitions

Type	Operand	Definition	Specification
set	jnl_dual	Specifies whether the archive is to be duplicated	Y <<N>>
	jnl_singleoperation	Specifies whether a file group is to be closed with one system closed.	Y <<N>>
	jnl_rerun_swap	Specifies whether journals are to be swapped when the global archive journal service is rerun.	Y <<N>>
	jnl_max_file_dispersion	Maximum number of distributions to enable parallel access	<unsigned integer> <<(1-8)>> <<1>>
	jnl_min_file_dispersion	Minimum number of distributions to enable parallel access	<unsigned integer> <<(1-8)>> <<1>>
	jnl_unload_check	Specifies whether the unload wait status is to be checked when determining the file group of the swap destination.	<<Y>> N

Type	Operand		Definition	Specification
	jnl_arc_max_datasize		Maximum size of data transferred during archiving	<unsigned integer> ((1020-8188)) <<1020>> (units: Kbytes)
Command	jnladdfg	-g	File group name of an archive journal file	<1-to-8-character identifier>
		ONL	Specifies whether this group is to be used at startup of the global archive journal service.	None
	jnladdpf	-g	File group name of an archive journal file	<1-to-8-character identifier>
		-e	Element file name	<1-to-8-character identifier>
		-a	Path name of a physical file name	<path name>
		-b	Path name of a physical file name	<path name>

(22) DAM service definitions

Table 2-23 shows the DAM service definitions.

Table 2-23: DAM service definitions

Type	Operand	Definition	Specification
set	dam_update_block	Maximum number of blocks to be updated	<unsigned integer> ((1-32768)) <<8>>
	dam_added_file	Maximum number of logical files added online	<unsigned integer> ((1-128)) <<8>>
	dam_update_block_over	Specifies whether error is returned if maximum block count is exceeded during a transaction.	flush <<error>>
	dam_message_level	Level of messages output by DAM service	<<1>> 0
	dam_tran_process_count	Number of transaction branches to be executed concurrently	<unsigned integer> ((0-8192))
	dam_cache_size	Size of the buffer area to stack referenced and updated blocks (if you do not want to specify a fixed value)	<unsigned integer> ((10-1000000)) (units: Kbytes)

2. Overview of the System Service Definitions

Type	Operand		Definition	Specification
	dam_cache_size_fix		Size of the buffer area to stack referenced and updated blocks (if you want to specify a fixed value)	<unsigned integer> ((10-1000000)) (unit: Kbytes)
	dam_cache_attribute		Specifies whether memory size of the buffer area is to be fixed.	<<free>> fixed
	dam_io_interval		Output process execution interval with the deferred update facility in use	<unsigned integer> ((1-60)) (units: seconds) <<1>>
	dam_transaction_access		Specifies the unit of transactions that perform data management or lock management of a DAM file.	global <<branch>>
	dam_io_error_occur		Processing DAM service upon disk error	stop <<continue>>
	dam_cache_reuse_from		Retrieves the cache blocks to be reused.	<<last>> first
	dam_default_cache_num		Specifies the default boundary for reusing cache blocks.	<unsigned integer> ((0-4000000)) <<0>>
	dam_ex_refer_read		Specifies whether to leave the block that is read with the locked reference specification on the cache buffer area until the transaction is determined.	<<none>> stay
	dam_max_block_size		Maximum block length in the DAM file in the system	<unsigned integer> ((504-32760)) [#] <<504>> (units: bytes)
	dam_kb_size		Specifies whether the value of the dam_cache_size operand specified in kilobytes is handled on a 1000-byte basis or on a 1024-byte basis.	<<1000>> 1024
	watch_time		Specifies the maximum time to wait for a response.	<unsigned integer> ((0-65535)) (units: seconds)
Command	damcache	Argument	Name of the logical file that validates the boundary for reusing cache blocks	<identifier of 1 to 8 characters>
			Boundary for reusing cache blocks	<unsigned integer> ((0-4000000))

Type	Operand		Definition	Specification
	damchlimt	Argument	Name of the logical file that validates a threshold for the number of cache blocks	<identifier of 1 to 8 characters>
			Threshold for the number of cache blocks	<unsigned integer> ((0-4000000))
	damfile	-d	Specifies whether deferred updating of the file is to be performed.	None
		-n	Specifies whether the file is not to be recovered.	None
		-f	Specifies whether to enable cacheless access for the files that are not to be recovered.	None
		-c	This option is specified to continue the normal startup processing of the DAM service even if an error occurs in the DAM file.	None
		Argument	Name of the logical file to be accessed online	<1-to-8-character identifier>
	Name of the physical file to be accessed online		<1-to-63-character path name>	

#: Specify a value that satisfies the following: sector length x $n-8$ (n is a positive integer).

(23) TAM service definitions

Table 2-24 shows the TAM service definitions.

Table 2-24: TAM service definitions

Type	Operand	Definition	Specification
set	tam_max_tblnum	Maximum number of TAM tables used online	<unsigned integer> ((1-65535))
	tam_max_filesize	Maximum capacity of TAM tables used online	<unsigned integer> ((136-1000000000)) (units: bytes)
	tam_max_recsz	Maximum record length of TAM tables	<unsigned integer> ((1-1000000000)) (units: bytes)

Type	Operand		Definition	Specification
	tam_jnl_err_flag		Specifies whether TAM service should be suspended if error occurs in reading journals.	<<STOP>> CONTINUE
	tam_pool_attri		Specifies whether memory pool is to be fixed in shared memory.	<<fixed>> free For HP-UX or Solaris: <<fixed>> free For AIX, Linux, or Windows: fixed <<free>>
	tam_tbl_lock_mode		Specifies whether the table is to be locked when accessed.	<<LOCK>> NOLOCK
	tam_cbl_level		Lock level of COBOL API	<unsigned integer> ((0-2)) <<0>>
	tam_max_trnnum		Maximum number of concurrent transaction branches	<unsigned integer> ((1-8192)) <<20>>
	tam_max_trnfilnum		Maximum number of accessible tables in the transaction	<unsigned integer> ((1-1024)) <<5>>
	watch_time		Specifies the maximum time to wait for a response.	<unsigned integer> ((0-65535)) (units: seconds)
Command	tamtable	-o	Loading point	<<start>> cmd lib
		-a	Access mode	<<read>> rewrite write
		-i	Specifies whether the access is to be continued even if an input/output error occurs when updating the TAM table.	None
		-j	Specifies whether to collect differential journal when updating TAM record.	None
		Argument	Name of the TAM table to be accessed online	<1-to-32-character identifier>
		Name of the physical file to be accessed online	<1-to-63-character path name>	

(24) Client service definitions

Table 2-25 shows the client service definitions.

Table 2-25: Client service definitions

Type	Operand	Definition	Specification
set	parallel_count	Number of resident processes and maximum number of processes	<unsigned integer> ((1-1024)) <<1>>
	balance_count	Number of service requests processed by a process	<unsigned integer> ((0-512)) <<3>>
	trn_expiration_time	Transaction branch expiration time	<unsigned integer> ((0-65535)) <<0>> (units: seconds)
	trn_expiration_time_suspend	Specifies the range for time check of transaction branches.	Y <<N>> F
	trn_cpu_time	CPU time that can be used by transaction branch until synchronous point processing	<unsigned integer> ((0-65535)) <<0>> (units: seconds)
	open_rm	Name of the resource manager opened by the client service execution program when using the transactional RPC facility	OpenTP1_ALL <<OpenTP1_NONE> >
	clt_inquire_time	Maximum time interval between permanent connection inquiries	<unsigned integer> ((0-1048575))<<180> > (units: seconds)
	clt_port	Port number of the client extension service	<unsigned integer> ((5001-65535))
	clt_trn_conf	Specifies whether to start transactional RPC execution processes.	<<Y>> N
	clt_cup_conf	Specifies whether to execute CUP execution processes.	Y <<N>>
	cup_parallel_count	Number of resident CUP execution processes and maximum number of CUP execution processes	<unsigned integer> ((1-1024)) <<1>>
	cup_balance_count	Number of remaining service requests to be executed by CUP execution processes.	<unsigned integer> ((0-512)) <<3>>
	clttrn_port	Port number for a process that executes transactional RPC	<unsigned integer> ((5001-65535))
	cltcon_port	Port number for a process that executes CUP	<unsigned integer> ((5001-65535))

Type	Operand	Definition	Specification
	trn_statistics_item	Specifying a statistics item for transaction branch	nothing base <<executiontime>> cputime
	trn_optimum_item	Specifying an optimizing item for transaction	<<base>> asyncprepare
	trn_watch_time	Maximum wait time in processing transaction synchronization point	<unsigned integer> ((1-65535)) <<120>> (unit: seconds)
	trn_rollback_information_pu t	Specifying whether to obtain rollback information during transaction branch rollback	<<no>> self remote all
	trn_limit_time	Maximum executable time for transaction branch	<unsigned integer> ((0-65535)) <<0>> (unit: seconds)
	trn_rollback_response_recei ve	Specifying whether to receive end-of-rollback notice	<<Y>> N
	trn_partial_recovery_type	Method of processing transaction synchronization point upon UAP error	<<type1>> type2 type3
	trn_completion_limit_time	Time limit for completing a transaction	<unsigned integer> ((0-65535)) <<0>> (unit: seconds)
	message_store_buflen	Size of the message storage buffer pool	<unsigned integer> ((1024-31457280)) <<8196>> (unit: bytes)
	watch_time	Specifies the maximum time to wait for a response.	<unsigned integer> ((0-65535)) (unit: seconds)

(25) IST service definitions

Table 2-26 shows the IST service definitions.

Table 2-26: IST service definitions

Type	Operand/command	Definition	Specification
set	ist_node	Specifies the node that operates the IST table.	<4-character identifier>

Type	Operand/command	Definition	Specification
	ist_node_group	Specifies the node group that operates the IST table.	<1-to-8-character identifier>
Command	istdef	Table name	<1-to-8-character identifier>
		Record length	<unsigned integer> ((4-65536)) (units: bytes)
		Number of records	<unsigned integer>((1-16384))

(26) RMM service definitions

Table 2-27 shows the RMM service definitions.

Table 2-27: RMM service definitions

Type	Operand	Definition	Specification
set	rmm_check_services	Name of the monitored resource manager	<1-to-7-character identifier>
	rmm_system_behavior	Specifies the system action when startup of the monitored resource manager fails.	<<down>> giveup
	rmm_down_with_system	Specifies whether to terminate the monitored resource manager if OpenTP1 goes down.	<<Y>> N
	rmm_sysdown_with_rm	Specifies whether to terminate OpenTP1 if the monitored resource manager goes down.	Y <<N>>

(27) Monitored RM definitions

Table 2-28 shows the monitored RM definitions.

Table 2-28: Monitored RM definitions

Type	Operand	Definition	Specification
set	rmm_start_command	Command that starts the monitored resource manager	<1-to-127-byte path name>
	rmm_stop_command	Command that stops the monitored resource manager	<1-to-127-byte path name>

Type	Operand	Definition	Specification
	rmm_abort_command	Command that terminates forcibly the monitored resource manager	<1-to-127-byte path name>
	rmm_get_pid_command	Command that obtains the ID of the monitored process	<1-to-127-byte path name>
	rmm_command_watch_time	Monitoring time of the monitored resource manager command	<unsigned integer> ((0-7200)) <<1800>> (units: seconds)
	rmm_command_uid	ID of the user with the execution permission of the monitored resource manager	<unsigned integer> ((0-59999))
	rmm_command_gid	ID of the group with the execution permission of the monitored resource manager	<unsigned integer> ((0-59999))
	rmm_start_watch_time	Monitoring time for the start processing of the monitored resource manager	<unsigned integer> ((0-7200)) <<300>> (units: seconds)

(28) Extended RM registration definitions

Table 2-29 shows the extended RM registration definitions.

Table 2-29: Extended RM registration definitions

Type	Command	Option	Definition	Specification
Command	trnlncrm	-a	Name of the additional resource manager provided by other than OpenTPI	<1-to-31-character alphanumerics>
		-s	Switch name of the additional resource manager	<1-to-32-character alphanumerics beginning with an alphabetic character or underscore>
		-o	Name of the object file related to the additional resource manager	<alphanumerics>
		-l	This option is specified when the execution progress of the trnlncrm command is output to standard output.	None
		-f	This option is specified when forcibly executing the trnlncrm command regardless of the OpenTPI status.	None

(29) XATMI communication service definitions

Table 2-30 shows the XATMI communication service definitions.

Table 2-30: XATMI communication service definitions

Type	Operand	Option	Definition	Specification
set	xatinitapt		Local AP name for each system	<1-to-24 character hexadecimal number>
	xatinitaeg		Local AE modifier for each system	<unsigned integer> ((0-2147483647))
	xat_aso_con_event_svcname		Service group name of the SPP that receives the notification of association establishment	<1-to-31-character identifier>
			Service name of the SPP that receives the notification of association establishment	<1-to-31-character identifier>
	xat_aso_discon_event_svcname		Service group name of the SPP that receives the notification of the normal release of an association	<1-to-31-character identifier>

Type	Operand	Option	Definition	Specification
			Service name of the SPP that receives the notification of the normal release of an association	<1-to-31-character identifier>
	xat_aso_failure_event_svcname	Service group name of the SPP that receives the notification of the abnormal release of an association		<1-to-31-character identifier>
		Service name of the SPP that receives the notification of the abnormal release of an association		<1-to-31-character identifier>
	max_open_fds	Maximum FDS value used by OSI TP communication association		<unsigned integer> ((16-2016)) <<50>>
	max_socket_descriptors	Maximum FDS value used by communication between XATMI communication service and UAP		<unsigned integer> ((4-2047)) <<64>>
Command	xatsrvadd	-p	Remote AP name	<1-to-24-character hexadecimal number>
		-q	Remote AE modifier	<unsigned integer> ((0-2147483647))
		-s	Name of the service provided by the remote system	<1-to-15-character hexadecimal number>

(30) Message queue service definitions

Table 2-31 shows the message queue service definitions.

Table 2-31: Message queue service definitions

Type	Operand/ command	Option	Definition	Specification
set	que_xidnum		Maximum number of transactions to be executed concurrently	<unsigned integer> ((1-4096)) <<256>>
	que_io_maxrecsize		Maximum record length for overwriting delay	<unsigned integer> ((0-32000)) <<0>> (units: bytes)

Type	Operand/ command	Option	Definition	Specification
Command	quegrp	-g	ID of queue group allocated to physical file	<1-to-8-character identifier>
		-f	Path name of physical file	<path name>
		-n	Number of I/O buffers for buffer cache	<unsigned integer> ((2-1024)) <<128>>
		-m	Number of retained messages in queue file	<unsigned integer> ((0-1024)) <<10>>
		-w	Warning ratio of used memory to physical file capacity	<unsigned integer> ((0-95)) <<80>> (units: %)
		-c	Warning release ratio of used memory to physical file capacity	<unsigned integer> ((0-95)) <<0>> (units: %)

(31) User service network definitions

Table 2-32 summarizes the contents of the user service network definitions.

Table 2-32: Contents of user service network definitions

Type	Command	Option	Definition	Specification
Command	dcsvgrdef	-g	Service group name	<identifier consisting of up to 31 characters>
		-h	Host name	<identifier consisting of up to 255 characters>
		-p	Port number	<unsigned integer> ((1-65535))
		-t	Destination reselection interval	<unsigned integer> ((0-65534)) (unit: seconds)
		-w	Specifies whether to use remote API facility	None

(32) RAP-processing listener service definitions

Table 2-33 summarizes the contents of the RAP-processing listener service definitions.

Table 2-33: Contents of RAP-processing listener service definitions

Type	Operand	Definition	Specification
set	rap_listen_port	RAP-processing listener port number	<unsigned integer> ((5001-65535))
	rap_parallel_server	Number of RAP-processing servers	<unsigned integer> ((1-1024)) <<1>>
	rap_watch_time	Maximum monitor time or message sending/receiving	<unsigned integer> ((0-65535)) <<180>> (unit: seconds)
	rap_inquire_time	Maximum of inquiry interval	<unsigned integer> ((0-1048575)) <<180>> (unit: seconds)
	nice	Change in process priority	<unsigned integer> ((0-39)) <<0>>
	uap_trace_max	Maximum number of UAP traces stored	<unsigned integer> ((0-4095)) <<32>>
	uid	User identifier for OpenTP1 system administrator	<unsigned integer> ((0-4294967294))
	rpc_response_statistics	Specifying whether or not to obtain information about response statistics	Y <<N>>
	rpc_service_retry_count	Maximum number of retries regarding the service function with a service retry facility	<unsigned integer> ((0-65535)) <<0>>
	rpc_trace	Specifies whether to acquire the RPC trace.	Y N
	rpc_trace_name	Name of the file for storing the RPC trace	<path name>
	rpc_trace_size	Maximum size of the file for storing the RPC trace	<unsigned integer> ((1024-2147483648)) (units: bytes)
	trn_expiration_time	Expiry time in the transaction branch	<unsigned integer> ((0-65535)) (units: seconds)
	trn_expiration_time_suspend	Specifies the scope of the time monitoring for the transaction branch	Y N F

Type	Operand	Definition	Specification
	trn_cpu_time	CPU time that the transaction branch can use until synchronization point processing	<unsigned integer> ((0-65535)) (units: seconds)
	trf_put	Specifies whether the journal that a transaction output is to be stored in a transaction recovery journal file	Y N
	trn_statistics_item	Specifies the items of statistics on transaction branches	nothing base executiontime cputime
	trn_optimum_item	Specifies the items to be optimized for the transaction	base asyncprepare
	trn_watch_time	Maximum waiting time for receiving communication during the transaction synchronization-point processing	<unsigned integer> ((1-65535))(units: seconds)
	trn_rollback_information_put	Specifies whether to collect rollback information when transaction branches are rolled back.	no self remote all
	trn_limit_time	Maximum time to execute a transaction branch	<unsigned integer> ((0-65535)) (units: seconds)l
	trn_rollback_response_receive	Specifies whether to receive a rollback completion report.	<<Y>> N
	trn_partial_recovery_type	Method of processing transaction synchronization point upon a UAP error	type1 type2 type3
	rap_inquire_timeout_message	Specifies whether to output an error message when the maximum wait time for a request from the client is expired.	<<Y>> N
	rap_connection_assign_type	Specifies whether to use the dynamic connection schedule facility.	dynamic <<static>>
	rap_max_client	Maximum number of clients simultaneously connected to the RAP-processing listener	<unsigned integer> ((128-1024)) <<256>>

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Type	Operand	Definition	Specification
	rap_notify	Specifies whether to issue a startup notification to the RAP-processing client manager.	Y <<N>>
	rap_client_manager_node	Host name of OpenTP1 system where the RAP-processing client resides	<1-to-255-character identifier>
		Port number for RAP-processing client manager of OpenTP1 system where the RAP-processing client resides	<unsigned integer> ((1-65535))
	rap_max_buff_size	Socket window size	<unsigned integer> ((4-2147483647)) <<4>> (unit: Kbytes)
	rap_io_retry_interval	Interval between retries to send / receive a message	<unsigned integer> ((1-999)) <<35>> (unit: milliseconds)
	rap_sock_count	Number of retries to create a socket	<unsigned integer> ((0-65535)) <<1>>
	rap_sock_interval	Interval between retries to create a socket	<unsigned integer> ((15-500)) <<30>> (unit: milliseconds)
	rap_connect_retry_count	Number of retries to establish a connection	<unsigned integer> ((8-2147483647)) <<8>>
	rap_connect_retry_interval	Interval between retries to establish a connection	<unsigned integer> ((10-999)) <<100>> (unit: milliseconds)
	rap_listen_backlog	Maximum number of requests that can be held in the connection waiting queue	<unsigned integer> ((SOMAXCONN to 2147483647)) <<SOMAXCONN>>
	rap_msg_output_interval	Interval between output of messages indicating the number of clients	<unsigned integer> ((0-32767)) <<0>> (unit: minutes)
	rap_recovery_server	Number of standby RAP-processing servers for recovery requests	<unsigned integer> ((0-value specified in the rap_parallel_server operand - 1)) <<0>>

Type	Operand	Definition	Specification
	rap_connect_interval	Interval between attempts to establish connection	<unsigned integer> <<(0-999)>><<40>> (unit: milliseconds)
	rpc_extend_function	RPC service facility extension level	<hexadecimal number> <<(00000000-0000000 F)>> <<00000000>>
	max_socket_descriptors	Maximum number of file descriptors for sockets	<unsigned integer> <<(32-2032)>>
	trn_completion_limit_time	Time limit for completing a transaction	<unsigned integer> <<(0-65535)>> (unit: seconds)
	rap_message_id_change_level	Definition that specifies the new message level to change the error message type from E to W	<unsigned integer> <<(0-2)>>
	rap_term_disconnect_time	Wait time for disconnection when the RAP-processing listener terminates	<unsigned integer> <<(0-3600)>> <<0>> (units: seconds)
	rap_stay_watch_time	Maximum monitoring time for a request waiting for allocation of an RAP-processing server	<unsigned integer> <<(0-65535)>> <<30>> (units: seconds)
	rap_stay_warning_interval	Interval for outputting a warning message for a request that remains in the queue	<unsigned integer> <<(3-65535)>> <<180>> (units: seconds)
	log_audit_out_suppress	Specifies whether to suppress output of audit log data from the RAP-processing listener and server.	Y <<N>>
	log_audit_message	Message IDs for items for which audit log data is to be acquired	<unsigned integer> <<(33400-99999)>>
	ipc_sockctl_highwater	Percentage of sockets at which temporary closing starts	<unsigned integer> <<(0-100)>>
		Percentage of sockets for which temporary closing is not performed	<unsigned integer> <<(0-100)>>
	ipc_sockctl_watchtime	Length of time to wait until the sockets are reusable	<unsigned integer> <<(0-65535)>> (units: seconds)

Type	Operand	Definition	Specification
	watch_time	Maximum time to wait for a response	<unsigned integer> <<0-65535>> (units: seconds)

(33) RAP-processing client manager service definitions

Table 2-34 summarizes the contents of the RAP-processing client manager service definitions.

Table 2-34: Contents of RAP-processing client manager service definitions

Type	Operand	Definition	Specification
set	rap_client_manager_port	RAP-processing client manager port number	<unsigned integer> <<5001-65535>>
	rap_listen_inf	Node identifier of OpenTP1 node where the RAP-processing listener starts	<4-character identifier>
		RAP-processing listener port number	<unsigned integer> <<5001-65535>>
		Host name for receiving side of service by the remote API facility	<1-to-255 alphanumeric characters, including periods and hyphens>
		Port number for receiving side of service by the remote API facility	<unsigned integer> <<1-65535>>
	uid	User identifier of OpenTP1 administrator	<unsigned integer> <<0-4294967294>>
	log_audit_out_suppress	Specifies whether to suppress output of audit log data from the RAP-processing client manager.	Y <<N>>
	log_audit_message	Message ID for an item for which audit log data is to be acquired	<unsigned integer> <<33400-99999>>
rap_watch_time	Maximum amount of monitoring time allowed for message sending or receiving	<unsigned integer> <<0-65535>> <<180>> (unit: seconds)	

(34) Performance verification trace definitions

Table 2-35 shows the performance verification trace definitions.

Table 2-35: Performance verification trace definitions

Type	Operand	Definition	Specification
set	prf_file_size	Size of the performance verification trace information file	<unsigned integer> ((1024-1048576)) <<1024>> (units: Kbytes)
	prf_information_level	Output level of the messages related to the trace file	<<1>> 0
	prf_file_count	Number of generations for performance verification trace information files	<unsigned integer> ((3-256)) <<3>>
	prf_trace_backup	Specifies whether to acquire a trace file backup.	<<Y>> N

(35) XAR performance verification trace definitions

Table 2-36 shows the XAR performance verification trace definitions.

Table 2-36: XAR performance verification trace definitions

Type	Operand	Definition	Specification
set	prf_file_size	Size of an XAR performance verification trace information file	<unsigned integer> ((1024-1048576)) <<10240>> (units: Kbytes)
	prf_information_level	Display level of the messages related to an XAR performance verification trace	<<1>> 0
	prf_file_count	Number of generations for XAR performance verification trace information files	<unsigned integer> ((3-256)) <<3>>

(36) JNL performance verification trace definitions

Table 2-37 shows the JNL performance verification trace definitions.

Table 2-37: JNL performance verification trace definitions

Type	Operand	Definition	Specification
set	prf_file_size	Size of a JNL performance verification trace information file	<unsigned integer> ((1024-1048576)) <<1024>> (units: Kbytes)

Type	Operand	Definition	Specification
	prf_file_count	Number of generations for JNL performance verification trace information files	<unsigned integer> ((3-256)) <<3>>
	prf_trace_backup	Specifies whether to acquire a backup for a JNL performance verification trace information file.	<<Y>> N

(37) LCK performance verification trace definitions

Table 2-38 shows the LCK performance verification trace definitions.

Table 2-38: LCK performance verification trace definitions

Type	Operand	Definition	Specification
set	prf_file_size	Size of an LCK performance verification trace information file	<unsigned integer> ((1024-1048576)) <<5120>> (units: Kbytes)
	prf_information_level	Display level of the messages related to an LCK performance verification trace	<<1>> 0
	prf_file_count	Number of generations for LCK performance verification trace information files	<unsigned integer> ((3-256)) <<3>>

(38) TRN event trace definitions

Table 2-39 shows the TRN event trace definitions.

Table 2-39: TRN event trace definitions

Type	Operand/Path	Definition	Specification
set	prf_file_size	Size of a TRN event trace information file	<unsigned integer> ((1024-1048576)) <<10240>> (units: Kbytes)
	prf_information_level	Display level for TRN event trace messages	<<1>> 0
	prf_file_count	Number of generations for TRN event trace information files	<unsigned integer> ((3-256)) <<3>>

(39) Real-time statistics service definitions

Table 2-40 shows the real-time statistics service definitions.

Table 2-40: Real-time statistics service definitions

Type	Operand/ Command/ Path	Option	Definition	Specification
set		rts_trcput_interval	Statistics acquisition interval	<unsigned integer> <<(10-86400)>> <<600>> (unit: seconds)
		rts_service_max	Maximum number of services for which statistics can be acquired	<unsigned integer> <<(1-1000)>> <<64>>
		rts_item_max	Maximum number of items that can be acquired	<unsigned integer> <<(1-1000)>> <<64>>
		rts_log_file	Specifies whether to output the acquired statistics to the RTS log file	<<Y>> N
		rts_log_file_name	RTS log file name	<1-to-63-character path name> <<\$DCDIR/ spool/dcrtsinf/ rtslog>>
		rts_log_file_size	RTS log file size	<unsigned integer> <<(1024-1048576)>> <<1024>> (unit: Kbytes)
		rts_log_file_count	Number of generations for RTS log files	<unsigned integer> <<(1-10)>> <<3>>
		rts_log_file_backup	Specifies whether to create a backup file of the RTS log file.	<<Y>> N
		rts_swap_message	Specifies whether to output the KFCA32740-I message, which reports that the RTS log file was swapped	Y <<N>>
Command	rtspat	-u	Type of real-time statistics to be acquired	sys srv svc obj
		-s	Server name	<1-to-8 alphanumeric characters beginning with an alphabetic character>
		-v	Service name	<1-to-31-character identifier>

Type	Operand/ Command/ Path	Option	Definition	Specification
		-o	Acquisition target 1	<1-to-8 characters>
		-b	Acquisition target 2	<1-to-63 characters>
		-e	Item ID	<unsigned integer> ((1000-9999))
		-f	Name of the file that defines the items of real-time statistics to be acquired	<1-to-8-character identifier>

(40) Real-time statistics acquisition-item definitions

Table 2-41 shows the real-time statistics acquisition-item definitions.

Table 2-41: Real-time statistics acquisition-item definitions

Type	Operand	Type	Definition	Specification
set	rts_cpd_co llct_cpd	Checkpoint dump information	Specifies whether to acquire checkpoint dump acquisition events.	Y <<N>>
	rts_cpd_va lidt_cpd		Specifies whether to acquire events indicating that a checkpoint dump was made valid.	Y <<N>>
	rts_jnl_bu f_full	Journal information	Specifies whether to acquire buffer full events.	Y <<N>>
	rts_jnl_wa it_buf		Specifies whether to acquire free buffer wait events.	Y <<N>>
	rts_jnl_jn l_output		Specifies whether to acquire journal output (block) events.	Y <<N>>
	rts_jnl_io _wait		Specifies whether to acquire I/O wait events.	Y <<N>>
	rts_jnl_wr ite		Specifies whether to acquire write events.	Y <<N>>
	rts_jnl_sw ap		Specifies whether to acquire swap events.	Y <<N>>
	rts_jnl_jn l_input		Specifies whether to acquire journal input events.	Y <<N>>

Type	Operand	Type	Definition	Specification
	rts_jnl_read		Specifies whether to acquire read events.	Y <<N>>
	rts_lck_lock_acqst	Lock information	Specifies whether to acquire lock acquisition events.	Y <<N>>
	rts_lck_lock_wait		Specifies whether to acquire lock wait events.	Y <<N>>
	rts_lck_deadlock		Specifies whether to acquire deadlock events.	Y <<N>>
	rts_name_global_cache_hit	Name information	Specifies whether to acquire global cache hit events.	Y <<N>>
	rts_name_local_cache_hit		Specifies whether to acquire local cache hit events.	Y <<N>>
	rts_name_lookup		Specifies whether to acquire events indicating the number of times a search was made for service information.	Y <<N>>
	rts_name_node_lookup		Specifies whether to acquire events indicating the number of times a send was performed to the specified reference node for finding a service.	Y <<N>>
	rts_name_node_lookup_response		Specifies whether to acquire events indicating the number of times a response to a service search request for the specified reference node was received.	Y <<N>>
	rts_osl_static_acq	Shared memory management information	Specifies whether to acquire events indicating the usage of static shared memory.	Y <<N>>
	rts_osl_static_pool		Specifies whether to acquire events indicating the maximum size of the required static shared memory pool.	Y <<N>>
	rts_osl_dynamic_acq		Specifies whether to acquire an event indicating the usage of dynamic shared memory.	Y <<N>>

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Type	Operand	Type	Definition	Specification
	rts_osl_dynmem_pol		Specifies whether to acquire events indicating the maximum size of the required dynamic shared memory pool.	Y <<N>>
	rts_prc_prc_genert	Process information	Specifies whether to acquire process generation events.	Y <<N>>
	rts_prc_uap_abnml		Specifies whether to acquire UAP abnormal termination events.	Y <<N>>
	rts_prc_sys_abnml		Specifies whether to acquire system-server abnormal termination events.	Y <<N>>
	rts_prc_prc_term		Specifies whether to acquire process termination events.	Y <<N>>
	rts_prc_prc_num		Specifies whether to acquire monitoring events indicating the number of active processes.	Y <<N>>
	rts_que_read		Message queue information	Specifies whether to acquire read message events.
	rts_que_write	Specifies whether to acquire write message events.		Y <<N>>
	rts_que_read_err	Specifies whether to acquire read error events.		Y <<N>>
	rts_que_write_err	Specifies whether to acquire write error events.		Y <<N>>
	rts_que_wait_buf	Specifies whether to acquire free buffer wait events.		Y <<N>>
	rts_que_real_read	Specifies whether to acquire real read events.		Y <<N>>
	rts_que_real_write	Specifies whether to acquire real write events.		Y <<N>>
	rts_que_delay_wrt	Specifies whether to acquire lazy write (count) events.		Y <<N>>
	rts_que_delay_rec	Specifies whether to acquire events (records) indicating a lazy write on a physical file basis.		Y <<N>>

Type	Operand	Type	Definition	Specification
	rts_que_delay_msg		Specifies whether to acquire events (messages) indicating a lazy write on a physical file basis.	Y <<N>>
	rts_rpc_rpc_call	RPC information	Specifies whether to acquire RPC call (synchronous-response type) events.	Y <<N>>
	rts_rpc_rpc_call_chained		Specifies whether to acquire RPC call events (chained type).	Y <<N>>
	rts_rpc_user_srvc		Specifies whether to acquire user service execution events.	Y <<N>>
	rts_rpc_rpc_ovrtim		Specifies whether to acquire RPC timeout events.	Y <<N>>
	rts_scd_scd_wait	Schedule information	Specifies whether to acquire schedule wait events.	Y <<N>>
	rts_scd_scd_schedule		Specifies whether to acquire schedule events.	Y <<N>>
	rts_scd_using_buf		Specifies whether to acquire events indicating usage of the message storage pool.	Y <<N>>
	rts_scd_lack_buf		Specifies whether to acquire events indicating the size of a message that could not be scheduled due to a message storage buffer pool shortage.	Y <<N>>
	rts_scd_scd_stay		Specifies whether to acquire an event indicating that service requests are accumulated in the schedule queue.	Y <<N>>
	rts_scd_svc_scd_wait		Specifies whether to acquire an event indicating a wait for scheduling, on a service basis.	Y <<N>>
	rts_scd_svc_using_buf		Specifies whether to acquire an event indicating the usage of the message storage buffer pool, on a service basis.	Y <<N>>

2. Overview of the System Service Definitions

Type	Operand	Type	Definition	Specification
	rts_scd_parallel		Specifies whether to acquire an event indicating the number of services being executed concurrently.	Y <<N>>
	rts_trn_commit	Transaction information	Specifies whether to acquire commit events.	Y <<N>>
	rts_trn_rollback		Specifies whether to acquire rollback events.	Y <<N>>
	rts_trn_command_cmd		Specifies whether to acquire commit events caused by commands.	Y <<N>>
	rts_trn_rollback_cmd		Specifies whether to acquire rollback events caused by commands.	Y <<N>>
	rts_trn_hazard_cmd		Specifies whether to acquire hazard events caused by commands.	Y <<N>>
	rts_trn_mixed_cmd		Specifies whether to acquire mix events caused by commands.	Y <<N>>
	rts_trn_branch		Specifies whether to acquire branch execution time events.	Y <<N>>
	rts_trn_sync_point		Specifies whether to acquire events indicating the execution time for branch synchronization point processing.	Y <<N>>
	rts_dam_read		DAM information	Specifies whether to acquire read events.
	rts_dam_read_err	Specifies whether to acquire read error events.		Y <<N>>
	rts_dam_write	Specifies whether to acquire write events.		Y <<N>>
	rts_dam_write_err	Specifies whether to acquire write error events.		Y <<N>>
	rts_dam_fj	Specifies whether to acquire FJ output count events.		Y <<N>>
	rts_dam_transaction_branch	Specifies whether to acquire events indicating the number of concurrently executed DAM transaction branches.		Y <<N>>

Type	Operand	Type	Definition	Specification
	rts_dam_cache_block		Specifies whether to acquire events indicating the number of DAM cache block allocations.	Y <<N>>
	rts_dam_shm_pool		Specifies whether to acquire events indicating the usage of the shared memory for the DAM cache.	Y <<N>>
	rts_tam_real_renew	TAM information	Specifies whether to acquire TAM file real update events.	Y <<N>>
	rts_tam_real_renew_time		Specifies whether to acquire events indicating the real update time for a TAM file.	Y <<N>>
	rts_tam_rec_refer		Specifies whether to acquire commit or rollback (record reference) events.	Y <<N>>
	rts_tam_rec_renew		Specifies whether to acquire commit or rollback (record update) events.	Y <<N>>
	rts_tam_read		Specifies whether to acquire read events.	Y <<N>>
	rts_tam_read_err		Specifies whether to acquire read error events.	Y <<N>>
	rts_tam_write		Specifies whether to acquire write events.	Y <<N>>
	rts_tam_write_err		Specifies whether to acquire write error events.	Y <<N>>
	rts_xar_start	XA resource service information	Specifies whether to acquire events indicating the number of transaction start requests issued from the application server to the RAP-processing server.	Y <<N>>
	rts_xar_start_err		Specifies whether to acquire events for a transaction start request issued from the application server to the RAP-processing server.	Y <<N>>
	rts_xar_call		Specifies whether to acquire events indicating the number of service requests issued from the application server to the RAP-processing server.	Y <<N>>

2. Overview of the System Service Definitions

Type	Operand	Type	Definition	Specification
	rts_xar_call_err		Specifies whether to acquire error events for a service request issued from the application server to the RAP-processing server.	Y <<N>>
	rts_xar_end		Specifies whether to acquire events indicating the number of transaction termination requests issued from the application server to the RAP-processing server.	Y <<N>>
	rts_xar_end_err		Specifies whether to acquire error events for a transaction termination request issued from the application server to the RAP-processing server.	Y <<N>>
	rts_xar_prepare		Specifies whether to acquire events indicating the number of transaction preparation requests issued from the application server to the RAP-processing server.	Y <<N>>
	rts_xar_prepare_err		Specifies whether to acquire error events for a transaction preparation request issued from the application server to the RAP-processing server.	Y <<N>>
	rts_xar_commit		Specifies whether to acquire events indicating the number of transaction commit requests issued from the application server to the RAP-processing server.	Y <<N>>
	rts_xar_commit_err		Specifies whether to acquire error events for a transaction commit request issued from the application server to the RAP-processing server.	Y <<N>>
	rts_xar_rollback		Specifies whether to acquire events indicating the number of transaction rollback requests issued from the application server to the RAP-processing server.	Y <<N>>
	rts_xar_rollback_err		Specifies whether to acquire error events for a transaction rollback request issued from the application server to the RAP-processing server.	Y <<N>>

Type	Operand	Type	Definition	Specification
	rts_xar_recover		Specifies whether to acquire events indicating the number of notification requests for a prepared transaction or heuristically completed transaction issued from the application server to the RAP-processing server.	Y <<N>>
	rts_xar_recover_err		Specifies whether to acquire error events for a notification request for a prepared transaction or heuristically completed transaction issued from the application server to the RAP-processing server.	Y <<N>>
	rts_xar_forget		Specifies whether to acquire events indicating the number of requests to discard a transaction issued from the application server to the RAP-processing server.	Y <<N>>
	rts_xar_forget_err		Specifies whether to acquire error events for a request to discard a transaction issued from the application server to the RAP-processing server.	Y <<N>>
	rts_mcf_ap_scd_stay	MCF information	Specifies whether to acquire schedule wait information.	Y <<N>>
	rts_mcf_ap_usr_srvc		Specifies whether to acquire user service execution information.	Y <<N>>
	rts_mcf_in_msg_scd_wait		Specifies whether to acquire received message processing wait information for each logical terminal.	Y <<N>>
	rts_mcf_out_msg_sync_scd_wait		Specifies whether to acquire processing wait information for synchronous sent messages.	Y <<N>>
	rts_mcf_out_msg_resp_scd_wait		Specifies whether to acquire processing wait information for inquiry response mode sent messages.	Y <<N>>
	rts_mcf_out_msg_prio_scd_wait		Specifies whether to acquire processing wait information for priority branch type sent messages.	Y <<N>>

Type	Operand	Type	Definition	Specification
	rts_mcf_out_msg_norm_scd_wait		Specifies whether to acquire processing wait information for normal branch type sent messages.	Y <<N>>
	rts_mcf_queue_scd_wait_num		Specifies whether to acquire the number of items remaining in the input queue.	Y <<N>>

(41) User service default definitions

Table 2-42 shows the user service default definitions.

Table 2-42: User service default definitions

Type	Operand	Option	Definition	Specification
set	nice		Changing process priority position	C<unsigned integer> ((0-39)) <<0>>
	parallel_count		Number of resident processes and maximum number of processes	<unsigned integer> ((0-1024)) <<1>>
	hold		Specifies whether service groups or services should be shut down if UAP terminates abnormally.	<<Y>> N
	hold_recovery		Specifies whether service groups and services should inherit shut down after a full recovery.	<<Y>> N
	deadlock_priority		UAP deadlock priority position	<unsigned integer> ((1-127)) <<64>>
	schedule_priority		Schedule priority position of this service group	<unsigned integer> ((1-16)) <<8>>
	message_bufLen		Maximum message length	<unsigned integer> ((1024-31457280)) <<4096>> (units: bytes)
	message_store_bufLen		Length of the message storage buffer pool	<unsigned integer> ((1024-31457280)) <<4096>> (units: bytes)
	trn_expiration_time		Transaction branch expiration time	<unsigned integer> ((0-65535)) (units: seconds)

Type	Operand	Option	Definition	Specification
	trn_expiration_time_suspend		Specifies the range for time check of transaction branches.	Y N F
	watch_next_chain_time		Chained RPC maximum time interval	<unsigned integer> <<(0-65535)>> <<180>> (units: seconds)
	atomic_update		Specifies whether service should be executed as a transaction.	<<Y>> N
	receive_from		Specifies whether the schedule queue, or the UNIX domain or internet domain is to be used.	<<queue>> socket none
	uap_trace_max		Maximum number of records for UAP trace	<unsigned integer> <<(0-4095)>> <<32>>
	uap_trace_file_put		Specifies whether to acquire UAP trace information in a file.	Y N
	term_watch_time		Abnormal termination check expire time	<unsigned integer> <<(0-32767)>> <<30>> (units: minutes)
	mcf_jnl_buff_size		MCF journal buffer size	<unsigned integer> <<(4096-131072)>> (units: bytes)
	type		Specifies the type of this service group.	<<other>> MHP RAP
	balance_count		Number of service requests processed by a process	<unsigned integer> <<(0-512)>> <<3>>
	uid		User identifier	<unsigned integer> <<(0-4294967294)>>
	auto_restart		Specifies the processing for service groups if UAP terminates abnormally.	Y <<N>>
	critical		Specifies the system action if UAP terminates abnormally.	Y <<N>>
	lck_wait_priority		Priority position to enter wait state for a lock	<unsigned integer> <<(0-127)>> <<0>>
	mcf_psv_id		Application startup process identifier	<hexadecimal number> <<(01-ff)>>

2. Overview of the System Service Definitions

Type	Operand	Option	Definition	Specification
	trn_cpu_time		Specifies the CPU time that can be used by transaction branch until synchronization point processing.	<unsigned integer> ((0-65535)) (units: seconds)
	service_hold		Specifies whether control over shutdown per service is to be used.	Y <<N>>
	service_priority_control		Specifies whether scheduling is to be carried out according to priority in units of service requests.	Y <<N>>
	message_cell_size		Storage cell size of a schedule message	<unsigned integer> ((512-31457280)) <<512>> (units: bytes)
	max_socket_msg		Maximum number of messages that the server receives from the socket	<unsigned integer> ((1-500)) <<100>>
	max_socket_msglen		Maximum length of messages that the server receives from the socket	<unsigned integer> ((1-30270)) <<10240>> (units: Kbytes)
	trf_put		Specifies whether the journal output by a transaction is to be output to a transaction recovery journal file.	Y <<N>>
	mcf_mgrid		Identifier of the MCF manager to which an application startup process belongs	<identifier> ((A-Z, a-z)) <<A>>
	mcf_service_max_count		Maximum number of issued MCF communication functions	<unsigned integer> ((0-65535))
	trn_statistics_item		Item of statistics on transaction branches	nothing base executiontime cputime
	node_down_restart		Specifies whether a user server is to be automatically started up.	<<Y>> N
	rpc_response_statistics		Specifies whether to collect response statistics.	Y <<N>>
	server_type		Specifies the paradigm that follows the call of a service function.	<<betran>> xatmi xatmi_cb1
	trn_rm_open_close_scope		Specifies the issuing range of the xa_open and xa_close functions.	process transaction

Type	Operand	Option	Definition	Specification
	trn_optimum_item		Specifies the items to be optimized for the transaction.	base asynprepare
	purge_msgget		Specifies whether to clear the operating system's message queue assigned to the service group.	SY <<N>>
	cancel_normal_terminate		Specifies whether to cancel the normal termination for the dcsvstop command.	Y <<N>>
	prc_abort_signal		Abort signal number for servers	<unsigned integer> ((1-128)) <<3>>
	rpc_service_retry_count		Maximum number of service function retries performed by the service retry facility	<unsigned integer> ((0-65535)) <<0>>
	rpc_extend_function		Facility extension level of the RPC service	<hexadecimal number> ((00000000-0000000F)) <<00000000>>
	max_socket_descriptors		Maximum number of file descriptors for sockets	<unsigned integer> ((32-2032))
	max_open_fds		Maximum number of files and pipes accessed by a UAP process	<unsigned integer> ((16-2016)) <<50>>
	service_term_watch_time		Abnormal termination check expiration time for service	<unsigned integer> ((0-32767)) <<0>> (units: minutes)
	termed_after_service		Specifies whether to terminate the non-resident process when the load is decreased at the termination of a service.	Y <<N>>
	xat_trn_expiration_time		Period of time to monitor the expiration of the synchronization point processing with the remote system	<unsigned integer> ((1-2147483647)) <<180>> (units: seconds)
	xat_osi_usr		Specifies whether to use a stub for OSI TP communication.	Y <<N>>
	rpc_trace		Specifies whether to collect RPC trace.	Y N
	rpc_trace_name		Name of the file to collect RPC trace in	<path name>

2. Overview of the System Service Definitions

Type	Operand	Option	Definition	Specification
	rpc_trace_size		Capacity of the RPC trace collection file	<unsigned integer> ((1024-2147483648)) (units: bytes)
	trn_rollback_information_put		Specifies whether to collect rollback information when transaction branches are rolled back.	no self remote all
	schedule_method		Scheduling method of a user server	<<msgque>> namedpipe
	service_wait_time		Service request waiting time for non-resident server processes of the user server	<unsigned integer> ((1-4096)) (units: seconds)
	mcf_spp_oj		Specifies whether OJ historical information is to be collected for an SPP.	<<Y>> N
	adm_message_option		Specifies messages to be output.	<one-digit hexadecimal number> <<F>>
	trn_watch_time		Maximum waiting time for receiving communication during the synchronization point processing of transactions.	<unsigned integer> ((10-1024)) <<120>> (units: seconds)
	trn_limit_time		Maximum time to execute a transaction branch	<unsigned integer> ((0-65535)) (units: seconds)
	trn_rollback_response_receive		Specifies whether to receive a rollback completion report.	Y N
	trn_partial_recovery_type		Method of processing transaction synchronization point upon UAP error	type1 type2 type3
	rpc_destination_mode		Method of determining the destination of service	namdonly namd <<definition>>
	rpc_rap_auto_connect		Specifies whether or not to automatically manage the connection between UAP and remote API control process.	<<Y>> N
	rpc_rap_inquire_time		Maximum inquiry interval for request service using a remote API facility	<unsigned integer> ((0-1048575)) <<0>> (unit: seconds)

Type	Operand	Option	Definition	Specification
	rpc_request_cancel_for_timeout		Specifies whether or not to make the server be aware of the response wait time for client UAP.	<<Y>> N
	status_change_when_terminating		Specifies whether or not to reflect changes in the final status at the next restart.	<<Y>> N
	service_expiration_time		Period of time to monitor the execution between startup and termination of a service function.	<unsigned integer> ((0-65535)) <<0>> (units: seconds)
	multi_schedule		Specifies whether to use the multi-scheduler facility for scheduling requests.	Y <<N>>
	make_queue_on_starting		Specifies whether to allocate a schedule queue to a service group assigned as a non-resident server at the start of the server.	Y <<N>>
	loadcheck_interval		Interval between checks of the load level of the current service group	<unsigned integer> ((0-65535))
	levelup_queue_count		Number of remaining service requests, which determines the load level of the current service group (up)	<unsigned integer> ((0-32767))
	leveldown_queue_count		Number of remaining service requests, which determines the load level of the current service group (down)	<unsigned integer> ((0-32767))
	ipc_sockctl_highwater		Percentage of sockets at which temporary closing starts/percentage of sockets for which temporary closing is not performed	<unsigned integer> ((0-100)) <<100,0>>
	ipc_sockctl_watchtime		Length of time to wait until the sockets are reusable	<unsigned integer> ((0-65535)) <<180>> (unit: seconds)
	ipc_conn_interval		Length of time to wait until the connection is established	<unsigned integer> ((8-65535)) <<8>> (unit: seconds)
	ipc_send_interval		Interval for monitoring data transmission	<unsigned integer> ((5-32767)) <<5>> (unit: seconds)

2. Overview of the System Service Definitions

Type	Operand	Option	Definition	Specification
	ipc_send_count		Number of times data transmission is monitored	<unsigned integer> ((1-32767)) <<5>>
	ipc_header_rcv_time		Length of time to wait until the communication control data is received	<unsigned integer> ((5-32767)) <<10>> (unit: seconds)
	rpc_send_retry_count		Number of retries if an error occurs during TCP/IP connection	<unsigned integer> ((0-65535)) <<0>>
	rpc_send_retry_interval		Interval between retries if an error occurs during TCP/IP connection	<unsigned integer> ((0-300000)) <<0>> (unit: milliseconds)
	ipc_rcvbuf_size		Receive buffer size of TCP/IP	<unsigned integer> ((8192-1048576)) <<8192>> (unit: bytes)
	ipc_sndbuf_size		Send buffer size of TCP/IP	<unsigned integer> ((8192-1048576)) <<8192>> (unit: bytes)
	ipc_listen_sockbufset		Specifies whether to set the TCP/IP send and receive buffer sizes for the listen socket.	Y <<N>>
	polling_control_data		Checks whether a temporary closing request has arrived.	Y <<N>>
	thread_yield_interval		Interval for issuing a trigger to receive a socket reuse instruction	<unsigned integer> ((1-86400)) <<90>> (unit: seconds)
	groups		Sets a group access list of service groups	<unsigned integer> ((0-4294967294))
	loadlevel_message		Specifies whether to output a load level notification message.	Y <<N>> A
	ipc_backlog_count		Length of queue storing connection establishment requests	<unsigned integer> ((0-4096)) <<0>>
	rpc_buffer_pool_max		Number of buffers to be pooled	<unsigned integer> ((1-64))<<64>>
	schedule_delay_limit		Schedule delay limit	<unsigned integer> ((0-32767))<<0>> (unit: seconds)

Type	Operand	Option	Definition	Specification
	schedule_delay_abort		Specifies whether to abort the system when the schedule is delayed.	Y <<N>>
	rap_autoconnect_con_err or_msg		Specifies whether to output an error message if the RAP-processing server is disconnected when substitutional execution for APIs is requested.	<<Y>> N
	core_shm_suppress		Specifies whether to suppress the output of the shared memory dump to the core file.	Y <<N>>
	xat_connect_resp_time		Maximum response wait time for association establishment of the SPP for processing communication events	<unsigned integer> ((0-65535)) <<180>> (unit: seconds)
	scd_poolfull_check_inte rval		Interval at which message KFCA00853-E is output for successive memory shortages occurring in the message storage buffer pool	<unsigned integer> ((0-32767)) <<0>> (units: seconds)
	scd_poolfull_check_coun t		Threshold for determining whether to output message KFCA00853-E for successive memory shortages occurring in the message storage buffer pool	<unsigned integer> ((1-32767)) <<10>> (units: times)
	scd_pool_warning_use_ra te		Maximum use rate for the message storage buffer pool that triggers output of a warning message	<unsigned integer> ((0-99)) <<0>> (units: percent)
	scd_pool_warning_interv al		Interval at which a warning message is output if the use rate for the message storage buffer pool is exceeded	<unsigned integer> ((0-32767)) <<0>> (units: seconds)
	ipc_tcpnodelay		Specification for determining whether to disable the Nagle algorithm	Y <<N>>
	stay_watch_queue_count		Number of service requests that triggers the start of judgment of the schedule queue accumulation status	<unsigned integer> ((0-32767)) <<0>>
	stay_watch_check_rate		Service request processing rate used for monitoring the service requests remaining in the schedule queue	<unsigned integer> ((1-100)) (units: percent)

2. Overview of the System Service Definitions

Type	Operand	Option	Definition	Specification
	stay_watch_abort		Specification for determining whether to shut down OpenTP1 if the conditional expression for judging the schedule queue accumulation status evaluates to true	Y <<N>>
	stay_watch_start_interval		Interval for checking the number of service requests remaining in the schedule queue	<unsigned integer> ((1-32767)) <<10>> (units: seconds)
	stay_watch_check_interval		Interval for judging the schedule queue accumulation status	<unsigned integer> ((1-65534)) <<10>> (units: seconds)
	trn_completion_limit_time		Time limit for completing a transaction	<unsigned integer> ((0-65535)) (units: seconds)
	rap_message_id_change_level		Definition that specifies the new message level to change the error message type from E to W	<unsigned integer> ((0-2))
	log_audit_out_suppress		Whether to suppress output of audit log data	Y <<N>>
	log_audit_message		Message ID of an item for which audit log data is to be acquired	<unsigned integer> ((33400-99999))
	mcf_prf_trace		Specifies whether to acquire MCF performance verification trace information for each user server.	<<Y>> N
	watch_time		Maximum time to wait for a response	<unsigned integer> ((0-65535)) (units: seconds)
Command	trnrmid	-n	Resource manager name	<1-to-31-character identifier>
		-i	Resource manager extension	<1-to-2-character identifier>
	scdbufgrp	-g	Schedule buffer group name	<1-to-8-character identifier>
	scdmulti	-g	Multi-scheduler group name	<1-to-8-character identifier> <<scdmltgp>>
	scdsvcldef	-c	Service name	<1-to-31-character identifier>

Type	Operand	Option	Definition	Specification
		-p	Number of services that can be executed concurrently	<unsigned integer> ((1-1024))
		-n	Number of services that can be queued	<unsigned integer> ((1-65535))
		-l	Length of the buffer pool storing messages that can be queued	<unsigned integer> ((512-31457280)) (units: bytes)
putenv	Any-name		Environment variable name Environment variable value	<character string>
	XAT_CONNECT_RESP_TIME		Maximum response wait time for association establishment of the SPP for processing communication events	<unsigned integer> ((0-65535)) <<180>> (unit: seconds)
dcputenv	Any-name		Environment variable name Environment variable value	<character string>

(42) User service definitions

Table 2-43 shows the user service definitions.

Table 2-43: User service definitions

Type	Operand	Option	Definition	Specification	
set	service_group		Service group name	S<1-to-31-character identifier>	
	module		Name of executable program that executes this service group	<1-to-14-character identifier>	
	service			Combination of the name of service belonging to this service group and the name of entry point providing the service	<1-to-31-character identifier>
				UAP shared library name	<1-to-255-character path name>
	nice		Changing service group process priority position	<unsigned integer> ((0-39))	
	parallel_count		Number of resident processes and maximum number of processes	<unsigned integer> ((0-1024))	

2. Overview of the System Service Definitions

Type	Operand	Option	Definition	Specification
	hold		Specifies whether service groups or services should be shut down if UAP terminates abnormally.	Y N
	hold_recovery		Specifies whether service groups and services should inherit shut down after a full recovery.	Y N
	deadlock_priority		UAP deadlock priority position	<unsigned integer> ((1-127))
	schedule_priority		Schedule priority position of this service group	<unsigned integer> ((1-16))
	message_bufLen		Maximum message length	<unsigned integer> ((1024-31457280)) (units: bytes)
	message_store_bufLen		Length of the message storage buffer pool	<unsigned integer> ((1024-31457280)) (units: bytes)
	trn_expiration_time		Transaction branch expiration time	<unsigned integer> ((0-65535)) (units: seconds)
	trn_expiration_time_suspend		Range for time check of transaction branches	Y N F
	watch_next_chain_time		Chained RPC maximum time interval	<unsigned integer> ((0-65535)) (units: seconds)
	atomic_update		Specifies whether service should be executed as transaction.	Y N
	receive_from		Specifies whether the schedule queue, or the UNIX domain or Internet domain is to be used.	queue socket none
	uap_trace_max		Maximum number of records for UAP trace	<unsigned integer> ((0-4095))
	uap_trace_file_put		Specifies whether to acquire UAP trace information in a file.	Y N
	term_watch_time		Abnormal termination check expire time	<unsigned integer> ((0-32767)) (units: minutes)

Type	Operand	Option	Definition	Specification
	mcf_jnl_buff_size		MCF journal buffer size	<unsigned integer> ((4096-131072)) (units: bytes)
	type		Specifies the type of this service group.	other MHP RAP
	balance_count		Number of service requests processed by a process	<unsigned integer> ((0-512))
	uid		User identifier	<unsigned integer> ((0-4294967294))
	auto_restart		Specifies the system action if UAP terminates abnormally.	Y N
	critical		Specifies the system action if UAP terminates abnormally.	Y N
	lck_wait_priority		Priority position to enter wait state for a lock	<unsigned integer> ((0-127))
	mcf_psv_id		Application process startup process identifier	<hexadecimal number> ((01-ff))
	trn_cpu_time		Specifies the CPU time that can be used by a transaction branch until synchronization point processing.	<unsigned integer> ((0-65535))(units: seconds)
	service_hold		Specifies whether control over shutdown per service is to be carried out.	Y N
	service_priority_control		Specifies whether scheduling is to be carried out according to priority in units of service requests.	Y N
	message_cell_size		Storage cell size of a schedule message	<unsigned integer> ((512-31457280)) (units: bytes)
	max_socket_msg		Maximum number of messages that the server receives from the socket	<unsigned integer> ((1-500))
	max_socket_msglen		Maximum length of messages that the server receives from the socket	<unsigned integer> ((1-30270)) (units: Kbytes)
	trf_put		Specifies whether the journal output by a transaction is to be output to a transaction recovery journal file.	Y N

2. Overview of the System Service Definitions

Type	Operand	Option	Definition	Specification
	mcf_mgrid		Identifier of the MCF manager to which an application startup process belongs	<identifier>((A-Z, a-z))
	mcf_service_max_count		Maximum number of issued MCF communication functions	<unsigned integer> ((0-65535))
	trn_statistics_item		Item of statistics on transaction branches	nothing base executiontime cputime
	node_down_restart		Specifies whether a user server is to be automatically started up.	Y N
	rpc_response_statistics		Specifies whether to collect response statistics.	Y N
	server_type		Specifies the paradigm that follows the call of a service function.	betran xatmi xatmi_cbl
	trn_rm_open_close_scope		Specifies the issuing range of the xa_open and xa_close functions.	process transaction
	trn_optimum_item		Specifies the items to be optimized for the transaction.	base asyncprepare
	purge_msgget		Specifies whether to clear the operating system's message queue assigned to the service group.	Y N
	cancel_normal_terminate		Specifies whether to cancel the normal termination for the dcsvstop command.	Y N
	prc_abort_signal		Abort signal number for servers	<unsigned integer> ((1-128))
	rpc_service_retry_count		Maximum number of service function retries performed by the service retry facility	<unsigned integer> ((0-65535))
	rpc_extend_function		Facility extension level of the RPC service	<hexadecimal number> ((00000000-0000000F))
	max_socket_descriptors		Maximum number of file descriptors for sockets	<unsigned integer> ((32-2032))
	max_open_fds		Maximum number of files and pipes accessed by a UAP process	<unsigned integer> ((16-2016))

Type	Operand	Option	Definition	Specification
	service_term_watch_time		Abnormal termination check expiration time for service	<unsigned integer> ((0-32767)) (units: minutes)
	termed_after_service		Specifies whether to terminate the non-resident process when the load is decreased at the termination of a service.	Y N
	xat_trn_expiration_time		Period of time to monitor the expiration of the synchronization point processing with the remote system	<unsigned integer> ((1-2147483647)) (units: seconds)
	xat_osi_usr		Specifies whether to use a stub for OSI TP communication.	Y N
	rpc_trace		Specifies whether to collect RPC trace.	Y N
	rpc_trace_name		Name of the file to collect RPC trace in	<path name>
	rpc_trace_size		Capacity of the RPC trace collection file	<unsigned integer> ((1024-2147483648)) (units: bytes)
	trn_rollback_information_put		Specifies whether to collect rollback information when transaction branches are rolled back.	no self remote all
	schedule_method		Scheduling method of a user server	msgque namedpipe
	service_wait_time		Service request waiting time for non-resident server processes of the user server	<unsigned integer> ((1-4096)) (units: seconds)
	mcf_spp_oj		Specifies whether OJ historical information is to be collected for an SPP.	Y N
	adm_message_option		Specifies messages to be output.	<one-digit hexadecimal number>
	trn_watch_time		Maximum waiting time for receiving communication during the synchronization point processing of transactions.	<unsigned integer> ((10-1024)) (units: seconds)

2. Overview of the System Service Definitions

Type	Operand	Option	Definition	Specification
	trn_limit_time		Maximum time to execute a transaction branch	<unsigned integer> ((0-65535)) (units: seconds)
	trn_rollback_response_receive		Specifies whether to receive a rollback completion report.	Y N
	trn_partial_recovery_type		Method of processing transaction synchronization point upon UAP error	type1 type2 type3
	rpc_destination_mode		Method of determining the destination of service	namdonly namd definition
	rpc_rap_auto_connect		Specifying whether or not to automatically manage the connection between UAP and remote API control process	Y N
	rpc_rap_inquire_time		Maximum inquiry interval for request service using a remote API facility	<unsigned integer> ((0-1048575)) (unit: seconds)
	rpc_request_cancel_for_timeout		Specifying whether or not to make the server be aware of the response wait time for client UAP	Y N
	status_change_when_terminating		Specifying whether or not to reflect changes in the final status at the next restart	Y N
	service_expiration_time		Period of time to monitor the execution between startup and termination of a service function.	<unsigned integer> ((0-65535)) (units: seconds)
	multi_schedule		Specifies whether to use the multi-scheduler facility for scheduling requests.	Y N
	make_queue_on_starting		Specifies whether to allocate a schedule queue to a service group assigned as a non-resident server at the start of the server.	Y N
	loadcheck_interval		Interval between checks of the load level of the current service group	<unsigned integer> ((0-65535)) (unit: seconds)

Type	Operand	Option	Definition	Specification
	levelup_queue_count		Number of remaining service requests, which determines the load level of the current service group (up)	<unsigned integer> ((0-32767))
	leveldown_queue_count		Number of remaining service requests, which determines the load level of the current service group (down)	<unsigned integer> ((0-32767))
	ipc_sockctl_highwater		Percentage of sockets at which temporary closing starts/percentage of sockets for which temporary closing is not performed	<unsigned integer> ((0-100))
	ipc_sockctl_watchtime		Length of time to wait until the sockets are reusable	<unsigned integer> ((0-65535)) (unit: seconds)
	ipc_conn_interval		Length of time to wait until the connection is established	<unsigned integer> ((8-65535)) (unit: seconds)
	ipc_send_interval		Interval for monitoring data transmission	<unsigned integer> ((5-32767)) (unit: seconds)
	ipc_send_count		Number of times data transmission is monitored	<unsigned integer> ((1-32767))
	ipc_header_rcv_time		Length of time to wait until the communication control data is received	<unsigned integer> ((5-32767)) (unit: seconds)
	rpc_send_retry_count		Number of retries if an error occurs during TCP/IP connection	<unsigned integer> ((0-65535))
	rpc_send_retry_interval		Interval between retries if an error occurs during TCP/IP connection	<unsigned integer> ((0-300000)) (unit: milliseconds)
	ipc_rcvbuf_size		Receive buffer size of TCP/IP	<unsigned integer> ((8192-1048576)) (unit: bytes)
	ipc_sndbuf_size		Send buffer size of TCP/IP	<unsigned integer> ((8192-1048576)) (unit: bytes)

2. Overview of the System Service Definitions

Type	Operand	Option	Definition	Specification
	ipc_listen_sockbufset		Specifies whether to set the TCP/IP send and receive buffer sizes for the listen socket.	Y <<N>>
	polling_control_data		Checks whether a temporary closing request has arrived.	Y N
	thread_yield_interval		Interval for issuing a trigger to receive a socket reuse instruction	<unsigned integer> ((1-86400)) (unit: seconds)
	groups		Sets a group access list of service groups	<unsigned integer> ((0-4294967294))
	loadlevel_message		Specifies whether to output a load level notification message.	Y N A
	ipc_backlog_count		Length of queue storing connection establishment requests	<unsigned integer> ((0-4096))
	rpc_buffer_pool_max		Number of buffers to be pooled	<unsigned integer> ((1-64))
	schedule_delay_limit		Schedule delay limit	<unsigned integer> ((0-32767)) (unit: seconds)
	schedule_delay_abort		Specifies whether to abort the system when the schedule is delayed.	Y N
	rap_autoconnect_con_err or_msg		Specifies whether to output an error message if the RAP-processing server is disconnected when substitutional execution for APIs is requested.	Y N
	core_shm_suppress		Specifies whether to suppress the output of the shared memory dump to the core file.	Y N
	xat_connect_resp_time		Maximum response wait time for association establishment of the SPP for processing communication events	<unsigned integer> ((0-65535)) (units: seconds)
	scd_poolfull_check_inte rval		Interval at which message KFCA00853-E is output for successive memory shortages occurring in the message storage buffer pool	<unsigned integer> ((0-32767)) (units: seconds)

Type	Operand	Option	Definition	Specification
	scd_poolfull_check_count		Threshold for determining whether to output message KFCA00853-E for successive memory shortages occurring in the message storage buffer pool	<unsigned integer> ((1-32767)) (units: times)
	scd_pool_warning_use_rate		Maximum use rate for the message storage buffer pool that triggers output of a warning message	<unsigned integer> ((0-99)) (units: percent)
	scd_pool_warning_interval		Interval at which a warning message is output if the use rate for the message storage buffer pool is exceeded	<unsigned integer> ((0-32767)) (units: seconds)
	ipc_tcpnodelay		Specification for determining whether to disable the Nagle algorithm	Y N
	stay_watch_queue_count		Number of service requests that triggers the start of judgment of the schedule queue accumulation status	<unsigned integer> ((0-32767))
	stay_watch_check_rate		Service request processing rate used for monitoring the service requests remaining in the schedule queue	<unsigned integer> ((1-100)) (units: percent)
	stay_watch_abort		Specification for determining whether to shut down OpenTP1 if the conditional expression for judging the schedule queue accumulation status evaluates to true	Y N
	stay_watch_start_interval		Interval for checking whether to start monitoring of the service requests remaining in the schedule queue	<unsigned integer> ((1-32767)) (units: seconds)
	stay_watch_check_interval		Interval for judging the schedule queue accumulation status	<unsigned integer> ((1-65534)) (units: seconds)
	trn_completion_limit_time		Time limit for completing a transaction	<unsigned integer> ((0-65535)) (units: seconds)
	rap_message_id_change_level		Definition that specifies the new message level to change the error message type from E to W	<unsigned integer> ((0-2))

2. Overview of the System Service Definitions

Type	Operand	Option	Definition	Specification
	log_audit_out_suppress		Whether to suppress output of audit log data	Y <<N>>
	log_audit_message		Message ID of an item for which audit log data is to be acquired	<unsigned integer> ((33400-99999))
	mcf_prf_trace		Specifies whether to acquire MCF performance verification trace information for each user server.	<<Y>> N
	watch_time		Maximum time to wait for a response	<unsigned integer> ((0-65535)) (units: seconds)
Command	trnrmid	-n	Resource manager name	<1-to-31-character identifier>
		-i	Resource manager extension	<1-to-2-character identifier>
	scdbufgrp	-g	Schedule buffer group name	<1-to-8-character identifier>
	scdmulti	-g	Multi-scheduler group name	<1-to-8-character identifier> <<scdmltgp>>
	scdsvcdef	-c	Service name	<1-to-31-character identifier>
		-p	Number of services that can be executed concurrently	<unsigned integer> ((1-1024))
		-n	Number of services that can be queued	<unsigned integer> ((1-65535))
		-l	Length of the buffer pool storing messages that can be queued	<unsigned integer> ((512-31457280)) (units: bytes)
putenv	Any-name		Environment variable name Environment variable value	<character string>
	DCFPL_CONNECT_RETRY_COUNT		Number of retries to establish a connection	<unsigned integer> ((8-2147483647))
	DCFPL_CONNECT_RETRY_INTERVAL		Interval between retries to establish a connection	<unsigned integer> ((10-999)) (units: milliseconds)

Type	Operand	Option	Definition	Specification
	XAT_CONNECT_RESP_TIME		Maximum response wait time for association establishment of the SPP for processing communication events	<unsigned integer> ((0-65535)) (units: seconds)
dcputenv	Any-name		Environment variable name Environment variable value	<character string>

Chapter

3. System Service Definitions

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System environment definition

Format

■ set format

```
[set mode_conf=AUTO|MANUAL1|MANUAL2]
[set static_shmpool_size=total-static-shared-memory]
[set dynamic_shmpool_size=total-dynamic-shared-memory-at-maximum-usage]
[set shmpool_attribute=free|fixed]
[set user_command=user-environment-setting-command]
[set server_count=maximum-server-count]
[set user_server_ha=Y|N]
[set system_terminate_watch_time=watching-time-for-system-terminate-process]
[set start_scheduling_timing=BEFORE|AFTER]
[set system_init_watch_time=system-initialization-waiting-time]
[set user_command_online=command-of-completion-of-starting-system]
[set preend_warning_watch_time=monitor-time-to-warn-pre-termination]
[set user_command_online_tplmngn_id=Y|N]
```

■ command format

None

■ putenv format

```
[putenv DCCONFPATH definition-file-storage-directory]
[putenv DCADMDEBUG 0|1]
[putenv DCUAPCONFPATH user-service-definition-file-storage-directory]
```

■ dcputenv format

```
[dcputenv DCCONFPATH definition-file-storage-directory]
[dcputenv DCUAPCONFPATH user-service-definition-file-storage-directory]
```

Function

The system environment definition defines the execution environment of an OpenTP1 system. This information is read by the process service at startup of an OpenTP1 system.

Explanation

set format

Operands

- `mode_conf=``AUTO` | `MANUAL1` | `MANUAL2` ~ `<<MANUAL2>>`

Specify the method to start the OpenTP1 system. The actual startup form will be a function of the method specified here and the previous termination mode (normal, forced normal, forced, planned (A), planned (B), or abnormal).

`AUTO`

Specifies an automatic startup.

`MANUAL1`

Specifies a manual startup; except if OpenTP1 had terminated abnormally, in which case restart will be automatic.

`MANUAL2`

Specifies a manual startup.

The following table shows the startup forms depending on the combination of the previous termination mode and the value specified in the `mode_conf` operand.

Conditions for determining the startup form		Startup form	
Previous termination mode	Value specified in the 'mode_conf' operand	Startup method	Startup mode
Normal termination	<code>AUTO</code>	Manual ^{#1}	Normal start
	<code>MANUAL1</code>	Manual	
	<code>MANUAL2</code>		
Forced normal termination	<code>AUTO</code>	Manual ^{#1}	Normal start
	<code>MANUAL1</code>	Manual	
	<code>MANUAL2</code>		
Planned termination A	<code>AUTO</code>	Manual ^{#1}	Restart
	<code>MANUAL1</code>	Manual	Restart ^{#2}
	<code>MANUAL2</code>		

Conditions for determining the startup form		Startup form	
Previous termination mode	Value specified in the 'mode_conf' operand	Startup method	Startup mode
Planned termination B	AUTO	Manual ^{#1}	Restart
	MANUAL1	Manual	Restart ^{#2}
	MANUAL2		
Forced termination	AUTO	Manual ^{#1}	Restart
	MANUAL1	Manual	Restart ^{#2}
	MANUAL2		
Abnormal termination	AUTO	Automatic	Restart
	MANUAL1	Automatic ^{#3}	
	MANUAL2	Manual	Restart ^{#2}

For the specification of `mode_conf` when using the system switchover facility, see the manual *OpenTP1 Description*.

#1: Automatic start is performed when the operating system starts.

#2: Forced normal start can be performed using the `dcstart -n` command. However, if the forced normal start is performed, the previous processing status will not be inherited.

#3: Manual start is performed when the operating system starts.

- `static_shmpool_size=total-static-shared-memory~<unsigned integer> ((0-1945600)) <<4096>>` (Unit: kilobytes)

Specify the total amount of shared memory that an OpenTP1 system will possess from startup to termination (hereafter static shared memory). The sum of the total amount of dynamic shared memory and the value of the `dynamic_shmpool_size` must not exceed 1945600. Specify an amount to include memory for all system services that will be started as required.

- `dynamic_shmpool_size=total-dynamic-shared-memory-at-maximum-usage~<unsigned integer> ((0-1945600)) <<4096>>` (Unit: kilobytes)

Specify the total amount of shared memory to be dynamically accessed by system services with a work area image (hereafter dynamic shared memory) at maximum usage. The sum of the total amount of dynamic shared memory at the time of maximum use and the value of the `static_shmpool_size` must not exceed 1945600.

Specify an amount to include memory for all system services that will be started as required.

- `shmpool_attribute=free|fixed~<<free>>`

An OpenTP1 system secures for the system services a shared memory pool, sufficient in size for static shared memory and dynamic shared memory use. Specify whether this shared memory pool should be free or fixed in memory.

`free`

Specifies that the shared memory pool is not fixed in memory. Paging of shared memory could occur depending on the amount of mounted storage, which could adversely affect performance.

`fixed`

Specifies that the shared memory pool is fixed in memory. No paging occurs, thus preventing any deterioration in performance caused by accessing of shared memory. However, depending on the amount of mounted storage, paging of text and data segments not in the shared memory could occur frequently; hence examine the amount of shared memory as a ratio of the amount of mounted storage and overall usage requirements.

`fixed` can be specified only when the OS is HP-UX or Solaris. Note that even when the OS is solaris, `fixed` cannot be specified in some cases, depending on the environment being used. For details, see the *Release Notes*.

- `user_command=user-environment-setting-command~<path name>`

Specify a user environment setting command to be executed in the path name before starting the OpenTP1 system. When this command is specified, the entire UAP environments such as shared memory allocation and file initialization can be set before starting the OpenTP1 system.

The execution environments of the user environment setting command are as follows:

- The superuser user ID and group ID (0 and 0) are used.
- The command might be executed by a superuser. We therefore recommend that you delete write permission from the system environment definition file (`$DCDIR/conf/env`) and the file specified in the `user_command` operand to prevent these files from being changed.
- If a shell is used, only a Bourne shell can be used.
- Standard input, standard output and standard error output are redirected by the OpenTP1 system.
- If a function is used online, it cannot be used.
- The system will go down if the user environment setting command fails, or if the

command does not exit with a 0.

- The core file is saved in `_usrcmdn` (n : 1-3). If the current working directory is changed using a user environment setting command, the core file is not saved.
- The standard input, standard output, and standard error output are opened with the `O_NONBLOCK` attribute.

- `server_count=maximum-server-count~<unsigned integer> ((32-4096)) <<64>>`

Specify the maximum number of servers to be started on one machine during the entire OpenTP1 session. Specify a value equal to the total number of system services to be manipulated with OpenTP1 plus the number of user servers. Regardless of how many times a user server with the same name is started, the number of times the user server was started is considered to be 1. A multiserver is deemed to be one server.

- `user_server_ha=Y|N~<<N>>`

Specify whether the wait user server is to be started without waiting for the system server startup at the time of system switchover.

Y

The user server is started without waiting for the system server startup.

N

The user server is started waiting for the system server startup.

- `system_terminate_watch_time=system-terminate-monitor-time~<unsigned integer> ((0-65535)) <<3600>> (Unit: seconds)`

Specify the monitoring time when the OpenTP1 terminates using the `dcstop` command. If the OpenTP1 system does not terminate within the specified time, it is stopped forcibly. If a 0 is specified, the terminate time will not be monitored.

To use the automatic unload function by specifying Y in the `jnl_auto_unload` operand of the system journal service definition, determine the value of the `system_terminate_watch_time` operand, taking the unload time into account.

- `start_scheduling_timing=BEFORE|AFTER~<<AFTER>>`

Specify the time to start receiving RPCs at the system start.

BEFORE

The RPC reception is started before all the user servers are started. When BEFORE is specified, RPCs may result in an error since the user server may not be started.

AFTER

The RPC reception is started after all the user servers are started. When AFTER is specified, RPCs result in an error until all the user servers are started.

When `BEFORE` is specified, the shutdown status of user servers is not carried over after system complete recovery, regardless of the specification of the `hold_recovery` operands in the user service definition and user service default definition. If you want to carry over the shutdown status after system complete recovery, specify `F` in the `scd_hold_recovery` operand of the schedule service definition. For details about the operand specification for carrying over the shutdown status, see the description of the operands for the schedule service definition.

- `system_init_watch_time=system-initialization-waiting-time~<unsigned integer> ((0-65535))` (Unit: seconds)

Specify the maximum waiting time for system initialization including execution of the `user_command` (before the system service starts) during startup of the OpenTP1 system.

Specify 0 to have the system wait infinitely until system initialization terminates.

If this operand is not specified, the value of the `watch_time` operand of the system common definition is assumed.

- `user_command_online=command-of-completion-of-starting-system~<path name>`

Use a path name to specify a command of completion of the starting system, which is to be executed at the start of OpenTP1. Specifying a command of completion of starting system makes it possible to start the processes that cannot be taken over at the restart of the `dcstats` or other command when the system start has been completed.

The `dcstart` command causes the system to wait for the finish of the command of completion of the starting system. If you want to execute the `dcstart` command asynchronously with the command of completion of starting the system, add an ampersand (&) at the end of the `dcstart` command.

If the program specified in the `user_command_online` operand requires environment variables, we recommend that you declare such environment variables in a shell script file and specify the shell script file in the `user_command_online` operand. If the environment variables required by the program are not declared in the shell script file, the operation of OpenTP1 may be affected if environment variables are not inherited because the system configuration is changed or for some other reason.

The command of completion of starting system is executed under the following environment conditions:

- The command of completion of starting system is activated from `dcstart`.
- The user ID and group ID differ depending on the conditions described below. Note that if the command must always be executed by an OpenTP1 administrator, set the `user_command_online_tplmngn_id` operand to `Y` in the system environment definition.
 - If the `dcstart` command is executed by the OpenTP1 administrator:

OpenTP1 administrator's UID and GID

- If automatic startup is set[#]: Superuser's UID and GID (0 and 0)
- If the command is started by using the `dcmstart` command: superuser's UID and GID (0 and 0)
- If the standby system is started by a system switchover: OpenTP1 administrator's UID and superuser GID (0)

#:

For details about how to set automatic startup, see the manual *OpenTP1 Operation*.

- The command might be executed by a superuser. We therefore recommend that you delete write permission from the system environment definition file (`$DCDDIR/conf/env`) and the file specified in the `user_command_online` operand to prevent these files from being changed.
 - In using shells, it is possible to use only Bourne shells.
 - The standard input, standard output, and standard error output are the same as those for the `dcstart` command. As necessary, you can redirect the standard input, standard output, and standard error output when, for example, activating the `dcstart` command in a remote shell.
 - It is possible to use facilities that can be used online.
 - The system goes down if the command for the completion of the starting system fails to be activated or if a non-0 exit takes place. If, however, the command for the completion of the starting system is executed asynchronously, the system will not go down even from a non-0 exit.
 - The core file is saved in `_usrcmdonn` (n : 1 to 3). Note, however, that the core file will not be saved if you use the command for the completion of the starting system to change the current working directory.
- `preend_warning_watch_time=monitor-time-to-warn pre-termination~<unsigned integer> ((0-65535)) <<180>> (unit: seconds)`

This specifies the period of time before the warning message KFCA01859-W appears in the pre-termination processing of the `dcstop` command. A value of 0 provides no monitoring of the time.

- `user_command_online_tplmngn_id=Y|N`
~<<N>>

Specify whether to execute the system-startup completion command with the OpenTP1 administrator UID and GID.

Y

The system-startup completion command is executed with the OpenTP1 administrator UID and GID.

N

The system-startup completion command is executed with the following UID and GID:

- When the `dcstart` command is executed by the OpenTP1 administrator: OpenTP1 administrator's UID and GID
- When automatic startup is set[#]: Superuser's UID and GID (0 and 0)
- When the command is started by using the `dcmstart` command: superuser's UID and GID (0 and 0)
- When the standby system is started by a system switchover: OpenTP1 administrator's UID and superuser GID (0)

#:

For details about how to set automatic startup, see the manual *OpenTP1 Operation*.

command format

None

putenv format

- `DCCONFPATH` *definition-file-storage-directory*~<path name> <<\$DCDIR/conf>>

Specify the full path name of the directory in which the definition files are stored. The full path name you specify can have a maximum of 246 bytes. Note that no environment variable can be specified.

This operand is normally used to change a directory if the files are stored in other than a standard directory. However, the system environment definition file `env` must always be stored in `$DCDIR/conf`.

- `DCADMDEBUG` `0|1`~<<0>>

This operand defines whether to acquire debug information.

OpenTP1 issues the `netstat` command to acquire the OpenTP1 error information if a UAP goes down. The `netstat` command is entered more than once if a UAP goes down more than once successively. Depending on the configuration, this command may use the CPU excessively, increasing machine load. To control the CPU use rate, specify 1 for this operand.

0

Outputs the information acquired by `netstat` if the server goes down.

1

Does not output the information acquired by `netstat` if the server goes down.

- `DCUAPCONFPATH user-service-definition-file-storage-directory~<path name>`

If you want to store specific user service definition files in a directory other than the directory specified in the `DCCONFPATH` environment variable, specify the full path name of the directory. The full path name you specify can have a maximum of 246 bytes. Note that no environment variable can be specified in this operand.

dcputenv format

- `DCCONFPATH definition-file-storage-directory~<path name>`

Specify the full path name of the directory in which each definition file is stored. When an environment variable name is included in the path name, the environment variable name is replaced with its value. Make sure that the number of bytes in the full path name including the value of the environment variable does not exceed 246.

This operand is normally used to change a directory if the files are stored in other than a standard directory.

- `DCUAPCONFPATH user-service-definition-file-storage-directory~<path name>`

If you want to store specific user service definition files in a directory other than the directory specified in the `DCCONFPATH` environment variable, specify the full path name of the directory.

When an environment variable name is included in the path name, the environment variable name is replaced with its value. Make sure that the number of bytes in the full path name including the value of the environment variable does not exceed 246.

Notes

If a user service definition file is in the directory specified in the `DCCONFPATH` environment variable, the user service definition file in the directory becomes valid.

If the `DCCONFPATH` and `DCUAPCONFPATH` environment variables are specified in the login environment, specify the same values in these environment variables of the login environment definition as specified in the system environment definition.

System service configuration definition

Format

■ set format

```
[set uap_conf=Y|N]
[set dam_conf=Y|N]
[set tam_conf=Y|N]
[set que_conf=Y|N]
[set ha_conf=Y|N]
[set jar_conf=Y|N]
[set mrs_conf=Y|N]
[set clt_conf=Y|N]
[set ist_conf=Y|N]
[set rmm_conf=Y|N]
[set xat_conf=Y|N]
[set mqa_conf=Y|N]
```

■ command format

```
[dcsvstart -m system-service-name]
```

Function

The system service configuration definition defines the configuration of service groups to be started together on one machine as one OpenTP1 system.

Explanation

set format

■ uap_conf=Y|N~<<N>>

Specify whether *to start user servers* when the OpenTP1 system starts on this node.

Y

User servers will start when the OpenTP1 system starts on this node.

N

User servers will not start when the OpenTP1 system starts on this node.

When you specify Y for this operand, you need to define the applicable user servers in the user service configuration definition.

■ dam_conf=Y|N~<<N>>

Specify whether the DAM service will be used with this node.

Y

DAM service will be used with this node.

N

DAM service will not be used with this node.

- `tam_conf=Y|N~<<N>>`

Specify whether the TAM service will be used with this node.

Y

TAM service will be used with this node.

N

TAM service will not be used with this node.

- `que_conf=Y|N~<<N>>`

Specify whether the message queue service (MCF service) will be used with this node.

Y

Message queue service will be used with this node.

N

Message queue service will not be used with this node.

- `ha_conf=Y|N~<<N>>`

Specify whether the system switchover facility will be used with this node.

Y

System switchover will be used with this node.

N

System switchover will not be used with this node.

- `jar_conf=Y|N~<<N>>`

Specify whether the global archive journal service will be executed with this node.

Y

Global archive journal service will be executed with this node.

N

Global archive journal service will not be executed with this node.

TP1/Multi is required to specify Y for this operand.

- `mrs_conf=Y|N~<<N>>`

Specify whether the remote MCF service will be used with this node.

Y

Remote MCF service will be used with this node.

N

Remote MCF service will not be used with this node.

■ `clt_conf=Y|N~<<N>>`

Specify whether the client expansion service will be used with this node.

Y

Client expansion service will be used with this node.

N

Client expansion service will not be used with this node.

If starting up a transaction from the CPU, specify Y.

If the answer is Y, a client service definition is necessary.

Note:

When you specify Y, do not define the resource manager extension using the `trnrmid` definition command in the user service default definition. If defined, OpenTP1 cannot start up.

■ `ist_conf=Y|N~<<N>>`

Specify whether the IST service will be used with this node.

Y

IST service will be used with this node.

N

IST service will not be used with this node.

■ `rmm_conf=Y|N~<<N>>`

Specify whether the RMM service will be used with this node.

Y

RMM service will be used with this node.

N

RMM service will not be used with this node.

■ `xat_conf=Y|N~<<N>>`

Specify whether the XATMI communication service will be used with this node.

Y

XATMI communication service will be used with this node.

N

XATMI communication service will not be used with this node.

Specify N if you want only TCP/IP communication to be executed.

■ `mqa_conf=Y|N~<<N>>`

Specify whether the MQA service will be used with this node.

Y

MQA service will be used with this node.

N

MQA service will not be used with this node.

command format

Described on the following page.

dcsvstart (start system service)

Format

```
[dcsvstart -m system-service-name]
```

Function

This command starts the MCF service to be used with this node.

Option

- `-m system-service-name`~<1-8 alphanumeric characters>

Specify the name of the MCF service to be used with this node.

This then starts the MCF service.

A name must start with the three characters `_mu`, and is the name of the output object file for the MCF manager definition created with the MCF definition object creation utility ('mcfmng' command).

User service configuration definition

Format

- set format
None
- command format

```
{{dcsvstart -u user-server-name [ ,user-server-name]...}}
```

Function

The user service configuration definition defines the group of user servers to be started together on one machine as one OpenTP1 system.

Explanation

- set format
None
- command format
Described on the following page.

dcsvstart (start user server)

Format

```
{ {dcsvstart -u user-server-name [ ,user-server-name ] . . . }
```

Function

This command starts the user servers to be used with this node. User servers to be started by an operator command cannot be specified here.

The user servers will be started in tandem with startup of the OpenTP1 system. Service groups cannot be called, whether specified as resident or non-resident with the user service definition, unless the user servers are started. The order in which the servers are to be started can be controlled.

Option

- `-u user-server-name [,user-server-name] . . .` ~<1-8 character identifier>

Specify the names of the user servers to be started in this node. Use the file names defined with the user service definition.

You can specify a maximum of 50 user server names by using a single `dcsvstart` definition command.

The listed group of user servers are started in parallel, and the next command is executed after all servers are up.

System common definition

Format

■ set format

```
[set rpc_trace=Y|N]
[set rpc_trace_name="RPC-trace-collection-file-name" ]
[set rpc_trace_size=RPC-trace-collection-file-capacity]
[set name_port=name-service-port-number]
[set system_id=OpenTPI-identifier]
[set all_node="node-name[:port-number][:high]"
  [,"node-name[:port-number][:high]"...]]
set node_id=node-identifier
[set rpc_retry=Y|N]
[set rpc_retry_count=maximum-number-of-rpc-processing-retries]
[set rpc_retry_interval=rpc-processing-retry-interval]
[set multi_node_option=Y|N]
[set prc_port=port-number-used-by-multinode-linkage-control]
[set rpc_delay_statistics=Y|N]
[set my_host="host-name" |MYHOST]
[set jpl_use=Y|N]
[set rpc_message_level=display-level-for-RPC-troubleshooting-
  messages]
[set rpc_multi_tpl_in_same_host=Y|N]
[set max_socket_descriptors=maximum-number-of-file-descriptors-for-
  sockets]
[set rpc_datacomp=Y|N]
[set domain_masters_addr=" domain-name=host-name-1
  [:port-number-1][,host-name-2[:port-number-2]
  [,host-name-3[:port-number-3]]]"
  [," domain-name=host-name-1[:port-number-1][,host-name-2
  [:port-number-2][,host-name-3[:port-number-3]]]"...]]
[set domain_masters_port=port-number-of-domain-alternate-schedule-
  service]
[set domain_use_dns=Y|N]
[set client_uid_check=Y|N]
[set rpc_port_base=minimum-port-number]
[set prf_trace=Y|N]
[set trn_prf_trace_level=trace-acquisition-level]
[set core_suppress_watch_time=time-period-to-suppress-outputting-the-
  core-dump-about-a-process-being-monitored-in-real-time-for-a-timeout]
[set rpc_netmask=sub-netmask-value-specified-in-TCP/IP-network-
  definition-file]
```

```

[set ipc_sockctl_highwater=percentage-of-sockets-at-which-temporary-
closing-starts
[ ,percentage-of-sockets-for-which-temporary-closing-is-not-performed]]
[set ipc_sockctl_wathtime=length-of-time-to-wait-until-the-sockets-
are-reusable]
[set ipc_conn_interval=length-of-time-to-wait-until-the-connection-is-
established]
[set ipc_send_interval=interval-for-monitoring-data-transmission]
[set ipc_send_count=number-of-times-data-transmission-is-monitored]
[set ipc_header_recv_time=length-of-time-to-wait-until-the-
communication-control-data-is-received]
[set name_notify=Y|N]
[set all_node_ex="node-name[ :port-number]" [ , "node-name[ :port-
number]" ...]]
[set rpc_server_busy_count=number-of-bundles-that-output-
KFA00356-W-message]
[set rpc_send_retry_count=number-of-retries-if-an-error-occurs-
during-TCP/IP-connection]
[set rpc_send_retry_interval=interval-between-retries-if-an-error-
occurs-during-TCP/IP-connection]
[set thdlock_sleep_time=thread's-waiting-time-if-a-lock-conflict-
occurs-among-threads]
[set ipc_recvbuf_size=receive-buffer-size-of-TCP/IP]
[set ipc_sendbuf_size=send-buffer-size-of-TCP/IP]
[set ipc_listen_sockbufset=Y|N]
[set rpc_router_retry_count=number-of-retries-if-ENOBUFS-or-
ENOMEM-occurs]
[set rpc_router_retry_interval=interval-between-retries-if-
ENOBUFS-or-ENOMEM-occurs]
[set ipc_backlog_count=length-of-queue-storing-connection-
establishment-requests]

[set statistics=Y|N]
[set name_domain_file_use=Y|N]
[set all_node_extend_number=maximum-number-of-nodes-after-
domain-reconfiguration]
[set all_node_ex_extend_number=maximum-number-of-nodes-after-
domain-reconfiguration-by-using-
domain-definition-files]
[set prc_current_work_path=path-name-of-the-directory-under-
which-the-current-working-directory-is-
created]
[set rpc_max_message_size=maximum-size-of-a-message-sent-or-
received-by-an-RPC]
[set uap_trace_file_put=Y|N]
[set dcstart_wakeup_retry_count=number-of-error-retries-for-
OpenTPI-startup-notification]
[set dcstart_wakeup_retry_interval=error-retry-interval-for-
OpenTPI-startup-notification]

```

```
[set nam_prf_trace_level=NAM-event-trace-acquisition-level]
[set fil_prf_trace_option=0|1]
[set
fil_prf_trace_delay_time=file-access-processing-time-threshold-which-becomes-FIL-event-trace-collecti
on-condition]
[set jnl_prf_event_trace_level=collection-level-for-JNL-performance-verification-trace]
[set jnl_fileless_option=Y|N]
[set watch_time=maximum-response-waiting-time]
```

■ command format

```
{{dcbindht -h host-name
[-n network-name [ ,network-name] . . . ]}}
```

■ putenv format

```
[putenv LANG LANG-setting]
```

Function

The system common definition defines the common execution environment of an OpenTP1 system.

Explanation

set format

■ `rpc_trace=Y|N~<<N>>`

Specify whether an RPC trace is to be collected.

Y

An RPC trace is collected.

N

An RPC trace is not collected.

When an RPC trace is collected, the processing speed may be reduced and the RPC may return an error due to a timeout. In this case, increase either of the following values, which are the maximum amount of response waiting time (default: 180 sec.), to an appropriate value:

1. The maximum response waiting time specified in the `watch_time` operand of the system common definition, user service definition, or user service default definition
2. The maximum response waiting time that the RAP-processing server inherited from the client

Whether the RAP-processing server inherits the maximum response waiting time from

the client is specified in the `DCWATCHTIMINHERIT` operand of the client environment definition (for TP1/Client/W or TP1/Client/P) or in the `dcwatchtiminherit` operand of the TP1/Client/J environment definition (for TP1/Client/J).

If `Y` is specified in the `DCWATCHTIMINHERIT` or `dcwatchtiminherit` operand, use the maximum response waiting time indicated in 2 above.

If `N` is specified in the `DCWATCHTIMINHERIT` or `dcwatchtiminherit` operand, or if these operands are not specified, use the maximum response waiting time indicated in 1 above.

When the remote API facility is used, the RPC trace for RAP-processing clients cannot be acquired even if `Y` is specified in this operand.

This operand can also be specified in the user service definition (or the RAP-processing listener service definition) and the user service default definition.

The priorities of specified values are (1.>2.>3.):

1. User service definition or RAP-processing listener service definition
2. User service default definition
3. System common definition

- `rpc_trace_name="RPC-trace-collection-file-name"~<path name> <<$DCDIR/spool/rpctr>>`

Specify the path name of the file for collection of the RPC trace.

In the path name, the maximum length of the name of the file for acquiring the RPC trace is 13 characters. The default file name is `rpctr`.

To specify an environment variable in a path name, make sure that the path name begins with the environment variable (example: `$DCDIR/tmp/file-name`).

This operand can also be specified in the user service definition (or the RAP-processing listener service definition) and the user service default definition.

The priorities of specified values are (1.>2.>3.):

1. User service definition or RAP-processing listener service definition
2. User service default definition
3. System common definition

- `rpc_trace_size=RPC-trace-collection-file-capacity~<unsigned integer> ((1024-2147483648)) <<4096>> (Unit: bytes)`

Specify the capacity of the file for collection of the RPC trace.

This operand can also be specified in the user service definition (or the RAP-processing listener service definition) and the user service default definition.

The priorities of specified values are (1.>2.>3.):

1. User service definition or RAP-processing listener service definition
2. User service default definition
3. System common definition

Even if you specify 4096 or less for this operand in the system common definition, the user service default definition, or the user service definition, if the length of the transmitted text exceeds the specified value, the size of the trace file to be created may be larger than the value specified by this operand.

- `name_port=name-service-port-number~<unsigned integer> ((5001-65535)) <<10000>>`

Specify the port number that becomes the address of the name service.

If creating a multi-OpenTP1 system, specify a different port number for each system. Specify a different port number also if a program other than an OpenTP1 system is using a specific port number.

The port number specified using this operand must not be used by other programs.

Note that the operating system assigns certain numbers automatically. You should not use such a number for the port number. The numbers assigned by the operating system differ depending on the type and version of the operating system. For details, see the documentation for your operating system.

- `system_id=OpenTP1-identifier~<1-2 character identifier>`

Specify an OpenTP1 identifier.

If you change the value specified in this operand, you need to initialize the checkpoint dump file.

- `all_node="node-name[:port-number][:high]" [, "node-name[:port-number][:high]" ...]`

Specify the names of all nodes of the OpenTP1 system and the port numbers whose name server is used as a well-known port number. If this operand is not specified, an OpenTP1 system formed from the local node only is assumed.

When you use the service information prioritizing function, specify `:high`, which is the service information prioritizing keyword, after specifying of the node whose service information is to be selected at high priority (preferred node). If the port number is omitted, specify `:high` after the node name. This keyword must be specified at the end of the specification value. If the keyword delimiter (`:`) is omitted or is specified in an incorrect position, the definition becomes invalid. If the definition is invalid, error message KFCA00606-E (host undefined) or KFCA00607-E (invalid port number) is output, and startup of OpenTP1 fails.

If the system is not in a multi-OpenTP1 configuration, do not specify a host name (or IP address) that indicates the local host or a loopback address (an IP address beginning with 127) in *node-name*. If you do so, the performance of transactions may be adversely affected or the OpenTP1 system may go down.

If you have created a multi-OpenTP1 system, you can specify the host name (or IP address) of the local host as a node name in this operand. However, each port number must be unique. Note that you must not specify the name of a host that has an IP address that begins with 127 (example: 127.0.0.1), such as a loopback address. Doing so might adversely affect global search and other facilities.

When you specify `Y` for the `name_notify` operand and use the startup notification facility, a startup notification is sent to the instance of OpenTP1 that starts on the node specified in this operand. By using the startup notification facility, OpenTP1 can manage connection establishment and communicate with more accuracy.

When you use the global archive journal service, specify this operand as follows:

- For the archive-journal source node, include the node name of the archive-journal node.
- For the archive-journal node, include the node names of all the archive-journal source nodes.

node-name~<1-255 character identifier>

Specify all nodes of the OpenTP1 system. The identifier you specify can consist of alphanumeric characters, periods, and hyphens. You can specify a node name specified in `/etc/hosts`. If you specify a node name longer than 255 characters, the first 255 characters are used as the node name.

port-number~<unsigned integer> ((5001-65535)) <<10000>>

Specify a port number for which the name server uses it as a well-known port number.

If this port number is not specified, a port number for the name service specified in the `name_port` operand is assumed.

Service information prioritizing keyword - `:high`

When using the service information prioritizing function, specify this keyword for the node whose service information is to be selected at high priority (preferred node). For details about the service information prioritizing function, see the manual *OpenTP1 Description*.

Note:

If the node specified in this operand is also specified in the `all_node_ex` operand or if the same node is specified more than once in this operand, the KFCA00604-W message is output to the first operand that is analyzed by

OpenTP1. In this case, the first node that is analyzed is valid. The priority of analysis is as follows (A>B indicates that A takes precedence over B):

- When the same node is specified in both the `all_node` operand and the `all_node_ex` operand

`all_node operand > all_node_ex operand`

- When the same node is specified more than once in the `all_node` (`all_node_ex`) operand

Node that is specified first > node that is specified later

- `node_id=node-identifier~<4 character identifier>`

Specify the identifier of the local node. Each name within an OpenTP1 system must be unique.

If you change the value of this operand, you need to initialize the journal file.

- `rpc_retry=Y|N~<<N>>`

For an OpenTP1 RPC, its server may not be active when a service request is made (for example, because of the system being changed over or the remove server being started up) and this may cause a service request to terminate with an error. In this case, the `rpc_retry` operand is used to specify whether RPC processing is retried.

Y

RPC processing is retried.

N

RPC processing is not retried.

The following describes the types of RPC processing retry.

- Retry of request destination search by the user server

An RPC that uses the name service acquires information from it about the request destination. If the request destination server is not active and information about the request destination cannot be acquired from the name service, the request destination search is retried at the interval specified in the `rpc_retry_interval` operand for the number of times specified in the `rpc_retry_count` operand.

- Retry of request send by the user server

After determining the request destination, the RPC sends a service request to the remote server. In the following cases, the request send is retried the number of times specified in the `rpc_retry_count` operand without waiting for the interval specified in the `rpc_retry_interval` operand:

- The remote server cannot accept service requests or provide services because

the service start function (dc_rpc_mainloop or CBLDCRSV('MAINLOOP')) has not completed.

- A failure or the like has occurred at the remote server, causing a communication error immediately before the service request is sent.

If service requests cannot be accepted or problems such as communication errors cannot be resolved immediately, the service request may terminate in error even when it is retried the number of times specified in the `rpc_retry_count` operand.

- Retry of request send by the system server

OpenTP1 system servers communicate with each other. When a communication error occurs, the request send is retried at the interval specified in the `rpc_retry_interval` operand for the number of times specified in the `rpc_retry_count` operand.

The table below shows the relationship between RPC processing retry types and the specifications of the `rpc_retry_count` and `rpc_retry_interval` operands.

Retry type	rpc_retry_count operand specification	rpc_retry_interval operand specification
Retry of request destination search by the user server	Y	Y
Retry of request send by the user server	Y	N
Retry of request send by the system server	Y	Y

Legend:

Y: The operand specification is valid.

N: The operand specification is invalid.

- `rpc_retry_count=maximum-number-of-rpc-processing-retries~<unsigned integer> ((1-3600)) <<18>>`

Specify the maximum number of retries for the request destination search and request send.

- Request destination search retry: When an RPC that uses the name service cannot acquire information about the request destination
- Request send retry: When the sent service request is not accepted, or a communication error has occurred

This specification is applicable when Y is specified in the `rpc_retry` operand.

■ `rpc_retry_interval=rpc-processing-retry-interval`

Specify the retry interval for the request destination search or request send.

■ `multi_node_option=Y|N~<<N>>`

Specify whether to use the multinode facility with an applicable OpenTP1 node.

Y

The multinode facility is used.

N

The multinode facility is not used.

If Y is specified with no TP1/Multi installed, a warning message is output and the OpenTP1 system halts.

■ `prc_port=port-number-used-by-multinode-linkage-control~<unsigned integer> ((5001-49999))`

Specify the port number to be used by the multinode linkage control function. If N is specified in the `multi_node_option` operand, the `prc_port` operand does not need to be specified. To create a multi-OpenTP1 system, use a different number for each OpenTP1 system.

If the OpenTP1 system in current use is not a multi-system and if any program not under the OpenTP1 system needs to use a particular port number, specify a port number different from that number for process service. Also, specify a port number different from the number for name service specified in the `name_port` operand. The port number specified in the multinode physical definition must be the value specified in the `prc_port` operand. If the setting of this operand is changed, set up the OpenTP1 system again.

The port number specified using this operand must not be used by other programs.

Note that the operating system assigns certain numbers automatically. You should not use such a number for the port number. The numbers assigned by the operating system differ depending on the type and version of the operating system. For details, see the documentation for your operating system.

■ `rpc_delay_statistics=Y|N~<<N>>`

Specify whether to collect communication delay time statistics.

Communication delay time means the time required for actual communication (request send and response send) out of the `dc_rpc_call` function response time.

Communication delay time statistics are collected for synchronous response type RPC only.

Y

Communication delay time statistics are collected.

N

Communication delay time statistics are not collected.

- `my_host="host-name" | MYHOST~<1-to-255-character identifier>`

Specify the network adapter to be used as a host name. The identifier you specify can consist of alphanumeric characters, periods, and hyphens. You cannot specify the identifier in an IP address format. The host name must be mapped with an IP address in the `/etc/hosts` file or by using DNS. Note that, in *host-name*, you must not specify `localhost` or a host whose IP address begins with 127 (example: 127.0.0.1). Only one host name can be specified.

If this operand is omitted or `MYHOST` is selected, the system assumes that the name returned by the `hostname` command has been specified.

When a host name longer than 64 characters is specified, no host name is set in the `set_host` argument during user authentication by a TP1/Client broadcast (`dc_clt_cltin_s` or `dc_clt_cltin`).

- `jp1_use=Y | N~<<N>>`

Specify whether to register an event in the JP1 event service facility.

Y

The event is registered.

N

The event is not registered.

For details about the events to be registered in the JP1 event service facility, see the manual *OpenTP1 Operation*.

- `rpc_message_level=display-level-for-RPC-troubleshooting-messages~<unsigned integer> ((0-2)) <<2>>`

Specify the display level for RPC troubleshooting messages.

0

No RPC troubleshooting messages are displayed.

1

The RPC troubleshooting messages with a display level of 1 or lower are displayed.

2

The RPC troubleshooting messages with a display level of 2 or lower are displayed.

The following shows the RPC troubleshooting messages (KFCA00325-E to KFCA00332-W) and display levels.

Message	Display level
KFCA00325-E	0
KFCA00326-W	2
KFCA00327-W	1
KFCA00328-W	2
KFCA00329-E	0
KFCA00330-E	0
KFCA00331-W	--
KFCA00332-W	1

Legend:

--: Not displayed.

The RPC troubleshooting messages are output to the standard error output.

■ `rpc_multi_tpl_in_same_host=Y|N~<<N>>`

Specify whether more than one OpenTP1 within a host is assumed to be in the same global domain[#] (group specified by the `all_node` operand).

#

Here, a global domain means a set of the following node names:

When `N` is specified for the `name_domain_file_use` operand of the system common definition:

A set of node names specified in the `all_node` and `all_node_ex` operands of the system common definition

When `Y` is specified for the `name_domain_file_use` operand of the system common definition:

A set of node names specified in the domain definition file. Note that the domain definition file is stored at the following location:

- Domain definition file of the `all_node` operand
The `$DCCONFPATH/dcnamnd` directory
- Domain definition file of the `all_node_ex` operand

The `$DCCONFPATH/dcnamndex` directory

Y

More than one OpenTP1 within a host is assumed to be in the same global domain.

N

More than one OpenTP1 within a host is not assumed to be in the same global domain.

The specification of this operand must be changed after OpenTP1 is stopped. After the specification is changed, enter the `dcsetup` command before starting OpenTP1.

- `max_socket_descriptors=maximum-number-of-file-descriptors-for-sockets~<unsigned integer> ((32-2032)) <<64>>`

Specify the maximum number of file descriptors to be used for sockets by the processes under the control of OpenTP1[#].

The processes under the OpenTP1 control[#] exchange the process information with the system service or the user server through the TCP/IP communication using sockets. Therefore, the maximum number of file descriptors for sockets must be changed depending on the number of UAP processes that operate concurrently.

#

Use this operand for OpenTP1 processes other than the MCF services (MCF manager service, MCF communication service, and application startup service). For the MCF services, see *System service information definition* and *System service common information definition*.

Calculate the maximum number of file descriptors for sockets using the following formula.

$\uparrow (\text{Number of UAP processes in the local node}^{\#1} + \text{number of system service processes}^{\#2}) / 0.8 \uparrow$

$\uparrow \uparrow$: Rounded up to the nearest whole integer.

#1: The number of UAP processes in the local node is the sum of the following values:

- Number of UAP processes in the local OpenTP1
- Number of transactions to be started concurrently by the CUP (value of the `parallel_count` operand specified in the client service definition)

#2: The number of system service processes in the local OpenTP1.

If the value specified by this operand is too small, the connection cannot be set with other processes under the OpenTP1 control and the process terminates abnormally

after outputting the KFCA00307-E error message.

This operand can also be specified in the user service definition and the user service default definition.

The priority of the specified values in decreasing order is as follows.

For the system server, the priority of the specified values is (1. > 2.):

1. System-specific service definition
2. System common definitions

For the user server, the priority of the specified values is (1. > 2. > 3.):

1. User service definition
2. User service default definition
3. System common definition

■ `rpc_datacomp=Y|N~<<N>>`

Specify whether the OpenTP1 system compresses the user data to be sent when the client requests a service or when the server returns a response to a service request.

The specification of this operand takes effect on the client that issues the `dc_rpc_call` function for service request. Therefore, if the client node specifies `rpc_datacomp=Y`, the compressed user data is sent for a service request message or service response message even if the node with a server that accepts the service does not specify `rpc_datacomp=Y`. This applies to the server system that supports the user data compression facility. On the contrary, if the client node does not specify `rpc_datacomp=Y`, the non-compressed user data is sent for the service request message or service response message even if the node with a server that accepts the service specifies `rpc_datacomp=Y`.

When specifying `rpc_datacomp=Y` at the client node produces no compression effect on the user data, the non-compressed user data is sent for service request. If this specification produces any compression effect on the response message, the compressed user data is sent for response.

Y

The compressed user data is sent when a service is requested or a response is returned to a service request.

N

The non-compressed user data is sent when a service is requested or a response is returned to a service request.

■ `domain_masters_addr="domain-name=host-name-1[:port-number-1][,host-name-2[:port-number-2][,host-name-3[:port-number-3]]]"`

```
[ , "domain-name=host-name-1[:port-number-1][ ,host-name-2[:port-number-2]
[ ,host-name-3[:port-number-3]]]" . . . ]
```

Specify the domain name of the communication destination and the host name (and port number) of the domain-alternate schedule service when the domain-specified RPC is issued. When this definition is specified, the communication can be performed without searching the domain name service when the domain-specified RPC is issued. Therefore, the RPC response time can be reduced.

If the port number is not specified, the value of the `domain_masters_port` operand is assumed.

domain-name~<identifier of at least 1 character>

Specify the domain name of the communication destination.

host-name-1, host-name-2, host-name-3~<1-to-255-character identifier>

Specify the host name of the schedule service.

Specify the host name of priority 1 as host name 1 and the host name of priority 2 as host name 2 and the rest.

If you specify a host name longer than 255 characters, the first 255 characters are used as the host name.

port-number-1, port-number-2, port-number-3~<unsigned integer> ((5001-65535))

Specify the port number of the schedule service.

Specify the port number of priority 1 as port number 1 and the port number of priority 2 as port number 2 and the rest.

- `domain_masters_port=port-number-of-domain-alternate-schedule-service`~<unsigned integer> ((5001-65535))

Specify the port number of the domain-alternate schedule service of the communication destination, which is required to communicate without searching the domain name service when the domain-specified RPC is issued.

The port number specified using this operand must not be used by other programs.

Note that the operating system assigns certain numbers automatically. You should not use such a number for the port number. The numbers assigned by the operating system differ depending on the type and version of the operating system. For details, see the documentation for your operating system.

- `domain_use_dns=Y|N`~<<Y>>

Specify whether to inquire the domain name service when searching for the domain that is not specified in the `domain_masters_addr` operand when the domain-specified RPC is issued.

Y

The domain name service is required.

N

The domain name service is not required.

■ `client_uid_check=Y|N`

~<<HP-UX or Windows: Y, AIX, Linux, Solaris: N>>

Specify whether to use the user authentication facility for TP1/Client/W or TP1/Client/P.

Y

The user authentication facility for TP1/Client/W or TP1/Client/P is used. Note that if you want to apply Trusted System in HP-UX or apply HP-UX Shadow Passwords, specify *s*. Specifying *s* in an OS other than HP-UX results in a definition error.

N

The user authentication facility for TP1/Client/W or TP1/Client/P is not used.

When N is specified, any authentication request from TP1/Client/W or TP1/Client/P is authorized regardless of the log name. When this operand is set to Y (or *s* in HP-UX) in AIX, Linux, Solaris, or HP-UX, the user ID of the `namd` process becomes `root`.

■ `rpc_port_base=minimum-port-number~<unsigned integer> ((5001-65535))`

If processes under control of OpenTP1 are not allocated to well-known ports, you can restrict the receiving port numbers to within a specific range. Specify the minimum port number.

The number of port numbers to be used is the value of the `rpc_process_count` operand (maximum number of server processes to start concurrently) of the process service definition, plus 129. Therefore, specifying the `rpc_port_base` operand validates the receiving port numbers within the specified range. This operand is effective for the OpenTP1 system servers, SUP, SPP, and MHP.

The sum of the values specified in this operand and the `prc_process_count` operand of the process service definition, plus 128 must not exceed 65535. If the sum exceeds 65535, the port numbers ranging from the value specified in this operand to 65535, and port numbers assigned by the operating system will be used.

This operand is ignored and the port numbers assigned by the operating system are used for the processes not allocated to well-known ports under OpenTP1 when:

- This operand is not specified.
- Any port number, which is selected from the range of the minimum port number

to the sum of the minimum port number, the maximum number of concurrently started server processes and 128, is being used when a process is started.

Do not define a well-known port of OpenTP1 or any other program within the range of the minimum port number to the sum of the minimum port number, the maximum number of concurrently started server processes and 128, or as a port number assigned by the operating system if this operand is not specified.

- `prf_trace=Y|N~<<Y>>`

Specifies whether to acquire the performance verification trace.

Y

Acquire the performance verification trace.

N

Do not acquire the performance verification trace.

- `trn_prf_trace_level=trace-acquisition-level~((00000001-00000003))<<00000001>>`

Specifies the level of performance verification trace to be acquired. The event IDs about transactions are 0x4000 to 0x4150. For details on event IDs, see the manual *OpenTP1 Operation*.

00000001

Acquires the performance verification trace information (event IDs 0x4000 to 0x4017)

00000002

Acquires the performance verification trace information about the transaction start event and the transaction end event (event IDs 0x4100 and 0x4150).

00000003

Acquires the performance verification traces of both 00000001 and 00000002.

- `core_suppress_watch_time=time-period-to-suppress-outputting-the-core-dump-about-a-process-being-monitored-in-real-time-for-a-timeout~<unsigned integer>((0-3600))<<0>>` (units: seconds)

Specify the time period during which the system suppresses outputting the core dump about a process that is monitored in real time for a timeout and is forcibly terminated if a timeout occurs.

The system suppresses outputting the core dump about a process for the specified time period since the last time the core dump for the process was output due to a timeout.

If you specify 0 in this operand, the system does not suppress outputting the core dump. The system outputs the core dumps about all the processes that are forcibly

terminated due to a timeout of real-time monitoring.

- `rpc_netmask=subnet-mask-value-specified-in-the-network-definition-file-for-TCP/IP`

When there is a subnet in a network where OpenTP1 is running, specify a dotted decimal form Internet address as the subnet mask value which is specified in the network definition file for TCP/IP. For example, this operand is specified in this way: `rpc_netmask=255.255.255.0`. Note that if you place a space between a dot and a number, the part after the space is ignored.

If the network definition file for TCP/IP does not specify any subnet mask, you do not need to specify this operand.

This operand is valid when the `dcbindht` command definition is specified. When OpenTP1 is running in a network that has a subnet and the `dcbindht` command format definition is specified, you must specify this operand. If you do not specify this operand when OpenTP1 is running in a network that has a subnet, the specification in the `dcbindht` command has no effect. This is because the network name specified in the `dcbindht` command format definition does not match any network address that OpenTP1 recognizes.

To use `dcbindht` with the OpenTP1 system in a network environment having a subnet, all the networks belonging to the OpenTP1 global domain must use the same subnet mask. If those networks do not use the same subnet mask, `dcbindht` may not work correctly.

- `ipc_socketctl_highwater=percentage-of-sockets-at-which-temporary-closing-starts [,percentage-of-sockets-for-which-temporary-closing-is-not-performed] ~<unsigned integer>((0-100))<<100,0>>`

For the `max_socket_descriptors` operand specification value, specify a percentage of sockets at which temporary closing starts.

When the number of file descriptors that are used for the sockets in a process exceeds the following value, OpenTP1 starts temporary closing.

Value specified in the `max_socket_descriptors` operand x (Percentage of sockets at which temporary closing starts/100)

If you specify 0 for the percentage of sockets at which temporary closing starts, temporary closing is executed each time a connection is established. For details about temporary closing, see the manual *OpenTP1 Description*.

You can also specify the percentage of connections that are not to be temporarily closed. The system calculates the number of connections that are not to be temporarily closed as follows:

Value specified in the `max_socket_descriptors` operand x (Percentage of sockets for which temporary closing is not performed/100)

The percentage of sockets for which temporary closing is not performed should be less than the percentage of sockets at which temporary closing starts. If you specify a value greater than the percentage of sockets at which temporary closing starts, the system assumes the same value as the percentage of sockets at which temporary closing starts.

OpenTP1 chronologically manages the connections that are established within a process. When you specify the percentage of sockets for which temporary closing is not performed, the temporary closing requests are sent starting with the oldest connection that was established.

This operand is used to specify the percentage of sockets at which temporary closing starts, as a percentage of the value specified in the `max_socket_descriptors` operand. If a small value is specified for the `max_socket_descriptors` operand and also for this operand (the percentage of sockets at which temporary closing starts), many temporary closing requests occur, affecting the performance or causing communication failures.

You can also specify this operand in the RAP-processing listener service definition, the user service default definition, or the user service definition.

The priority of the specified values is (1.>2.>3.):

1. User service definition or RAP-processing listener service definition
2. User service default definition
3. System common definition

- `ipc_socketctl_watchtime=length-of-time-to-wait-until-the-sockets-are-reusable~<unsigned integer>((0-65535))<<180>>` (unit: seconds)

Specify the length of time (seconds) to wait from the moment the number of file descriptors used for the sockets in the process reaches the value specified in the `max_socket_descriptors` operand until the sockets become reusable due to temporary closing.

Whether the service or service group is to be shut down if a UAP terminates abnormally depends on the specification of the `hold` and `term_watch_time` operands. For details, see the descriptions of the `hold` and `term_watch_time` operands of the user service definition.

Since temporary closing disconnects the connection between processes based on the agreement of the processes, the process that sends the request for temporary closing cannot disconnect the connection until it receives the response. When the process receives the response, the connection is disconnected, and the sockets can be reused.

If no process returns the response to the request for temporary closing after the length of time specified in the `ipc_socketctl_watchtime` operand is exceeded, the process that sent the request is forcibly terminated. If you specify 0 for the `ipc_socketctl_watchtime` operand, the wait time is unlimited.

You can also specify this operand in the RAP-processing listener service definition, the user service default definition, or the user service definition.

The priority of the specified values is (1.>2.>3.):

1. User service definition or RAP-processing listener service definition
2. User service default definition
3. System common definition

- `ipc_conn_interval=length-of-time-to-wait-until-the-connection-is-established~<unsigned integer>((8-65535))<<8>>` (unit: seconds)

Specify the length of time to wait in seconds until the connection is established when data is sent.

Specify the length of time to wait until the system receives the response to the connect() system call that is called in the nonblocking mode.

You can also specify this operand in the user service definition and the user service default definition.

The priority of the specified values is (1.>2.>3.):

1. User service definition
2. User service default definition
3. System common definition

- `ipc_send_interval=interval-for-monitoring-data-transmission~<unsigned integer>((5-32767))<<5>>` (unit: seconds)

Specify the interval for monitoring data transmission.

You can also specify this operand in the user service definition and the user service default definition.

The priority of the specified values is (1.>2.>3.):

1. User service definition
2. User service default definition
3. System common definition

- `ipc_send_count=number-of-times-data-transmission-is-monitored~ <unsigned integer>((1-32767))<<5>>`

Specify the number of times data transmission is monitored until data transmission is completed.

The system monitors the data transmission monitoring time for OpenTP1 which is calculated in seconds as follows:

Value specified in the `ipc_send_interval` operand x Value specified in the `ipc_send_count` operand

You can also specify this operand in the user service definition and the user service default definition.

The priority of the specified values is (1.>2.>3.):

1. User service definition
2. User service default definition
3. System common definition

- `ipc_header_recv_time=length-of-time-to-wait-until-the-communication-control-data-is-received~<unsigned integer>((5-32767))<<10>>` (unit: seconds)

Specify the length of time to wait from when OpenTP1 is notified by TCP/IP that data reception is started until OpenTP1 receives the communication control data.

You can also specify this operand in the user service definition and the user service default definition.

The priority of the specified values is (1.>2.>3.):

1. User service definition
2. User service default definition
3. System common definition

- `name_notify=Y|N~<<N>>`

This operand specifies whether to send a startup notification to the instance of OpenTP1 that starts on the node specified in the `all_node` operand or the `all_node_ex` operand when OpenTP1 in the local node starts, or to have OpenTP1 on the local node receive a startup notification from OpenTP1 on another node.

Y

Uses the startup notification facility

N

Does not use the startup notification facility.

Note that the `namunavl` command operates regardless of the value specified in this operand.

Note:

If multiple OpenTP1s are started in the notification source host or if multiple OpenTP1s start at the same IP address after a system switchover (only 1 LAN board is used), the startup notification facility does not work. Do not specify Y for this operand in such an environment.

- `all_node_ex="node-name[:port-number]" [, "node-name[:port-number]" . . .]`

Specify the node name of the OpenTP1 system that might communicate using an RPC with a specified destination other than the node names specified in the `all_node` operand. Also specify the port number that the name server might use as a well-known port number. When OpenTP1 in the local node starts, a startup notification is issued to all running instances of OpenTP1 in the nodes specified in the `all_node_ex` operand or the `all_node` operand. By using the startup notification facility, OpenTP1 can manage connection establishment and communicate with more accuracy.

node-name~<identifier of 1 to 255 characters>

Specify the names of all nodes in the OpenTP1 system. The identifier you specify can consist of alphanumeric characters, periods, and hyphens. You can specify a node name specified in `/etc/hosts`.

If you specify a node name longer than 255 characters, the first 255 characters are used as the node name. Note that when you specify an IP address, make sure that you do not specify an IP address that begins with 127 (example: 127.0.0.1), such as a loopback address.

port-number~<unsigned integer>((5001-65535))<<10000>>

Specify the port number to be used as a well-known port number by the name server.

If you do not specify a port number, the port number of the name service specified in the `name_port` operand is assumed.

Note:

If the node specified in this operand is also specified in the `all_node` operand or if the same node is specified more than once in this operand, the KFCA00604-W message is output to the first operand that is analyzed by OpenTP1. In this case, the first node that is analyzed is valid. The priority of analysis is as follows (A>B indicates that A takes precedence over B):

- When the same node is specified in both the `all_node` operand and the `all_node_ex` operand

`all_node` operand > `all_node_ex` operand

- When the same node is specified more than once in the `all_node` (`all_node_ex`) operand

Node that is specified first > node that is specified later

- `rpc_server_busy_count=number-of-bundles-that-output-KFCA00356-W-message`
~<unsigned integer>((0-32767))<<20>>

The schedule service registers the received service requests in schedule queues. The schedule queue registration processing uses threads to register multiple service

requests in schedule queues in parallel. However, if the threads to be used for schedule queue registering run short and the schedule service cannot accept service requests, the system outputs the KFCA00356-W message.

In this operand, specify the number of bundles that output the KFCA00356-W message. The KFCA00356-W message is output when the schedule service cannot accept a service request for the first time or when the number of times the schedule service cannot accept service requests exceeds the value specified in this operand after the KFCA00356-W message is output.

When you specify 0 for this operand, the KFCA00356-W message will not be output regardless of the number of times the schedule service cannot access service requests. When you specify 1, the KFCA00356-W message will be output each time the schedule service fails to accept a service request.

- `rpc_send_retry_count=number-of-retries-if-an-error-occurs-during-TCP/IP-connection ~<unsigned integer>((0-65535))<<0>>`

Even if any of the errors ECONNREFUSED (239), EHOSTUNREACH (242), and ENETUNREACH (229) occurs during a TCP/IP connection when the server sends a response, you may be able to avoid the error by specifying the number of retries in this operand.

When you specify 0 for this operand, no retry is performed even if any of the above errors occurs during a TCP/IP connection.

When you specify 1 to 65535 and if any of the errors occurs during a TCP/IP connection, retries are performed after waiting for the period of time specified in the `rpc_send_retry_interval` operand.

This operand can also be specified in the user service definition and the user service default definition.

The priorities of specified values are (1.>2.>3.):

1. User service definition
2. User service default definition
3. System common definition

- `rpc_send_retry_interval=interval-between-retries-if-an-error-occurs-during-TCP/IP-connection~<unsigned integer>((0-300000))<<0>> (unit: milliseconds)`

Even if any of the errors ECONNREFUSED, EHOSTUNREACH, and ENETUNREACH occurs during a TCP/IP connection when the server sends a response, you may be able to avoid the error by specifying the interval in milliseconds between retries in this operand.

When you specify 0 for this operand, no interval is taken between retries to establish a TCP/IP connection. You cannot specify 1 to 19. If any value of 1 to 19 is specified,

20 is assumed.

This operand becomes valid when any value of 1 to 65535 is specified in the `rpc_send_retry_count` operand.

This operand can also be specified in the user service definition, the user service default definition, and each system service definition.

The priorities of specified values are (1.>2.>3.>4.):

1. User service definition
2. User service default definition
3. Each system service definition
4. System common definition

- `thdlock_sleep_time=thread's-waiting-time-if-a-lock-conflict-occurs-among-threads~<unsigned integer>((1-32767))<<15>>` (unit: milliseconds)

Specify the thread's waiting time in milliseconds when the lock control function that the process under OpenTP1 internally uses cannot acquire a lock because a lock conflict occurs among threads.

If you specify a value smaller than the default (15), the `select` system call is issued more frequently, causing the CPU utilization to increase.

Note:

When more than one thread attempts to lock a resource at the same time, the threads other than the one that has locked the resource wait until the resource is unlocked. When the threads wait, they issue the OS `select` system call according to the value specified in this operand. Note that the actual wait time might be longer than the value specified in this operand because the wait time precision for the `select` system call differs depending on the OS or machine environment.

The following table shows sample results of wait time measurement for this operand in different OSs.

Note that the values in the table might be different in some machine environments due to factors such as the OS version and whether patches have been applied. For details about the wait time precision for the `select` system call, consult the OS specifications.

OS name	Version	thdlock_sleep_time operand value	Wait time
AIX	5L V5.3	Specified value	Specified value

OS name	Version	thdlock_sleep_time operand value	Wait time
Linux	5 (x86) 5 (IPF) (64-bit architecture)	Specified value	Specified value + about one millisecond
HP-UX	11i V2 (IPF) 11i V3 (PA-RISC)	1-9	About 10 milliseconds
		10-19	About 20 milliseconds
Solaris	8	1-9	About 10 milliseconds
		10-19	About 20 milliseconds
Windows	Windows Server 2003	1-15	About 16 milliseconds
		16-31	About 31 milliseconds

This operand can also be specified in each system service definition.

The priority of specified values is (1.>2.):

1. Each system service definition
2. System common definition

■ `ipc_listen_sockbufset=Y|N ~<<N>>`

Specify whether to set the TCP/IP send and receive buffer sizes for the listen socket that OpenTP1 uses for inter-process communication during generation of the socket as specified in the `ipc_sendbuf_size` and `ipc_rcvbuf_size` operands.

Y

Sets the TCP/IP send and receive buffer sizes for the listen socket.

N

Does not set the TCP/IP send and receive buffer sizes for the listen socket.

The TCP/IP send and receive buffer sizes specified in the `ipc_sendbuf_size` and `ipc_rcvbuf_size` operands are applied after the OpenTP1 process receives a connection establishment request and establishes a connection. Because the buffer sizes change after a connection is established, differences in buffer size between the connection source and destination might cause a communication delay.

If TP1/Client communicates with TP1/Server Base on the same node, Hitachi recommends that you specify Y in this operand.

You can also specify this operand in the user service definition and user service default definition.

The priority of specified values is as follows (1.> 2.>3.):

1. User service definition
2. User service default definition
3. System common definition

- `ipc_rcvbuf_size=receive-buffer-size-of-TCP/IP~<unsigned integer>`
`((8192-1048576))<<8192>>` (unit: bytes)

Specify the size of the receive buffer of TCP/IP allocated for each connection. When using devices with high speed communication or using a large MTU, the performance can be improved if the value in this operand is increased.

Notes:

TCP returns a delivery acknowledge (ACK) packet in response to the received data. If the length of the received data is much smaller than the size of the receive buffer, TCP may not return ACK immediately (delayed ACK).

If a great value is specified in this operand and a small amount of data is exchanged, the performance may be degraded due to delayed ACK. For details about delayed ACK, see the TCP/IP documentation.

Make sure that the value of this operand does not exceed the TCP/IP receive buffer size that can be specified in the OS. Note that the TCP/IP receive buffer size specified in this operand is not applied for the global archive journal facility. When you use the facility, specify the TCP/IP send-and-receive buffer size in the following operands:

- The `jnl_arc_ipc_buff_size` operand in the journal service definition
- The `jnl_arc_ipc_buff_size` operand in the global archive journal service definition

This operand can also be specified in the user service definition, the user service default definition, and each system service definition.

The priorities of specified values are:

For a system server (1.>2.):

1. Each system service definition
2. System common definition

For a user server (1.>2.>3.)

1. User service definition
2. User service default definition
3. System common definition

- `ipc_sendbuf_size=send-buffer-size-of-TCP/IP~<unsigned integer>`
`((8192-1048576))<<8192>>` (unit: bytes)

Specify the size of the send buffer of TCP/IP allocated for each connection. When using devices with high speed communication or using a large MTU, the performance can be improved if the value in this operand is increased.

Notes:

Make sure that the value of this operand does not exceed the TCP/IP send buffer size that can be specified in the OS. Note that the TCP/IP send buffer size specified in this operand is not applied for the global archive journal facility. When you use the facility, specify the TCP/IP send-and-receive buffer size in the following operands:

- The `jnl_arc_ipc_buff_size` operand in the journal service definition
- The `jnl_arc_ipc_buff_size` operand in the global archive journal service definition

This operand can also be specified in the user service definition, the user service default definition, and each system service definition.

The priorities of specified values are:

For a system server (1.>2.):

1. Each system service definition
2. System common definition

For a user server (1.>2.>3.)

1. User service definition
2. User service default definition
3. System common definition

- `rpc_router_retry_count=number-of-retries-if-ENOBUFS-or-ENOMEM-occurs~<unsigned integer>((0-65535))<<30>>`

Specify the number of times message reception (including issuance of the `accept` system call) is retried if `ENOBUFS` occurs for the `accept` system call internally issued by TP1/Server Base or if `ENOMEM` occurs during message reception.

- `rpc_router_retry_interval=interval-between-retries-if-ENOBUFS-or-ENOME M-occurs~<unsigned integer>((0-3600000))<<0>>`(unit: milliseconds)

Specify the interval for retrying message reception (including issuance of the `accept` system call) if `ENOBUFS` occurs for the `accept` system call internally issued by TP1/Server Base or if `ENOMEM` occurs during message reception. If you specify 0 in this operand, message reception is retried with no interval. If any value of 1 to 9 is

specified, 10 is assumed.

- `ipc_backlog_count=length-of-queue-storing-connection-establishment-requests~<unsigned integer>((0-4096))<<0>>`

Specify the length of the queue storing connection establishment requests. (Number of backlogged `listen` system calls)

The actual number to be specified as the number of backlogged `listen` system calls when 0 (default) is specified depends on the OS. For details, see the *Release Notes*.

The actual length of the queue may be longer than the specified value.

The upper and lower limits on the length vary depending on the OS. If the length of the queue is restricted with the upper and lower limits by the OS, the specified value may not be valid. For details about the queue storing connection establishment requests, see your OS or TCP/IP documentation.

This operand can also be specified in the user service definition and the user service default definition.

The priorities of specified values are (1.>2.>3.):

1. User service definition
2. User service default definition
3. System common definition

- `statistics=Y|N~<<N>>`

Specify whether to acquire system statistics and place them in shared memory.

Y

Acquires system statistics and places them in shared memory.

N

Does not acquire system statistics and does not place them in shared memory.

To view the acquired system statistics, use the `dcstats` command to output the system statistics to the journal file or use the `dcreport` command to output the system statistics to the standard output.

The system statistics to be acquired and placed in shared memory are the same as the statistics that are acquired when the `-s` option is specified in the `dcstats` command.

The acquired system statistics are accumulated since the start of OpenTP1 and may overflow the memory. If you run the system for many hours, use the `dcstats` command to output the system statistics to the journal file or specify the `-r` option in the `dcreport` command to periodically reset the value.

■ `name_domain_file_use=Y|N~<<N>>`

Select the domain configuration to be enabled when OpenTP1 is started or restarted.

For details on how to specify a definition file when using the `namchgfl` command to change the domain configuration, and for relevant notes, see the manual *OpenTP1 Operation*.

Y

Enables the domain configuration specified in domain definition files.

N

Enables the domain configuration specified in the system common definition.

There are three domain definition files. One is used for specifying `all_node`, another is used for specifying `all_node_ex`, and the third is used for specifying a preferred node. The method of specifying a definition file for a preferred node is the same as that used for specifying `all_node` or `all_node_ex`. The file names are arbitrary. To enable this operand, place these domain definition files in their appropriate directories.

Domain definition file for specifying `all_node`:

The `$DCCONFPATH/dcnamnd` directory

Domain definition file for specifying `all_node_ex`:

The `$DCCONFPATH/dcnamndex` directory

Definition file for specifying a preferred node:

The `$DCCONFPATH/dcnampr` directory

If a node name or port number in these files is invalid, error message KFCA00656-E (invalid node name), KFCA00657-E (invalid port number), or KFCA00666-E (host undefined) is output, and startup of OpenTP1 fails.

If the node specified in the preferred node definition file is not specified in the domain definition file for `all_node`, error message KFCA00603-W (undefined in `all_node`) is output and OpenTP1 is started by ignoring the specification of the preferred node. For a node that is correctly defined in another line within the same file, the specification of a preferred node is invalid.

If there is more than one domain definition file in one directory, a single domain (OpenTP1 system) is created using the definitions in all of the domain definition files. In the following cases, an OpenTP1 system is created as a domain consisting of only the local node:

- When domain definition files are not placed in the appropriate directories
- When a directory for storing domain definition files does not exist
- When no nodes are specified in the domain definition files

OpenTP1 might not operate correctly if the setting of this operand is changed while OpenTP1 is operating.

If **Y** is specified, the `namndchg` command returns an error. If **N** is specified, the `namchgfl` command returns an error.

The following table explains the differences between specifying **Y** and **N** in the `name_domain_file_use` operand.

OpenTP1 status	Value of the <code>name_domain_file_use</code> operand	
	Y	N
Normal startup	The command creates an OpenTP1 system, ignoring the <code>all_node</code> and <code>all_node_ex</code> operands of the system common definition.	The command creates an OpenTP1 system on the basis of the <code>all_node</code> and <code>all_node_ex</code> operands of the system common definition.
Restart	The command creates an OpenTP1 system, ignoring the <code>all_node</code> and <code>all_node_ex</code> operands that were used when the restart occurred.	The command creates an OpenTP1 system on the basis of the <code>all_node</code> and <code>all_node_ex</code> operands that were used when the restart occurred.
Operating	The domain configuration can be changed by using the <code>namchgfl</code> command. The command reconfigures the domain on the basis of the domain definition files existing when the command is executed.	The domain configuration cannot be changed by using the <code>namchgfl</code> command. The value N set in the <code>name_domain_file_use</code> operand when OpenTP1 was started causes an environment error, and the command returns an error.
	The domain configuration cannot be changed by using the <code>namndchg</code> command. The value Y set in the <code>name_domain_file_use</code> operand when OpenTP1 was started causes an environment error, and the command returns an error.	The domain configuration can be changed by using the <code>namndchg</code> command. The command reconfigures the domain on the basis of the settings of the <code>all_node</code> and <code>all_node_ex</code> operands when the command is executed.

- `all_node_extend_number=maximum-number-of-nodes-after-domain-reconfiguration~<unsigned integer> ((0-65535)) <<64>>`

Specify the maximum number of nodes that make up the domain when you use the `namndchg` or `namchgfl` command to change the domain configuration.

If you use the `namndchg` command, specify the maximum number of nodes to be specified in the `all_node` operand of the system common definition. If you use the `namchgfl` command, specify the maximum number of nodes to be specified in the

`all_node` operand in the domain definition files.

The command allocates shared memory area for the number of nodes calculated as follows:

The number of nodes specified in this operand plus the value of `all_node` operand in the system common definition or plus the number of nodes specified in the domain definition file used to specify the `all_node` operand.

If the number of nodes you specify in the system common definition or that domain definition file is greater than the value of the `all_node_extend_number` operand, the `namndchg` or `namchgfl` command returns an error, and outputs messages KFCA00616-E and KFCA00654-E. If the command returns an error, the domain configuration is not changed.

- `all_node_ex_extend_number=maximum-number-of-nodes-after-domain-reconfiguration-by-using-domain-definition-files~<unsigned integer> ((0-65535)) <<64>>`

Specify the maximum number of nodes that make up the domain when you use the `namchgfl` command with the `-e` option to change the domain configuration.

In this operand, specify the maximum number of nodes that can be specified in the `all_node_ex` operand in the domain definition files.

The command allocates shared memory area for the number of nodes calculated as follows:

The number of nodes specified in this operand plus the number of nodes specified in the domain definition file used to specify the `all_node_ex` operand.

If the number of nodes specified in that domain definition file is greater than the value specified in this operand, the `namchgfl` command returns an error, and outputs message KFCA00655-E. If the command returns an error, the domain configuration is not changed.

- `prc_current_work_path=path-name-of-the-directory-under-which-the-current-working-directory-is-created~<path name> <<$DCDIR>>`

Specify the absolute path name for the directory used to create the current working directory that OpenTP1 processes will use. The actual current working directory for a process is created as follows:

path-specified-in-this-operand / `tmp/home/process-specific-directory`

If the path name specified in this operand is incorrect or if this operand is not specified, the current working directory is created under `$DCDIR`. That is, the actual current working directory for a process is created as follows:

`$DCDIR/tmp/home/process-specific-directory`

You can use a maximum of 50 characters to specify the path name.

If the `tmp` directory exists when OpenTP1 is started or the `dreset` command is executed, the existing `tmp` directory is deleted and a new `tmp` directory is created. If core files are contained in the `tmp` directory specified by this operand, they will be saved in `$DCDIR/spool/save` or the directory specified in the `prc_coresave_path` operand of the process service definition.

The following permissions must be set for the directory specified in this operand:

- A permission that allows the OpenTP1 system administrator to create directories
- A permission that allows the OpenTP1 group to create files (such as core files) in the directories created by the OpenTP1 system administrator

If you use multiple OpenTP1 systems on the same machine, do not specify the same directory in the `prc_current_work_path` operands of two or more OpenTP1 systems. If the specified directory is already being used by another OpenTP1 system, your OpenTP1 system will use the default directory, without using the specified directory.

If you want to change the value of this operand, first terminate OpenTP1 normally, and then change the value of the operand. You will then need to execute the `dreset` command.

After the value of the operand is changed, directories created before the change may remain in the previously specified directory. There are no problems caused by deleting these directories. Before deleting them, terminate OpenTP1 normally.

Hitachi recommends that you set this operand and the `prc_coresave_path` operand of the process service definition on the same partition.

When you specify this operand, do not use the online tester facility.

- `rpc_max_message_size=maximum-size-of-a-message-sent-or-received-by-an-RPC`
~<unsigned integer> ((1-8)) <<1>> (units: MB)

Specify the maximum length of a message that can be sent or received by an RPC call.

If you specify this operand, make sure that the value of this operand is set for all nodes specified in the `all_node` operand of the system common definition. If different values are set, an RPC call (`dc_rpc_call` or `dc_rpc_call_to`) may return a `DCRPCER_NET_DOWN` error when the inter-node load-balancing facility is executed at the destination node.

Note the following points when you send a message larger than 1 MB by specifying this operand:

- Make sure that the versions of the OpenTP1 nodes on which an SPP is running support this operand.

If none of the versions of the OpenTP1 nodes on which the SPP is running supports this operand, the RPC call (`dc_rpc_call` or `dc_rpc_call_to`)

returns a `DCRPCER_NO_SUCH_SERVICE_GROUP` or `DCRPCER_TRNCHK` error.

- Before starting the SPP, start the OpenTP1 node from which you want to issue a service request.

If you start the SPP before starting the OpenTP1 node from which you want to issue a service request, the RPC call (`dc_rpc_call` or `dc_rpc_call_to`) may return a `DCRPCER_NO_SUCH_SERVICE_GROUP` error.

If this operand is specified, the maximum length of a message that can be sent using an RPC call changes from the `DCRPC_MAX_MESSAGE_SIZE` value (1 MB) to the value specified in this operand. However, if you specify no value or 1 in the `rpc_max_message_size` operand, the maximum message length is set to the `DCRPC_MAX_MESSAGE_SIZE` value (1 MB).

Be careful if you specify 2 or a greater value in this operand in an environment that is operating without this operand specified. In this situation, if you attempt to send a message larger than 1 MB, a memory shortage may occur. Before you add this operand, consider the amount of installed memory and the maximum amount of memory that the process can use. You can obtain the maximum amount of memory required when the schedule service from the following formula:

Maximum required memory = Value specified in the `rpc_max_message_size` operand x 64 x 2 (units: MB)

If you acquire an RPC trace after sending a message larger than 1 MB by specifying 2 or a greater value in this operand, the amount of memory used increases. Acquiring the RPC trace may take some time.

OpenTP1 may not operate correctly if you use any of the following operations and functions when this operand is specified:

- Specifying the port for the scheduler daemon of a remote service with a communication destination specified (`dc_rpc_call_to`)
- Communication without using the name service (definition command `dcsvgdef`)
- Domain representative schedule service function
- Communication using the XATMI interface
- Communication using a gateway program
- UAP testers (online tester, offline tester, and MCF online tester)

To send a message larger than 1 MB to a CUP on a one-way basis by specifying this operand, use the TP1/Client version that can receive messages larger than 1 MB.

When this operand is specified and a data compression function is used, the command determines the message size from the `in_len` value of the RPC call (`dc_rpc_call` or `dc_rpc_call_to`). The command assumes the message to be larger than 1 MB if

the `in_len` value is larger than 1 MB, even though the length of the compressed message is not larger than 1 MB.

- `uap_trace_file_put=Y | N`

~<<N>>

Specify whether to acquire the trace information of a UAP trace in a file.

Y

Trace information is acquired in the UAP trace data file.

If the trace information cannot be acquired in a file, it is acquired in a process-specific area.

N

Trace information is acquired in a process-specific area.

When Y is specified, a maximum of six generations of backup files for the UAP trace data file are acquired by each server when the user server fails or restarts after termination of OpenTP1. Three generations of backup files are acquired when the applicable server terminates normally, and also during abnormal termination accompanied by a core file output. Backup files are stored in the core file storage destination specified in the `prc_coresave_path` operand of the process service definition.

- `dcstart_wakeup_retry_count=number-of-retries-for-OpenTP1-startup-notification~<unsigned integer> ((0-60))<<0>>`

Specify the maximum number of times OpenTP1 startup notification is retried if notification fails.

When the `dcstart` command is used to start OpenTP1, the process server is notified that OpenTP1 has started. If notification fails, the `dcstart` command automatically retries notification. This operand specifies the maximum number of times notification is retried.

If this operand is omitted or if 0 is specified in the operand, the command does not retry notification.

- `dcstart_wakeup_retry_interval=retry-interval-for-OpenTP1-startup-notification~<unsigned integer> ((1-60))<<10>> (units: seconds)`

Specify the interval for retrying OpenTP1 startup notification if notification fails.

This operand takes effect when 1 or a greater value is specified in the `dcstart_wakeup_retry_count` operand.

The retry interval is the period during which the command waits after failing to notify the process server of startup before it attempts notification again.

- `nam_prf_trace_level=NAM-event-trace-acquisition-level`
~((00000000-00000007)) <<00000003>>

Specify the acquisition level of the trace information related to the name service (NAM event trace) of the performance verification trace information. The range of event IDs for the NAM event trace is from 0xf000 to 0xffff. For details about event IDs, see the manual *OpenTP1 Operation*. Note that if any value other than the following is specified, 00000003 is assumed.

00000000:

A NAM event trace is not acquired.

00000001:

A NAM event trace related to the registration and deletion of service group information or other such events (event IDs 0xf1000 to 0xf1fff) is acquired.

00000002:

A NAM event trace related to communication between the name server (namd) and remote node (event IDs 0xf000 to 0xf0ff) is acquired.

00000003:

A NAM event trace that includes both 00000001 and 00000002 is acquired.

00000004:

A NAM event trace related to communication between the name server (namd) and the processes of UAPs and operation commands is acquired (event IDs 0xf200 to 0xf2ff).

00000005:

A NAM event trace that includes both 00000001 and 00000004 is acquired.

00000006:

A NAM event trace that includes both 00000002 and 00000004 is acquired.

00000007:

A complete NAM event trace (NAM event trace information for 00000001, 00000002, and 00000004) is acquired.

You can use the `prfget` command to export the acquired trace to a file or use the `prfed` command to edit and output the acquired trace. For details about the `prfget` and `prfed` commands, see the manual *OpenTP1 Operation*.

This operand requires installation of TP1/Extension 1. If this operand is specified when TP1/Extension 1 has not been installed, operation cannot be guaranteed.

- `fil_prf_trace_option=0|1`

~<<1>>

Specify whether to acquire a FIL event trace.

0

A FIL event trace is not acquired.

1

If processing of a request to access an OpenTP1 file takes longer than the time specified in the `fil_prf_trace_delay_time` operand, an FIL event trace is acquired as delay information.

Do not specify a value other than 0 or 1 for this operand. If such a value is specified, the operation is not guaranteed.

A FIL event trace is acquired for event IDs 0x6805, 0x6807, 0x6905, 0x6907, and 0x6909.

To output or edit and output the acquired trace to a file, use the `prfget` or `prfed` command. For details about event IDs or these commands, see the manual *OpenTP1 Operation*.

Use this operand only when TP1/Extension 1 is installed. If TP1/Extension 1 is not installed, the operation is not guaranteed.

- `fil_prf_trace_delay_time=file-access-processing-time-threshold-which-becomes-FIL-event-trace-acquisition-condition`

~<unsigned integer> ((1-65535))<<10>> (Unit: seconds)

Specify the file access processing time threshold that becomes the FIL event trace acquisition condition.

Note:

The time precision for monitoring the threshold is in seconds. Consequently, depending on the timing, a FIL event trace may be acquired within the file access processing time that is shorter than the value specified in this operand. Note that as the threshold becomes smaller, it is more prone to be affected by error.

- `jnl_prf_event_trace_level=acquisition-level-for-JNL-performance-verification-trace`

~((00000000-00000002)) <<00000001>>

Specify the acquisition level for the JNL performance verification trace for acquiring performance verification trace information. The event IDs for the JNL performance verification trace are from 0xc000 to 0xcfff. For details about event IDs, see the manual *OpenTP1 Operation*. When a value other than those listed below is specified,

00000001 is assumed.

00000000

A JNL performance verification trace is not acquired.

00000001

A JNL performance verification trace (event IDs 0xc202, 0xc203, 0xc401, and 0xc402) is acquired.

00000002

A JNL performance verification trace (event IDs 0xc001-0xc402) is acquired.

If 00000002 is specified as the acquisition level, all trace information can be acquired. However, since doing so adversely impacts online performance, we recommend that you use the default output level except during debugging.

To output or edit and output the acquired trace to a file, use the `prfget` or `prfed` command. For details about event IDs or these commands, see the manual *OpenTP1 Operation*.

The use of this operand assumes that TP1/Extension 1 is installed. If TP1/Extension 1 is not installed, the operation is not guaranteed.

■ `jnl_fileless_option=Y|N~<<N>>`

Specify whether to use journal fileless mode for the applicable OpenTP1 nodes.

Y

Journal fileless mode is used.

N

Journal fileless mode is not used.

In journal fileless mode, the following facilities cannot be used:

- System journal facility
- Global archive journal facility
- Transaction facility
- Transaction facility provided by the XA resource service
- DAM, TAM, and other resource manager facilities provided by OpenTP1
- Statistics acquisition facility

Although use of the statistics acquisition facility does not result in an error, no statistics are acquired.

Using any of the above facilities except the statistics acquisition facility causes

OpenTP1 startup processing to fail.

Because the transaction facility is unavailable, OpenTP1 assumes that the `atomic_update` operand in the user service definition or user service default definition has been set to `N` even when `Y` is set.

The XA linkage facility is also unavailable because the transaction facility is unavailable. For this reason, you do not need to use the `trnlncrm` command to register the resource manager in OpenTP1.

For details about the facilities and commands that cannot be used in journal fileless mode, see the manual *OpenTP1 Operation*.

- `watch_time=maximum-response-waiting-time~<unsigned integer> ((0-65535)) <<180>>` (Units: seconds)

Specify the maximum waiting time between sending a service request and receipt of a response when communicating between processes by RPC.

OpenTP1 may suspend termination processing for the length of time specified in this operand. Therefore, if you specify a large value, the termination processing of OpenTP1 may take some time.

If no response is received within the specified time, RPC returns a transmission timeout error.

Specify 0 if the system is to wait for a response. When you specify 0, OpenTP1 may not terminate.

This operand can also be specified in some system service definitions other than the system common definition. The values specified in system service definitions prevail over those specified in the system common definition.

Use the default for this operand.

When this operand is specified only in the system common definition, it becomes valid for the entire OpenTP1 system. Therefore, we recommend that you do not change the operand unless special tuning is necessary. Even if some tuning is necessary, settings for user services should be specified in the user service default definition.

If a value that is much greater or smaller than the default is specified, a failure may occur causing OpenTP1 to go down.

command format

The command format is described on the next page.

putenv format

- `LANG LANG-setting~<character string>`

Assign environment variable LANG. The LANG setting must be a language type

defined by the OS. If this variable is not assigned, or if an invalid value is assigned, the system assumes the English language.

dcbindht (Specify host name for OpenTP1 communication or for using system switchover facility)

Format

```
{{dcbindht -h host-name [-n network-name[,network-name]. . . ]}}
```

Function

This command specifies which network adapter OpenTP1 uses to communicate if the host running OpenTP1 is connected to multiple network adapters. If multiple IP addresses can be assigned to a single network adapter, you specify which IP address OpenTP1 uses for communication. You also need to specify an IP address when the host performs system switchover by inheriting the IP address.

This command explicitly notifies the communication destination OpenTP1 that the source OpenTP1 is running using the IP address corresponding to the host name specified in the `dcbindht` command.

If the machine is connected to only one network adapter and has only one IP address, the IP address used by OpenTP1 is physically fixed to one. In that case, you do not need to specify this command.

Specify this command if multiple OpenTP1 systems operate at one host in the system switchover that inherits the IP address like a 2-to-1 switchover organization or mutual switchover organization. If a connection is made between the networks over the router, specify all networks that communicate via the network adapter specified here.

If you do not specify this command, TCP/IP determines the network adapter or IP address to be used for access. Note that if you do not specify this command even if multiple IP addresses or multiple network adapters are used, an undesired IP address may be reported to the communication destination OpenTP1 and a communication error might occur.

As shown below, OpenTP1 uses the IP address corresponding to the specified host name for all communications if you do not specify a network name in this definition. You cannot specify this command more than once without a specified network name in the definition. If you specify this command more than once, the first command takes precedence, and subsequent commands are ignored. If a command specified with a network name and a command without a network name both exist, the command specified with a network name takes precedence.

System common definition

```

dcbindht -h HOST_A -n NET_A,NET_B      # If the send destination
                                         network addresses are
                                         # NET_A and NET_B, host name
                                         HOST_A is bound and sent.
dcbindht -h HOST_B                     # If the send destination
                                         network address is other than
                                         # NET_A and NET_B, host name
                                         HOST_B is bound and sent.
dcbindht -h HOST_C                     # Even if this definition
                                         is made, host name HOST_B,
                                         # which is defined before,
                                         is validated.

```

When you use this specification in a network environment having a subnet, you also need to specify the `rpc_netmask` operand in the set format definition, which is a system common definition.

If you do not specify the `rpc_netmask` operand when OpenTP1 is running in a network having a subnet, the specification in the `dcbindht` command has no effect. This is because the network name specified in the `dcbindht` command format definition does not match any network address that OpenTP1 recognizes. Note that all the networks belonging to the OpenTP1 global domain must use the same subnet mask specified in the `rpc_netmask` operand.

Option

- `-h host-name~<1-255 character identifier>`

Specify the applicable host name or the host name of the network adapter which is used for the OpenTP1 communication. When more than one IP address can be assigned to one network adapter and to perform switchover by inheriting the IP address, specify the host name for the IP address that you want to inherit. The identifier you specify can consist of alphanumeric characters, periods, and hyphens. You cannot specify the identifier in an IP address format. The host name must be mapped with an IP address in the `/etc/hosts` file or by using DNS. If you specify `localhost` or a host whose IP address begins with 127 (example: 127.0.0.1) in `host-name`, a communication error might occur.

Note that when you use `dc_rpc_call_to()`, if the host name specified in this option differs from the host name specified in the `my_host` operand, the operation is not guaranteed.

- `-n network-name~<1-64 character identifier>`

Specify the name of the network to communicate with via a network adapter or an IP address specified in the `-h` option. The network name must be mapped with a network number in the `/etc/networks` file or by using NIS.

You can omit this option. If you omit this option, OpenTP1 uses the network adapter or the IP address corresponding to the host name specified in the `-h` option for all

communications.

Note

- When you connect a host that has multiple IP addresses to the same network by using the multiple IP addresses, specify the host name set in the `-h` option of the `dcbindht` definition command in the `my_host` operand as well. OpenTP1 pairs the connection destination and the information specified in the `my_host` operand. If the host name specified in the `-h` option in the `dcbindht` definition command differs from the value specified in the `my_host` operand, multiple connections may be used even if the connection destination is the same.
- Always define this specification if the multiple OpenTP1 systems operate within one host and the system switchover organization that inherits the IP address is established. If this specification is omitted, the communication to the target OpenTP1 may be impossible.

With the configuration shown in Figure 3-1, IP address `ip=a` or `ip=x` is used to communicate from OpenTP1 B to OpenTP1 A.

When the OpenTP1 system accepts a service request, it stores the IP address used to collect the service address information.

If a system switchover occurs after collecting the address information using IP address `ip=x`, `ip=x` is inherited from OpenTP1 X to OpenTP1 X'. OpenTP1 B remains storing the IP address as `ip=x` when collecting the address information. When a service request is sent in this state, the service request which should have been sent to OpenTP1 A may be sent OpenTP1 X'. (Figure 3-2.)

To communicate to the target OpenTP1 system, specify a network adapter which is used for communications by defining the following:

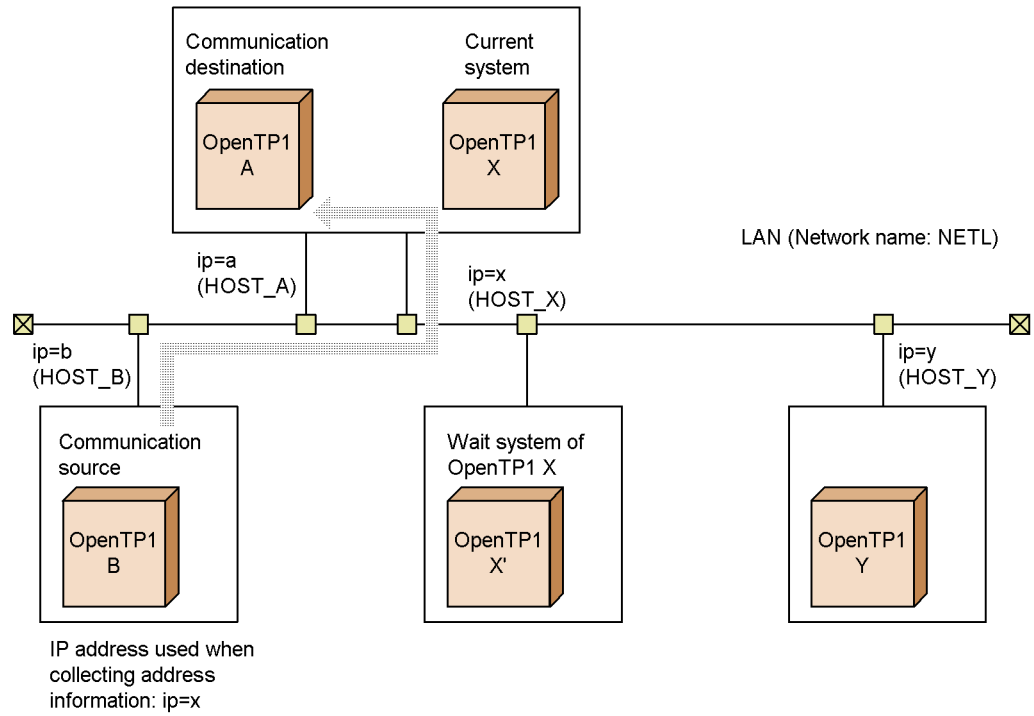
- For OpenTP1 A

```
dcbindht -h HOST_A -n NETL
```

- For OpenTP1 B

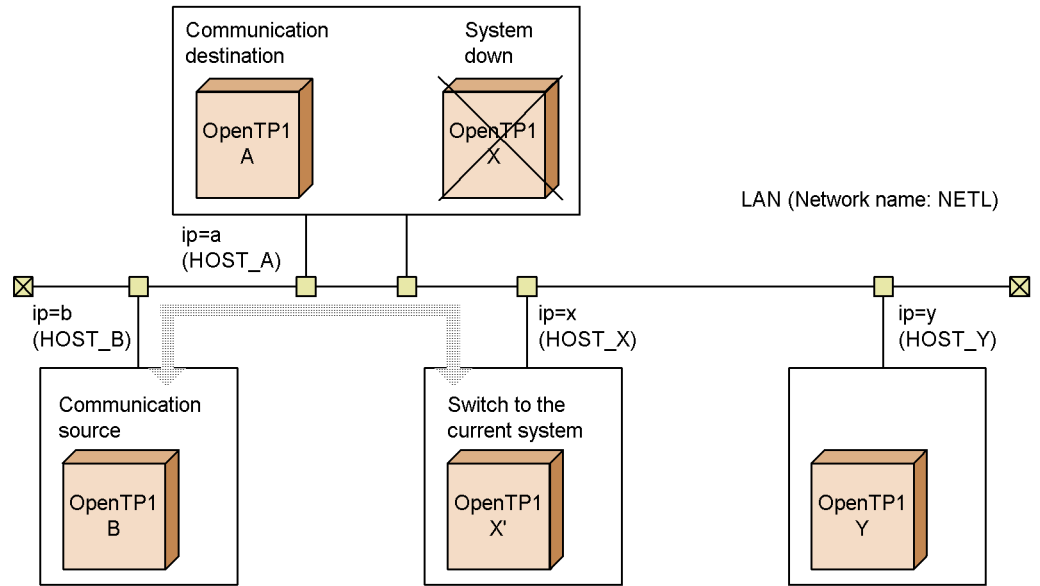
```
dcbindht -h HOST_B -n NETL
```

Figure 3-1: Communication before system switchover



If the `dcbindht` command definition is specified, IP address `ip=a` is used to communicate to OpenTP1 A while the IP address `ip=x` is used to communicate to OpenTP1 X.

Figure 3-2: Communication after system switchover



Lock service definition

Format

■ set format

```
[set lck_limit_foruser=maximum-user-server-concurrent-lock-request-count]
[set lck_limit_fordam=maximum-DAM-service-concurrent-lock-request-count]
[set lck_limit_fortam=maximum-TAM-service-concurrent-lock-request-count]
[set lck_limit_formqa=maximum-MQA-service-concurrent-lock-request-count]
[set lck_wait_timeout=lock-waiting-timeout-value]
[set lck_deadlock_info=Y|N]
[set lck_deadlock_info_remove=normal|force|no]
[set lck_deadlock_info_remove_level=deadlock-information-file-and-timeout-information-file-delete-level]

[set lck_release_detect=interval|pipe]
[set lck_release_detect_interval=maximum-interval-time-for-detecting-unlock]

[set lck_prf_trace_level=acquisition-level-for-LCK-performance-verification-trace-information]
```

■ command format

None

Function

The lock service definition defines the execution environment to use the OpenTP1 exclusive control function.

Explanation

set format

- `lck_limit_foruser=maximum-user-server-concurrent-lock-request-count~<unsigned integer> ((0-327670)) <<512>>`

Specify the maximum number of lock requests that can be generated simultaneously from user servers on this node. Specify 0 to disable use of the exclusive control function.

- `lck_limit_fordam=maximum-DAM-service-concurrent-lock-request-count~<unsigned integer> ((0-327670)) <<512>>`

Specify the maximum number of lock requests that can be generated simultaneously from DAM services on this node.

Use the following formula to compute the number of lock requests.

$$\text{lck_limit_fordam} = \sum_{i=1}^t T_i + \sum_{i=1}^p P_i + 1\#$$

where,

t:

Number of transactions to be executed concurrently

p:

Number of transactions to be executed concurrently to enable access not to be recovered

T:

Number of files opened in one transaction branch plus number of blocks referenced or updated

P:

Number of files opened plus number of blocks referenced and updated in one process of access not to be recovered

#

If the +1 part is not included in the formula, the KFCA01613-E message may be output during execution of the `damrm` command.

- `lck_limit_fortam=maximum-TAM-service-concurrent-lock-request-count~<unsigned integer> ((0-327670)) <<512>>`

Specify the maximum number of lock requests that can be generated simultaneously from TAM services on this node.

Use the following formula to compute the number of lock requests.

$$\text{lck_limit_fortam} = \sum_{i=1}^t (T_i + R_i)$$

t is the number of transactions executed concurrently.

T is the number of tables to be retrieved or updated with one transaction.

R is the number of records to be retrieved or updated with one transaction.

- `lck_limit_formqa=maximum-MQA-service-concurrent-lock-request-count~<unsigned integer> ((0-327670)) <<0>>`

Specify the maximum number of lock requests that can be concurrently issued from

the MQA service on this node. For calculation of the number of lock requests, see the *OpenTP1 TP1/Message Queue User's Guide*.

- `lck_wait_timeout=lock-wait-timeout-value~<unsigned integer> ((0-32767)) <<0>>` (Unit: seconds)

Specify the maximum monitoring time between the point at which a lock request enters a wait state until it is released.

If the wait state is not released after the specified timeout value, the lock service returns an error for that lock request.

Specify 0 to disable a check of the lock waiting time.

- `lck_deadlock_info=Y|N~<<N>>`

Specify deadlock information and timeout information are to be output.

The OpenTP1 system creates a file under `$DCDIR/spool/dclckinf` and outputs information whenever a deadlock or timeout occurs. Delete unnecessary files.

Y

Deadlock information and timeout information are output.

N

Deadlock information and timeout information are not output.

- `lck_deadlock_info_remove=normal|force|no~<<no>>`

Specify deadlock information and timeout information are to be deleted during OpenTP1 startup.

normal

They are deleted when the OpenTP1 starts normally.

force

They are deleted when the OpenTP1 starts.

no

They are deleted when the OpenTP1 starts.

- `lck_deadlock_info_remove_level=deadlock-information-file-and-timeout-information-file-delete-level~<unsigned integer> ((0-24855)) <<0>>` (Unit: days)

Specify the delete level of the deadlock information file and timeout information file.

This format will be valid when specifying `normal` or `force` in the `lck_deadlock_info_remove` operand.

0

All files are deleted.

1-24855

The files created before *the specified value x 24* hours calculated from the lock service startup time are deleted.

- `lck_release_detect=interval|pipe~<<pipe>>`

Specify how to check on when the occupied process is unlocked if the locks conflict. This operand is valid if the process waits for the lock.

`interval`

The lock management area of the shared memory at predetermined intervals is checked. This operand checks if the occupied process performs an unlock by widening a interval gradually from 50 milliseconds to the specified value in the `lck_release_detect_interval` operand. The lock wait time takes much since a retrieval cannot be done until the next interval even if the lock occupancy process unlocks.

`pipe`

Unlock is checked using a pipe file.

An unlock is reported from the occupancy process to the lock wait process. When the lock occupancy process is unlocked, the lock wait process can detect an unlock. The number of dynamic steps of a transaction in which the locks conflict increases more than when specifying `interval`.

Add the result of the following expression to the estimate of the file descriptors since OpenTP1 may simultaneously use pipe files for the value calculated in the following expression:

*number-of-processes-that-are-locked-simultaneously +
number-of-processes-waiting-to-be-locked-simultaneously +
number-of-transaction-recovery-processes-that-can-be-executed-simultaneously*

- `lck_release_detect_interval=maximum-interval-time-for-detecting-unlock~<<unsigned integer> ((10-60000)) <<250>>` (Unit: milliseconds)

Specify the maximum interval time in which the unlock wait process checks an unlock. This operand is valid when `interval` is specified to the `lck_release_detect` operand.

When a value more than 50 is specified, this operand checks the process unlock by widening an interval gradually from 50 milliseconds to this specified value. When a value equal to or less than 50 is specified, this operand checks the process unlock at specified intervals. Determine a specified value following the statistics.

- `lck_prf_trace_level=acquisition-level-for-LCK-performance-verification-trace-information`

~((00000000-00000001)) <<00000000>>

Specify the acquisition level for the LCK performance verification trace.

For details about LCK performance verification traces, see the troubleshooting section in the manual *OpenTP1 Description*.

00000000

An LCK performance verification trace is not acquired.

00000001

An LCK performance verification trace is acquired.

To output or edit and output the acquired trace to a file, use the `prfget` or `prfed` command. The results of the file output operation are saved in `$DCDIR/spool/dclckinf/prf`. For details about event IDs or these commands, see the manual *OpenTP1 Operation*.

The use of this operand assumes that TP1/Extension 1 is installed. If TP1/Extension 1 is not installed, the operation is not guaranteed.

command format

None

Timer service definition

Format

- set format

```
[set tim_watch_count=maximum-time-check-service-count]
```

- command format

None

Function

The timer service definition defines the execution environment for the time check service.

Explanation

set format

- `tim_watch_count=maximum-time-check-service-count~<unsigned integer>`
(0-65535) <<128>>

Specify the maximum number of time check services. An OpenTP1 system monitors the processing time of a transaction branch and the time of an MHP, as well as monitoring of the execution time of a service function.

Use the following formula for calculating the maximum number of time check services:

Maximum number of time check services = A + B + C + D

A: Number of transaction branches that are concurrently started

This is the value of the `trn_tran_process_count` operand in the transaction service definition.

B: Number of MHP processes for which monitoring of a timeout for non-transaction MHPs is specified

This is the number of processes concurrently executing MHPs that satisfy both of the following conditions:

- The `trnmode` operand is set to `nontrn` by using the `-n` option in the application attribute definition (`mcfaalcap`).
- The `ntmetim` operand is set to a value other than 0 by using the `-v` option in the application attribute definition (`mcfaalcap`) or the `-u` option in the UAP common definition (`mcfmuap`).

C: Number of SPP processes for which monitoring of the service function execution time is specified

This is the number of SPP processes affected by the `service_expiration_time` operand in the user service definition or user service default definition. When you want to run SPPs in a multi-server environment, add the value of the `parallel_count` operand in the user service definition or user service default definition.

D: Number of processes for which monitoring of the time limit for completing a transaction is specified

This is the total of the following numbers, each of which is the number of processes affected by the `trn_completion_limit_time` operand[#]:

- Number of SUP, SPP, and MHP processes that execute the transaction. When you want to run SPPs and MHPs in a multi-server environment, add the value of the `parallel_count` operand in the user service definition or user service default definition.
- Number of transactional RPC executing processes. Add the value of the `parallel_count` operand in the client service definition.
- Number of CUP executing processes that execute the transaction. Add the value of the `cup_parallel_count` operand in the client service definition.
- Number of RAP-processing servers that execute the transaction. When you want to run the RAP-processing servers in a multi-server environment, add the value of the `rap_parallel_server` operand in the RAP-processing listener service definition.

[#]: The `trn_completion_limit_time` operand in the user service definition, user service default definition, RAP-processing listener service definition, client service definition, or transaction service definition

Specify 0 if there are no transaction services, MCFs or SPPs that specify monitoring of service function execution time within the same node. In this case the timer service performs no time check service.

Request of a time check service in excess of the value specified here disables the timer service. If the timer service cannot monitor the processing time of a transaction branch, OpenTP1 returns error to the API that requests to start the transaction. If the timer service cannot monitor the execution time of a service function, OpenTP1 outputs the error message and continues processing. If the timer service cannot monitor the service function execution time or the time limit for completing a transaction, OpenTP1 outputs an error message and continues processing.

command format

None

Name service definition

Format

- set format

```
[set name_total_size=service-information-area-size]
[set name_cache_size=service-information-cache-area-size]
[set max_socket_descriptors=maximum-number-of-file-descriptors-for-
sockets]
[set name_global_lookup=Y|N]
[set name_service_extend=1|0]
[set name_audit_conf=2|1|0]
[set name_audit_interval=monitoring-interval]
[set name_audit_watch_time=maximum-time-to-wait-until-a-node-
failure-is-detected]
[set name_rpc_control_list=Y|N]
[set name_nodeid_check_message=Y|N]
[set name_cache_validity_time=validity-duration-of-service-information-of-other-nodes]
[set watch_time=maximum-time-to-wait-for-a-response]
```

- command format

None

Function

The name service definition defines the execution environment to manage the service name and corresponding address which enables RPC. A name service secures storage equal to the sum of the size of the service information area and service information cache area as specified here, from the static shared memory specified with the system environment definition.

Explanation

set format

- `name_total_size=service-information-area-size~<unsigned integer> ((1-32767)) <<64>>` (Unit: kilobytes)

Specify the size of the service information area to be secured by the name service on the local node. Compute this size based on the number of service information to be registered with the system services and user servers. For details about the formula, see *B.1 Estimating the shared memory requirements for TPI/Server Base*.

- `name_cache_size=service-information-cache-area-size~<unsigned integer> ((1-32767)) <<64>>` (Unit: kilobytes)

Specify the size of the service information cache area to be secured by the name service on the local node. Compute this size based on the number of service

information retrievals to be requested by the local node from the service information registered in other nodes. For details about the formula, see *B.1 Estimating the shared memory requirements for TP1/Server Base*.

A name service could use this service information cache area as the service information area if the latter is insufficient. Conversely however, the service information area will never be used as the service information cache area.

A larger service information cache area will improve the response time of service information retrievals from other nodes. However, an area in excess of what is required will cause the memory of the OpenTP1 system as a whole to be compressed.

- `max_socket_descriptors=maximum-number-of-file-descriptors-for-sockets~<unsigned integer> ((32-2032))`

Specify the maximum number of file descriptors to be used for sockets by the processes under control of OpenTP1[#].

The processes under control of OpenTP1[#] exchange the process information with the system servers or user servers through the TCP/IP communication using sockets. Therefore, you must change the maximum number of file descriptors for sockets depending on the number of UAP processes that run concurrently and the number of other nodes to communicate with.

#1: OpenTP1 processes other than the MCF services (MCF manager service, MCF communication service, and application startup service). For the MCF services, see the sections on the *system service information definition* and the *system service common information definition*.

Use the following formula for calculating the maximum number of file descriptors for sockets:

$$\uparrow (\text{Number of UAP processes in the local node}^{\#1} + \text{number of nodes that request a service of the name service}^{\#2} + \text{number of system service processes}^{\#3}) / 0.8 \uparrow$$

\uparrow \uparrow : Rounded up to the nearest whole integer.

#1: The number of UAP processes in the local node is the sum of the following values:

- Number of UAP processes in the local OpenTP1
- Number of transactions to be started concurrently by the CUP (value of the `parallel_count` operand specified in the client service definition)

#2: The number of nodes that request a service of the name service is the sum of the following values. Count any duplicated nodes as one.

- Number of node names specified in the `all_node` operand for the local OpenTP1

- Number of other nodes that specify the local node name in the `all_node` operand for OpenTP1

#3: The number of system service processes in the local OpenTP1.

If the value specified for this operand is too small, the connection cannot be set with other processes under control of OpenTP1. The process terminates abnormally after outputting the KFCA00307-E error message.

The order of priority of the specified values is $1 > 2$.

1. Name service definition
2. System common definition

If this operand is omitted, the system assumes the value in the system common definition.

- `name_global_lookup=Y|N~<<N>>`

Specify whether to use the global search facility.

The global search facility allows you to retrieve information about the services in other nodes cached by the name service on each node specified in the `all_node` operand.

Y

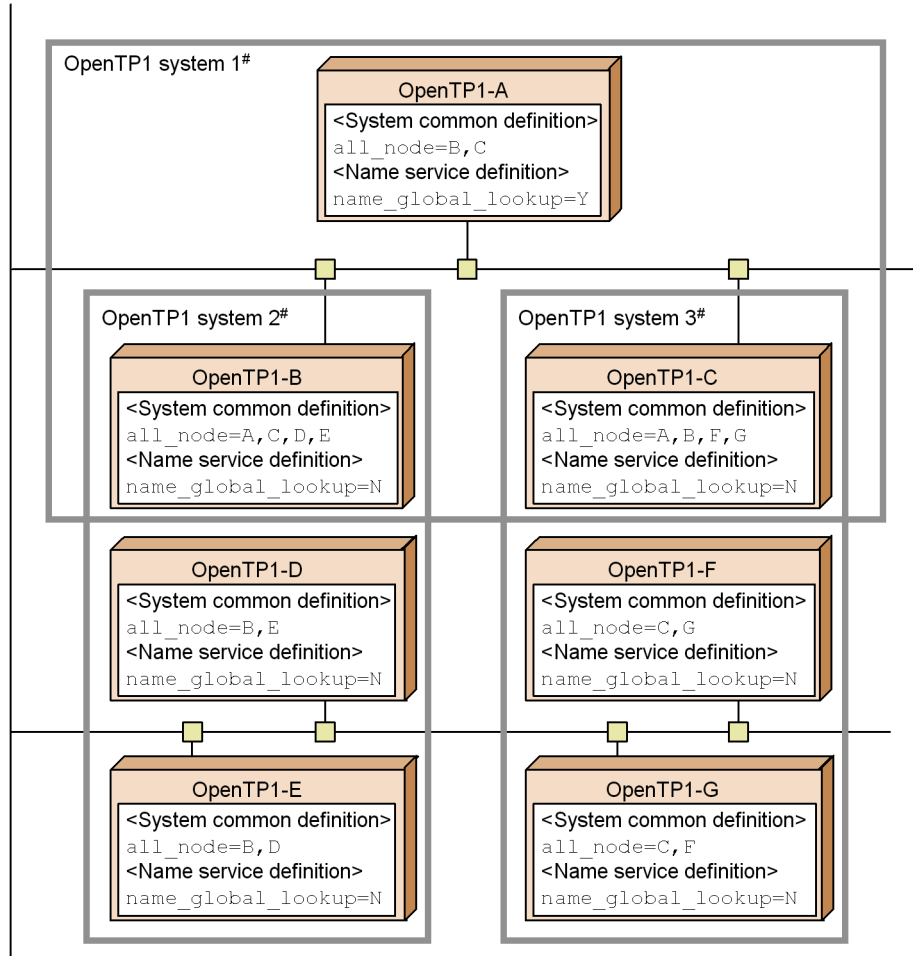
The global search facility is used.

N

The global search facility is not used.

Figure 3-3 shows the system configuration example when the global search facility is used.

Figure 3-3: System configuration when the global search facility is used



Note: OpenTP1B through OpenTP1G must be version 03-02 or newer.

#: An OpenTP1 system indicates a group of OpenTP1 nodes that are specified by the all_node operand of each OpenTP1 node.

The following table shows the operand values to be specified on each OpenTP1 node in the system configuration shown in the above figure.

Table 3-1: Values specified in the operands in the system using the global search facility

OpenTP1 node name	Value specified in the all_node operand	Value specified in the name_global_lookup operand
OpenTP1-A	B, C	Y

OpenTP1 node name	Value specified in the all_node operand	Value specified in the name_global_lookup operand
OpenTP1-B	A, C, D, E	N
OpenTP1-C	A, B, F, G	N
OpenTP1-D	B, E	N
OpenTP1-E	B, D	N
OpenTP1-F	C, G	N
OpenTP1-G	C, F	N

The range of search from OpenTP1-A is OpenTP1-B to OpenTP1-G. In other words, OpenTP1-A can communicate with the services in OpenTP1 systems 2 and 3 as well as OpenTP1 system 1.

In the environment where the global search facility is enabled, the `dc_rpc_call_to` function, which specifies the port number of the name service in parameter `portno` in the `DCRPC_BINDTBL_SET` function, is not available.

The `dc_rpc_call_to` function, which specifies a node identifier in parameter `nid` in the `DCRPC_BINDTBL_SET` function, can be used only when each of the node identifiers of all the OpenTP1 nodes in the search range of the global search facility (OpenTP1 systems 1 to 3 in the above figure) is unique.

The information about services (such as shutdown status or load status) is not reported to the search source OpenTP1 (OpenTP1-A in the above figure). Therefore, we recommend that you request services using the horizontal distribution shown in the figure.

When calculating the value specified in the `name_cache_size` operand in the name service definition, the number of service information items cached to the node specified in the `all_node` operand must be added to the number of service information items which the local node requests to search for.

When TP1/Client/P, TP1/Client/W, or TP1/Client/J sends a service request to OpenTP1 (OpenTP1-A in the above figure) using the global search facility, information about the services in OpenTP1 systems 2 and 3 as well as OpenTP1 system 1 is acquired.

For details about the global search facility, see the manual *OpenTP1 Description*.

■ `name_service_extend=1|0~<<0>>`

Increase the number of server UAPs (managed by the name service) to be obtained. When you specify 1 for this operand, an RPC can be sent to a maximum of 512 server UAPs that have the same service group name and that are started on the node the RPC

is sent to. However, RPC destination nodes need to be included in the OpenTP1 system specified in the `all_node` operand. When you specify 0 for this operand or do not specify any value, an RPC can be sent to up to 128 server UAPs.

■ `name_audit_conf=2|1|0~<<0>>`

Specify whether to use the node monitoring feature. For details about the node monitoring feature, see the manual *OpenTP1 Description*.

2

Uses the node monitoring feature in the two-way (send and receive) mode.

1

Uses the node monitoring feature in the one-way (send-only) mode.

0

Does not use the node monitoring feature.

Note the following points when you specify this operand:

- The node monitoring feature is unavailable when multiple instances of OpenTP1 are running on the host for which you want to monitor activation of OpenTP1. The facility is also unavailable in an environment in which multiple instances of OpenTP1 will start with the same IP address (when only one LAN board is used) after a system switchover occurs.
- For the communication that the node monitoring feature uses for monitoring, you can tune the sensitivity of node failure detection by adjusting the value of an operand. Which operand you adjust depends on the value of the `name_audit_conf` operand.

When 1 is specified in the `name_audit_conf` operand

Adjust the value of the `ipc_conn_interval` operand in the system common definition.

When 2 is specified in the `name_audit_conf` operand

Adjust the value of the `name_audit_watch_time` operand in the name service definition.

- The node monitoring feature can concurrently monitor a maximum of 60 nodes. If the total number of nodes specified in the `all_node` and `all_node_ex` operands of the system common definition exceeds 60, the feature performs monitoring for 60 nodes at a time.
- If you specify many nodes in the `all_node` and `all_node_ex` operands of the system common definition, the operation of the node monitoring feature may affect the RPCs issued by UAPs. If you need to specify many nodes in the operands, do not specify a small value in the `name_audit_interval` operand.

Also, if the `namalivechk` command is repeatedly executed, make sure that the command is not executed at short intervals.

- If the `name_rpc_control_list` operand is omitted or `Y` is specified in the operand, a node recovered from a failure may be removed from the RPC control list before the time specified in the `name_audit_interval` operand elapses. If this happens, the `KFCA00651-I` message is not output.
- If `2` is specified in the `name_audit_conf` operand when the `name_rpc_control_list` operand is omitted or `Y` is specified in the `name_rpc_control_list` operand, the `KFCA00650-I` message may be output periodically.
- When `1` or `2` is specified in the `name_audit_conf` operand and `180` or a smaller value is specified in the `name_audit_interval` operand, Hitachi recommends that you specify `N` in the `name_rpc_control_list` operand.
- If you specify `N` in the `name_rpc_control_list` operand when the `name_audit_conf` operand is omitted or `0` is specified in the `name_audit_conf` operand, the node monitoring feature and the feature for monitoring the nodes registered in the RPC control list are disabled. Note the following when both features are disabled:
 - A node is removed from the RPC control list only when communication from the node to the local node occurs.
 - If the `all_node` operand for a node registered in the RPC control list does not specify the local node, the node is not removed from the list until `OpenTP1` on the local node is restarted.

Hitachi recommends that you omit the `name_rpc_control_list` operand or specify `Y` in the operand when the `name_audit_conf` operand is omitted or `0` is specified in the `name_audit_conf` operand.

- `name_audit_interval=monitoring-interval~<unsigned integer> ((1-65535)) <<60>>` (Units: seconds)

Specify the length of time between the end of node monitoring by the monitoring service and the beginning of the next monitoring.

- `name_audit_watch_time=maximum-time-to-wait-until-a-node-failure-is-detected~<unsigned integer> ((8-65535))<<8>>`(units: seconds)

When the `name_audit_conf` operand is set to `2` (node monitoring in the two-way mode), specify the maximum time to wait until the monitoring-target node responds. Note that if the `name_audit_conf` operand is set to `1`, the value of the `ipc_conn_interval` operand in the system common definition is set as the time to wait until a node failure is detected.

■ name_rpc_control_list=Y|N~<<Y>>

Specify whether to enable monitoring of the nodes registered in the RPC control list.

Y

Performs monitoring of the nodes registered in the RPC control list at 180-second intervals.

N

Does not monitor the nodes registered in the RPC control list.

The name service provides a feature separate from the node monitoring feature for checking the activation status of the nodes registered in the RPC control list at 180-second intervals. This feature is enabled using the name_rpc_control_list operand.

Decide whether to use this feature after considering the settings of the node monitoring feature. For example, you must disable the feature for monitoring the nodes registered in the RPC control list in the following cases:

- A node recovered from a failure is removed from the RPC control list before the time specified in the name_audit_interval operand elapses, and the KFCA00651-I message is not output.
- 2 is specified in the name_audit_conf operand, and the KFCA00650-I message is output periodically.

When the feature for monitoring the nodes registered in the RPC control list is disabled and the name_audit_interval operand is set to 180 or more seconds, removal of a recovered node from the list takes longer than usual.

Hitachi recommends that you specify N in the name_rpc_control_list operand when both the following conditions are satisfied:

- The name_audit_conf operand is set to 1 or 2.
- The name_audit_interval operand is set to 180 or a smaller value.

If name_audit_conf is omitted or is 0, and name_rpc_control_list is N, the node monitoring feature and the feature for monitoring the nodes registered in the RPC control list are disabled. Note the following when both features are disabled:

- A node is removed from the RPC control list only when communication from the node to the local node occurs.
- If the all_node operand for a node registered in the RPC control list does not specify the local node, the node is not removed from the list until OpenTP1 on the local node is restarted.

Hitachi recommends that you omit the name_rpc_control_list operand or specify Y in the operand when the name_audit_conf operand is omitted or 0 is

specified in the `name_audit_conf` operand.

- `name_nodeid_check_message=Y|N ~<<Y>>`

Specify whether the KFCA00677-W message is output when communication is received from a node whose node identifier is the same as the local node.

Y

The KFCA00677-W message is output.

N

The KFCA00677-W message is not output.

- `name_cache_validity_time=`
validity-duration-of-service-information-of-other-nodes
`~<unsigned integer>((0-65535)) <<1800>> (Unit: seconds)`

Specify the validity duration of the server UAP service information acquired from other nodes. The name service acquires the service information of the server UAPs that are active in other nodes at the times listed below.

- When an RPC is executed at the node of an RPC-target service group for the first time
- When a server UAP is started at another node

During the time period specified in this operand following the acquisition of service information from other nodes, the RPC is executed without performing a service information search on other nodes. If the validity duration of the service information has exceeded the time specified in this operand when the RPC is executed, service information is newly acquired from the nodes specified in the `all_node` operand of the system common definition, and the registered service information is updated. Even within the validity duration of the service information, the service information is updated if a service information update notice is received from another node.

Note the following when you change the specification value in the `name_cache_validity_time` operand:

- When 0 is specified:
Even when the validity duration for service information expires, service information is not acquired.
- When a value smaller than the default value (1-1799) is specified:
Since the validity duration for service information becomes shorter, service information is exchanged with the name services of other nodes frequently during RPC execution, increasing communications traffic with other nodes. In this case, shortening the interval for updating the global cache can accelerate the detection of service information changes at the nodes specified in the `all_node` operand

of the system common definition.

If an extremely small value is specified, the load on the name service of each node increases and may make it impossible to use name service functions such as service information searching.

- When a value greater than the default value (1801-65535) is specified

Since the validity duration for service information becomes longer, service information is exchanged with the name services of other nodes less frequently during RPC execution, decreasing communications traffic with other nodes.

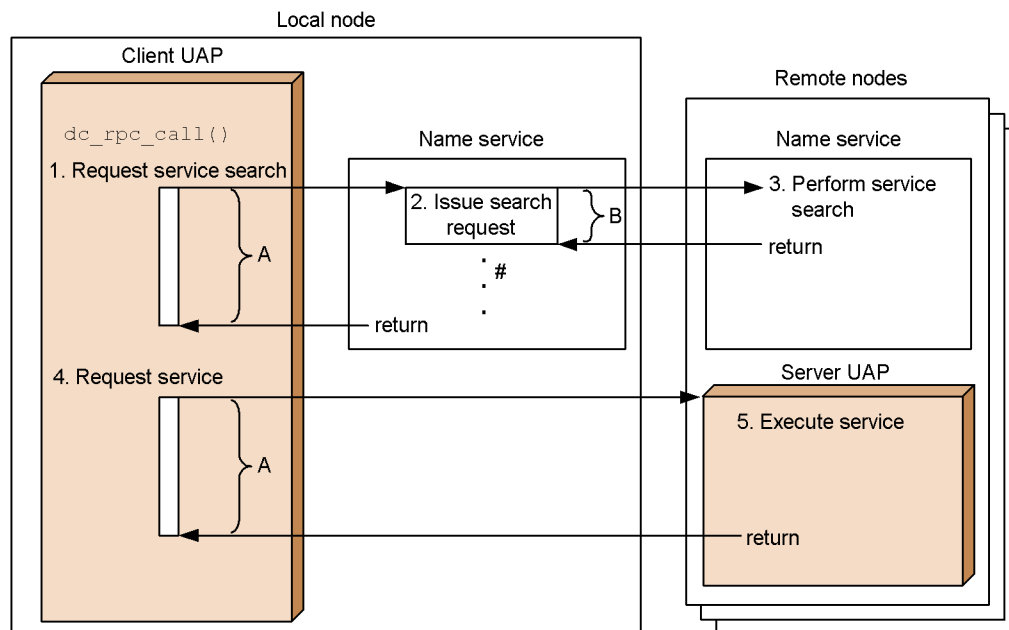
Since there are fewer opportunities to acquire service information from server UAPs that are active on other nodes, a phenomenon may occur in which the RPC cannot be executed on a server UAP that is active on a given node.

- `watch_time=maximum-time-to-wait-for-a-response ~<unsigned integer>`
`((0-65535)) (units: seconds)`

Specify the maximum time to wait for a response to a service request sent for inter-process communication that uses RPCs.

Specify this operand in an environment in which a client UAP requests a service from a server UAP on a remote node. The following figure provides an overview of requesting a service from a server UAP on a remote node, and shows the points in the RPC communication to which this operand applies.

Figure 3-4: Overview of requesting a service from a server UAP on a remote node



Legend:

- A: Maximum response wait time specified in the client UAP (maximum response wait time A)
The maximum response wait time specified in the client UAP is the time set by the `watch_time` operand of the user service definition or by the `dc_rpc_set_watch_time` function.
- B: Value specified by the `watch_time` operand of the name service definition (maximum response wait time B)
#: When a service is requested from server UAPs that have the same service group name and are distributed across multiple nodes, a search request is issued for each node.
1. The client UAP sends the server UAP's service search request to the name service on the same node. Maximum response wait time A to wait for a response is the maximum response time specified in the client UAP. However, if service search requests to all nodes time out during sending/receiving, the search requests are retried. The retry count and retry interval are specified in the `rpc_retry_count` and `rpc_retry_interval` operands of the system common definition, respectively. These two operands are enabled when `Y` is specified in the `rpc_retry` operand of the system common definition. If `N` is specified in the `rpc_retry` operand, the retry count is 1.
 2. The name service sends the search requests received in step 1 to the name services of the remote node. The maximum response wait time B to wait for a response is specified in the `watch_time` operand of the name service definition. When service search requests are sent to the name services of multiple nodes, maximum response wait time B applies to the search request sent to each node.
 3. The remote node searches for the server UAP service.
 4. The client UAP sends a service request to the server UAP. Maximum response wait time A to wait for a response is the maximum response time specified in the client UAP.
 5. Execute the server UAP service.

Make sure that the value of this operand is smaller than the value for the maximum

time to wait for a response specified in the client UAP. If the value of this operand is equal to or larger than the value specified in the client UAP, a problem might occur. That is, the service search request from the client UAP process might time out before the transferred request times out if a delay in name service processing occurs on the remote node.

Since OpenTP1 might wait for the time specified in this operand during termination processing. OpenTP1 termination processing might take time if you specify a large value in this operand.

If there is no response for the specified period of time, the RPC returns a timeout error.

If 0 is specified in this operand, OpenTP1 waits until a response is received. Note also that if 0 is specified, OpenTP1 might not be able to terminate.

If this operand is omitted, the value of the `watch_time` operand in the system common definition is assumed.

Note that if the value of this operand is very much larger or smaller than the default value of the `watch_time` operand in the system common definition, difficulties that can cause OpenTP1 to fail might occur.

command format

None

Process service definition

Format

■ set format

```
[set prc_process_count=maximum-concurrent-server-processes]
[set prc_recovery_resident=Y|N]
[set prc_take_over_svpath=Y|N]
[set term_watch_time=abnormal-termination-check-expiration-time]
[set max_socket_descriptors=maximum-number-of-file-descriptors-for-sockets]
[set term_watch_count=limit-of-consecutive-abnormal-terminations]
[set prc_prf_trace=Y|N]
[set prc_coresave_path=core-file-storage-path]
[set prc_corecompress=Y|N]
[set watch_time=maximum-response-waiting-time]
```

■ command format

```
[prcsvpath path-name]
```

Function

The process service definition defines the execution environment to manage server processes executed under an OpenTP1 system environment.

Explanation

set format

- `prc_process_count=maximum-concurrent-server-processes~<unsigned integer> ((1-10000)) <<64>>`

Specify the maximum number of server processes to be started concurrently within the same machine. Note that the maximum number of processes that can actually be started up depends on the machine that starts up the OpenTP1 system. When specifying the `prc_process_count` operand, consider the installed memory size and the maximum number of processes that can be started up by the machine. For this, include all resident and non-resident server processes (user servers and system services) to be operated within an OpenTP1 system.

Compute the total of all servers to be started if using a multi-server system. The number of system services is the sum of the log services, journal related services (checkpoint dump, system journal, and other journal services), MCFs, and MQ systems.

- `prc_recovery_resident=Y|N~<<Y>>`

Specify whether to make resident or non-resident the partial-recovery process when a UAP terminates abnormally. If the process is made non-resident, it is started when the UAP goes down. In case there is not enough memory when operating OpenTP1, either specify Y or omit this operand. If you specify Y or omit this operand, you will get a single resident process for partial recovery.

Y

The partial-recovery process is made resident.

N

The partial-recovery process is made non-resident.

- `prc_take_over_svpath=Y|N~<<N>>`

Specify whether to inherit the user server and command path within the node at a rerun.

Y

The user server and command path are inherited at a rerun.

N

The user server and command path are not inherited at a rerun.

When Y is specified and the user server or command path is changed, the change is retained until OpenTP1 is started normally.

The user server and command path are inherited only within the same node. They are not inherited to a different system when a system switchover occurs.

If the inheritance fails, a warning message is output and the processing is continued without inheriting the user server and command path changed when the previous online session.

- `term_watch_time=abnormal-termination-check-expiration-time~<unsigned integer> ((0-32767)) <<10>> (Unit: minutes)`

Specify a period of time to monitor the number of times OpenTP1 terminates abnormally. Specify 0 to have no time check.

If the OpenTP1 system is shut down three times consecutively within the specified time, the process service outputs the KFCA00715-E message and halts the system startup or restart. In this case, remove the cause of the shutdown, and then enter the `dcsetup` command to delete and re-register OpenTP1 to the operating system, or enter the `dcreset` command.

When `MANUAL2` is specified for the `mode_conf` operand of the system environment definition, this operand is effective only for consecutive shutdown of the process service.

- `max_socket_descriptors=maximum-number-of-file-descriptors-for-sockets~<unsigned integer> ((32-2032))`

Specify the maximum number of file descriptors to be used for sockets by the processes under control of OpenTP1[#].

The processes under control of OpenTP1[#] exchange the process information with the system servers or user servers through the TCP/IP communication using sockets. Therefore, you must change the maximum number of file descriptors for sockets depending on the number of UAP processes that run concurrently and the number of other nodes to communicate with.

#: OpenTP1 processes other than the MCF services (MCF manager service, MCF communication service, and application startup service). For the MCF services, see the sections on the system service information definition and the system service common information definition.

Use the following formula for calculating the maximum number of file descriptors for sockets:

\uparrow (Number of UAP processes in the local node^{#1} + number of nodes that request a service of the name service^{#2} + number of system service processes^{#3})/0.8 \uparrow

\uparrow \uparrow : Rounded up to the nearest whole integer.

#1: The number of UAP processes in the local node is the sum of the following values:

- Number of UAP processes in the local OpenTP1
- Number of transactions to be started concurrently by the CUP (value of the `parallel_count` operand specified in the client service definition)

#2: Add this only when using TP1/Multi. This value is the sum of the following values:

- Number of UAP processes in other nodes that call the `dc_adm_get~` function for the local node
- Number of `dcmstart`, `dcmstop`, and `dcndls` commands to be entered for the multi-node area and multi-node subarea that contains the local node as a building block

#3: The number of system service processes in the local OpenTP1.

If the value specified for this operand is too small, the connection cannot be set with other processes under control of OpenTP1. The process terminates abnormally after outputting the KFCA00307-E error message.

The order of priority of the specified values is 1 > 2.

1. Process service definition

2. System common definition

If this operand is omitted, the system assumes the value in the system common definition.

- `term_watch_count=limit-of-consecutive-abnormal-terminations~<unsigned integer>((1-3))<<3>>`

When you specify 1 to 3 in this operand, you can use the facility of specifying the limit of consecutive abnormal terminations for the OpenTP1 system.

The `term_watch_time` operand becomes valid when 3 is specified in this operand or this operand is omitted. Table 3-2 shows the relationship between this operand and the `term_watch_time` operand.

Table 3-2: Relationship between `term_watch_count` and `term_watch_time` operands

Value specified in <code>term_watch_count</code> operand	Value specified in <code>term_watch_time</code> operand	
	0	Other than 0
1 or 2	Cancels the system startup or restart at the count specified in the <code>term_watch_count</code> operand regardless of the value specified in the <code>term_watch_time</code> operand.	Cancels the system startup or restart at the count specified in the <code>term_watch_count</code> operand regardless of the value specified in the <code>term_watch_time</code> operand.
3 or omitted	Does not cancel the system startup or restart.	Cancels the system startup or restart after 3 retries as specified in the <code>term_watch_time</code> operand.

If the OpenTP1 system goes down the number of times specified in this operand, the process service outputs the KFC A00715-E message and cancels the system startup or restart. In this case, correct the error that caused the system failure, then use the `dcsetup` command to delete the registration in the operating system and re-register OpenTP1 or enter the `dcreset` command.

If the `mode_conf` operand in the system environment definition is `MANUAL2`, the specification of this operand is invalid except in the case where there are consecutive failures of the process service.

- `prc_prf_trace=Y|N~<<Y>>`

Specify whether to acquire the trace information for performance verification when a process is generated or disappears.

Specify whether to acquire the event trace for the process service.

Y

The event trace for the process service is acquired.

N

The event trace for the process service is not acquired.

When Y is specified for this operand, the event trace for verifying the process service operation is acquired. For details about event IDs, see the manual *OpenTPI Operation*.

The acquired event trace information is stored in the following files:

- 0xb001 to 0xb003: Trace files in \$DCDIR/spool/dcprfinf
- 0xb010 and following events: Trace files in \$DCDIR/spool/dcprcinf

For the event trace, the information about process generation and disappearance is acquired at the following times:

1. By a child process when a process is generated (the event ID is 0xb001)
2. When a process disappears (the event ID is 0xb002)
3. By the parent process when a process is generated (the event ID is 0xb003)

When you specify the `-d` option when executing the `prfed` command, as the data to be displayed, method 1 acquires the server name of the generated process, method 2 acquires the ID of the process that disappeared and the end status, and method 3 acquires the generated process ID. To output the acquired trace information using the `prfed` command, specify the `-d` option. When you specify the `-d` option, trace information is output as follows:

For method 1:

Offset	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+a	+b	+c	+d	+e	+f	ASCII_code
+0000	aa	aa	aa	aa	aa	aa	aa	aa	aa	aa	aa	aa	aa	aa	aa	aa	AAAAAAA

- *aa....aa*: Server name of the generated process (hexadecimal number)
- *AA....AA*: Server name of the generated process (ASCII code)

For method 2:

Offset	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+a	+b	+c	+d	+e	+f	ASCII_code
+0000	bb	bb	bb	bb	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	BBBCCCC

- *bb....bb*: ID of the process that disappeared (hexadecimal number)
- *BB....BB*: ID of the process that disappeared (ASCII code)
- *cc....cc*: End status of the process that disappeared (hexadecimal number)
- *CC....CC*: End status of the process that disappeared (ASCII code)

For method 3:

Offset	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+a	+b	+c	+d	+e	+f	ASCII_code
+0000	dd	dd	dd	dd													DDDD

- *dd....dd*: Generated process ID (hexadecimal number)
- *DD....DD*: Generated process ID (ASCII code)

For details about the `prfed` command, see the manual *OpenTP1 Operation*.

When you specify *N* for the `prf_trace` operand in the system common definition, the `prc_prf_trace` operand is invalid.

- `prc_coresave_path=core-file-storage-path~<path name> <<$DCDIR/spool/save>>`

Specify the absolute path name for the directory that stores the core file of an OpenTP1 process.

For a user server, the result of editing the UAP trace is also stored in the directory specified using this operand.

Up to 63 characters can be specified for a path name.

If the path name specified using this operand contains an error or if you do not specify this operand, `$DCDIR/spool/save` is assumed as the storage destination of the core file.

The OpenTP1 system administrator must have the permission to write the core file in the directory specified in this operand. Otherwise, the core file may not be written in the specified directory.

The core file of the process server may be output to `$DCDIR/spool/save` regardless of the specification of this operand.

If you change the value specified for this operand, you need to execute the `dcreset` command.

- `prc_corecompress=Y|N~<<N>>`

Specify whether to allow OpenTP1 to automatically compress the core file of the OpenTP1 process when storing the core file.

Y

OpenTP1 automatically compresses the core file of the OpenTP1 process when storing the core file.

N

OpenTP1 does not automatically compress the core file of the OpenTP1 process when storing the core file.

The core file is not compressed when the operand is not specified.

Compression processing is performed using a standard command provided by the operating system if a user application program goes down while OpenTP1 is online. Therefore, when you specify \forall for this operand and a user application program goes down, the entire performance may degrade depending on the performance of the standard compression command provided by the operating system.

When you specify \forall for this operand, a file containing no data with a file name before compression is created in the directory specified for storing the core file. Do not delete this file since it may be used to manage the generations of information files that are backed up.

When you change the value specified for this operand, you need to execute the `dreset` command.

- `watch_time=maximum-response-waiting-time~<unsigned integer> ((0-65535))`
(Unit: seconds)

Specify the maximum waiting time between sending a service request and receipt of a response when communicating between processes by RPC.

OpenTP1 may suspend termination processing for the length of time specified in this operand. Therefore, if you specify a large value, the termination processing of OpenTP1 may take some time.

If no response is received within the specified time, RPC returns a transmission timeout error.

Specify 0 if the system is to wait for a response. When you specify 0, OpenTP1 may not terminate.

If this operand is omitted, the value specified with the `watch_time` operand of the system common definition is assumed.

Use the default of the `watch_time` operand of the system common definition for this operand.

We recommend that you do not change the operand unless special tuning is necessary.

If a value that is much greater or smaller than the default of the `watch_time` operand of the system common definition is specified, a failure may occur causing OpenTP1 to go down.

command format

Described on the following page.

prcsvpath (Specify user server path)

Format

[prcsvpath <i>path-name</i>]

Function

This command specifies the path name of the user servers and commands.

Option

- *path-name*~<path name> <<\$DCDIR/aplib:\$DCDIR/bin>>

Specify the full path name of the user servers started by the process service and of the commands activated from the user servers.

In switching user servers, the path name of the directory in which the user server is stored can be changed online by using the `prcpath` command. For details about the `prcpath` command, see the manual *OpenTPI Operation*.

Multiple path names can be specified by separating each name by a colon (:). A path name can also be added, in which case, include the existing paths in the specification. No environment variable can be used as the path name. A path name can be up to 255 characters long. Note that the maximum number of bytes each definition line can have is 80. For details about how to code a definition on multiple lines, see *1.4 Definition rules*.

Schedule service definition

Format

■ set format

```
[set scd_server_count=maximum-user-server-count]
[set scd_hold_recovery=Y|F]
[set scd_hold_recovery_count=total-number-of-servers-and-services-
required-to-inherit-shutdown-status]

[set scd_port=schedule-service-port-number]
[set scd_this_node_first=Y|N]
[set scd_announce_server_status=Y|N]
[set max_socket_descriptors=maximum-number-of-file-descriptors-for-
sockets]

[set schedule_rate=schedule-rate]
[set scd_retry_of_comm_error=number-of-retries]
[set scd_advertise_control=BEFORE|AFTER]
[set scd_message_level=1|2]
[set ipc_tcpnodelay=Y|N]
[set watch_time=maximum-response-waiting-time]
```

■ command format

```
{{scdbufgrp -g schedule-buffer-group-name
[-n number-of-message-storing-buffer-cells]
[-l length-of-a-message-storing-buffer-cell ]}}
{{scdmulti[-m number-of-multi-scheduler-daemons]
[-p port-number]
[-g multi-scheduler-group-name]
[-t]}}
```

Function

The schedule service definition defines the execution environment to schedule service requests to the servers operated under an OpenTP1 system environment. This schedule service uses the message function of the operating system, and creates a schedule queue in units of service groups.

Explanation

set format

- `scd_server_count=maximum-user-server-count~<unsigned integer> ((0-4096)) <<32>>`

Specify the maximum number of user servers to be operated using the schedule service. Include the number of user servers which will be started online with `dcsvstart` command, the server startup command.

■ `scd_hold_recovery=Y|F~<<Y>>`

Specify whether to take over the shutdown status of user servers during a complete recovery of the system.

Y

Takes over the shutdown status of servers or services according to the specification of the `hold_recovery` operand in the user service definition or user service default definition. If `BEFORE` is specified in the `start_scheduling_timing` operand of the system environment definition, the shutdown status is not taken over, regardless of the specification of the `hold_recovery` operand in the user service definition.

F

Takes over the shutdown status of servers or services according to the specification of the `hold_recovery` operand in the user service definition or user service default definition.

If the number of shut-down servers or services exceeds the value of the `scd_hold_recovery_count` operand in the schedule service definition, the shutdown status of the excess servers or services is not taken over. If 0 is specified in the `scd_hold_recovery_count` operand, the shutdown status of no servers or services is taken over.

For SUPs, MHPs, and the servers that receive requests from sockets for SPPs, you do not need to specify the `scd_hold_recovery` operand. The following table describes the relationships among the `scd_hold_recovery` operand, the `hold_recovery` operands in the user service definition and user service default definition, the `start_scheduling_timing` operand in the system environment definition, and the `scd_hold_recovery_count` operand in the schedule service definition.

Operand value				Whether OpenTP1 takes over the shutdown status
<code>start_scheduling_timing</code>	<code>hold_recovery</code>	<code>scd_hold_recovery_count</code>	<code>scd_hold_recovery</code>	
AFTER	Y	0	--	N
		Values other than 0	--	Y
	N	0	--	N
		Values other than 0	--	N
BEFORE	Y	0	--	N
		Values other than 0	Y	N

Operand value				Whether OpenTP1 takes over the shutdown status
start_scheduling_timing	hold_recovery	scd_hold_recovery_count	scd_hold_recovery	
			F	Y
	N	0	--	N
		Values other than 0	--	N

Legend:

Y:OpenTP1 takes over the shutdown status.

N:OpenTP1 does not take over the shutdown status.

--:Not applicable. Any specification is ignored.

- `scd_hold_recovery_count=total-number-of-servers-and-services-required-to-inherit-shutdown-status~<unsigned integer> ((0-58240)) <<64>>`

Specify the total number of servers and services that are required to inherit shutdown status when fully recovering the system. (The specified value is rounded up to an even number.)

For a server for which `service_hold=N` is specified in the user service definition, the number that is included in the total number is one. For a server for which `service_hold=Y` is specified, the number that is included in the total number is the number of services that the server has. However, for a server for which `service_hold=Y` is specified, if `hold=N` and `service_term_watch_time=0` are specified in the user service definition, the number that is included in the total number is one.

If the number of shutdown servers or services exceeds this setting, the shutdown status of the excess is not inherited. If 0 is specified, the shutdown status is not inherited, either.

When the system is fully recovered, the value specified in the previous online processing is inherited. If the previous or current setting is 0, the setting is not inherited.

If any value other than 0 is specified, the shutdown information is stored in the status file. It is necessary to estimate the size of the status file depending on the setting. If the setting is too small, overwriting of the shutdown information occurs many times in the status file.

Depending on the value specified in this operand, you might need to change the value of the `rpc_max_message_size` operand in the system common definition. If the

following expression results in a value larger than 1 (2 to 8), specify a value larger than the resulting value in the `rpc_max_message_size` operand.

↑ (Value of the `scd_hold_recovery_count` operand / 7280) ↑

↑ ↑: Rounded up to the nearest whole integer.

Before changing the value of the `rpc_max_message_size` operand, read the description of the operand.

- `scd_port=schedule-service-port-number~<unsigned integer> ((5001-65535))`

Specify the port number of the schedule service.

If this operand is omitted, a system-allocated port number is used.

The port number specified using this operand must not be used by other programs.

Note that the operating system assigns certain numbers automatically. You should not use such a number for the port number. The numbers assigned by the operating system differ depending on the type and version of the operating system. For details, see the documentation for your operating system.

- `scd_this_node_first=Y|N~<<N>>`

Specify whether the server on the local node is scheduled first when the requested server is on the local node.

Y

The server on the local node is scheduled first when the requested server is on the local node.

When no server is on the local node or when the server on the local node cannot be scheduled (due to overload or shutdown), another node is scheduled.

N

A node is randomly selected and scheduled even when the requested server is on the local node.

If this operand specifies Y and the `scd_announce_server_status` operand specifies N, the server on the local node is always scheduled regardless of the load status as long as it can be scheduled.

- `scd_announce_server_status=Y|N~<<Y>>`

Specify whether to report the status of the server on the local node to all the other nodes not periodically. This operand is specified when inter-node load-balancing is performed.

Y

The load status of the server on the local node is reported to all the other nodes

not periodically (at intervals of at least 30 seconds).

N

The load status of the server on the local node is not reported to the other nodes.

When the same service group is divided among multiple nodes and Y is specified by this operand, the server status is mutually reported between the nodes and the load between the nodes can be balanced. Note that N must be specified in the following cases:

- When the service group is not divided into more than one node
- When a node is randomly selected without considering the load balancing

All the distributed nodes must be the same in the specification of this operand. If there is a node with a different specification, the load may be concentrated on it.

- `max_socket_descriptors=maximum-number-of-file-descriptors-for-sockets~<unsigned integer> ((32-2032))`

Specify the maximum number of file descriptors to be used for sockets by the processes under control of OpenTP1^{#1}.

The processes under control of OpenTP1^{#1} exchange the process information with the system servers or user servers through the TCP/IP communication using sockets. Therefore, you must change the maximum number of file descriptors for sockets depending on the number of UAP processes that run concurrently and the number of other nodes to communicate with.

#1: OpenTP1 processes other than the MCF services (MCF manager service, MCF communication service, and application startup service). For the MCF services, see the sections on the system service information definition and the system service common information definition.

Use the following formula for calculating the maximum number of file descriptors for sockets:

$\uparrow (\text{Total number of UAP processes}^{\#1} + \text{number of nodes that request the scheduling service}^{\#2} + \text{number of system service processes}^{\#3}) / 0.8 \uparrow$

$\uparrow \uparrow$: Rounded up to the nearest whole integer.

#1: The total number of UAP processes is the sum of the following values:

- Number of UAP processes in the local OpenTP1
- Number of UAP processes in other nodes that use a service in the local OpenTP1
- Number of transactions to be started concurrently by the CUP (value of the

`parallel_count` operand specified in the client service definition)

#2: The number of nodes that request the scheduling service is the sum of the following values. Count any duplicate nodes as one.

- Number of node names specified in the `all_node` operand for the local OpenTP1
- Number of other nodes that specify the local node name in the `all_node` operand for OpenTP1

#3: The number of system service processes in the local OpenTP1.

If the value specified for this operand is too small, the connection cannot be set with other processes under control of OpenTP1. The process terminates abnormally after outputting the KFCA00307-E error message.

The order of priority of the specified values is 1 > 2.

1. Schedule service definition
2. System common definition

If this operand is omitted, the system assumes the value in the system common definition.

- `schedule_rate=schedule-rate~<unsigned integer>((50-100))` (unit: %)

When you specify Y in the `DCSCDDIRECT` operand in the client environment definition of TP1/Client/W or TP1/Client/P to schedule RPCs, specify the percentage of schedules made to the LEVEL0 nodes (there are nodes with server load levels LEVEL0 and LEVEL1).

You can use this definition command when TP1/Extension 1 is already installed. If TP1/Extension 1 is not installed, the operation of this definition command cannot be assured.

- `scd_retry_of_comm_error=number-of-retries~<unsigned integer>((0-128))<<0>>`

Specify the number of times to retry scheduling to nodes other than the failed node if a communication error occurs while service requests are scheduled. However, if the value specified in this operand exceeds the number of nodes started by the service group which is the target of the service request, the number of nodes started by the target service group is used as the upper limit of retries.

If you specify 0, no retry is performed.

You can use this definition command when TP1/Extension 1 is already installed. If TP1/Extension 1 is not installed, the operation of this definition command cannot be assured.

- `scd_advertise_control=BEFORE|AFTER~<<BEFORE>>`

Change the time to report name information to the nodes specified in the `all_node` operand in the system common definition when the user server starts up.

BEFORE

Reports name information to the OpenTP1 nodes specified in the `all_node` operand in the system common definition during the startup processing of the user server (before OpenTP1 goes online).

AFTER

Reports name information to the OpenTP1 nodes specified in the `all_node` operand in the system common definition immediately after the user server is started up.

Regarding the user servers that are started during the OpenTP1 startup processing or restart processing, the name information is reported about all the user servers that are active when the schedule service is started. However, if `BEFORE` is specified for the `start_scheduling_timing` operand in the system environment definition, the schedule service is started during the OpenTP1 startup processing or restart processing before the user servers are started and no name information is reported.

Note:

With `AFTER` specified for this operand, if too many user servers are started during the startup or restart of an OpenTP1, the amount of name information to be reported in a batch to the OpenTP1 nodes specified in the `all_node` operand in the system common definition increases. This increase temporarily results in increasing the load on the machine or network.

- `scd_message_level=1|2~<<2>>`

Specify whether to suppress output of message KFCA00854-E, which is output if the memory for the message storage buffer pool becomes insufficient. To suppress output of the message, specify 1.

- `ipc_tcpnodelay=Y|N~<<N>>`

Specify whether to use the `TCP_NODELAY` option for the socket that OpenTP1 uses for inter-node communication (INET domain).

When the `TCP_NODELAY` option is used (that is, when `Y` is specified in this operand), the Nagle algorithm is disabled. When the algorithm is disabled, you can send data without delay even during a wait for a response to the data sent. Note that if this option is used, the efficiency of sending data in INET domain communication may be degraded and the network load may increase. Before using the option, carefully consider whether the option is necessary by taking into account the `ipc_sendbuf_size` operand, the `ipc_recvbuf_size` operand, the network

bandwidth, and other factors.

- `watch_time=maximum-response-waiting-time~<unsigned integer> ((0-65535))`
(Unit: seconds)

Specify the maximum waiting time between sending a service request and receipt of a response when communicating between processes by RPC.

OpenTP1 may suspend termination processing for the length of time specified in this operand. Therefore, if you specify a large value, the termination processing of OpenTP1 may take some time.

If no response is received within the specified time, RPC returns a transmission timeout error.

Specify 0 if the system is to wait for a response. When you specify 0, OpenTP1 may not terminate.

If this operand is omitted, the value specified with the `watch_time` operand of the system common definition is assumed.

Use the default of the `watch_time` operand of the system common definition for this operand.

We recommend that you do not change the operand unless special tuning is necessary.

If a value that is much greater or smaller than the default of the `watch_time` operand of the system common definition is specified, a failure may occur causing OpenTP1 to go down.

command format

See the following page.

scdbufgrp (Specify message-storing buffer pool to be shared)

Format

```
{ { scdbufgrp -g schedule-buffer-group-name
    [-n number-of-message-storing-buffer-cells]
    [-l length-of-a-message-storing-buffer-cell] }
```

Function

A schedule buffer group is a collection of user servers that share a single message-storing buffer pool.

In the schedule service definition, specify the message-storing buffer pool to be created for each schedule buffer group.

Option

- -g *schedule-buffer-group-name*~<1-to-8-character identifier>

Specify the name of the schedule buffer group that use a single message-storing buffer pool.

The schedule buffer group name must be unique in the node. If the same schedule buffer group name is specified more than once, an error occurs.

- -n *number-of-message-storing-buffer-cells*~<unsigned integer> ((1-61440)) <<16>>

Specify the number of cells that configure the message-storing buffer pool to be shared.

- -l *length-of-a-message-storing-buffer-cell*~<unsigned integer> ((512-31457280)) <<512>> (units: bytes)

Specify the length of a cell which is an element of the message-storing buffer pool to be shared.

Specify an integer multiple of 8 in this operand. If the specified value is not an integer multiple of 8, the value is rounded up to an integer multiple of 8.

The relationship among the length of the message-storing buffer pool, the number of message-storing buffer cells, and the length of a message-storing buffer cell is:

Length of the message-storing buffer pool=

Length of a message-storing buffer cell x Number of message-storing buffer cells

The maximum length of the buffer pool that can be reserved as the message-storing buffer pool is 31,457,280 bytes. If the result of *Length of a message-storing buffer cell* x *Number of message-storing buffer cells* exceeds this value, an error occurs.

scdmulti (Specify information about multi-scheduler daemons)

Format

```
{ {scdmulti [-m number-of-multi-scheduler-daemons]
      [-p port-number]
      [-g multi-scheduler-group-name]
      [-t]}
```

Function

Specifies the information about the multi-scheduler daemons that provide the multi-scheduler facility.

To use the multi-scheduler facility, the following definition command and operand must be specified with this definition command:

RPC receiving side: `scdmulti` definition command of user service definition

RPC sending side: `multi-schedule` operand of user service definition

Option

- `-m number-of-multi-scheduler-daemons`~<unsigned integer> ((1-4096)) <<1>>

Specifies the number of multi-scheduler daemon processes.

Each of the processes started by this option is assigned a port number beginning from the value specified in the `-p` option.

- `-p port-number`~<unsigned integer> ((5001-65535))

Specifies the base port number for multi-scheduler daemons. The multi-scheduler facility starts the multi-scheduler daemons by the number of daemons specified in the `-m` option. This facility also assigns each of the daemons a port number beginning from the value specified in the `-p` option up to the value specified in the `-p` option + the value specified in the `-m` option -1.

You can omit this option when you specify an `scdmulti` definition command for each of the multi-scheduler daemons you want to start. You can also omit this option when you specify the `scd_port` operand in the schedule service definition. When you omit this option, the default of this option is determined as follows:

When `scdmulti` definition commands have already been executed before this `scdmulti` definition command, this option defaults to the port number used by the previous `scdmulti` definition command + 1. When `scdmulti` definition commands have not been executed yet before this `scdmulti` definition command and the `scd_port` operand is specified in the schedule service definition, this option defaults to the value of the `scd_port` operand + 1. In other cases, a definition error occurs.

If a port number assigned by specifying this option has already been assigned to another multi-scheduler daemon, a definition error occurs.

- `-g` *multi-scheduler-group-name*~<1-to-8-character identifier> <<scdmltgp>>

Specifies the group name of the multi-scheduler daemons started by the `scdmulti` definition command.

You should specify this option only when you want to prevent other daemon groups than the specified daemon group from receiving service request messages.

If you have specified this option, you must specify the multi-scheduler group name specified here also in the `-g` option of the `scdmulti` definition command when defining the user service for the user server in which you want to have the multi-scheduler daemons schedule the service requests.

If you do not specify this option, a group name of `scdmltgp` is assumed. Therefore, do not use `scdmltgp` as a group name.

- `-t`

Specifies whether to transfer some service requests to user servers on other nodes that do not use the multi-scheduler facility (user servers that are not specified with the multi-scheduler facility by using the `scdmulti` definition command in the user service definition) for load balancing. This load balancing is used when the multi-scheduler daemon receives service requests and the user server in the local node is highly loaded.

Service requests are distributed for load balancing even if this option is not specified when the service requests cannot be scheduled for a reason such as the user server on the local node has shut down.

When you specify this option, the load is distributed to the user servers that do not use the multi-scheduler facility via the master scheduler daemon, and the load may concentrate on the master scheduler daemon.

The following table lists the conditions that trigger load balancing of service requests.

Table 3-3: Conditions that trigger load balancing of service requests

-t option in scdmulti definition command	Server status		Load balancing of service requests
	Node A (source of service requests) (multi-scheduler facility specified)	Node B (destination of service requests) (multi-scheduler facility not specified)	
Specified	Normal	Normal	N
		High load	N
		Cannot be scheduled.	N
	High load	Normal	Y
		High load	N
		Cannot be scheduled.	N
	Cannot be scheduled.	Normal	Y
		High load	Y
		Cannot be scheduled.	N [#]
Not specified	Normal	Normal	N
		High load	N
		Cannot be scheduled.	N
	High load	Normal	N
		High load	N
		Cannot be scheduled.	N
	Cannot be scheduled.	Normal	Y
		High load	Y
		Cannot be scheduled.	N [#]

Legend:

Y: Service requests are load-balanced.

N: Service requests are not load-balanced.

#: The schedule service detects that a user server cannot be scheduled only when the

user server is shut down.

If a user server cannot be scheduled for reasons other than a shutdown of the user server (for example, the message storage buffer is insufficient), an error is sent from the transfer destination of the service request to the service request source.

Note

For how to request services using the multi-scheduler facility from TP1/Client, see the manual *OpenTP1 TP1/Client User's Guide TP1/Client/W, TP1/Client P*.

Make sure that all the port numbers used by multi-scheduler daemons are allocatable.

For the port number to be specified in the `-p` option, specify a value that is different from the well-known port numbers used by other programs and not automatically allocated by the operating system for other processes.

If a specified port number cannot be allocated at the start of multi-scheduler daemons, an attempt to start the schedule service fails, canceling the start of the OpenTP1 system.

Each multi-scheduler daemon is started as a system server of OpenTP1. Therefore, you must add the sum of the values in the `-m` options of all the `scdmulti` definition commands to the `server_count` operand in the system environment definition and to the `prc_process_count` operand in the process service definition. If the value specified in the `server_count` operand is smaller than the sum, the system aborts the master scheduler daemon, with an hm02102 error or with an hm02301 error.

You can specify more than one `scdmulti` definition command. However, if you specify more than one `scdmulti` definition command, you must explicitly specify the `-g` option in each `scdmulti` definition command.

Also, you must specify a different group name in the `-g` option of each `scdmulti` definition command. If you specify `scdmulti` definition commands that violate these rules, a definition error occurs, canceling the start of the OpenTP1 system.

When the multi-scheduler facility is enabled, if a service group in the OpenTP1 system contains some user servers that use the facility and some that do not, service requests are distributed first to the user servers that use the facility.

You can use this definition command when TP1/Extension 1 is already installed. If TP1/Extension 1 is not installed, the operation of this definition command cannot be assured.

Transaction service definition

Format

■ set format

```

set trn_tran_process_count=concurrent-transaction-branch-count
[set trn_recovery_process_count=parallel-recovery-process-count]
[set trn_expiration_time=transaction-branch-expiry-time]
[set trn_expiration_time_suspend=Y|N|F]
[set trn_tran_statistics=Y|N]
[set trn_tran_recovery_list=Y|N]
[set trn_cpu_time=transaction-branch-CPU-check-time]
[set trn_statistics_item=statistical-information-item
                        [ ,statistical-information-item]... ]
[set trn_max_subordinate_count=maximum-number-of-
                               childtransaction-branches]
[set trn_rm_open_close_scope=process|transaction]
[set trn_optimum_item=transaction-optimization-item[ ,transaction-
                               optimization-item]... ]
[set trn_processing_in_rm_error=down|retry|force]
[set trn_recovery_list_remove=normal|force|no]
[set trn_recovery_list_remove_level=delete-level-for-undecided-
                                     transaction-information-file]

[set trn_crm_use=Y|N]
[set trn_max_crm_subordinate_count=maximum-number-of-childtrans-
                                   action-branches-through-CRM]

[set trn_watch_time=maximum-communication-wait-time-for-
                    synchronization-point-processing-of-transactions]
[set trn_rollback_information_put=no|self|remote|all]
[set trn_limit_time=maximum-time-to-execute-transaction-branch]
[set trn_rollback_response_receive=Y|N]
[set trn_partial_recovery_type=type1|type2|type3]
[set max_socket_descriptors=maximum-number-of-file-descriptors-for-
                              sockets]

[set trn_recovery_failmsg_interval=minimum-interval-between-
                                   issuing-messages-containing-
                                   information-about-incomplete-
                                   transactions]

[set trn_wait_rm_open=continue|stop|retry
                    continue|retry_stop]
[set trn_retry_interval_rm_open=retry-interval-for-issuing-xa_open-
                                   function]
[set trn_retry_count_rm_open=number-of-retries-for-issuing-xa_open-
                                   function]

```

```
[set thread_stack_size=size-of-thread-stack -area-used-within-OpenTPI]
[set polling_control_data=Y|N]
[set thread_yield_interval=Interval-for-issuing-a-trigger-to-receive-a-socket-reuse-instruction]

[set groups=group-identifier [, group-identifier]...]
[set trn_xar_use=Y|N]
[set trn_start_recovery_mode=stop|wait|continue]
[set trn_start_recovery_watch_time=elapsed-retry-time]
[set trn_start_recovery_interval=retry-interval]
[set trn_xa_commit_error=down|force]
[set trn_prf_event_trace_level=acquisition-level-of-TRN-event-trace]
[set trn_prf_event_trace_condition=trace-acquisition-type [, trace-acquisition-type]]

[set trn_completion_limit_time=time-limit-for-completing-transaction]
[set trn_extend_function=facility-extension-level-of-the-transaction-service]
[set watch_time=maximum-response-waiting-time]
```

■ command format

```
trnstring -n resource-manager-name
        [-I resource-manager-extension [, resource-manager-extension]...]
        [-o "transaction-service-xa_open-function-character-string" ]
        [-c "transaction-service-xa_close-function-character-string" ]
        [-O "user-server-xa_open-function-character-string" ]
        [-C "user-server-xa_close-function-character-string" ] [-d]
        [-e] [-m] [-r]
```

■ putenv format

```
{{[putenv environment-variable-name environment-variable-value]}}
```

■ dcputenv format

```
{{[dcputenv environment-variable-name environment-variable-value]}}
```

Function

The transaction service definition defines the execution environment to manage transactions.

Explanation

set format

- `trn_tran_process_count=concurrent-transaction-branch-count ~<unsigned integer>> ((1-8192#))`

#:

The range of specifiable values applicable when the MCF service is used is as follows:

- 32-bit environment: 1-7484
- 64-bit environment: 1-6893

Specify the number of transaction branches to be started simultaneously.

The number you specify is the sum of the number of user server processes for processing transactions, the number of recovery processes, and the number of transaction branches waiting for recovery.

Should the user server process that generated the transaction branch terminate abnormally, that transaction branch could enter a recovery-wait state while other transaction branches are being recovered. If this waiting state is prolonged, the number of transaction branches which can be started could be reduced. Accordingly, the number of transaction branches should be set taking into account the disposal of user server processes which can generate a transaction branch after an abnormal termination, and the frequency of abnormal terminations.

Thus the specification should satisfy the following condition:

(Number of user server processes executing transactions + number of recovery processes)

< Transaction branch count specification

≤ [(Number of user server processes executing transactions × 2) + number of recovery processes]

Take note that the larger the number of transactions, the lower will be the efficiency of the memory resources.

- `trn_recovery_process_count=parallel-recovery-process-count~<unsigned integer> ((1-128)) <<4>>`

Specify the number of transaction branches that can be recovered in parallel should they terminate abnormally.

If the transaction branch terminates abnormally, its recovery processes are carried out in parallel the specified number of times.

- `trn_expiration_time=transaction-branch-expiration-time~<unsigned integer>`
 ((0-65535)) <<0>> (Unit: seconds)

Specify the maximum time to monitor processing of a transaction branch. OpenTPI abnormally terminates and rolls back the transaction branch when processing goes beyond the specified time. Specify 0 to have no time check.

Whether the service or service group is to be shut down if a UAP terminates abnormally depends on the specification of the `hold` and `term_watch_time` operands. For details, see the descriptions of the `hold` and `term_watch_time` operands of the user service definition.

This operand can also be specified with the user service definition or RAP-processing listener service definition, and the user service default definition. The priority of the specified values in decreasing order are as follows (1.>2.>3.).

1. User service definition or RAP-processing listener service definition
2. User service default definition
3. Transaction service definition

A time check can also be specified with other functions. For details of these functions, see the *OpenTPI Programming Guide*.

To apply this operand in a transactional RPC executing process (`clttrnd`) or CUP executing process (`cltcond`), you must specify the `trn_expiration_time` operand in the client environment definition or client service definition.

- `trn_expiration_time_suspend=Y|N|F~<<N>>`

Specify whether the next processing time is to be included in the specified time check of the processing of a transaction branch.

1. Time required for the monitored transaction branch to call another transaction branch using the RPC facility and wait until its processing is terminated
2. Time required for the server UAP called with the chained RPC to wait for the next service request
3. Time required for the monitored transaction branch to call another transaction branch using the asynchronous RPC facility and receive the result of processing

Y

The monitoring time includes all of 1., 2., and 3.

N

The monitoring time includes only 3.

F

The monitoring time includes none of 1., 2., and 3.

This operand can also be specified with the user service definition or RAP-processing listener service definition, and the user service default definition. The priority of the specified values in decreasing order are as follows (1.>2.>3.).

1. User service definition or RAP-processing listener service definition
2. User service default definition
3. Transaction service definition

For details about the relationship between this operand and the timer monitoring options, see *A.2 Time monitoring for transactions*.

To apply this operand in a transactional RPC executing process (`clttrnd`) or CUP executing process (`cltcond`), you must specify the `trn_expiration_time_suspend` operand in the client environment definition or client service definition.

■ `trn_tran_statistics=Y|N~<<N>>`

Specify whether statistical information is to be collected for each transaction branch.

Y

Statistical information is collected.

N

Statistical information is not collected.

If Y is specified, the system collects statistics of the transaction branches executed by the user server for which other than `nothing` was specified in the `trn_statistics_item` operand of the user service definition during the time from startup to termination of the OpenTP1 system.

The `trnstics` command can also specify the start or termination of collecting statistics. If this command is used, the specification of this operand becomes invalid.

The more the types of statistics collected, the lower the transaction performance. It is recommended to collect statistics only during system tuning or when checking on trouble when transaction performance is not a problem.

■ `trn_tran_recovery_list=Y|N~<<N>>`

Specify whether undecided transactions information is to be recovered during full recovery of an OpenTP1 system. The OpenTP1 system creates a file under `$DCDIR/spool/dctrninf` and outputs this information whenever the system recovers entirely. Delete unnecessary files.

Y

Undecided transactions information is collected.

N

Undecided transactions information is not collected.

- `trn_cpu_time=transaction-branch-CPU-check-time~<unsigned integer>`
`((0-65535)) <<0>>` (Unit: seconds)

Specify the CPU time that can be used by a transaction branch until synchronous point processing. If 0 is specified, no time check is performed. If the specified time is exceeded, the transaction branch process terminates abnormally and rolls back.

Whether the service or service group is to be shut down if a UAP terminates abnormally depends on the specification of the `hold` and `term_watch_time` operands. For details, see the descriptions of the `hold` and `term_watch_time` operands of the user service definition.

This operand can also be specified with the user service definition or RAP-processing listener service definition, and the user service default definition.

The priority of the specified values in decreasing order are as follows (1.>2.>3.).

1. User service definition or RAP-processing listener service definition
2. User service default definition
3. Transaction service definition

To apply this operand in a transactional RPC executing process (`clttrnd`) or CUP executing process (`cltcond`), you must specify the `trn_cpu_time` operand in the client environment definition or client service definition.

- `trn_statistics_item=statistical-information-item[, statistical-information-item]`
`...~<<executiontime>>`

Specify an item that collects statistics of a transaction branch.

`nothing`

Statistics are not collected.

`base`

The following is collected as basic information.

- Transaction branch identifier
- Transaction branch decision results
- Execution process type of transaction branch
- Execution server name of transaction branch
- Execution service name of transaction branch

`executiontime`

The basic information and the execution time information of the transaction

branch are collected.

`cputime`

The basic information and the transaction branch CPU check time information are collected.

Only one `nothing` is specified. If `nothing` and other statistics concurrently, specifying `nothing` will be invalid.

When collecting statistics about transactions, use either of the following two ways:

- Specify `Y` in the `trn_tran_statistics` operand.
- Specify the `-s` option of the `trnstics` command.

This operand can also be specified with the user service definition or RAP-processing listener service definition, and the user service default definition.

The priority of the specified values in decreasing order are as follows (1.>2.>3.).

1. User service definition or RAP-processing listener service definition
2. User service default definition
3. Transaction service definition

To apply this operand in a transactional RPC executing process (`clttrnd`) or CUP executing process (`cltcond`), you must specify the `trn_statistics_item` operand in the client environment definition or client service definition.

- `trn_max_subordinate_count=maximum-number-of-childtransaction-branches~<unsigned integer> ((0-1024)) <<32>>`

Specify the maximum number of `childtransaction` branches that are generated from one transaction branch under OpenTP1. It is the maximum number of `dc_rpc_call` function (s) issued from one transaction branch (but which are updated or `uj-output` at the calling side).

- `trn_rm_open_close_scope=process | transaction~<<process>>`

Specify the issuing timing of the two functions (`xa_open` and `xa_close`) which are the XA interfaces to the resource manager that other than the OpenTP1 system offers.

`process`

The `xa_open` function is issued when issuing the `dc_rpc_open` function and the `xa_close` function is issued when issuing the `dc_rpc_close` function.

`transaction`

The `xa_open` function is issued when starting the transaction and the `xa_close` function is issued when terminating the transaction.

If `process` is specified, the resource for the resource manager is occupied from the

issue of the `dc_rpc_open` function to the issue of the `dc_rpc_close` function. If the transaction performance is focused on, specify `process`.

If `transaction` is specified, the `xa_open` and `xa_close` functions will be issued whenever the transaction starts and terminates. Therefore, if the resource of the resource manager must be used efficiently, specify `transaction`.

This operand can also be specified to the user service definition, and the user service default definition.

The priority of the specified values in decreasing order are as follows (1.>2.>3.).

1. User service definition
2. User service default definition
3. Transaction definition

- `trn_optimum_item=transaction-optimization-item[, transaction-optimization-item]...~<<base>>`

The items to be optimized are specified with the following character strings to improve the performance of the global transaction distributed to multiple user servers.

`base`

The entire synchronization point processing (prepare processing, commit, and rollback) is optimized. Since the OpenTP1 transaction control uses the two-phase commit method, the commit control between two transaction branches requires an inter-process communication four times.

However, when all the following conditions are satisfied, the four occurrences of inter-process communications required for the commit control can be eliminated by having the parent transaction branch execute the commit of the `childtransaction` branch, instead.

1. The parent transaction branch and the `childtransaction` branch are under control of the same OpenTP1.
2. The parent transaction branch has called the `childtransaction` branch by the synchronous-response RPC.
3. The XA interface object for the resource manager accessed with the `childtransaction` branch is linked also to the parent transaction branch.

`asynprepare`

If optimization of the entire synchronization point processing cannot be performed because the specification conditions of `base` are not satisfied, only the prepare processing is optimized.

When all the following conditions are satisfied and the `childtransaction` branch issues a service request by the RPC issued by the parent transaction branch,

two-time inter-process communications can be eliminated by executing the preparation before the RPC is returned.

1. The optimization by specifying `base` cannot be performed.
2. The parent transaction branch has called the childtransaction branch by the synchronous-response RPC.

Performing this optimization shows the response of the synchronous-response RPC issued by the parent transaction branch. For the childtransaction branch, the interval between the prepare processing and commit (the status in which the transaction cannot be determined without the instruction from the parent transaction branch) becomes longer. If the OpenTP1 of the parent transaction branch fails, disabling the communication between transaction branches, the swapping of the journal file and the validating of the checkpoint dump file are slowed and the OpenTP1 of the childtransaction branch may also fail.

More than one transaction optimization item can be specified. When both of them are specified, the specification takes precedence according to the following priority (1.>2.):

1. `base`
2. `asyncprepare`

This operand can also be specified with the user service definition or RAP-processing listener service definition, and the user service default definition.

The priority of the specified values in decreasing order are as follows (1.>2.>3.).

1. User service definition or RAP-processing listener service definition
2. User service default definition
3. Transaction service definition

To apply this operand in a transactional RPC executing process (`clttrnd`) or CUP executing process (`cltcond`), you must specify the `trn_optimum_item` operand in the client environment definition or client service definition.

- `trn_processing_in_rm_error=down|retry|force~<<down>>`

Specify the *action of OpenTP1 if an error is returned* with the code (`XAER_INVAL(-5)`, `XAER_PROTO(-6)`) indicating that the XA function (`xa_commit` function, `xa_forget` function, `xa_rollback` function) issued to the resource manager cannot continue to be processed during the transaction recovery by the transaction recovery service.

This error occurs in the following cases. If this error occurs, there may be a resource inconsistency.

- If an error occurs on the resource manager
- When the transaction control facility provided by the resource manager that is communicating with the XA interface under transaction control of OpenTP1
- When a facility not allowed by the resource manager is used during communication with the XA interface

If this error occurs, messages KFCA00907-E and KFCA00908-E are output.

`down`

Shuts down the OpenTP1 system. After the shutdown, recover all the resources to the normal status and force the OpenTP1 system to start normally.

`retry`

Instructs the resource manager on which the error occurred to periodically determine the transaction until the transaction is determined.

Specify `retry` when the resource manager can be recovered from the error by some method or when checking the resource manager status to take an action such as prohibiting the access before changing the specification to `force`.

`force`

Ignores the faulty resource manager and determines the transaction forcibly.

After the transaction is determined forcibly, specify `force` if another transaction can access the resource manager on which the error occurred.

This operand can be changed during an online session to determine the error handling. Therefore, it is possible to specify `retry` at the system startup, take an appropriate action on the faulty resource manager if an error occurs, and then change the specification to `force`.

- `trn_recovery_list_remove=normal|force|no~<<no>>`

Specify whether to delete undecided transaction information files at the start of OpenTP1.

`normal`

Undecided transaction information files are deleted at normal start of OpenTP1.

`force`

Undecided transaction information files are deleted at start of OpenTP1.

`no`

Undecided transaction information files are not deleted at start of OpenTP1.

- `trn_recovery_list_remove_level=delete-level-for-undecided-transaction-information-file~<unsigned integer> ((0-24855)) <<0>>` (Unit: days)

Specify the delete level for the undecided transaction information files. This operand is valid when `normal` or `force` is specified by the `trn_recovery_list_remove` operand.

0

All files are deleted.

1-24855

The files created *specified-value* x 24 or more hours before the transaction service start time are deleted.

- `trn_crm_use=Y|N~<<N>>`

Specify whether to use the communication resource manager (CRM).

Y

The CRM is used.

N

The CRM is not used.

- `trn_max_crm_subordinate_count=maximum-number-of-childtransaction-branches-through-CRM~<unsigned integer> ((0-1024)) <<8>>`

Specify the maximum number of RPCs through the CRM that are created by a single transaction branch under OpenTP1.

- `trn_watch_time=maximum-communication-wait-time-for-synchronization-point-processing-of-transactions~<unsigned integer> ((1-65535)) <<120>>` (Unit: seconds)

Specify the maximum waiting time for receiving the communication (such as a prepare instruction, commit instruction, rollback instruction, and response) performed between transaction branches during the synchronization point processing of transactions.

If no instruction or response is made after the specified time, the transaction branch will be rolled back if it is before completion of the first phase of two-phase commit. If the first phase is completed, the system process of the transaction service retries to terminate the transaction.

You can also specify this operand with the user service definition or RAP-processing listener service definition, and user service default definition.

Priority is given to the specified values in the following order (1.>2.>3.).

1. User service definition or RAP-processing listener service definition

2. User service default definition
3. User transaction service definition

Omitting this operand in all of these definitions assumes the `watch_time` value of the user server involving the transaction. Note that you cannot specify 0 in `trn_watch_time`. If you specify 0 in the `watch_time` operand on the user server, 120 (seconds), which is the default value of `trn_watch_time`, is used.

To apply this operand in a transactional RPC executing process (`clttrnd`) or CUP executing process (`cltcond`), you must specify the `trn_watch_time` operand in the client environment definition or client service definition.

- `trn_rollback_information_put=no|self|remote|all~<<no>>`

Specify whether to log information on the cause of rollback when transaction branches are rolled back.

`no`

Rollback information is not logged.

`self`

Rollback information is logged only for the transaction branch that caused rollback.

`remote`

In addition to information of `self`, rollback information is logged for transaction branches for which the remote node transaction branch requested rollback.

`all`

In addition to information of `remote`, rollback information is logged for transaction branches for which the local node transaction branch requested rollback.

This operand can also be specified with the user service definition or RAP-processing listener service definition, and the user service default definition.

The priority of the specified values is (1.>2.>3.).

1. User service definition or RAP-processing listener service definition
2. User service default definition
3. Transaction service definition

To apply this operand in a transactional RPC executing process (`clttrnd`) or CUP executing process (`cltcond`), you must specify the `trn_rollback_information_put` operand in the client environment definition or client service definition.

You will be able to investigate errors more easily by using the log data acquired when this operand is specified. If no or nothing is specified for this operand, we recommend that you specify `all` instead.

- `trn_limit_time=maximum-time-to-execute-transaction-branch~<unsigned integer> ((0-65535)) <<0>>` (Unit: seconds)

Specify the maximum time to execute a transaction branch. The expiration time is automatically specified for the `dc_rpc_call` and `dc_rpc_poll_any_replies` functions and for the communication during the synchronization point processing as shown below, so that the time between startup of a transaction branch and termination of the synchronization point processing does not exceed the value specified in this operand.

- Expiration time for the `dc_rpc_call` function and the `dc_rpc_poll_any_replies` function

For $K \geq \text{Value of the operand}$, the system returns a timeout error without executing the requested processing.

For $K < \text{Value of the operand}$, and $(\text{Value of the operand}) - K \geq W$, W is set for the expiration time.

For $K < \text{Value of the operand}$, and $(\text{Value of the operand}) - K < W$, the value of the operand minus K is set for the expiration time.

K

$(\text{Current time}) - (\text{Transaction branch startup time})$

W

Value specified in the `watch_time` operand for the `dc_rpc_call` function, or value of the `timeout` argument for the `dc_rpc_poll_any_replies` function

- Expiration time for the communication during the synchronization point processing

For $K \geq \text{Value of the operand}$, the expiration time is 1 second.

For $K < \text{Value of the operand}$, and $(\text{Value of the operand}) - K \geq W$, W is set for the expiration time.

For $K < \text{Value of the operand}$, and $(\text{Value of the operand}) - K < W$, the value of the operand minus K is set for the expiration time.

K

$(\text{Current time}) - (\text{Transaction branch startup time})$

W

Value specified in the `trn_watch_time` operand, or in the `watch_time` operand if the `trn_watch_time` operand is not specified

If processing other than above takes a long time, the transaction branch may not terminate within the specified time.

If the time specified with this operand has expired before the synchronization point processing starts, the transaction will be rolled back. Specify 0 to have no time check.

This operand can also be specified with the user service definition or RAP-processing listener service definition, and the user service default definition.

The priority of the specified values is (1.>2.>3.).

1. User service definition or RAP-processing listener service definition
2. User service default definition
3. Transaction service definition

To apply this operand in a transactional RPC executing process (`clttrnd`) or CUP executing process (`cltcond`), you must specify the `trn_limit_time` operand in the client environment definition or client service definition.

■ `trn_rollback_response_receive=Y|N~<<Y>>`

Specify whether to receive a rollback completion report after sending a rollback instruction to the RPC destination transaction branch. Specify `N` to terminate the local transaction branch without receiving the rollback completion report from the RPC destination transaction branch (i.e., without waiting for the RPC destination transaction branch to complete rollback processing).

This operand can also be specified with the user service definition or RAP-processing listener service definition, and the user service default definition.

The priority of the specified values is (1.>2.>3.).

1. User service definition or RAP-processing listener service definition
2. User service default definition
3. Transaction service definition

To apply this operand in a transactional RPC executing process (`clttrnd`) or CUP executing process (`cltcond`), you must specify the `trn_rollback_response_receive` operand in the client environment definition or client service definition.

■ `trn_partial_recovery_type=type1|type2|type3~<<type1>>`

This specifies the method of processing transaction synchronization points when there is a UAP error.

If, because of an RPC timeout, the address of a process to which the RPC is issued fails

to be settled or the UAP where a transaction is underway goes down, the communication between transaction branches will become degraded so that it may take time to settle transactions.

With this operand, the method of processing transaction synchronization points depending on different faults is selected among from the three methods shown in specified values.

Error 1

When there is an RPC timeout:

In this case, the RPC-issuing transaction branch cannot identify the process in which the service request is being executed. Because the RPC-issuing transaction branch cannot identify the process, it cannot send a message about the transaction synchronization point to the RPC-receiving transaction branch. Therefore, both the RPC-issuing and RPC-receiving transaction branches have to wait for the transaction synchronization point message and that wait requires time to settle the transaction.

Error 2

When the RPC-issuing UAP goes down before receiving an RPC response:

In this case, the RPC-issuing transaction branch cannot identify the process in which the service request is being executed. Because the RPC-issuing branch cannot identify the process, it cannot send a message about the transaction synchronization point to the RPC-receiving transaction branch. Therefore, the RPC-receiving transaction branch has to wait for the transaction synchronization point message and that wait requires time to settle the transaction.

Error 3

When the RPC-issuing UAP and the RPC-receiving UAP go down almost simultaneously after the reception of a response from the RPC-receiving UAP:

In this case, the transaction recovery process taking over both of the transaction branches does not know that the other party's UAP process is down. The transaction recovery process will send a transaction synchronization point message to a non-existing UAP process and that action may require time to settle the transaction.

type1

If Error 1 occurs, the RPC-issuing transaction branch and the RPC-receiving transaction branch both settle the transaction when the processing of the transaction synchronization point message gets a timeout.

If Error 2 occurs, the RPC-issuing transaction branch settles the transaction without sending the transaction synchronization point message to the RPC-receiving transaction branch. The RPC-receiving transaction branch settles

the transaction when the processing of the transaction synchronization point message causes a timeout.

If Error 3 occurs, the RPC-issuing transaction branch and the RPC-receiving transaction branch both settle the transaction when the processing of the transaction synchronization point message causes a timeout.

type2

If Error 1 occurs and transaction is committed, the procedure is the same as type1.

If Error 1 occurs and the transaction is rolled back or if Error 2 occurs, the RPC-issuing transaction branch sends the transaction synchronization point message to the transaction service process at the node where the RPC-receiving transaction branch exists. Then the RPC-issuing transaction branch settles the transaction. When the transaction service process receives the transaction synchronization point message, the transaction service process sends a transaction synchronization point instruction to the process that is currently processing the transaction branch.

If Error 3 occurs, the RPC-issuing transaction branch and the RPC-receiving transaction branch both settle the transaction when the processing of the transaction synchronization point message cause a timeout.

type3

If Error 1 occurs and transaction is committed, the procedure is the same as type1.

If Error 1 occurs and the transaction is rolled back, or if Error 2 occurs, or if Error 3 occurs, the RPC-issuing transaction branch sends the transaction synchronization point message to the transaction service process at the node where the other party's transaction branch exists. Then RPC-issuing transaction branch settles the transaction. When the transaction service process receives the transaction synchronization point message, the transaction service process sends a transaction synchronization point instruction to the process that is currently processing the transaction branch.

In the following cases, even if this operand is given type2 or type3, the transaction may take time to settle.

1. During an RPC execution, the RPC-receiving UAP undergoes a status change (such as a load increase, UAP termination, or UAP blocking) and a service request is retransferred to the same UAP of another node.
2. In this version, this option does not support the other party's OpenTP1.
3. The other party's transaction branch takes time other than in the reception of the transaction synchronization point message.

It is possible to specify this operand even in the user service definition or RAP-processing listener service definition, and user service default definition.

Priority is given to the specified values in the following order (1.>2.>3.).

1. User service definition or RAP-processing listener service definition
2. User service default definition
3. User transaction service definition

To apply this operand in a transactional RPC executing process (`clttrnd`) or CUP executing process (`cltcond`), you must specify the `trn_partial_recovery_type` operand in the client environment definition or client service definition.

- `max_socket_descriptors=maximum-number-of-file-descriptors-for-sockets~<unsigned integer> ((32-2032))`

Specify the maximum number of file descriptors to be used for sockets by the processes under control of OpenTP1[#].

The processes under control of OpenTP1[#] exchange the process information with the system servers or user servers through the TCP/IP communication using sockets. Therefore, you must change the maximum number of file descriptors for sockets depending on the number of UAP processes that run concurrently and the number of other nodes to communicate with.

#

Use this operand for OpenTP1 processes other than the MCF services (MCF manager service, MCF communication service, and application startup service). For the MCF services, see *System service information definition* and *System service common information definition*.

Use the following formula for calculating the maximum number of file descriptors for sockets:

\uparrow (Number of UAP processes in the local node^{#1} + number of trn system processes in the nodes that request the transaction service^{#2} + number of system service processes^{#3})/0.8 \uparrow

\uparrow \uparrow : Rounded up to the nearest whole integer.

#1: The number of UAP processes in the local node is the sum of the following values:

- Number of UAP processes in the local OpenTP1 that use a transactional RPC for sending a service request
- Number of UAP processes in another node that use a transactional RPC for requesting a service from the local OpenTP1.
- Number of transactions to be started concurrently by the CUP (value of the `parallel_count` operand specified in the client service definition)

#2: The number of trn system processes in the nodes that request the transaction service is the sum of the following values:

- Of the nodes specified in the `all_node` operand for the local OpenTP1, the value of the `trn_recovery_process_count` operand plus 1 in the transaction service definition of the node using a transactional RPC to extend the transaction from the local OpenTP1
- Of other nodes that specify the local node name in the `all_node` operand for OpenTP1, the value of the `trn_recovery_process_count` operand plus 1 in the transaction service definition of the node using a transactional RPC to extend the transaction to the local OpenTP1

#3: The number of system service processes in the local OpenTP1.

If the value specified for this operand is too small, the connection cannot be set with other processes under control of OpenTP1. The process terminates abnormally after outputting the KFCA00307-E error message.

If this operand is omitted, the system assumes the value in the system common definition.

- `trn_recovery_failmsg_interval=minimum-interval-between-issuing-messages-containing-information-about-the-incomplete-transaction~<unsigned integer>((0-65535))<<1800>>` (unit: seconds)

Specify the interval between outputs of the KFCA00960-I message.

If the system cannot recover a transaction and the length of time specified in this operand is exceeded after the previous KFCA00960-I message was output, the same message is output again. However, the KFCA00960-I message is output immediately for the following cases:

- If the system fails to recover the transaction at the outset after the transaction starts.
- If the system fails to recover the transaction at the outset after the start of OpenTP1 termination processing.
- If the system fails to recover the transaction at the outset after the restart of OpenTP1.

If you specify 0 for this operand, the KFCA00960-I message will not be output.

If you are currently recovering multiple transaction branches, this operand is applied to each transaction branch. Only messages from the same transaction branch are output at the interval specified in this operand.

The KFCA00960-I message may sometimes be output twice or more for a single transaction recovery failure. This occurs when there are multiple reasons for the failure. The KFCA00960-I message may sometimes be output after the KFCA00990-I

message.

- `trn_wait_rm_open=continue|stop|retry_continue|retry_stop~<<continue>>`

This operand specifies the action to be taken if an error occurs while a resource manager provided by other than OpenTP1 is opened (`xa_open` function) when OpenTP1 starts.

`continue`

Ignores the `xa_open` function error and continues the OpenTP1 start processing.

`stop`

Stops the OpenTP1 start processing if the `xa_open` function error occurs.

`retry_continue`

Suspends the OpenTP1 start processing if the `xa_open` function error occurs and retries to issue the `xa_open` function for the number of times specified in the `trn_retry_count_rm_open` operand at the interval specified in the `trn_retry_interval_rm_open` operand. If the `xa_open` function error does not go away, `retry_continue` ignores the error and continues the OpenTP1 start processing.

`retry_stop`

Suspends the OpenTP1 start processing if the `xa_open` function error occurs and retries to issue the `xa_open` function for the number of times specified in the `trn_retry_count_rm_open` operand at the interval specified in the `trn_retry_interval_rm_open` operand. If the `xa_open` function error does not go away, `retry_stop` cancels the OpenTP1 start processing.

- `trn_retry_interval_rm_open=retry-interval-for-issuing-xa-open-function~<unsigned integer>((1-3600))<<10>>` (unit: seconds)

This operand specifies the retry interval for issuing the `xa_open` function when `retry_continue` or `retry_stop` is specified in the `trn_wait_rm_open` operand.

- `trn_retry_count_rm_open=number-of-retries-for-issuing-xa-open-function~<unsigned integer>((1-65535))<<18>>`

This operand specifies the number of retries for issuing the `xa_open` function when `retry_continue` or `retry_stop` is specified in the `trn_wait_rm_open` operand.

- `thread_stack_size=size-of-thread-stack-area-used-within-OpenTP1~<unsigned integer>((1024-524288))<<49152#>>` (unit: bytes)

#

For the AIX version of uCosminexus TP1/Server Base(64), the default value is

65536.

This operand specifies the thread stack area that OpenTP1 uses internally. The size of the thread stack area for the resource manager monitoring service has been expanded to 262,144 bytes. Therefore, specify this operand only when a thread stack area larger than 262,144 bytes is required for the resource manager for which you want to use XA linkage. You can use the following formula to calculate the amount of memory required when this operand is specified:

Thread stack area size (bytes) = (value of the `trn_recovery_process_count` operand in the transaction service definition + 2) x (value of the `thread_stack_size` operand) x 2

- `polling_control_data=Y|N~<<N>>`

This operand specifies whether to regularly poll into the waiting status where the transaction recovery daemon is waiting for a transaction recovery request. Specify Y to check whether a temporary closing request has arrived.

Y

Regularly polls into the waiting status for a transaction recovery request and checks whether a temporary closing request has arrived.

N

Does not poll into the waiting status for a transaction recovery request, and keeps the waiting status until a service request arrives.

- `thread_yield_interval=interval-for-issuing-a-trigger-to-receive-a-socket-reuse-instruction~<unsigned integer>((1-86400))<<90>>(unit: seconds)`

Specify the interval in seconds for polling into the waiting status where the transaction recovery daemon is waiting for a transaction recovery request. This specification checks whether a temporary closing request has arrived.

If the transaction recovery requests are accepted one after another without waiting, the system checks whether a temporary closing request has arrived when the time period in which transaction recovery requests are accepted successively exceeds a predetermined time. This operand is also used as the interval. (No signal interrupt occurs for checking whether a temporary closing request has arrived, when the time period in which transaction recovery requests are accepted successively exceeds the value specified in this operand.)

Specify a smaller value than the time period in which a process issuing a temporary closing request waits for a response (180 seconds: default of `ipc_socket1_watchtime` operand).

The facility of checking whether a temporary closing request has arrived by polling into the transaction recovery request waiting status becomes active only when Y is

specified in the `polling_control_data` operand. The facility of checking whether a temporary closing request has arrived when successive services are accepted becomes active regardless of the value specified in the `polling_control_data`.

If the maximum value is specified in this operand, the system does not check whether a temporary closing request has arrived, regardless of the value specified in the `polling_control_data` operand.

- `groups=group-identifier [,group-identifier]...~<unsigned integer>((0-4294967294))`

Sets a group access list of the service groups.

Specify group IDs cataloged in the operating system. You can specify up to 16 group IDs.

The `setgid()` system call automatically sets the group ID for the OpenTP1 administrator regardless of the specified value in this operand.

Since the maximum value depends on the operating system, see the documentation for your operating system.

- `trn_xar_use=Y|N~<<N>>`

Specify whether to use the XA resource service. To use the XA resource service, you need to define the execution environment in the XA resource service definition. Note that if Y is specified for the `jnl_fileless_option` operand in the system common definition, the XA resource service cannot be used.

Y

The XA resource service is used.

N

The XA resource service is not used.

- `trn_start_recovery_mode=stop|wait|continue~<<stop>>`

Specify the transaction recovery processing method used by the resource manager, specified in the `-m` option in the `trnstring` definition command, during its OpenTP1 startup processing. This operand can be changed or deleted at the restart.

`stop`

Stops the OpenTP1 startup processing if recovery processing does not finish within the retry processing in a specified length of time (value specified in the `trn_start_recovery_watch_time` operand). In this case, the system outputs abort code `t860004`.

`wait`

Continues retry processing until all the transaction recovery processing for OpenTP1 finishes in the resource manager specified in the `-m` option in the

`trnstring` definition command. To cancel this retry processing, use the `dcstop` command to forcibly terminate OpenTP1.

`continue`

Cancels recovery processing if it does not finish within the retry processing in a specified length of time (value specified in the `trn_start_recovery_watch_time` operand), and continues OpenTP1 startup processing.

- `trn_start_recovery_watch_time=elapsed-retry-time~<unsigned integer>`
((0-65535))<<600>> (units: seconds)

Specify the upper retry time limit until pre-online recovery processing finishes when the `-m` option is specified in the `trnstring` definition command. When you specify 0, no retry is performed. This operand is valid when a value other than `wait` is specified in the `trn_start_recovery_mode` operand. This operand can be changed or deleted at restart.

- `trn_start_recovery_interval=retry-interval~<unsigned integer>`
((0-65535))<<3>> (units: seconds)

Specify the retry interval before pre-online recovery processing finishes when the `-m` option is specified in the `trnstring` definition command. When you specify 0, the next retry is performed immediately. When you specify 0 for the `trn_start_recovery_watch_time` operand, the value specified for the `trn_start_recovery_interval` operand is invalid. This operand can be changed or deleted at restart.

- `trn_xa_commit_error=down|force~<<down>>`

Specify the processing to be performed[#] if a resource manager becomes unable to commit a transaction that accesses multiple resources after the commitment of the transaction is determined.

If this error occurs, the resources accessed by the applicable transaction may become inconsistent.

#

When the `xa_commit` function issued to the resource manager is returned with a rollback code (code beginning with `XAER_RMERR` or `XA_RB`)

`down`

Shuts down the OpenTP1 system.

Recover the consistency of resources after the system goes down and forcibly start OpenTP1.

`force`

Continues the system, disregarding the resource inconsistency.

In this case, the function that performs a commitment (`dc_trn_chained_commit`, `dc_trn_unchained_commit()`, `tx_commit()`) ends normally. Specify this operand if resource inconsistency is not a problem or during a test.

- `trn_prf_event_trace_level=acquisition-level-of-TRN-event-trace~((00000000-00000007)) <<00000007>>`

Specify the acquisition level of the TRN event trace. This operand controls the event trace acquisition feature. If you do not specify this operand, entry information, normal exit information, and error exit information are acquired as trace data. For details about the TRN event trace, see the description about the trace feature in the manual *OpenTPI Description*.

00000000

Does not acquire the TRN event trace.

00000001

Acquires the trace at the entry of an event (entry information).

00000002

Acquires the trace at the exit of an event (normal exit information).

When you specify `xafunc` for the `trn_prf_event_trace_condition` operand, the trace is acquired when the return value of the XA function is 0 or greater.

00000004

Acquires the trace if an error occurs at the exit of an event (error exit information).

00000007

Acquires the trace at the entry and exit of an event (including the case when an error occurs) (entry information, normal exit information, and error exit information).

To output the acquired trace data to a file or edit the trace data, use the `prfget` command or the `prfed` command. The result of file output is stored in `$DCDIR/spool/dctrninf/trace/prf`. For details about the `prfget` command or the `prfed` command, see the manual *OpenTPI Operation*.

TP1/Extension 1 must be installed to use this operand. If TP1/Extension 1 is not installed, the operation is not guaranteed.

- `trn_prf_event_trace_condition=trace-acquisition-type[,trace-acquisition-type]~<<xafunc>>`

Specify the type of the TRN event trace to be acquired. You can specify multiple types depending on the trace you want to acquire. If you do not specify this operand, the trace about XA functions is acquired.

`xafunc`

Acquires the trace about XA functions.

`trnservice`

Acquires the trace about the operating status of the transaction service.

TP1/Extension 1 must be installed to use this operand. If TP1/Extension 1 is not installed, the operation is not guaranteed.

- `trn_completion_limit_time=time-limit-for-completing-transaction~<unsigned integer> ((0-65535))<<0>>(units: seconds)`

Specify the maximum time for execution of a transaction branch. If the execution time of a transaction branch reaches the maximum, the transaction branch process terminates abnormally, and the recovery process commits or rolls back the transaction branch. If 0 is specified, the execution time of the transaction branch is not monitored for this purpose.

Whether an abnormally terminated UAP is shut down depends on the specification of the `hold` and `term_watch_time` operands. For details, see the descriptions of these user service definition operands.

Monitoring of the execution time specified by this operand starts when a transaction is started by invoking the `dc_trn_begin` function or by starting a service function. The monitoring ends when the transaction branch terminates after acquisition of information about the synchronization point processing of the transaction (TJ). However, if the transaction is optimized, monitoring of the transaction branch on the server terminates after a response is returned to the client. For details about the section for which the execution time specified by this operand is monitored and about the relationship between this operand and timer monitoring options, see *A.2 Time monitoring for transactions*.

Note that this operand can also be specified in the user service definition (or RAP-processing listener service definition) and user service default definition.

The priority of the specified values is 1 > 2 > 3.

1. User service definition or RAP-processing listener service definition
2. User service default definition
3. Transaction service definition

To apply this operand in a transactional RPC executing process (`clttrnd`) or CUP executing process (`cltcond`), you must specify the `trn_completion_limit_time` operand in the client service definition.

If the execution time of the process of a child transaction branch reaches the time specified by this operand and the process terminates abnormally, the RPC caller may wait until the time to wait for a response expires.

- `trn_extend_function=facility-extension-level-of-the-transaction-service~<hexadecimal number> ((00000000-00000001))<<00000000>>`

Specify the facility extension level of the transaction service.

The following describes the values you can specify in this operand. To specify multiple extension levels, specify the logical sum of the values.

00000000

The transaction service facility is not extended.

00000001

Specify this value in the transaction service definitions on all OpenTP1 nodes to which the transaction branch is related.

When this value is not specified on any OpenTP1 node to which the transaction branch is related, if the resource manager returns `XAER_NOTA` for a one-phase commit, the return value of the root transaction branch does not change.

The following table lists the values returned by functions when the resource manager returns `XAER_NOTA` for a one-phase commit.

Function	Return value	
	When <code>trn_extend_function=00000000</code>	When <code>trn_extend_function=00000001</code>
<code>dc_trn_chained_commit</code> (<code>CBLDCTRN('C-COMMIT')</code>)	DC_OK (00000)	DCTRNER_HAZARD (00904), DCTRNER_HAZARD_NO_BEGIN (00927)
<code>dc_trn_unchained_commit</code> (<code>CBLDCTRN('U-COMMIT')</code>)	DC_OK (00000)	DCTRNER_HAZARD (00904)
<code>tx_commit</code> (TXCOMMIT)	TX_OK (TX-OK)	TX_HAZARD (TX-HAZARD), TX_HAZARD_NO_BEGIN (TX-HAZARD-NO-BEGIN)
<code>dc_mcf_commit</code> (<code>CBLDCMCF('COMMIT')</code>)	DCMCFRTN_00000 (00000)	DCMCFRTN_HAZARD (70908)

Note

The alphanumeric characters in parentheses indicate the functions and status codes in COBOL.

- `watch_time=maximum-response-waiting-time~<unsigned integer> ((0-65535))`
(Unit: seconds)

Specify the maximum waiting time between sending a service request and receipt of a response when communicating between processes by RPC.

OpenTP1 may suspend termination processing for the length of time specified in this operand. Therefore, if you specify a large value, the termination processing of OpenTP1 may take some time.

If no response is received within the specified time, RPC returns a transmission timeout error.

Specify 0 if the system is to wait for a response. When you specify 0, OpenTP1 may not terminate.

If this operand is omitted, the value specified with the `watch_time` operand of the system common definition is assumed.

Use the default of the `watch_time` operand of the system common definition for this operand.

We recommend that you do not change the operand unless special tuning is necessary.

If a value that is much greater or smaller than the default of the `watch_time` operand of the system common definition is specified, a failure may occur causing OpenTP1 to go down.

command format

Described on the following pages.

putenv format

Operand

- `environment-variable-name environment-variable-value~<character string>`

Specify the environment variable that the transaction recovery service and resource manager monitoring service require to access the resource manager for linkage with the resource manager via the XA interface.

The name and value of the environment variable you specify depend on the resource manager.

In OpenTP1, do not use any environment variable name that begins with `dc`.

dcputenv format

Operand

- *environment-variable-name environment-variable-value*~<character string>

Specify the environment variable that the transaction recovery service and resource manager monitoring service require to access the resource manager for linkage with the resource manager via the XA interface. If the name of an environment variable is specified as the environment variable value, the environment variable is replaced with its value.

The name and value of the environment variable you specify depend on the resource manager.

In OpenTP1, do not use any environment variable name that begins with `dc`.

trnstring (Specify character string or extension for access to resource manager)

Format

```
trnstring -n resource-manager-name
          [-i resource-manager-extension [, resource-manager-
          extension] . . . ]
          [-o "transaction-service-xa_open-function-character-string" ]
          [-c "transaction-service-xa_close-function-character-string" ]
          [-O "user-server-xa_open-function-character-string" ]
          [-C "user-server-xa_close-function-character-string" ] [-d]
          [-e] [-m] [-x]
```

Function

The `trnstring` command specifies the character string or extension for access to the resource manager.

The OpenTP1 transaction service executes a transaction in collaboration with the resource manager in accordance with the X/Open XA interface. The XA interface must report the `xa_open` function character string and `xa_close` function character string that are defined by the resource manager.

If the user server accesses the resource manager provided by a system other than OpenTP1 within a transaction under OpenTP1 (that is, if the `trnmkobj` command is executed to specify a resource manager provided by a system other than OpenTP1, and this resource manager creates a transaction control object file and links with the user server), specify the `xa_open` function character string and `xa_close` function character string for that resource manager. The `xa_open` and `xa_close` functions are issued by the transaction service with the specified character strings used as arguments at startup and termination of the user server.

The transaction service recovers the transaction being processed by a user server when the user server terminated abnormally or when the OpenTP1 system resumed. Because this recovery process uses the two functions, their character strings for all resource managers the user server is to access must be defined in the transaction service.

The `-i` option can be specified only when more than one extension is assigned to one resource manager to be accessed as more than one control unit. The OpenTP1 system modifies the resource manager name to a *resource manager name + resource manager extension* to control the manager for which the `-i` option has been specified. This means that a user server cannot access the resource manager by its name alone. It is necessary to specify the `trnrmid` command in the user service definition or user service default definition.

The character string for identifying a resource manager that is specified in the `-i`

trnstring (Specify character string or extension for access to resource manager)

option must not be duplicated in any trnstring command. If more than one trnstring command for the same resource manager extension is specified under the same resource manager name within one definition file, only the last definition specified is valid.

In the `-o` and `-c` options, specify the character strings to be used when the transaction service process issues the `xa_open` and `xa_close` functions. Also in the `-O` and `-C` options, specify the character strings to be used when the user service process issues the `xa_open` and `xa_close` functions. These options must not be specified for resource managers provided by OpenTP1.

Specify the `-e` option to retry issuing the `xa_close` function, the `xa_open` function, and the `xa_start` function in this order to the static resource manager. If an error occurs in the `xa_start` function when a transaction branch starts for the static resource manager, you can use the `-e` option. If you do not specify the `-e` option, the `xa_open` function and the `xa_start` function are re-issued in this sequence.

For the character strings to be specified, see the manual for each resource manager.

If reporting the NULL characters is necessary, omit the `-o`, `-c`, `-O`, or `-C` option.

If the following two conditions are satisfied, the trnstring command need not be defined:

- where it is unnecessary to access one resource manager with more than one extension assigned to it to configure more than one control unit.
- where it is necessary to report both the `xa_open` and `xa_close` function character strings in the form of NULL characters.

If no required character string or an invalid character string is specified, an error occurs with user server startup or termination, or with transaction recovery.

Options

- `-n resource-manager-name~<1-31 character identifier>`

Specify the name of the resource manager to be accessed by a transaction under OpenTP1. When OpenTP1 provides the resource, you can omit this specification except for OpenTP1_MCF. However, you can omit the specification of OpenTP1_MCF for the following case:

- The `id` operand is omitted or `A` is specified in the `mcfmenv` MCF manager environment definition.

- `-i resource-manager-extension~<1-2 character identifier>`

When one resource manager is accessed as more than one control unit, this option specifies a character string for modifying the manager name to a *resource manager name + resource manager extension*.

If more than one extension uses the same `xa_open` or `xa_close` function character

string, they can be specified in the `-i` option. In this case, a comma (,) must be placed between extensions.

Any extension specified by the `trnstring` command must not be duplicated. To control an MCF relating to transactions, the resource manager extensions for that MCF must be specified in the `-i` operand. They must include process identifiers that can be accessed by user servers and the MCF manager process identifiers that are specified by the manager definition for the MCF operating at each applicable node.

- `-o "transaction-service-xa_open-function-character-string" ~<1-256 character string>`

Specify the character string to be used when the transaction service process under OpenTP1 issues the `xa_open` function. For the character string to be specified, see the manual for each resource manager. If it is necessary to report the NULL character string, omit the `-o` operand.

- `-c "transaction-service-xa_close-function-character-string" ~<1-256 character string>`

Specify the character string to be used when the transaction service process under OpenTP1 issues the `xa_close` function. For the character string to be specified, see the manual for each resource manager. If it is necessary to report the NULL character string, omit the `-c` operand.

- `-O "user-server-xa_open-function-character-string" ~<1-256 character string>`

Specify the character string to be used when the user server process issues the `xa_open` function. For the character string to be specified, see the manual for each resource manager. If it is necessary to report the NULL character string, omit the `-O` operand.

- `-C "user-server-xa_close-function-character-string" ~<1-256 character string>`

Specify the character string to be used when the user server process issues the `xa_close` function. For the character string to be specified, see the manual for each resource manager. If it is necessary to report the NULL character string, omit the `-C` operand.

- `-d`

This operand must be specified if this resource manager does not correspond to the commit optimization and prepare optimization. If this specification is omitted for the resource manager that does not correspond to the commit optimization and prepare optimization, the transaction may not be terminated or the resource manager may go down.

If the resource manager with this operand participates in a transaction, the transaction branch does not perform the commit optimization and prepare optimization.

trnstring (Specify character string or extension for access to resource manager)

■ -e

Specify this option to retry issuing the `xa_close` function, the `xa_open` function, and the `xa_start` function in this order to the resource manager. The `-e` option is useful, if an error occurs in the `xa_start` function when a transaction branch starts for the resource manager specified in the `-n` option. If an error occurs in the `xa_start` function while the `-e` option is not specified, the `xa_open` function and the `xa_start` function are re-issued in this sequence.

■ -m

Specify this option to recover undetermined transactions in the applicable resource manager before OpenTP1 goes online.

When you specify this option, the resource manager monitoring service issues the `xa_recover` function to the resource manager when OpenTP1 starts. Then the resource manager recovers transactions based on the acquired undetermined transaction information as specified in the `trn_start_recovery_mode`, `trn_start_recovery_watch_time`, and `trn_start_recovery_interval` operands.

■ -r

Specify this option to suspend the recovery of transactions until the resource manager reports the information about undetermined transactions during OpenTP1 startup processing or online processing. Transactions are not recovered until the `xa_recover` function issued from the transaction recovery process to the resource manager acquires the information about undetermined transactions. If you specify this option, make sure that you secure transaction parallel recovery processes for the number of specified resource managers (specify the number of transaction parallel recovery processes in the `trn_recovery_process_count` operand). This option can be changed or deleted at restart.

To enable this option, you need to specify an open character string[#].

#

In Oracle 9i and earlier versions, specify `OPS_FAILOVER=T` for an open character string.

In Oracle 10g and later versions, specify `RAC_FAILOVER=T` for an open character string.

XA resource service definition

Format

■ set format

```
[set xar_eventtrace_level=ERR|INF|ALL]
[set xar_eventtrace_record=maximum-number-of-records-output-to-
the-XAR-event-trace-information-file]
[set xar_session_time=monitoring-time-for-idle-transaction-branches]
[set xar_msdtc_use=Y|N]
[set xar_prf_trace_level=acquisition-level-of-the-XAR-performance-verification-trace]
```

■ Command format

```
xarfile -t online|backup
        -a physical-file-name
```

Function

The XA resource service definition defines the execution environment for managing transactions using the XA resource service.

Explanation

set format

■ xar_eventtrace_level=ERR|INF|ALL~<<ERR>>

Specify the output level of the XAR event trace information.

ERR

The error information is output to the XAR event trace.

INF

The error information and the normal information are output to the XAR event trace.

ALL

All the XAR event trace information including the error information and the normal information are output to the XAR event trace.

Hitachi recommends that you specify ERR in the production environment. If you specify a value other than ERR, the number of inputs and outputs increases, slowing down the processing.

- `xar_eventtrace_record=maximum-number-of-records-output-to-the-XAR-event-trace-information-file~<unsigned integer>((1-65535))<<8192>>`

Specify the maximum number of records output to the XAR event trace information file.

- `xar_session_time=monitoring-time-for-idle-transaction-branches~<unsigned integer>((10-65535))<<180>>` (unit: seconds)

Specify the length of time to monitor an idle transaction branch between `End()` and `Prepare()`. When the specified length of time expires, a message is output to roll back the transaction branch. The interval of monitoring the idle status is 10 seconds. Therefore, it may take a while before the idle status is detected.

- `xar_msdtc_use=Y|N ~<<N>>`

Specify whether to use MSDTC linkage.

Y:

MSDTC linkage is used.

N:

MSDTC linkage is not used.

- `xar_prf_trace_level=acquisition-level-of-the-XAR-performance-verification-trace ~(((00000000-00000003)) <<00000003>>`

Specify the acquisition level of the XAR performance verification trace. To specify multiple acquisition levels, specify the logical sum of the values for those acquisition levels.

For details about the XAR performance verification trace, see the description of troubleshooting in the manual *OpenTP1 Description*.

00000000:

The XAR performance verification trace is not acquired.

00000001:

The XAR performance verification trace (for event IDs 0x4a00 to 0x4a0f) is acquired at the entry and exit points of a transaction request from the application server.

00000002:

The XAR performance verification trace (for event IDs 0x4b00 to 0x4b0f) is acquired at the entry and exit points of OpenTP1 transaction processing.

You can use the `prfget` command to export the acquired trace to a file or use the `prfed` command to edit and output the acquired trace. For details about the `prfget` and `prfed` commands, see the manual *OpenTP1 Operation*.

This operand requires the installation of TP1/Extension 1. If this operand is specified when TP1/Extension 1 has not been installed, operation cannot be guaranteed.

Command format

The command format is described on the following page.

xarfile (Specify XAR file)

Format

```
xarfile -t online|backup  
        -a physical-XAR-file-name
```

Function

This command specifies the name of the physical XAR file used for the XA resource service.

There are two types of physical XAR files, for online and for backup, and you need to specify both.

You cannot specify multiple online XAR files and multiple backup XAR files.

The online XAR file and the backup XAR file must have the same number of records and the same record length. The number of records must be greater than the value specified in the `trn_tran_process_count` operand in the transaction service definition.

Options

- `-t online|backup`

Specify the type of the XAR file.

`online`

Online XAR file

`backup`

Backup XAR file

- `-a physical-XAR-file-name~<path name of 1 - 63 characters>`

Specify the name of a physical XAR file.

Interval service definition

Format

- set format

```
[set watch_time=maximum-response-wait-time]
```

- Command format

None

Function

The interval service definition defines the execution environment for the interval timer function to be provided for each system server.

Explanation

set format

- *watch_time=maximum-response-waiting-time*~<unsigned integer> ((0-65535))
(Unit: seconds)

Specify the maximum waiting time between sending a service request and receipt of a response when communicating between processes by RPC.

OpenTP1 may suspend termination processing for the length of time specified in this operand. Therefore, if you specify a large value, the termination processing of OpenTP1 may take some time.

If no response is received within the specified time, RPC returns a transmission timeout error.

If 0 is specified, the system is to wait for a response. When you specify 0, OpenTP1 may not terminate.

If this operand is omitted, the value specified with the *watch_time* operand of the system common definition is assumed.

Use the default of the *watch_time* operand of the system common definition for this operand.

We recommend that you do not change the operand unless special tuning is necessary.

If a value that is much greater or smaller than the default of the *watch_time* operand of the system common definition is specified, a failure may occur causing OpenTP1 to go down.

Interval service definition

command format

None

Status service definition

Format

■ set format

```
set sts_file_name_1="logical-file-name" , "system-A-status-file-name" ,
    "system-B-status-file-name"
[set sts_file_name_2="logical-file-name" , "system-A-status-file-name" ,
    "system-B-status-file-name" ]
[set sts_file_name_3="logical-file-name" , "system-A-status-file-name" ,
    "system-B-status-file-name" ]
[set sts_file_name_4="logical-file-name" , "system-A-status-file-name" ,
    "system-B-status-file-name" ]
[set sts_file_name_5="logical-file-name" , "system-A-status-file-name" ,
    "system-B-status-file-name" ]
[set sts_file_name_6="logical-file-name" , "system-A-status-file-name" ,
    "system-B-status-file-name" ]
[set sts_file_name_7="logical-file-name" , "system-A-status-file-name" ,
    "system-B-status-file-name" ]
[set sts_initial_error_switch=stop|continue|excontinue]
[set sts_single_operation_switch=stop|continue]
[set sts_last_active_file="logical-file-name" ]
[set sts_last_active_side=A|B]
[set watch_time=maximum-response-waiting-time]
```

■ command format

None

Function

The status service definition defines the execution environment to manage the status of each system service operated under an OpenTP1 system environment. There is one status service for each node.

A maximum of 7 status file names can be defined. If an OpenTP1 system opens normally, the first defined status file becomes active. The other status files become reserved files. After a restart, the previous file in use will continue to be active.

Status files are managed in duplicate as system A and system B files for better reliability. The same contents are written into the active status file as system A and system B files. Thus, be sure to specify files in which all records are of the same length. Also specify files of the same capacity for each logical file.

Distribute the physical files of system A and system B to more than one disk. When all the physical files of the same system are created in one disk, the system cannot be used if the entire disk becomes faulty. For example, when all the physical files of the same system are created in one disk, there will be no generation of system A and B files that

can be duplicated if a disk failure occurs. In this case, OpenTP1 may be terminated urgently or continues operation using only one system, and this may cause a loss of files.

Should a status file be damaged during a normal OpenTP1 system startup, a restart, or during on-line operation, the status service will swap status files to prevent OpenTP1 from suspending. However, this swap function requires that a spare status logical file be defined.

Explanation

set format

- `sts_file_name_1-sts_file_name_7="logical-file-name" , "system-A-status-file-name" , "system-B-status-file-name"`

Specify up to seven status files. One file is created as the active file, and the other six files as spare files. Each status file will be created in duplicate as a system A status file and system B status file, to improve reliability.

The logical file name, system A status file name, and system B status file name must each be unique for each of the seven status files.

logical-file-name~<1-8 character identifier>

Specify the logical file name of the status file.

system-A-status-file-name~<path name>

Specify the full path name of the system A status file name that will make up the logical file.

system-B-status-file-name~<path name>

Specify the full path name of the system B status file name that will make up the logical file.

Specify files of the same record length and record number as for the system A file.

No environment variables can be used for the full path name of the system A or B status file name.

The same file name cannot be specified for the status files more than once even if the full path names are different.

- `sts_initial_error_switch=stop | continue | excontinue~<<stop>>`

Specify the action of the status service if either of the following abnormalities is detected when opening the defined status file:

- the status file has not been created, or
- the status file is damaged.

stop

Specify **stop** to suspend OpenTP1 without starting the status service; this will guarantee that OpenTP1 can restart.

A **stop** specification will suspend OpenTP1 if even one of the specified files is abnormal. Take corrective action for the abnormal file, then restart OpenTP1. However, OpenTP1 cannot be restarted if both system A and system B files of the status logical file active in the last on-line operation were damaged.

continue

Specify **continue** to start the status service even with an abnormality in the specified status logical file.

1. Should an error occur in either system A or system B file of the status logical file active in the last online operation, the contents of the normal system file are copied into a spare system A and system B file. These spare files then become the active files and the status service is started. If there is no spare file to perform the copying, whether the status service stops or continues depends on the specification of the `sts_single_operation_switch` operand.
2. In starting a system service, if OpenTP1 cannot determine whether the status file selected to be active was the last active file in the previous online operation, OpenTP1 compares it with the logical file name specified with the `sts_last_active_file` operand. If the file names match, then the status service is started; otherwise the status service is suspended. If the `sts_last_active_file` operand is not specified, and the last active file cannot be determined, the status service will not be started. The last active file cannot be determined if any of the defined logical files are in a state as shown in Table 3-4 during startup.

Table 3-4: Logical file states for which active file cannot be determined (continue)

No.	System A state	System B state
1	BLOCKADE	BLOCKADE
2	BLOCKADE	OPEN (INIT)
3	BLOCKADE	NONE
4	OPEN (INIT)	BLOCKADE
5	OPEN (INIT)	NONE
6	NONE	OPEN (INIT)
7	NONE	BLOCKADE

No.	System A state	System B state
8	NONE	NONE

3. If at least one normal status logical file does not exist in either system A or system B, the status service will not be started and OpenTP1 will be suspended.

`excontinue`

Specify `excontinue` to perform the same processing as for `continue`. When nothing or `stop` is specified for the `sts_single_operation_switch` operand, any logical file of which either system file has error and the other system file is initialized is skipped for processing during determination of the active file.

The last active file cannot be determined if any of the defined logical files are in a state as shown in Table 3-5 during the status service startup.

Table 3-5: Logical file states for which active file cannot be determined (excontinue)

No.	System A state	System B state
1	BLOCKADE	BLOCKADE
2	BLOCKADE	NONE
3	NONE	BLOCKADE
4	NONE	NONE

Note that if `stsin` command initializes either system of the logical file active in the last online operation, the active file cannot be determined correctly.

For troubleshooting of status files, see the manual *OpenTP1 Operation*.

- `sts_single_operation_switch=stop|continue~<<stop>>`

Specify the status service action to be taken if an I/O error occurs with one system for the active status file during startup or after starting the status service and there is no logical file of which both system files are swappable.

`stop`

Specify this operand to stop the status service.

`continue`

Specify this to continue the status service with only the normal system for the active status file.

The KFCA01044-I message appears when single-system operation begins. Perform

troubleshooting as soon as this message appears because OpenTP1 can no longer restart if either of the following errors occurs during single-system operation:

- During single-system operation, an error occurs with the normal system.
- During single-system operation, the system goes down at file updating.

■ `sts_last_active_file="logical-file-name"~<1-8 character identifier>`

Specify the name of the last active file up to the last online operation as the logical file name. Specify this definition only if `continue` or `excontinue` is specified in the `sts_initial_error_switch` operand. It becomes effective if OpenTP1 cannot determine if the selected active file is the same as the last active file for the previous online operation.

Specify this operand as follows:

1. If the definition can be revised as the active file is changed

If OpenTP1 is started after all status files are initialized, specify the logical file name with the smallest number as specified in the `sts_file_name` operand. Then, if the active file is changed because of a swap, change this definition to the new active file name.

2. If the definition cannot be revised when the active file is changed

If during system startup, KFCA01011-I and KFCA01005-E (reason code=000000015 or 000000016) is output to indicate a system startup error, inspect the last active file of the previous on-line operation with the log file. If it matches the logical file name output with KFCA01011-I, specify that logical file name in this definition statement, and restart OpenTP1.

■ `sts_last_active_side=A|B`

If an error occurred with one system for the active status file and this file was shut down in the previous online session, the system that was normal at that time must be specified in this operand.

This specification is used to prevent the defective system (detected in the previous online session) from being selected at restart of OpenTP1.

The `sts_last_active_side` operand must be specified if one system is shut down due to an error. It is valid only with `continue` specified in the `sts_single_operation_switch` operand.

■ `watch_time=maximum-response-waiting-time~<unsigned integer> ((0-65535))`
(Unit: seconds)

Specify the maximum waiting time between sending a service request and receipt of a response when communicating between processes by RPC.

OpenTP1 may suspend termination processing for the length of time specified in this

operand. Therefore, if you specify a large value, the termination processing of OpenTP1 may take some time.

If no response is received within the specified time, RPC returns a transmission timeout error.

Specify 0 if the system is to wait for a response. When you specify 0, OpenTP1 may not terminate.

If this operand is omitted, the value specified with the `watch_time` operand of the system common definition is assumed.

Use the default of the `watch_time` operand of the system common definition for this operand.

We recommend that you do not change the operand unless special tuning is necessary.

If a value that is much greater or smaller than the default of the `watch_time` operand of the system common definition is specified, a failure may occur causing OpenTP1 to go down.

command format

None

Journal service definition

Format

■ set format

```
[set jnl_tran_optimum_level=journal-output-method-optimum-level]
[set jnl_arc_terminate_timeout=maximum-waiting-time]
[set max_socket_descriptors=maximum-number-of-file-descriptors-for-sockets]
[set jnl_arc_ipc_buff_size=TCP/IP-send-and-receive-buffer-size]
[set jnl_watch_time=maximum-time-the-journal-service-waits-for-a-communication-response]
[set watch_time=maximum-response-waiting-time]
```

■ command format

```
jnldfs -r system-journal-service-definition-file-name
        -c checkpoint-dump-service-definition-file-name
        [ [ ,checkpoint-dump-service-definition-file-name ] . . . ]
```

Function

The journal service definition defines the execution environment to use the system journal service and checkpoint dump service. The definition cannot be changed for a system restart.

Explanation

set format

- `jnl_tran_optimum_level=journal-output-method-optimum-level~<unsigned integer> ((2-3)) <<2>>`

Specify the optimum level for the method of outputting journals that are needed for recovering transactions to be collected in journal files. Consider the mode of applications when using level 3.

2

Optimization per global transaction

Journals are output synchronously in either of the following cases only:

- PJ is output from the root transaction branch within a global transaction.
- PJ and HJ are output from transaction branches at other nodes.

If journals other than the above are output asynchronously, the journal I/O count is reduced at the execution of transactions, resulting in improved performance.

Journals that were not asynchronously output to files when the system restarted after an abnormal termination are output again by the system when the transaction is recovered.

3

Conditional asynchronous journal output

If the transaction in progress does not include any of the following conditions, all the journals are output asynchronously. This eliminates journal I/O operations to enhance the transaction execution performance. If the transaction in progress includes the following conditions, journals are collected at level 2:

- In a global transaction using DAM, any DAM file not using the deferred update function is updated.
- A global transaction extending over more than one node is executed.
- Files are updated in a global transaction using ISAM.
- Files are updated in a global transaction using MCF.

Transaction journals requested to be output asynchronously are output to a journal file at each of the following times:

- When a resource manager (DAM, TAM, or MCF) accessed within a transaction is really updated (at a certain interval).
- When a checkpoint dump is collected.
- When the journal buffer becomes full.

Note that a transaction in which journals were not output to the journal file at system restart from abnormal termination is rolled back. It is rolled back even if the transaction terminated normally (commit completed) before abnormal termination of the system. If a user-processed UAP is executed in expectation for normal return of the commit API of a transaction, mismatch in status between the transaction and user process may occur when the OpenTP1 terminates abnormally during execution of the UAP. With this taken into consideration, do not specify level 3 if roll-back after system restart is a problem.

- `jnl_arc_terminate_timeout=maximum-waiting-time~<<unsigned integer>> ((0-3600)) <<0>> (Unit: seconds)`

Specify the maximum waiting time in seconds from the end of journal service to the halt of the archive service. If the archive service that passes the specified time is present, it will be stopped. Also, the journal service will terminate.

If a 0 is specified, the archive service and the journal service will not terminate until the end processing of the archived node to be archived is completed.

- `max_socket_descriptors=maximum-number-of-file-descriptors-for-sockets~<unsigned integer> ((32-2032))`

Specify the maximum number of file descriptors to be used for sockets by the processes under control of OpenTP1[#].

The processes under control of OpenTP1[#] exchange the process information with the system servers or user servers through the TCP/IP communication using sockets. Therefore, you must change the maximum number of file descriptors for sockets depending on the number of UAP processes that run concurrently and the number of other nodes to communicate with.

#: OpenTP1 processes other than the MCF services (MCF manager service, MCF communication service, and application startup service). For the MCF services, see the sections on the *system service information definition* and the *system service common information definition*.

Use the following formula for calculating the maximum number of file descriptors for sockets:

\uparrow (Number of UAP processes in the local node^{#1} + number of nodes that request a service of the journal service^{#2} + number of system service processes^{#3})/0.8 \uparrow

\uparrow \uparrow : Rounded up to the nearest whole integer.

#1: The number of UAP processes in the local node is the sum of the following values:

- Number of UAP processes in the local OpenTP1
- Number of transactions to be started concurrently from the CUP (value of the `parallel_count` operand specified in the client service definition)

#2: Add this value only when using the journal archiving facility. This value is the sum of the following values:

- Number of node names specified in the `all_node` operand for the local OpenTP1
- Number of other nodes that specify the local node name in the `all_node` operand for the local OpenTP1

#3: The number of system service processes in the local OpenTP1.

If the value specified for this operand is too small, the connection cannot be set with other processes under control of OpenTP1. The process terminates abnormally after outputting the KFCA00307-E error message.

The order of priority of the specified values is 1 > 2.

1. Journal service definition

2. System common definition

If this operand is omitted, the system assumes the value in the system common definition.

- `jnl_watch_time=maximum-time-the-journal-service-waits-for-a-communication-response ~<unsigned integer> ((0-65535)) <<180>>` (Unit: seconds)

Specify the maximum time that the journal service waits from the time it sends a service request until it receives a service response for inter-process communication that uses RPCs. If no response to an RPC is received within the specified time, the RPC returns a timeout error.

If 0 is specified, the journal service continues to wait until a response is received, in which case OpenTP1 might not be able to terminate.

Do not change the setting of this operand unless special tuning is required.

The scope of the `jnl_watch_time` operand is the following:

- `jnl_opnfg` command
- `jnl_clsfg` command
- `jnl_chgfg` command
- `jnl_unlfg` command
- `jnl_swpfg` command[#]
- Time to wait for a response to a swap request when the journal file failed or became full

#:

For the `jnl_swpfg` command, the time specified by the `jnl_watch_time` operand is doubled.

- `watch_time=maximum-response-waiting-time~<unsigned integer> ((0-65535))` (Unit: seconds)

Specify the maximum waiting time between sending a service request and receipt of a response when communicating between processes by RPC.

OpenTP1 may suspend termination processing for the length of time specified in this operand. Therefore, if you specify a large value, the termination processing of OpenTP1 may take some time.

If no response is received within the specified time, RPC returns a transmission timeout error.

Specify 0 if the system is to wait for a response. When you specify 0, OpenTP1 may not terminate.

If this operand is omitted, the value specified with the `watch_time` operand of the system common definition is assumed.

Use the default of the `watch_time` operand of the system common definition for this operand.

We recommend that you do not change the operand unless special tuning is necessary.

If a value that is much greater or smaller than the default of the `watch_time` operand of the system common definition is specified, a failure may occur causing OpenTP1 to go down.

- `jnl_arc_ipc_buff_size=TCP/IP-send-and-receive-buffer-size~<unsigned integer> ((8192-1048576))<<61440>>` (units: bytes)

Specify the size of the TCP/IP send-and-receive buffer used by the journal transfer process, which uses the archive facility to transfer journal data to the archive node.

In a high-speed communication environment, you can improve performance by increasing the value of this operand. When you specify the operand, make sure that the value does not exceed the maximum TCP/IP buffer size that can be specified in the OS. Also, note that the value of the operand must be equal to the value of the `jnl_arc_ipc_buff_size` operand in the global archive journal service definition on the archive node.

command format

Described on the following page.

jnldfs (Specify journal related files)

Format

```
jnldfs -r system-journal-service-definition-file-name  
      -c checkpoint-dump-service-definition-file-name  
      [ [ ,checkpoint-dump-service-definition-file-name ] . . . ]
```

Function

This command specifies the file name of each system service definition making up the journal service. Each file name must be unique within an OpenTP1 system.

Options

- **-r** *system-journal-service-definition-file-name*~<1-8 character identifier>
Specify the file name of the system journal service definition.
- **-c**
checkpoint-dump-service-definition-file-name [,*checkpoint-dump-service-definition-file-name*] . . .]~<1-8 character identifier>
Specify the file name of the checkpoint dump service definition. Create a file for each MCF service, transaction service, and MQA service for which checkpoint dumps are to be collected.
"cpdN" (N: integer) cannot be used as a file name.

Note

If Y has been specified for the `jnl_fileless_option` operand in the system common definition, you can omit the `jnldfs` definition command.

System journal service definition

Format

■ set format

```
[set jnl_max_datasize=maximum-record-data-length]
[set jnl_cdinterval=journal-block-count]
[set jnl_rerun_swap=Y|N]
[set jnl_dual=Y|N]
[set jnl_singleoperation=Y|N]
[set jnl_rerun_reserved_file_open=Y|N]
[set jnl_arc_name=global-archive-journal-service-resource-group-name-
@-node-identifier]
[set jnl_arc_buff_size=archive-buffer-size]
[set jnl_arc_max_datasize=maximum-size-of-data-transferred-
during-archiving]
[set jnl_arc_terminate_check=Y|N]
[set jnl_arc_rec_kind=journal-record-type[journal-record-type]. . . ]
[set jnl_arc_uj_code="UJ-code[ , UJ-code]. . . " ]
[set jnl_arc_check_level=1|2]
[set jnl_arc_trn_stat=Y|N]
[set jnl_unload_check=Y|N]
[set jnl_auto_unload=Y|N]
[set jnl_auto_unload_path
=directory-for-storing-unload-journal-files"
[ , "directory-for-storing-unload-journal-files" , . . . ] ]
[set jnl_max_file_dispersion=maximum-degree-of-parallelism-for-parallel-access]
[set jnl_min_file_dispersion=minimum-degree-of-parallelism-for-parallel-access]
[set watch_time=maximum-response-waiting-time]
```

■ command format

```
{{{{jnladdfg -g file-group-name[ONL]}}}
{{{jnladdpf -g file-groupname
[-e element-file-name]
-a physical-file-name
[-b physical-file-name]}}}}
```

Function

The system journal service definition defines the execution environment to collect journals in the system journal file.

Explanation

set format

- `jnl_max_datasize=maximum-record-data-length~<unsigned integer>`
`((32000-4000000)) <<32000>>` (Unit: bytes)

Specify the maximum length of record data to be collected in the journal, as computed by the following formula. The specified value must satisfy the conditions as described.

1. If collecting uj
 (Maximum length of UAP historical information + 8) or greater
2. If using the DAM service
 - (1) If `flush` is specified in the `dam_update_block_over` operand
 $\{a \times [(b \times 2) + 24] + 128\}$ or greater
 - (2) All cases other than 1.
 $[a \times (b + 24) + 128]$ or greater, where
 a
 Value of the `dam_update_block` operand in the DAM service definition,
 b
 $[\text{maximum block length} + 8]$ (i.e. the `[blksize value + 8]` as specified with the `damload` command or `dc_dam_create` function) of the DAM file created with the `damload` command or the `dc_dam_create` function.
 - (3) If the value obtained by calculation in 1. or 2. exceeds 4000000
 The possible largest value below 4000000
 Attempting to use the DAM service to output a journal record larger than the value specified in the `jnl_max_datasize` operand will cause the journal record to be divided into more than one part which is not larger than the value specified in the `jnl_max_datasize` operand. Since this record division may increase the number of journal I/Os for the disk, you should specify the possible largest value below 4000000.
3. If using the TAM service
 Greater than or equal to the length of the `cj` data to be collected with TAM; that is,
 $[a \times 2 + 96]$ or greater, where
 a
 Value of the `tam_max_recsiz` operand in the TAM service definition, rounded up from not lower than 4

4. If using the MCF service

Greater than or equal to the length of the AJ, GJ, IJ, MJ, OJ, or CJ data to be collected with MCF

(1) Data length of AJ

176

(2) Data length of GJ

$\uparrow (204 + \text{seg}) / 4 \uparrow \times 4$

(3) Data length of IJ

$\uparrow (172 + \text{seg}) / 4 \uparrow \times 4$

(4) Data length of MJ

$\uparrow (180 + \text{seg}) / 4 \uparrow \times 4$

(5) Data length of OJ

$\uparrow (204 + \text{seg}) / 4 \uparrow \times 4$

(6) Data length of CJ (serial number)

This journal is acquired when you send a message by specifying a serial number.

Outside the transaction: 128

In the transaction: 160

(7) Data length of CJ (last serial number)

This journal is acquired when you send a message by specifying a serial number.

144

(8) Data length of CJ (message queue server)

This journal is acquired when you specify a disk queue as ITQ or OTQ.

The possible largest value obtained from the following expression is used as the data length:

When acquiring data for each communication process:

$\uparrow \{88 + (24 \times (\uparrow \text{msg}/q1 \uparrow + \uparrow 960/q1 \uparrow)) + \text{msg}^\#\} / 4 \uparrow \times 4$

When acquiring data for each UAP process:

$\uparrow \{260 + \sum \{24 \times (\uparrow \text{msg}/q1 \uparrow + \uparrow 960/q1 \uparrow)\} + \sum \text{msg}^\#\} / 4 \uparrow \times 4$

Where,

$\uparrow \uparrow$: The value enclosed in these symbols is rounded up to the nearest whole number.

seg: Segment length

aps: Number of applications started by the function `dc_mcf_execap()`

les: Number of logical terminals used for sending messages

ap: 32 when a disk is used as the input queue. 0 when memory is used as the input queue.

msg: Length of messages to be sent or received using a disk queue

ql: Physical record length of the queue file

Σ : Sum of the estimates for the messages received or sent in the relevant transaction

#

Add this if the value of `que_io_maxrecsize` in the message queue service definition is larger than the message size.

5. If using the MQA service

(1) For 32 bits

$$j < 716 + 4 \times m$$

(2) For 64 bits

$$j < 744 + 4 \times m$$

Where,

j: `jnl_max_datasize` operand specification value

m: `mqa_max_msg_recnum` operand specification value

To use TP1/Message Queue, see the explanation of the `mqa_max_msg_recnum` operand in the manual *OpenTP1 TP1/Message Queue User's Guide*.

- `jnl_cdinterval=journal-block-count~<unsigned integer> ((100-32000)) <<1000>>`

Specify the interval at which to collect a checkpoint dump as the number of journal blocks.

A checkpoint dump is collected when the specified number of journals is stored in the journal file. The journal file must be of a capacity greater than or equal to the number of specified blocks.

- `jnl_rerun_swap=Y|N~<<N>>`

Specify whether journals are to be swapped during an OpenTP1 system restart. A swap enables journals to be physically divided.

Y

Journals are swapped.

N

Journals are not swapped.

- `jnl_dual=Y|N~<<N>>`

Specify whether the journal file is to be duplicated.

Y

Journal file is duplicated.

N

Journal file is not duplicated.

- `jnl_singleoperation=Y|N~<<N>>`

If the journal file is duplicated but only one system can be used, specify whether it can be allocated for swapping.

Y

Single system is allocated for swapping (one-system operation enabled).

N

Single system is not allocated for swapping (one-system operation disabled).

- `jnl_rerun_reserved_file_open=Y|N~<<N>>`

If all file groups opened during a full recovery are re-write prohibited and no swap file exists, specify whether a reserved file, if available, is to be opened.

Y

The reserved file is opened. The presence of a swap file will prevent another system suspension during a full recovery. If re-writable file groups are available, the reserved file is not opened even if there is no swap file.

N

The reserved file is not opened.

- `jnl_arc_name=global-archive-journal-service-resource-group-name-@-node-identifier~<1-to-8-character identifier> @ <4-character identifier>`

Specify the node identifier (the name specified by `node-id` operand of the system

common definition) at which the applicable journal is to be archived, linked by @ with the resource group name of the global archive journal service (the file name of the archive journal service definition) defined at that node.

- `jnl_arc_buff_size=archive-buffer-size~<unsigned integer> ((2-80)) <<10>>`
(Unit: Mbytes)

Specify the size of the shared memory buffer to archive the applicable journal. The value can be obtained from the number of journals that are generated during the time between abnormal termination and restart of the global archive journal service. Make sure that the value you specify in this operand is equal to or greater than the value obtained from the following formula:

$$\text{Value of the } jnl_arc_buff_size \text{ operand} = \uparrow(jnl_arc_max_datasize \times 1024) / 1048576 \uparrow \times 3$$

If the value of the `jnl_arc_buff_size` operand is less than the value obtained from the above formula, OpenTP1 outputs the KFCA01113-E message, with reason code 427 indicated, during startup of OpenTP1, and stops the startup processing.

This operand is applicable only with the `jnl_arc_name` operand defined.

- `jnl_arc_max_datasize=maximum-size-of-data-transferred-during-archiving~<unsigned integer> ((1020-8188))<<1020>>` (units: KB)

Specify the maximum size of journal data transferred during archiving to the archive node. Make sure that the value you specify in this operand is equal to or greater than the value obtained from the following formula:

$$jnl_arc_max_datasize \geq \uparrow(\uparrow(jnl_max_datasize + 336) / 4096 \uparrow \times 4096) / 1024 \uparrow$$

If the value of the `jnl_arc_max_datasize` operand is less than the value obtained from the above formula, OpenTP1 outputs the KFCA01113-E message, with reason code 424 indicated, during startup of OpenTP1, and stops the startup processing.

If you specify a value greater than 1020 in this operand, make sure that the value of the `rpc_max_message_size` operand in the system common definition is equal to or greater than the value obtained from the following formula:

$$rpc_max_message_size \geq \uparrow(jnl_arc_max_datasize \times 1024 + 4096) / 1048576 \uparrow$$

If the value of the `rpc_max_message_size` operand is less than the value obtained from the above formula, OpenTP1 outputs the KFCA01113-E message, with reason code 425 indicated, during startup of OpenTP1, and stops the startup processing. This operand has effect only when the `jnl_arc_name` operand is specified. Make sure that the value of this operand or a greater value is specified in the `jnl_arc_max_datasize` operand of the archive journal service definition.

If the value of the `jnl_arc_max_datasize` operand in the archive journal service definition is less than the value of this operand and the result of the following formula, the KFCA04133-W message, with reason code 427 indicated, is output, and the archiving facility stops:

Value of `jnl_arc_max_datasize` in the archive journal service definition

$$\geq \uparrow (\uparrow (\text{jnl_max_datasize} + 336) / 4096 \uparrow \times 4096) / 1024 \uparrow$$

- `jnl_arc_terminate_check=Y|N~<<Y>>`

Specifies whether all applicable journals are to be archived when the journal service terminates normally or at a planned time.

Y

All journals will be archived and the service terminate.

N

Archive operation will be suspended and the service terminate.

This operand is applicable only with the `jnl_arc_name` operand defined.

- `jnl_arc_rec_kind=journal-record-type[journal-record-type]...~<<acfgimosu>>`

Specify the type of the journal record to be archived.

The following shows the specifications for the journal record types and explains them.

Record type	Specification	Explanation	Journal type
FJ	f	Update information on the DAM file	Recovery journal
CJ	c	Update information on the table to be recovered	
SJ	s	System statistical information	Statistical journal
AJ	a	Send completion information	
IJ	i	Messages in the input queue	
OJ	o	Messages in the output queue	
MJ	m	Message journal	
GJ	g	Receive information	
UJ	u	User-specified information	User journal

If this operand is omitted, all the types of journal records are to be archived.

When Y is specified in the `jnl_arc_trn_stat` operand, the synchronization point

journal and the journal for restoring the transaction service will be archived regardless of the specification of this operand.

When this operand is specified, be careful about the specification of the `jnl_arc_check_level` operand. For details, see the explanation of the `jnl_arc_check_level` operand.

This operand is valid only when the `jnl_arc_name` operand is specified.

- `jnl_arc_uj_code="UJ-code[, UJ-code] . . . "~<unsigned integer> ((0-255)) <<all of 1 to 255>>`

Specify the UJ code to be archived when UJ is an archive target. More than one UJ code can be specified by separating them with a comma (,).

The UJ code can be specified as a hexadecimal number by prefixing `0x`. The UJ code can be specified as an octal number by prefixing `0`. The two UJ codes connected with a hyphen (-) specify the range.

Examples:

15: 15 in decimal

0x15: 21 in hexadecimal

015: 13 in octal

0-255: All of 1 to 255

If the specification of this operand is omitted, all the UJ codes are archived.

This operand is valid when the `jnl_arc_name` operand is specified and the `jnl_arc_rec_kind` operand is not specified or when the `jnl_arc_name` operand is specified and `u` is specified in the `jnl_arc_rec_kind` operand.

- `jnl_arc_check_level=1|2~<<1>>`

Specify the condition of assigning the file group as the swap destination when the global archive journal facility is used.

1

Assign the unloaded or archived file group as the swap destination.

2

Assign the unloaded and archived file group as the swap destination.

When 1 is specified by this operand and the type of the journal to be archived is specified by the `jnl_arc_rec_kind` operand, the journal file necessary to recover the online session may be lost. Therefore, when the type of the journal to be archived is specified by the `jnl_arc_rec_kind` operand, specify 2 by the `jnl_arc_check_level` operand. In this case, to assign the archived file group as the swap destination, use the `jnlunlfg` command to unload the file group or use the

`jnlchgfg` command to place the file group in the unloaded status forcibly. If an error occurs on the archive facility, use the `jnlchgfg` command to place the file group in the unloaded status forcibly.

This operand is valid only when the `jnl_arc_name` operand is specified.

■ `jnl_arc_trn_stat=Y|N~<<Y>>`

Specify whether to archive the synchronization point journal and the journal for restoring the transaction service.

Y

The journals are archived.

N

The journals are not archived.

When N is specified, the performance of the following operation commands using the archive journal files is not guaranteed.

- 'damfrc' command (for restoring DAM logical files)
- 'tamfrc' command (for restoring TAM files)
- 'jnlcolc' command (for collecting journals for restoring files)
- 'jnlmkrf' command (for restoring files of journals)
- `-e` option of the `jnlrput` command (for outputting records of the global archive unload journal file)

This operand is valid only when the `jnl_arc_name` operand and the `jnl_arc_rec_kind` operand are specified.

■ `jnl_unload_check=Y|N~<<Y>>`

Specify whether to check the unload wait status when determining the file group of the swap destination.

Y

The unload wait status is checked.

N

The unload wait status is not checked.

When Y is specified, if a normal forced start is performed on OpenTP1 following a forced termination or abnormal termination of OpenTP1, the journal file that was being used as the current file during the previous online session is closed. The journal file cannot be used until the status of the file group is changed with the `jnlunlfg` or `jnlchgfg` command.

When *N* is specified, the journals that are not unloaded will be lost. Therefore, *N* is usually specified when journals are not required such as tests (restoring user files, editing the operation statistics). Note that since journals are lost, some commands that specify the unload journal file may not be used.

For details, see the manual *OpenTP1 Operation*.

If *N* is specified on an OpenTP1 node that operates as an archive-journal source node using functionality of the global archive journal service, journals whose transfer is not complete are overwritten. As a result, generations may be missing on the archive node. On an OpenTP1 node that you want to use as an archive-journal source node, do not specify *N*.

- `jnl_auto_unload=Y|N~<<N>>`

Specify whether to use the automatic unload function. For details about this function, see the manual *OpenTP1 Operation*.

Y

The automatic unload function is used.

N

The automatic unload function is not used.

If *N* is specified in the `jnl_unload_check` operand, the function is unavailable even when you specify Y in the `jnl_auto_unload` operand.

- `jnl_auto_unload_path="directory-for-storing-unload-journal-files" [, "directory-for-storing-unload-journal-files" , . . .]~<path name> <<$DCDIR/spool/dcjnlinf/unload>>`

Specify the absolute path names of the directories for storing unload journal files when the automatic unload function is used. The maximum length you can specify for each path name is 80 bytes. You can specify a maximum of 32 directories.

This operand has effect only when Y is specified in the `jnl_unload_check` and `jnl_auto_unload` operands.

If a path name specified in the `jnl_auto_unload_path` operand is invalid, the automatic unload function cannot be used. If this operand is not specified, the command assumes that `$DCDIR/spool/dcjnlinf/unload` is the directory for storing unload journal files.

Each directory specified in the `jnl_auto_unload_path` operand must have sufficient capacity for storing unload journal files. You can use the following formula to calculate the minimum required disk space for each directory.

Disk space requirements (bytes) = number of records in a journal file x length of a record in a journal file x number of unload journal files to be stored x 1.2

- `jnl_max_file_dispersion=maximum-degree-of-parallelism-for-parallel-access`
~<unsigned integer> ((1-8)) <<1>>

Specify the maximum degree of parallelism when the system journal is accessed in parallel.

The value you specify in this operand is the maximum number of element files used for one file group. If you specify 1 or if you omit this operand, the specification of the `jnl_min_file_dispersion` operand has no effect.

- `jnl_min_file_dispersion=minimum-degree-of-parallelism-for-parallel-access`
~<unsigned integer> ((1-8)) <<1>>

Specify the minimum degree of parallelism when the system journal is accessed in parallel.

Specify the minimum number of element files required for the file group to continue to operate if some of the element files that constitute the file group become unavailable due to an error or for another reason. The file group no longer operates when the number of available element files is less than the value specified in this operand.

Make sure that the value specified in this operand satisfies the following condition:

$$\text{jnl_max_file_dispersion} \geq \text{jnl_min_file_dispersion} \geq 1$$

- `watch_time=maximum-response-waiting-time`~<unsigned integer> ((0-65535))
(Unit: seconds)

Specify the maximum waiting time between sending a service request and receipt of a response when communicating between processes by RPC.

OpenTP1 may suspend termination processing for the length of time specified in this operand. Therefore, if you specify a large value, the termination processing of OpenTP1 may take some time.

If no response is received within the specified time, RPC returns a transmission timeout error.

Specify 0 if the system is to wait for a response. When you specify 0, OpenTP1 may not terminate.

If this operand is omitted, the value specified with the `watch_time` operand of the system common definition is assumed.

Use the default of the `watch_time` operand of the system common definition for this operand.

We recommend that you do not change the operand unless special tuning is necessary.

If a value that is much greater or smaller than the default of the `watch_time` operand of the system common definition is specified, a failure may occur causing OpenTP1 to go down.

command format

Described on the following pages.

jnladdfg (Define system journal file group name and attributes)

Format

```
{{jnladdfg -g file-group-name [ONL]}}
```

Function

The `jnladdfg` command defines the file group name and attributes of a system journal file. A minimum of two and a maximum of 256 commands are specifiable within the system journal service definition. Note that at least two `jnladdfg` commands must be used if they have an ONL specification. Each file group name must be unique within the definition.

Options

- `-g file-group-name-of-system-journal-file~<1-8 character identifier>`

Specify the file group name of the system journal file.

If the value of this option is changed, the system journal file must be initialized.

- ONL

Specify ONL if the applicable file group is to be opened during an on-line startup. If this operand is not specified, it becomes a closed reserved file group.

Note

If `Y` has been specified for the `jnl_fileless_option` operand in the system common definition, you can omit the `jnladdfg` definition command.

jnladdpf (Define physical files making up system journal file group)

Format

```
{ { jnladdpf -g file-group-name
      [-e element-file-name]
      -a physical-file-name
      [-b physical-file-name] }
```

Function

The `jnladdpf` command defines the physical files that make up a system journal file group. Only one command can be specified for each file group.

For a file group, at least one `jnladdpf` definition command must be specified. The maximum number of `jnladdpf` definition commands that can be specified is eight.

Each physical file name must be unique within an OpenTP1 system.

Options

- `-g file-group-name-of-system-journal-file` ~<1-8 character identifier>

Specify the file group name of the system journal file. This name must be pre-defined with the `jnladdfg` command. Note that if the value of this option is changed, the system journal file must be initialized.

- `-e element-file-name` ~<1-to-8-character identifier>

Specify the name of one of the element files that constitute the file group.

The element file name you specify in this option must be unique in the system journal service definition.

If you parallelize access (the value of the `jnl_max_file_dispersion` operand is 2 or larger), always specify this option. If you do not parallelize access, you do not need to specify this option.

If you do not specify the `-e` option when parallelizing access, a definition parse error occurs. Make sure that the number of element files specified for one file group is in the following range:

$$\text{jnl_max_file_dispersion} \geq \text{number-of-element-files} \geq \text{jnl_min_file_dispersion}$$

If the number of element files specified by using `jnladdpf` definition commands is more than the value of the `jnl_max_file_dispersion` operand, only as many element files as the operand value are used online. If the number of element files specified by using `jnladdpf` definition commands is less than the value of the `jnl_min_file_dispersion` operand, the file group is unavailable.

- `-a physical-file-name~<path name>`

Specify the full path name as the name of the physical file making up the file group. In this case, no environment variables can be used.

This physical file uses the OpenTP1 file created for the journal function. If `Y` was specified in the `jnl_dual` operand with the set format, specify the physical file name of the system A file. If duplication is specified but only `-a` is specified, the entire command is ignored.

- `-b physical-file-name~<path name>`

If `Y` was specified in the `jnl_dual` operand with the set format, specify the full path name as the name of the physical file of the system B file. In this case, no environment variables can be used.

This physical file uses the OpenTP1 file created for the journal function. If duplication is not specified, and `-a` and `-b` are specified as physical file names, `-b` will be ineffective. Also, if only `-b` is specified, the entire command will be ignored, whether or not duplication is specified.

Note

If `Y` has been specified for the `jnl_fileless_option` operand in the system common definition, you can omit the `jnladdpf` definition command.

Checkpoint dump service definition

Format

■ set format

```
set jnl_objservername="applicable-system-service-name"
[set jnl_max_datasize=checkpoint-dump-buffer-length]
[set assurance_count=guaranteed-generation-count]
[set jnl_reduced_mode=fall-back-operation-option]
[set jnl_reserved_file_auto_open=Y|N]
[set jnl_dual=Y|N]
[set jnl_singleoperation=Y|N]
[set watch_time=maximum-response-waiting-time]
```

■ command format

```
{{{jnladdfg [-j srf] -g file-group-name [ONL]}}
  {{{jnladdpf [-j srf] -g file-group-name -a physical-file-name
    [-b physical-file-name]}}}}
```

Function

The checkpoint dump service definition defines the execution environment to collect a checkpoint dump in the checkpoint dump file. Always define the execution environment for the transaction service. For other services, define only when the service is to be used.

Explanation

set format

- `jnl_objservername="applicable-system-service-name"~<1-8 character identifier>`

Specify the name of the applicable system service.

For a MCF service, specify the name as specified with the `dcsvstart -m` command of the system service configuration definition. For a transaction service, specify as `_tjl`.

For an MQA service, specify as `_mqa`.

- `jnl_max_datasize=checkpoint-dump-buffer-length~<unsigned integer> ((32000-4000000)) <<32768>> (Unit: bytes)`

Specify the size of the buffer to read or write the checkpoint dump information from and to the checkpoint dump file.

The number of read and write operations from and to the checkpoint dump file can be

controlled. The larger the buffer specification, the smaller will be the number of operations.

- `assurance_count=guaranteed-generation-count~<unsigned integer> ((1-2)) <<1>>`

Specify the number of generations of a checkpoint dump file to be saved on-line as a contingency against input errors and other damage to the said file during a system recovery.

Files of the specified number of generations cannot be re-written. Should an error occur in the newest generation file, recovery can proceed with a remaining guaranteed file, thus improving system reliability.

File groups in a number equal to this (guaranteed generation count + 1) are required to collect a checkpoint dump file.

In specifying several guaranteed generations, the number of non-rewritable journals increases. This can cause a deficiency of files for the next journal collection. To prevent this, the number of journal file blocks should be computed and set as follows:

Journal file block count = Journal block count set as the interval for a checkpoint dump collection x (guaranteed generation count + 1).

- `jnl_reduced_mode=fall-back-operation-option~<unsigned integer> ((0-2)) <<0>>`

Specify whether the checkpoint dump fall-back function is to be used.

When a file error causes fewer files than necessary for online operation or restart operation, the processing continues if at least two files are available.

0

The fall-back function is not used.

1

The fall-back function is used.

2

The fall-back function is used and a warning message is output whenever the chance for collecting a checkpoint dump occurs in the fall-back state.

- `jnl_reserved_file_auto_open=Y|N~<<N>>`

Specify whether an unused (reserved) file is to be automatically opened to continue the processing when a file error causes fewer files than necessary for online operation.

Y

The reserved file is automatically opened.

N

The reserved file is not automatically opened.

This specification takes precedence over the fall-back operation option.

- `jnl_dual=Y|N~<<N>>`

Specify whether the checkpoint dump file is to be duplicated. If duplicated, specify the two physical files (systems A and B) to one file group.

Y

The checkpoint dump file is duplicated.

N

The checkpoint dump file is not duplicated.

- `jnl_singleoperation=Y|N~<<N>>`

When the checkpoint dump file is duplicated, specify whether to assign the physical file as an overwriteable file group if either of the dual systems becomes overwriteable.

Y

When the physical file of only one system is overwriteable, it is assigned as an overwriteable file group (one-system operation available).

N

When the physical file of only one system is overwriteable, it is not assigned as an overwriteable file group (one-system operation unavailable). The file group is placed in the reserved status.

- `watch_time=maximum-response-waiting-time~<unsigned integer> ((0-65535))`
(Unit: seconds)

Specify the maximum waiting time between sending a service request and receipt of a response when communicating between processes by RPC.

OpenTP1 may suspend termination processing for the length of time specified in this operand. Therefore, if you specify a large value, the termination processing of OpenTP1 may take some time.

If no response is received within the specified time, RPC returns a transmission timeout error.

Specify 0 if the system is to wait for a response. When you specify 0, OpenTP1 may not terminate.

If this operand is omitted, the value specified with the `watch_time` operand of the system common definition is assumed.

Use the default of the `watch_time` operand of the system common definition for this operand.

We recommend that you do not change the operand unless special tuning is necessary.

If a value that is much greater or smaller than the default of the `watch_time` operand of the system common definition is specified, a failure may occur causing OpenTP1 to go down.

command format

Described on the following pages.

jnladdfg (Define checkpoint dump file group name and attributes)

Format

```
{jnladdfg [-j srf] -g file-group-name [ONL]}
```

Function

The `jnladdfg` command defines the file group name and attributes of a checkpoint dump file and a server recovery journal file. For a server recovery journal file not created as an OpenTP1 file, the `jnladdfg` or `jnladdpf` command with the `-j` option specified must not be used. Only one `jnladdfg` command can be specified in a definition if its `-j` option is specified.

Within the checkpoint dump service definition, 2 to 60 `jnladdfg` commands can be specified. Two to 30 `jnladdfg` commands can be specified if ONL of the checkpoint dump file is specified in them.

Any file group name must be unique in all checkpoint dump service definitions.

Options

- `-j srf~<1-8 character identifier>`

To use the server recovery journal file for the system switchover configuration, you must create the server recovery journal file as an OpenTP1 file on the common disk device. At this time, be sure to specify this option.

See the description about the server recovery journal file in the manual *OpenTP1 Description*.

- `-g checkpoint-dump-file-group-name~<1-8 character identifier>`

Specify the file group name of a checkpoint dump file.

- ONL

Specify ONL if the applicable file group is to be opened at online startup.

If this operand is not specified, it becomes a closed reserved file group at online startup.

In the server recovery journal file definition, omitting this option makes no difference.

jnladdpf (Define physical files making up checkpoint dump file group)

Format

```
{jnladdpf [-j srf] -g file-group-name -a physical-file-name
          [-b physical-file-name]}
```

Function

The `jnladdpf` command defines the physical file that makes up a checkpoint dump file group.

Before this command is defined, the `jnladdfg` command must be defined to specify the file group name that is specified by the `jnladdpf` command. Each file group can use only one `jnladdpf` command. A physical file name must be unique within an OpenTP1 system.

For the `jnladdfg` command with no ONL specified, specifying the `jnladdpf` command can be omitted. When the command is omitted, the `jnladdpf` operation command is used to allocate a physical file. If a server recovery file is used as an OpenTP1 file, the `jnladdpf` command cannot be omitted.

Options

- `-j srf~<1-8 character identifier>`

To use the server recovery journal file for the system switchover configuration, you must create the server recovery journal file as an OpenTP1 file on the common disk device. At this time, be sure to specify this option.

See the description about the server recovery journal file in the manual *OpenTP1 Description*.

- `-g checkpoint-dump-file-group-name~<1-8 character identifier>`

Specify the file group name of a checkpoint dump file. The name must be pre-defined with the `jnladdfg` command.

- `-a physical-file-name~<path name>`

Specify the full path name as the name of the physical file making up the file group. In this case, no environment variables can be used.

If the checkpoint dump file is duplicated, specify a physical file name that makes up system A of the file group.

This physical file uses the OpenTP1 file created for the journal-related files.

■ **-b** *physical-file-name*~<<path name>>

Specify the physical file name that makes up system B of the file group specified by the **-g** option as an full path name. Specify this file name only if the checkpoint dump file is duplicated. This physical file specifies the OpenTP1 file created as a journal-related file. If the **-j** option and **-b** option are specified simultaneously, the **-b** option will be invalid.

Log service definition

Format

■ set format

```
[set log_filesize=maximum-message-log-file-capacity]
[set log_msg_console=Y|N]
[set log_msg_allno=Y|N]
[set log_msg_prcid=Y|N]
[set log_msg_prcno=Y|N]
[set log_msg_sysid=Y|N]
[set log_msg_date=Y|N]
[set log_msg_time=Y|N]
[set log_msg_hostname=Y|N]
[set log_msg_pgmid=Y|N]
[set log_netm_out=Y|N]
[set log_netm_allno=Y|N]
[set log_netm_prcid=Y|N]
[set log_netm_prcno=Y|N]
[set log_netm_sysid=Y|N]
[set log_netm_date=Y|N]
[set log_netm_time=Y|N]
[set log_netm_hostname=Y|N]
[set log_netm_pgmid=Y|N]
[set log_jpl_allno=Y|N]
[set log_jpl_prcid=Y|N]
[set log_jpl_prcno=Y|N]
[set log_jpl_sysid=Y|N]
[set log_jpl_date=Y|N]
[set log_jpl_time=Y|N]
[set log_jpl_hostname=Y|N]
[set log_jpl_pgmid=Y|N]
[set log_notify_out=Y|N]
[set log_notify_allno=Y|N]
[set log_notify_prcid=Y|N]
[set log_notify_prcno=Y|N]
[set log_notify_sysid=Y|N]
[set log_notify_date=Y|N]
[set log_notify_time=Y|N]
[set log_notify_hostname=Y|N]
[set log_notify_pgmid=Y|N]
[set log_jerr_rint=number-of-suppressed-message-log-outputs]
[set log_syslog_out=syslog-output-level]
[set log_syslog_allno=Y|N]
[set log_syslog_prcid=Y|N]
```

```
[set log_syslog_prcno=Y|N]
[set log_syslog_sysid=Y|N]
[set log_syslog_date=Y|N]
[set log_syslog_time=Y|N]
[set log_syslog_hostname=Y|N]
[set log_syslog_pgmid=Y|N]
[set log_syslog_append_nodeid=Y|N]
[set log_syslog_elist=number-of-elements-of-syslog-error-list]
[set log_syslog_elist_rint=regular-output-interval-of-syslog-error-list]
[set log_syslog_synchro=Y|N]
[set log_audit_out=Y|N]
[set log_audit_path=audit-log-file-output-directory]
[set log_audit_size=maximum-audit-log-file-size]
[set log_audit_count=maximum-number-of-audit-log-files]
[set log_audit_message=message-ID-for-which-audit-log-data-is-to-be-acquired
    [, message-ID-for-which-audit-log-data-is-to-be-acquired] . . . ]
[set watch_time=maximum-response-waiting-time]
```

- command format

None

- putenv format

```
[putenv TZ time-zone]
[putenv DCSYSLOGOUT 1|character-string-other-than-1]
```

Function

The log service definition defines the output environment for the message log. Use of the real time output facility enables the message log to be output to the message log file, as well as standard output.

Explanation

set format

- `log_filesize=maximum-message-log-file-capacity~<unsigned integer>`
(1-32767) <<1024>> (Unit: kilobytes)

Specify the maximum capacity of the message log file. There are two message log files for each log service. A file is switched when the specified maximum capacity is reached.

- `log_msg_console=Y|N~<<Y>>`

Specify whether the real time output facility is to be used.

Y

The real time facility is used.

N

The real time facility is not used.

The following operands (`log_msg_xxxx`) become effective only when `Y` is specified.

- `log_msg_allno=Y|N~<<N>>`

Specify whether to add system-specific message sequence numbers to the entries in the message log when the real-time output facility is used.

Y

System-specific message sequence numbers are added to the entries in the message log.

N

System-specific message sequence numbers are not added to the entries in the message log.
- `log_msg_prcid=Y|N~<<N>>`

Specify whether the process ID of the requesting process is to be appended to the message log when using the real time output facility.

Y

The process ID is appended.

N

The process ID is not appended.
- `log_msg_prcno=Y|N~<<N>>`

Specify whether to add process-specific message sequence numbers to the entries in the message log when the real-time output facility is used.

Y

Process-specific message sequence numbers are added to the entries in the message log.

N

Process-specific message sequence numbers are not added to the entries in the message log.
- `log_msg_sysid=Y|N~<<Y>>`

Specify whether the OpenTP1 identifier is to be appended to the message log when using the real time output facility.

Y

The OpenTP1 identifier is appended.

N

The OpenTP1 identifier is not appended.

- `log_msg_date=Y|N~<<Y>>`

Specify whether the output request date is to be appended to the message log when using the real time output facility.

Y

The output request date is appended.

N

The output request date is not appended.

- `log_msg_time=Y|N~<<Y>>`

Specify whether the output request time is to be appended to the message log when using the real time output facility.

Y

The output request time is appended.

N

The output request time is not appended.

- `log_msg_hostname=Y|N~<<Y>>`

Specify whether the name of the host requesting output is to be appended to the message log when using the real time output facility.

Y

The host name is appended.

N

The host name is not appended.

- `log_msg_pgmid=Y|N~<<Y>>`

Specify whether the ID of the program requesting output is to be appended to the message log when using the real time output facility.

Y

The program ID is appended.

N

The program ID is not appended.

- `log_netm_out=Y|N~<<N>>`
Specify whether the message log is to be output to NETM.

Y
The message log is output to NETM.

N
The message log is not output to NETM.

Specifications of the following operands (`log_netm_xxx`) are valid only if Y is specified.
- `log_netm_allno=Y|N~<<N>>`
Specify whether the system sequence number is to be appended to the message log if outputting to NETM.

Y
The system sequence number is appended.

N
The system sequence number is not appended.
- `log_netm_prcid=Y|N~<<N>>`
Specify whether the process ID is to be appended to the message log if outputting to NETM.

Y
The process ID is appended.

N
The process ID is not appended.
- `log_netm_prcno=Y|N~<<N>>`
Specify whether the process sequence number is to be appended to the message log if outputting to NETM.

Y
The process number is appended.

N
The process number is not appended.
- `log_netm_sysid=Y|N~<<Y>>`
Specify whether the OpenTP1 identifier is to be appended to the message log if

outputting to NETM.

Y

The OpenTP1 identifier is appended.

N

The OpenTP1 identifier is not appended.

■ `log_netm_date=Y|N~<<Y>>`

Specify whether the date of the output request is to be appended to the message log if outputting to NETM.

Y

The date is appended.

N

The date is not appended.

■ `log_netm_time=Y|N~<<Y>>`

Specify whether the time of the output request is to be appended to the message log if outputting to NETM.

Y

The time is appended.

N

The time is not appended.

■ `log_netm_hostname=Y|N~<<Y>>`

Specify whether the name of the host making the output request is to be appended to the message log if outputting to NETM.

Y

The host name is appended.

N

The host name is not appended.

■ `log_netm_pgmid=Y|N~<<Y>>`

Specify whether the ID of the program making the output request is to be appended to the message log if outputting to NETM.

Y

The program ID is appended.

N

The program ID is not appended.

- `log_jp1_allno=Y|N~<<N>>`

Specify whether the system sequence number is to be appended to the message log if outputting to the JP1 event service facility.

Y

The system sequence number is appended.

N

The system sequence number is not appended.

- `log_jp1_prcid=Y|N~<<N>>`

Specify whether the process ID is to be appended to the message log if outputting to the JP1 event service facility.

Y

The process ID is appended.

N

The process ID is not appended.

- `log_jp1_prcno=Y|N~<<N>>`

Specify whether the process sequence number is to be appended to the message log if outputting to the JP1 event service facility.

Y

The process sequence number is appended.

N

The process sequence number is not appended.

- `log_jp1_sysid=Y|N~<<Y>>`

Specify whether the OpenTP1 identifier is to be appended if outputting to the JP1 event service facility.

Y

The process sequence number is appended.

N

The process sequence number is not appended.

■ log_jp1_date=Y|N~<<Y>>

Specify whether the date of the output request is to be appended to the message log if outputting to the JP1 event service facility.

Y

The date is appended.

N

The date is not appended.

■ log_jp1_time=Y|N~<<Y>>

Specify whether the time of the output request is to be appended to the message log if outputting to the JP1 event service facility.

Y

The time is appended.

N

The time is not appended.

■ log_jp1_hostname=Y|N~<<Y>>

Specify whether the name of the host making the output request is to be appended to the message log if outputting to the JP1 event service facility.

Y

The host name is appended.

N

The host name is not appended.

■ log_jp1_pgmid=Y|N~<<Y>>

Specify whether the ID of the program making the output request is to be appended to the message log if outputting to the JP1 event service facility.

Y

The program ID is appended.

N

The program ID is not appended.

■ log_notify_out=Y|N~<<N>>

Specify whether the message log notification facility is to be used.

Y

The message log notification facility is used.

N

The message log notification facility is not used.

Only when Y is specified, the specification of the following operands (log_notify_xxxx) is validated.

■ log_notify_allno=Y|N~<<N>>

Specify whether the system sequence number is to be appended to the message log when using the message log notification facility.

Y

The system sequence number is appended.

N

The system sequence number is not appended.

■ log_notify_prclid=Y|N~<<N>>

Specify whether the ID of the process making the request is to be appended when using the message notification facility.

Y

The process ID is appended.

N

The process ID is not appended.

■ log_notify_prcno=Y|N~<<N>>

Specify whether the process sequence number is appended to the message log when using the message notification facility.

Y

The process sequence number is appended.

N

The process sequence number is not appended.

■ log_notify_sysid=Y|N~<<Y>>

Specify whether the OpenTP1 identifier is to be appended when using the message log notification facility.

Y

The OpenTP1 identifier is appended.

N

The OpenTP1 identifier is not appended.

- `log_notify_date=Y|N~<<Y>>`

Specify whether the date of the output request is to be appended to the message log when using the message log notification facility.

Y

The date is appended.

N

The date is not appended.

- `log_notify_time=Y|N~<<Y>>`

Specify whether the time of the output request is to be appended to the message log when using the message log notification facility.

Y

The time is appended.

N

The time is not appended.

- `log_notify_hostname=Y|N~<<Y>>`

Specify whether the name of the host making the output request is to be appended to the message log when using the message log notification facility.

Y

The host name is appended.

N

The host name is not appended.

- `log_notify_pgmid=Y|N~<<Y>>`

Specify whether the ID of the program making the output request is to be appended to the message log when using the message log notification facility.

Y

The program ID is appended.

N

The program ID is not appended.

- `log_jerr_rint=number-of-suppressed-message-log-outputs~<unsigned integer>`
`((1-65536)) <<32>>`

Specify the number of suppressed message log outputs if an error occurs while the message log is being output to the JP1 event service facility.

If an error occurs during message log output to the JP1 event service facility, the log output is suppressed as many times as specified in the `log_jerr_rint` operand, after which output is retried.

- `log_syslog_out=syslog-output-level~<unsigned integer>` `((0-2)) <<1>>`

For all messages that output to log files, specify the output request level of those messages to output to syslog.

0

No message is output to syslog.

1

Messages are output to syslog only when the message type is `-E` or `-W`.

2

All messages are output to syslog.

If 1 or 2 is specified, this operand takes effect when 1 is specified for the `DCSYSLOGOUT` environment variable.

The `log_syslog_xxx` operands specified below take effect when 1 or 2 is specified in the `log_syslog_out` operand.

By specifying this operand, you can control the messages that are output by the `dc_logprint` function issued from the UAP. Note, however, that you cannot completely control other messages. Therefore, even when 1 is specified for the `DCSYSLOGOUT` environment variable, messages that are supposed to be suppressed may be output to syslog if 1 or 2 is specified for the `log_syslog_out` operand in some cases.

To completely control the messages that are output to syslog, you need to change the `syslogd` configuration file settings.

In OpenTP1, the information described below is added to syslog output requests. To completely control output to syslog, change the `syslogd` configuration file settings based on this information.

- syslog facility: `LOG_USER`
- syslog level

When the message type is `-E`: `LOG_ERR`

When the message type is `-W`: `LOG_WARNING`

When the message type is -I: LOG_INFO

When the message type is -R: LOG_NOTICE

The table below shows whether messages can be output to syslog for each OS.

OS	Output to syslog
AIX	Y
HP-UX (IPF)	Y
HP-UX (PA-RISC)	N
Linux	Y
Solaris	N
Windows	--

Legend:

Y: Messages can be output.

N: Messages cannot be output.

--: Not applicable

■ log_syslog_allno=Y|N~<<N>>

Specify whether to append the intra-system serial number of the message log when using the syslog output facility.

Y

The intra-system serial number of the message log is appended.

N

The intra-system serial number of the message log is not appended.

■ log_syslog_prclid=Y|N~<<N>>

Specify whether to append the ID of the process making the request when using the syslog output facility.

Y

The ID of the processing making the request is appended.

N

The ID of the processing making the request is not appended.

- `log_syslog_prcno=Y|N~<<N>>`

Specify whether to append the intra-process serial number of the message log when using the syslog output facility.

Y

The intra-process serial number of the message log is appended.

N

The intra-process serial number of the message log is not appended.
- `log_syslog_sysid=Y|N~<<N>>`

Specify whether to append the OpenTP1 identifier when using the syslog output facility.

Y

The OpenTP1 identifier is appended.

N

The OpenTP1 identifier is not appended.
- `log_syslog_date=Y|N~<<N>>`

Specify whether to append the date of the output request to the message log when using the syslog output facility.

Y

The date is appended.

N

The date is not appended.
- `log_syslog_time=Y|N~<<N>>`

Specify whether to append the time of the output request to the message log when using the syslog output facility.

Y

The time is appended.

N

The time is not appended.
- `log_syslog_hostname=Y|N~<<N>>`

Specify whether to append the name of the host making the output request to the message log when using the syslog output facility.

Y

The host name is appended.

N

The host name is not appended.

- `log_syslog_pgmid=Y|N~<<N>>`

Specify whether to append the ID of the program making the output request to the message log when using the syslog output facility.

Y

The program ID is appended.

N

The program ID is not appended.

- `log_syslog_append_nodeid=Y|N~<<N>>`

Specify whether to append the node identifier when using the syslog output facility.

Y

The node identifier is appended.

N

The node identifier is not appended.

- `log_syslog_elist=number-of-elements-of-syslog-error-list~<unsigned integer> ((0-65536)) <<0>>`

Specify the number of memory queue elements that store messages when the log service failed to output to the syslog file. The messages are stored until the retry time.

If the syslog error list being full must store a new message, the oldest message is deleted and the new one is stored.

One element consists of 512 bytes.

This operand is effective when 1 or greater value is specified for both of this operand and the `log_syslog_out` operand.

The interval for outputting messages that are contained in the syslog error list is specified in the `log_syslog_elist_rint` operand.

This operand can be used in AIX and Linux (IPF). In Linux (IPF), however, the extended SYSLOG facility[#] is required. Accordingly, in an environment in which the extended SYSLOG facility has not been installed or in which the facility does not operate, this operand cannot be specified.

#:

The extended SYSLOG facility is a program provided by the support service (SD-LS100-FR1N1 or SD-LS200-FR1N1).

- `log_syslog_elist_rint=regular-output-interval-of-syslog-error-list~<unsigned integer> ((0-65536)) <<0>>` (Unit: seconds)

Specify the interval of regular output of the messages from the syslog error list to the syslog file.

Specify 0 to disable the regular output of the messages from the syslog error list to the syslog file.

This operand is effective when 1 or greater value is specified for both the `log_syslog_out` and the `log_syslog_elist` operands.

This operand can be used in AIX and Linux (IPF). In Linux (IPF), however, the extended SYSLOG facility[#] is required. Accordingly, in an environment in which the extended SYSLOG facility has not been installed or in which the facility does not operate, this operand cannot be specified.

#:

The extended SYSLOG facility is a program provided by the support service (SD-LS100-FR1N1 or SD-LS200-FR1N1).

- `log_syslog_synchro=Y|N~<<N>>`

This operand specifies whether to output the applicable message log using the format specified in the related operand (`log_syslog_xxx`) if the communication to the log server fails while the `syslog` output facility is being used.

However, this operand is invalid when the `log_syslog_allno` operand is specified. If you specify the `log_syslog_synchro` operand with the `log_syslog_allno` operand, a blank is displayed.

Y

Outputs the message log using the format specified in the related operand.

N

Does not output the message log using the format specified in the related operand.

- `log_audit_out=Y|N ~<<N>>`

Specify whether to use the audit logging facility.

Y

The audit logging facility is used.

N

The audit logging facility is not used.

The following operands (`log_audit_xxx`) take effect only when `Y` is specified:

- `log_audit_path=audit-log-file-output-directory` ~<1-to-63-character path name>
<<\$DCDIR/auditlog>>

Specify the absolute path name of the directory in which audit log files are created when the audit logging facility is used. Do not specify a directory on a shared disk. Although the directory that will directly contain the audit log files is created when the `dcauditsetup` command is executed, make sure that all the upper-level directories already exist.

On all the directories that constitute the path specified in this operand, execution permission must be set for owner, group, and others. If execution permission has not been set for owner, group, and others, an error might occur during output of the audit log data.

The directory specified in this operand must be on a disk with enough capacity to store audit log files. You can use the following formula to calculate the capacity of the disk that contains the audit log file output directory:

$$\text{Disk capacity (megabytes)} = \text{maximum-size-of-an-audit-log-file} \times \text{maximum-number-of-audit-log-files}$$

This operand takes effect when `Y` has been specified for the `log_audit_out` operand.

- `log_audit_size=maximum-size-of-an-audit-log-file` ~<unsigned integer>
((1-2047)) <<10>> (units: megabytes)

Specify the maximum size of each audit log file created when the audit logging facility is used. When the size of an audit log file reaches the specified maximum size, output switches to a new file.

This operand takes effect when `Y` has been specified for the `log_audit_out` operand.

- `log_audit_count=maximum-number-of-audit-log-files` ~<unsigned integer>
((1-256)) <<2>>

Specify the maximum number of audit log files created when the audit logging facility is used.

When a new file replaces the current audit log file, if the number of files (number-of-log-files + number of backup log files) has already reached the maximum number specified in this operand, the oldest file is deleted.

The following table shows how backup log files are created according to the value of this operand.

Table 3-6: Value of the log_audit_count operand and backup log file names

Value of the log_audit_count operand	Backup log file name
1	No backup log files are created.
2 to 256	audit001.log to audit255.log, respectively

Note: The greater the value of this operand, the larger the overhead when the output destination file is switched.

This operand takes effect when Y has been specified for the log_audit_out operand.

- log_audit_message=message-ID-for-which-audit-log-data-is-to-be-acquired[,message-ID-for-which-audit-log-data-is-to-be-acquired] . . . ~<unsigned integer> ((33400-99999)))

Specify the message IDs of the items for which you want to acquire audit log data in the range from 33400 to 99999. You can specify a maximum of 2048 message IDs.

For details about message IDs that can be specified in this operand, see *C. Definition for Acquiring Audit Events*.

This operand can also be specified in the user service definition, RAP-processing listener service definition, and user service default definition. The priority of the specified values is (1. > 2. > 3.):

1. The user service definition or the RAP-processing listener service definition
2. The user service default definition
3. The log service definition

This operand takes effect when Y has been specified for the log_audit_out operand.

- watch_time=maximum-response-waiting-time~<unsigned integer> ((0-65535)) (Unit: seconds)

Specify the maximum waiting time between sending a service request and receipt of a response when communicating between processes by RPC.

OpenTP1 may suspend termination processing for the length of time specified in this operand. Therefore, if you specify a large value, the termination processing of OpenTP1 may take some time.

If no response is received within the specified time, RPC returns a transmission timeout error.

Specify 0 if the system is to wait for a response. When you specify 0, OpenTP1 may not terminate.

If this operand is omitted, the value specified with the `watch_time` operand of the system common definition is assumed.

Use the default of the `watch_time` operand of the system common definition for this operand.

We recommend that you do not change the operand unless special tuning is necessary.

If a value that is much greater or smaller than the default of the `watch_time` operand of the system common definition is specified, a failure may occur causing OpenTP1 to go down.

command format

None

putenv format

- `TZ time-zone~<character string>`

Set a value for the environment variable TZ.

A time zone sets the environment if the time or similar parameter is being displayed.

Make sure that the time zone specified in this operand is the same as the time zone of the command execution environment. If the time zones are different, the times of data output to syslog will not be correct.

- `DCSYSLOGOUT 1 | character-string-other-than-1`

Specify whether to output messages to syslog.

To output messages to syslog, specify 1 for the `DCSYSLOGOUT` environment variable. If you specify a character string other than 1 or if you omit specification of this operand, messages are not output to syslog.

For details on how to control output, see the description of the `log_syslog_out` operand.

Notes

- The maximum length of each message that can be output to syslog is 255 bytes. If a message is longer than 255 bytes, only the first 255 bytes of the message are output to syslog.
- For some operands in the log service definition, a header is added to each user message when `Y` is specified. When headers are added, the amount of message content that can be output to syslog decreases.

The following table lists the operands that add a header when `Y` is specified, and the length of the header to be added. The length of the header includes a space character placed between the header and the message. Also note that 12 additional bytes are added to the header as the message ID.

Operand	Size of the header to be added (bytes)
log_syslog_allno	8
log_syslog_prcid	11
log_syslog_prcno	8
log_syslog_sysid	3
log_syslog_date	11
log_syslog_time	9
log_syslog_hostname	9
log_syslog_pgmid	4
log_syslog_append_nodeid	5

- If the last character of a message output to syslog is a multi-byte character when the 256th and subsequent bytes of a message are discarded, the character may be displayed incorrectly.

Multinode configuration definition

Format

■ set format

```
[set dcmstart_watch_time=dcmstart-abort-time]
[set dcmstop_watch_time=dcmstop-abort-time]
[set watch_time=maximum-response-waiting-time]
```

■ Command format

```
{{dcmarea{-m multinode-area-identifier|-g multinode-subarea-identifier}
-w node-identifier[,node-identifier]...}}
```

Function

The multinode configuration definition defines the configuration of a multinode area or subarea. More specifically, it defines the maximum response waiting time for a service request about the following multinode linkage control functions:

- dcmstart command
- dcmstop command
- dcndls command

Explanation

set format

- *dcmstart_watch_time=dcmstart-abort-time*~<unsigned integer> ((0-65535)) <<600>> (Unit: seconds)

Specify the time from the *dcmstart* command execution to the abort of processing. If the OpenTP1 node being process-started that exceeds the specified time is present, a message is output, and then the monitoring of the OpenTP1 node and the *dcmstart* command are aborted.

If a 0 is specified, the monitoring continues until checking whether or not the startup of all OpenTP1 nodes can be completed.

If 1 to 59 are specified, 60 is assumed.

- *dcmstop_watch_time=dcmstop-abort-time*~<unsigned integer> ((0-65535)) <<600>> (Units: seconds)

Specify the time from the *dcmstop* command execution until the abort of processing. If the OpenTP1 node being process-started that exceeds the specified time is present, a message is output, and then the monitoring of the OpenTP1 node and the *dcmstop*

command are aborted.

If a 0 is specified, the monitoring continues until checking whether or not the startup of all OpenTP1 nodes can be completed.

- `watch_time=maximum-response-waiting-time~<unsigned integer> ((0-65535)) <<180>>` (Units: seconds)

Specify the maximum waiting time between sending a service request and receiving a response when communicating between processes by RPC.

OpenTP1 may suspend termination processing for the length of time specified in this operand. Therefore, if you specify a large value, the termination processing of OpenTP1 may take some time.

If no response is received within the specified time, RPC returns a transmission timeout error.

If 0 is specified, the system waits for a response. When you specify 0, OpenTP1 may not terminate.

If this operand is omitted, the value specified with the `watch_time` operand of the system common definition is assumed.

The `watch_time` operand is needed for only the OpenTP1 nodes that use the multinode linkage control functions.

Use the default for this operand.

We recommend that you do not change the operand unless special tuning is necessary.

If a value that is much greater or smaller than the default is specified, a failure may occur causing OpenTP1 to go down.

Command format

The command format is described on the next page.

dcmarea (Specify multinode area or subarea node identifier)

Format

```
{ {dcmarea{-m multinode-area-identifier|-g multinode-subarea-identifier}  
-w node-identifier[ ,node-identifier] . . . }
```

Function

The `dcmarea` command defines the configuration of OpenTP1 nodes that belong to the same multinode area or subarea.

The following operations cannot be done during an online session:

- Setting a multinode area or subarea
- Adding or deleting OpenTP1 nodes to or from a multinode area or subarea

The prerequisites described below must be observed. If they are not satisfied, the result of any multinode function is not assured.

Prerequisites:

- Only one multinode area identifier can be specified.
- The maximum number of OpenTP1 nodes belonging to a multinode area is 128.
- If more than one command is specified for the same multinode area (or subarea), they are logically ORed.
- The node identifier must be the same as that specified by the system common definition.
- If the host and the host name correspond one-to-one and the host is placed in the multi-OpenTP1 system, each OpenTP1 node of the host belongs to the multinode area or subarea.
- Any OpenTP1 node belonging to a multinode subarea belongs to a multinode area.
- The multinode configuration definition must contain the configuration of all multinode subareas.
- The multinode configuration definition of all OpenTP1 node making up a multinode area or subarea must coincide with each other.

Command arguments

- `-m multinode-area-identifier~<1-8 character identifier>`

Specify the multinode area identifier.

- `-g multinode-subarea-identifier~<1-8 character identifier>`

Specify the multinode subarea identifier.

- `-w node-identifier [,node-identifier]~<4-character identifier>`

Specify the node identifier of an OpenTP1 node that belongs to a multinode area or subarea. It must be a node identifier specified in the system common definition of each OpenTP1 node.

Multinode physical definition

Format

- set format
 - None
- Command format

```
{ {dcpreport -w node-identifier
      -h host-name
      -p port-number }
```

Function

The multinode physical definition defines the name of a host used as an OpenTP1 node defined in the multinode configuration definition, and the number of the port used by the multinode linkage control function at that node.

Explanation

- set format
 - None
- Command format

The command format is described on the next page.

dcprcport (Specify the host name and port number of a host in a multinode configuration)

Format

```

{{dcprcport -w node-identifier
             -h host-name
             -p port-number}}

```

Function

The multinode physical definition defines the name of the host with an OpenTP1 node defined in the multinode configuration definition, and the number of the port used by the multinode linkage control function at that node.

The OpenTP1 node that uses a system changeover function must define the execution system and the wait system separately. The OpenTP1 node that does not use a system changeover function must not specify a double node identifier.

Any OpenTP1 node defined in the multinode configuration definition must be defined in the multinode physical definition. Up to 128 OpenTP1 nodes can be specified in this definition.

Explanation

Options

- `-w node-identifier`~<4-character identifier>

Specify the node identifier defined in the multinode configuration definition.

- `-h host-name`~<1-64 character identifier>

Specify the name of the host with the OpenTP1 node indicated by the `node-identifier` option. The host name must be cataloged in `/etc/hosts`.

If a maintenance LAN is provided, specify the host name of the maintenance LAN. If not provided, specify the host name (standard host name if omitted) specified by the `my_host` operand in the system common definition.

- `-p port-number`~<unsigned integer> ((5001-49999))

Specify the number of the port to be used by the multinode linkage control function that corresponds to the node identifier.

The port number used by the multinode linkage control function must be the same as specified in the `prc_port` operand.

Global archive journal service definition

Format

■ set format

```
[set jnl_arc_terminate_timeout=maximum-waiting-time]
[set max_socket_descriptors=maximum-number-of-file-descriptors-
for-sockets]
[set jnl_arc_ipc_buff_size=TCP/IP-send-and-receive-buffer-size]
[set jnl_watch_time=time-the-global-archive-journal-service-waits-for-a-communication-response]
```

■ Command format

```
jnldfs -a global-archive-journal-service-resource-group-name
[ [, global-archive-journal-service-resource-group-name ] . . . ]
```

Function

The global archive journal service definition defines the execution environment for using the global archive journal service. TP1/Multi is required to use this facility.

Explanation

set format

- `jnl_arc_terminate_timeout=maximum-waiting-time~<unsigned integer>`
((0-3600)) <<0>> (Unit: seconds)

Specify the maximum waiting time in seconds until all connected nodes to be archived are released after terminating the archive node. If the connection is released in the specified time, the archive node terminates. If the node to be archived that passed the specified time is connected, the archive node does not terminate.

If a 0 is specified, the archive node end processing is continues until all nodes to be archived are disconnected.

- `max_socket_descriptors=maximum-number-of-file-descriptors-for-sockets~<unsigned integer>` ((32-2032))

Specify the maximum number of file descriptors to be used for sockets by the processes under control of OpenTP1[#].

The processes under control of OpenTP1[#] exchange the process information with the system servers or user servers through the TCP/IP communication using sockets. Therefore, you must change the maximum number of file descriptors for sockets depending on the number of UAP processes that run concurrently and the number of other nodes to communicate with.

#: OpenTP1 processes other than the MCF services (MCF manager service, MCF communication service, and application startup service). For the MCF services, see the sections on the system service information definition and the system service common information definition.

Use the following formula for calculating the maximum number of file descriptors for sockets:

\uparrow (Number of nodes that request a service of the global archive journal service^{#1} + number of system service processes^{#2})/0.8 \uparrow

\uparrow \uparrow : Rounded up to the nearest whole integer.

#1: The number of nodes that request a service of the global archive journal service is the sum of the following values:

- Number of node names specified in the `all_node` operand for the local OpenTP1
- Number of other nodes that specify the local node name in the `all_node` operand for OpenTP1

#2: The number of system service processes in the local OpenTP1.

If the value specified for this operand is too small, the connection cannot be set with other processes under control of OpenTP1. The process terminates abnormally after outputting the KFCA00307-E error message.

The order of priority of the specified values is 1 > 2.

1. Global archive journal service definition
2. System common definition

If this operand is omitted, the system assumes the value in the system common definition.

- `jnl_arc_ipc_buff_size=TCP/IP-send-and-receive-buffer-size~<unsigned integer>((8192-1048576)) <<61440>>` (units: bytes)

Specify the size of the TCP/IP send-and-receive buffer used by the archive journal reception process that receives the journal data transferred from the archive source node.

In a high-speed communication environment, you can improve performance by increasing the value of this operand. When you specify the operand, make sure that the value does not exceed the maximum TCP/IP buffer size that can be specified in the OS. Also, note that the value of the operand must be equal to the value of the `jnl_arc_ipc_buff_size` operand in the journal service definition on the archive source node.

- `jnl_watch_time=time-the-global-archive-journal-service-waits-for-a-communication-response ~<unsigned integer> ((0-65535)) <<180>>` (units: seconds)

Specify the maximum time that the global archive journal service waits from the time it sends a service request until it receives a service response for inter-process communication that uses RPCs. If no response to an RPC is received within the specified time, the RPC returns a timeout error.

If 0 is specified, the global archive journal service continues to wait until a response is received, in which case OpenTP1 might not be able to terminate.

Do not change the setting of this operand unless special tuning is required.

The scope of the `jnl_watch_time` operand is the following:

- `jnl_opnfg` command
- `jnl_clsfg` command
- `jnl_chgfg` command
- `jnl_unlfg` command
- `jnl_swpfg` command[#]
- `jnl_dis` command
- Time to wait for a response to a swap request when the journal file failed or became full

#:

For the `jnl_swpfg` command, the time specified by the `jnl_watch_time` operand is doubled.

Command format

The command format is described on the next page.

jnldfs v (Specify the names of resource groups for the global archive journal service)

Function

```
jnldfs v -a name-of-a-resource-group-for-the-global-archive-journal-service
          [ [ , name-of-a-resource-group-for-the-global-archive-
            journal-service ] . . . ]
```

Function

The `jnldfs v` command specifies the names of resource groups for the global archive journal service.

Options

- `-a global-archive-journal-service-resource-group-name~<1-8 character identifier>`

Specify the resource group name for the global archive journal service (file name defined in the archive journal service definition).

Up to 16 resource group names can be specified. A duplicate name causes an error.

Archive journal service definition

Format

■ set format

```
[set jnl_dual=Y|N]
[set jnl_singleoperation=Y|N]
[set jnl_rerun_swap=Y|N]
[set jnl_max_file_dispersion=maximum-number-of-distributions-to-
enable-parallel-access]
[set jnl_min_file_dispersion=minimum-number-of-distributions-to-
enable-parallel-access]
[set jnl_unload_check=Y|N]
[set jnl_arc_max_datasize=maximum-size-of-data-transferred-during-archiving]
```

■ Command format

```
{{{{jnladdfg -g archive-journal-file-group-name [ONL]}}
  {{jnladdpf -g archive-journal-file-group-name
    [-e element-file-name]
    [-a physical-file-name]
    [-b physical-file-name]}}}}
```

Function

The archive journal service definition defines the execution environment for using the global archive journal service. TP1/Multi is required to use this facility.

Explanation

set format

■ jnl_dual=Y|N~<<N>>

Specify whether to duplicate an archive journal.

Y

The archive journal file is duplicated.

N

The archive journal file is not duplicated.

■ jnl_singleoperation=Y|N~<<N>>

Specify whether to use the file group with one system closed when Y is specified in the jnl_dual operand.

Y

The file group is used.

N

The file group is not used.

- `jnl_rerun_swap=Y|N~<<N>>`

Specify whether to swap the archive journal file when a node under the global archive journal service reruns.

Y

The archive journal file is swapped.

N

The archive journal file is not swapped.

- `jnl_max_file_dispersion=maximum-number-of-distributions-to-enable-parallel-access~<unsigned integer> ((1-8)) <<1>>`

Specify the maximum number of distributions to enable parallel access to the archive journal.

The value you specify in this operand is the maximum number of element files used for one file group. If you specify 1 or if you do not specify this operand, the specification of the `jnl_min_file_dispersion` operand has no effect.

- `jnl_min_file_dispersion=minimum-number-of-distributions-to-enable-parallel-access~<unsigned integer> ((1-8)) <<1>>`

Specify the minimum number of distributions to enable parallel access to the archive journal.

Specify the minimum number of element files required for the file group to continue to operate if some of the element files that constitute the file group become unavailable due to an error or for another reason. The file group no longer operates when the number of available element files is less than the value specified in this operand.

Make sure that the value specified in this operand satisfies the following condition:

Maximum number of distributions \geq minimum number of distributions \geq 1

- `jnl_unload_check=Y|N~<<Y>>`

Specify whether to check the unload wait status when determining the file group of the swap destination.

Y

The unload wait status is checked.

N

The unload wait status is not checked.

When **Y** is specified, if a normal forced start is performed on OpenTP1 following a forced termination or abnormal termination of OpenTP1, the journal file that was being used as the current file during the previous online session is closed. The journal file cannot be used until the status of the file group is changed with the `jnlunlfg` or `jnlchgfg` command.

When **N** is specified, the archive journals that are not unloaded will be lost. Therefore, **N** is usually specified when journals are not required such as tests (editing the operation statistics). Note that since journals are lost, some commands that specify the unload journal file may not be used.

For details, see the manual *OpenTP1 Operation*.

- `jnl_arc_max_datasize=maximum-size-of-data-transferred-during-archiving~<unsigned integer> ((1020-8188))<<1020>>` (units: KB)

Specify the maximum size of journal data transferred during archiving from the archive source node. Make sure that the value you specify in this operand is equal to the largest transfer data size specified for the archive source nodes connected to the relevant resource group.

If you specify a value greater than 1020 in this operand, make sure that the value of the `rpc_max_message_size` operand in the system common definition is equal to or greater than the value obtained from the following formula:

$$\text{rpc_max_message_size} \geq \uparrow (\text{jnl_arc_max_datasize} \times 1024 + 4096) / 1048576 \uparrow$$

If the value of the `rpc_max_message_size` operand is less than the value obtained from the above formula, OpenTP1 outputs the KFCA01113-E message, with reason code 425 indicated, during startup of OpenTP1, and stops the startup processing.

Command format

The command format is described on the next page.

jnladdfg (Define archive journal file group name and attributes)

Format

```
{{jnladdfg -g archive-journal-file-group-name [ONL]}}
```

Function

The `jnladdfg` command defines the file group name and attributes of an archive journal file.

Within the archive journal service definition, 2 to 256 `jnladdfg` commands can be specified. At least two commands are needed if ONL is specified. Each file group name must be unique within the archive journal service definition.

Options

- `-g archive-journal-file-group-name<1-8 character identifier>`

Specify the file group name of an archive journal file.

- ONL

This option must be specified when the file group is opened concurrently with startup of the global archive journal service.

If this operand is omitted, a closed reserved file group is assumed at startup of the service. The file group must be opened with the `jnlopenfg` command before using it.

jnladdpf (Define archive journal physical file)

Format

```
{{jnladdpf -g archive-journal-file-group-name [-e element-file-name]
-a physical-file-name [-b physical-file-name]}}
```

Function

The `jnladdpf` command defines a physical file that makes up the file group of an archive journal file.

Only one `jnladdpf` command can be used for each file group. Each physical name must be unique within an OpenTP1 system.

Options

- `-g archive-journal-file-group-name`~<1-8 character identifier>

Specify the name of the file group of an archive journal file. The file group name to be specified here must be predefined by the `jnladdfg` command.

- `-e element-file-name`~<1-8 character identifier>

Specify the element file that makes up this file group. The element file name you specify in this option must be unique in the archive journal service definition.

If you parallelize access (the value of the `jnl_max_file_dispersion` operand is 2 or larger), always specify this option. If you do not parallelize access, you do not need to specify this option.

If you do not specify the `-e` option when parallelizing access, a definition parse error occurs. Make sure that the number of element files specified for one file group is in the following range:

$$\text{jnl_max_file_dispersion} \geq \text{number-of-element-files} \geq \text{jnl_min_file_dispersion}$$

If the number of element files specified by using `jnladdpf` definition commands is more than the value of the `jnl_max_file_dispersion` operand, only as many element files as the operand value are used online. If the number of element files specified by using `jnladdpf` definition commands is less than the value of the `jnl_min_file_dispersion` operand, the file group is unavailable.

- `-a physical-file-name`~<path name>

Specify the physical file making up a file group in the form of a full path name. No environment variable can be used. The physical file must be an OpenTP1 file that has been created as a journal-related file.

If duplication of a file is specified by the `jnl_dual` operand (set format), specify the physical file name of a system A file.

■ `-b physical-file-name~<path name>`

Specify the physical file name of a system B file if duplication of the file is specified by the `jnl_dual` operand (set format). No environment variable can be used. The physical file must be an OpenTP1 file that has been created as a journal-related file.

If, with duplication not specified, physical file names `-a` and `-b` are specified, the `-a` name becomes valid. If only `-b` is specified independently of duplication, the entire command is discarded.

DAM service definition

Format

■ set format

```
[set dam_update_block=maximum-number-of-blocks-to-be-updated]
[set dam_added_file=maximum-logical-file-count-added-online]
[set dam_update_block_over=flush|error]
[set dam_message_level=1|0]
[set dam_tran_process_count=number-of-concurrently-executing-
transaction-branches]
[set dam_cache_size|dam_cache_size_fix=buffer-area-size]
[set dam_cache_attribute=free|fixed]
[set dam_io_interval=execution-interval-time]
[set dam_transaction_access=global|branch]
[set dam_io_error_occur=stop|continue]
[set dam_cache_reuse_from=last|first]
[set dam_default_cache_num=default-boundary-for-reusing-cache-blocks]
[set dam_ex_refer_read=none|stay]
[set dam_max_block_size=maximum-block-length]
[set dam_kb_size=1000|1024]
[set watch_time=maximum-response-waiting-time]
```

■ command format

```
[damcache logical-file-name boundary-for-reusing-cache-blocks]
[damchmt logical-file-name threshold-for-the-number-of-cache-blocks]
{{damfile [-{d|n[-f]}][-c] logical-file-name physical-file-name}}
```

Function

The DAM service definition defines the execution environment to manage direct access files having the file restoration function.

Explanation

set format

- dam_update_block=*maximum-number-of-blocks-to-be-updated*~<unsigned integer> ((1-32768)) <<8>>

Specify the maximum number of blocks to be updated.

According to this specification, the DAM service allocates an area of memory sufficient for the DAM service on the shared memory pool (dynamic shared memory) for the system service. If the specified value is too large, the shared memory pool (dynamic shared memory) is affected. Define the value not to affect the pool.

- `dam_added_file=maximum-logical-file-count-added-online~<unsigned integer> ((1-128)) <<8>>`

Specify the maximum number of logical files to be added online.

Logical files can be added up to this specified number during online execution.
- `dam_update_block_over=flush|error~<<error>>`

Specify whether the access function is to return an error if during a transaction, the number of updated blocks exceeds the maximum block count specified with the `dam_update_block` operand.

`flush`

Access function continues processing without returning an error. An input/output occurs when the maximum block count is exceeded, hence processing time will increase. Also, the number of collected journals will increase.

`error`

Access function returns an error.
- `dam_message_level=1|0~<<1>>`

Specify the level of the messages output by the DAM service.

`0`

All messages are output.

`1`

Lock error messages (KFCA01610-W) are not output.
- `dam_tran_process_count=number-of-concurrently-executing-transaction-branches~<unsigned integer> ((0-8192))`

Specify the number of transaction branches to be executed concurrently to access the DAM file. An area is secured as a function of this specified value.

For a value of 1 or greater, the specified number of areas will be secured during on-line startup. If the specified number cannot be secured, online operation proceeds with only the secured areas. Also, the secured areas are released upon termination of the online session.

For a value of 0, areas are secured upon execution of a transaction. The secured areas are released upon completion of the transaction.

If the operand is not specified, areas are secured when the UAP is started. The secured areas are released upon termination of the UAP.

Note that if 0 is specified or if the secured areas are insufficient, processing will be delayed since areas are secured with execution of the transaction.

Take note that a large value will cause shared memory to be compressed. Take the usable memory into consideration when specifying a value.

- `dam_cache_size|dam_cache_size_fix=buffer-area-size~<unsigned integer>`
((10-1000000)) (Unit: kilobytes)

In the `dam_cache_size` operand or the `dam_cache_size_fix` operand, specify the size of the buffer area for stacking the blocks that are referenced or updated online when the system starts. The value specified for the `dam_cache_size_fix` operand takes precedence over the value specified for the `dam_cache_size` operand.

When you specify `dam_cache_size`, specify a value greater than the value that is calculated using the following expression for determining the assumed buffer area size.

Expression for determining the assumed buffer area size

$$\text{Buffer area size} = A + B$$

$$A: (Mb \div 64 + 1) \times 128 \times n \times Tr$$

$$B: \{ \downarrow (A \div 576) \downarrow \} \times 32 + 64$$

Mb: Either of the following values, whichever is greater, with 8 added

- Block length in a file with the maximum block length among the logical files defined in the DAM service definition (block length specified in the `damload` command or the `dc_dam_create` function)
- Maximum block length specified in the `dam_max_block_size` operand of the DAM service definition

n: Maximum number of updated blocks specified in the `dam_update_block` operand of the DAM service definition

Tr: Number of transaction branches specified in the `dam_tran_process_count` operand of the DAM service definition

↓ ↓: Round down the figure after the decimal point.

Note:

When you specify the `-f` option in the `damfile` definition command of the DAM service definition to use a DAM file with cacheless access, calculate the buffer area size by specifying for *Mb* a value obtained by adding 8 to either of the following values, whichever is greater, and specify the calculated value in the `dam_cache_size_fix` operand.

- Block length in a file with the maximum block length among the non-cacheless access logical files defined in the DAM service definition (block length specified in the `damload` command or the `dc_dam_create` function)

- Value specified in the `dam_max_block_size` operand of the DAM service definition

To specify all DAM files for cacheless access, specify 10 in the `dam_cache_size_fix` operand.

When you specify 0 for the `dam_tran_process_count` operand, the system assumes 8 as the number of transaction branches to be executed simultaneously. If you do not specify the `dam_tran_process_count` operand, the system uses the value specified in the `trn_tran_process_count` operand in the transaction service definition as the number of transaction branches to be executed simultaneously.

If you omit the `dam_cache_size` operand or if you specify a value smaller than the value automatically calculated by the DAM service in the buffer area calculation expression, the DAM service secures the buffer area using the value calculated in the expression.

The value calculated in the expression for determining the assumed buffer area size is the maximum buffer area size that is calculated based on the operands specified in the DAM service definition. Therefore, the DAM service may not be able to secure the buffer area size determined in the calculation. In that case, the DAM service secures half of the calculated size until the determined buffer area size can be secured.

If you specify an unspecifiable value in the `dam_cache_size` operand or the `dam_cache_size_fix` operand, the KFCA01644-I message will be output.

If the DAM service cannot secure the buffer area size specified in the `dam_cache_size` or `dam_cache_size_fix` operand due to an insufficient buffer area, the KFCA01648-E message will be output and the DAM service and the UAP will stop.

Note that if a DAM file that is updated by deferred updating has been specified, in addition to the buffer area size calculated in the expression shown above, the size estimated from the following formula is required:

Formula for estimating the value to be added:

Number of transactions that were executed within the execution interval[#] and that remain for lazy write processing x total of the DAM file block sizes updated in the transactions

#

Execution interval time specified in the `dam_io_interval` operand of the DAM service definition

The difference between the `dam_cache_size` operand and the `dam_cache_size_fix` operand is as follows:

When `dam_cache_size` is specified

When you specify `dam_cache_size`, the value specified in `dam_cache_size` or the value calculated in the expression for determining the assumed buffer area size, whichever is greater, is used.

If you do not specify the `dam_cache_size` operand or if you specify an unspecifiable value in the `dam_cache_size` operand, the KFCA02530-I message will be output and the value determined by the expression will be used. When you specify the `dam_cache_size_fix` operand, the value specified in the `dam_cache_size_fix` operand takes precedence.

When `dam_cache_size_fix` is specified

The value specified in the `dam_cache_size_fix` operand takes precedence.

If you do not specify the `dam_cache_size_fix` operand or if you specify an unspecifiable value in the `dam_cache_size_fix` operand, the value specified in the `dam_cache_size` operand will be used if the operand is specified. If the `dam_cache_size` operand is not specified, the KFCA02530-I message will be output and the value calculated in the expression will be used.

Advantages of specifying `dam_cache_size_fix`

The value specified in the `dam_cache_size` operand and the value calculated in the expression for determining the assumed buffer area size are based on the following values:

- Maximum block length in the DAM file specified in the DAM service definition (maximum block length of the file specified in the `damfile` command definition)
- Number of transactions to be executed simultaneously (value specified in the `dam_tran_process_count` operand)
- Maximum number of blocks updated in a transaction (value specified in the `dam_update_block` operand)

In the expression, the above three values are multiplied to determine the buffer area size. Even if the transaction uses only one DAM file with the maximum block length and only one block is updated in the transaction, the above expression is used. The DAM service secures a buffer size that is far greater than the necessary buffer size.

In this case, you can secure an optimum buffer by specifying an optimum buffer area size in the `dam_cache_size_fix` operand. However, when you use the `dam_cache_size_fix` operand, be careful with the value you specify. If the value specified in the `dam_cache_size_fix` operand is smaller than the buffer size that is actually needed, the buffer area becomes insufficient during online processing and the processing cannot continue. If any of the DAM files to be used

is specified for deferred update specification, you should consider the number of blocks to be deferred within the execution interval and the total length of the deferred blocks (value specified in the `dam_io_interval` operand) when you estimate the buffer area size

The following table shows the relationship between the `dam_cache_size` operand and the `dam_cache_size_fix` operand, and the values to be used.

Specification of <code>dam_cache_size_fix</code>	Specification of <code>dam_cache_size</code>		
	Specification is correct	Specification is omitted	Specification is incorrect (KFCA01644-I is output)
Specification is correct	(2)	(2)	(2)
Specification is omitted	(1)	(3)	(3)
Specification is incorrect (KFCA01644-I is output)	(1)	(3)	(3)

Legend:

(1): The value specified in `dam_cache_size` is used.

(2): The value specified in `dam_cache_size_fix` is used.

(3): The value calculated in the expression is used and the KFCA02530-I message is output.

If the buffer area becomes insufficient and processing cannot continue, an abort code will be output. Check the abort code and perform countermeasures accordingly. For details about the abort code, see the manual *OpenTPI Messages*.

You should also reconsider the buffer area size when you change the system definition or environment, for example when you change the configuration of a DAM file.

The shared memory size required for a resource manager is the cache size specified in the `dam_cache_size_fix` operand.

■ `dam_cache_attribute=free|fixed~<<free>>`

Specify whether to fix the buffer area allocated on shared memory. When specifying this operand, consider the capacity of memory installed and the percentage of the buffer area in the total memory size. Specify the operand independently of the deferred update function.

`free`

The buffer area is not fixed on memory. If the size of the real memory is small,

paging of the shared memory may occur, causing a slower processing speed.

`fixed`

The buffer area is fixed on memory. The processing speed is not lowered by shared memory paging. If the size of the real memory is small, paging of text or segments on areas other than the shared memory may occur.

`fixed` can be specified only when the OS is HP-UX or Solaris. Note that even when the OS is solaris, `fixed` cannot be specified depending on the environment being used in some cases. For details, see the *Release Notes*.

- `dam_io_interval=execution-interval-time~<unsigned integer> ((1-60)) <<1>>`
(Unit: seconds)

Specify the interval of execution of output processes when the deferred update function is used. This specification is unnecessary if the deferred update function is not used.

Too large an interval may cause an insufficient buffer area, making it impossible to write blocks that are to be updated or output in other transactions. The resulting memory shortage can cause a UAP to go down. When specifying the interval, therefore, consider the maximum number of transactions that will terminate within the execution time interval and the number of blocks to be updated or output in each transaction (required buffer size).

- `dam_transaction_access=global | branch~<<branch>>`

Specify the unit of transactions which provides data management and lock management of DAM files.

`global`

Data management and lock management of files are performed in units of global transactions. When `global` is specified, the file-based lock cannot be specified when opening a logical file.

`branch`

Data management and lock management of files are performed in units of transaction branches. For different transaction branches, an access error occurs even for the same global transaction.

- `dam_io_error_occur=stop | continue~<<continue>>`

This specifies the action for the DAM service available if a disk error (I/O error) occurs during the updating of a disk.

The DAM service involves disk updating during the transaction synchronization point processing. Otherwise, disk updating takes place as an extension to the DAM service access function when the transaction uses the halfway update facility. In this case, the action for the DAM service is available if an error occurs during the updating of a disk.

With respect to disk errors during deferred updating or non-recovery file updating, there are no differences depending on specified values. If there is a disk error during deferred updating, the system issues the KFCA01646-E or KFCA01642-I message and continues processing with non-faulty files. If there is a disk error during non-recovery file updating, the system issues the KFCA01646-E or KFCA01642-I message and the `dc_dam_rewrite()` function or the `dc_dam_write()` function returns DCDAMER_IOER.

`stop`

Abnormally terminates the UAP involving DAM access. A critical situation causes the system to stop. The KFCA01622-E or KFCA01646-E message indicates a file has an error. Remove the cause of the error or assign a new different volume. Then execute the `damfrc` command to perform file recovery.

Here are procedures for file recovery.

1. Executing the `damfrc` command

Before you restart OpenTP1, use the `damrstr` command to restore the backup data and execute the `damfrc` command. The file is recovered using the journal information up to the point the system went down.

2. Restarting OpenTP1

Restart OpenTP1.

3. Releasing the file

When you restart OpenTP1, the failed file is still shut down due to the error. Execute the `damrles` command to release the file.

4. Settling the transaction

Execute the `damrles` command to let you access the file. OpenTP1 provides recovery (settlement) processing to the transaction, which is then completed. This process results in better data integrity.

Before the execution of the `damrles` command, the system continues to issue either of the messages KFCA01623-E (file being separated) and KFCA01624-E (file being blocked). The KFCA01623-E and KFCA01624-E inform the user the reason why, recovery of the transaction is impossible.

`continue`

If a disk error occurs during DAM access, the system issues the KFCA01618-E, KFCA01622-E, and KFCA01642-I messages and brings abnormally terminates the UAP.

In the case of a transaction under synchronization point processing, the system issues the KFCA01622-E and KFCA01642-I messages to complete the transaction (commitment settled: The OpenTP1 log is normally terminated and

the function's return value is seen in `DC_OK`). In this case, the transaction has been completed normally, but the file having the error has not reflected the data updated in the transaction.

Because continuing the application processing in this state would result in poor data integrity, take the file having the error offline. Then, use the `damrstr` and `damfrc` commands to recover the file logically, use the `damadd` command to add the corrected file, and use the `damrles` command to release the file. Terminate the UAP when you separate or recover the file, or add a new file.

- `dam_cache_reuse_from=last | first ~<<last>>`

This operand specifies the cache block the DAM service first retrieves for reuse if the transaction that accesses a DAM file requires a new cache block area. When the DAM service updates a cache block, the DAM service connects it to the beginning of the reference cache block chain.

`last`

The DAM service retrieves cache blocks to be reused, starting from the last cache block in the reference cache block chain managed by the DAM service. That is, when `last` is specified, the DAM service starts to reuse cache blocks from the oldest cache block connected to the reference cache block chain.

`first`

The DAM service retrieves cache blocks to be reused, starting from the first cache block in the reference cache block chain managed by the DAM service. That is, when `first` is specified, the DAM service starts to reuse cache blocks from the latest cache block connected to the reference cache block chain.

Even if you specify `last`, if the oldest cache block is being accessed by another transaction, the applicable transaction does not retrieve it for reuse when it attempts to retrieve cache blocks to be reused. In this case, the next oldest cache block is retrieved for reuse. The DAM service determines which cache block is the oldest in the cache block chain and, unlike the LRU (Least Recently Used) method, it does not rearrange the cache block chain even if cache blocks are accessed recently. The DAM service retrieves cache blocks that were accessed and are oldest in the cache chain.

- `dam_default_cache_num=default-boundary-for-reusing-cache-blocks > ~<unsigned integer>((0-4000000))<<0>>`

This operand specifies the default boundary for reusing cache blocks. The value specified in this operand is the boundary for logical files if you do not specify the boundary for reusing cache blocks in the `damcache` command.

- `dam_ex_refer_read=none | stay ~<<none>>`

This operand specifies whether the transaction that accesses a DAM file should leave the blocks to be read with the locked reference specification in the cache buffer area

until the transaction is determined.

Note the following when you use this operand:

- Add the number of blocks for which a locked reference read is to be executed to the `dam_update_block` operand (number of blocks that can be updated by a single transaction) in the DAM service definition.
- When you are using the halfway update facility for transactions, if you make an entry for locked reference using this facility, update the entry, and then update a block (`dc_dam_rewrite()`), the data in the update target block might be actually updated during a transaction. If the data in the update target block is actually updated, the block may not stay in the cache buffer area until the transaction is terminated. Cache blocks that are not updated will remain until the transaction is determined.
- The entry for locked reference will not be released from the lock until the transaction is concluded.

`none`

When the DAM service returns the data in the cache block that is read with locked reference specification to the user program, the DAM service treats the cache block as a reusable block. These cache blocks will not be immediately reused if the cache buffer area has free space. Cache blocks may be reused when the free space in the cache buffer area runs short.

Specify `none` if the DAM block to be accessed has no special purpose.

`stay`

The DAM service keeps the cache block that is read with locked reference specification in the cache buffer area until the transaction is determined like update specification. To increase the cache hit rate, you should specify `stay` if you frequently execute locked reference reads for a specific DAM block.

Note the following when you specify `stay`:

- You need to add the number of blocks to be read for locked reference in the `dam_update_block` operand specified in the DAM service definition. You should also add the value in the `dam_update_block` operand to increase the size of the dynamic shared memory for OpenTP1.
- If you do not add the value of the `dam_update_block` operand, the following may occur:
 1. If you are using the halfway update facility for transactions

If the sum of the number of blocks read for locked reference and update, and the number of updated blocks (`dc_dam_write()`) in a transaction exceeds the value specified in the `dam_update_block` operand, the halfway update

processing will be executed and data will be actually updated. If there are too many blocks to be read for locked reference, the halfway update processing will be executed many times, updating data frequently.

2. If error is specified for the `dam_update_block_over` operand in the DAM service definition

If the total of the number of blocks read for locked reference and update, and the number of updated blocks (`dc_dam_write()`) in a transaction exceeds the value specified in the `dam_update_block` operand, the executed API will return an error with `DCDAMER_JNLOV`. If there are too many blocks read for locked reference, the number of error returns with `DCDAMER_JNLOV` increases.

- `dam_max_block_size=maximum-block-length~<unsigned integer> ((504-32760))# <<504>>` (units: bytes)

#: Specify a value that satisfies the following expression: $\text{sector length} \times n - 8$ (n is a positive integer).

Specify the maximum block length in the DAM file in the system. However, a different block length may be used as the maximum block length in some cases. The following table describes the relationship between the conditions that cause such cases and the maximum block length to be employed.

dam_max_block_size operand	damfile definition command	
	Specified	Not specified
When the specification is correct	The greater value between a and b is used.	The value of a is used.
When the specification is omitted	The value of b is used.	504 is assumed.
When the specification is incorrect (the specified value is outside the range of 504 - 32760)	The value of b is used. ^{#1}	504 is assumed. ^{#1}
When the specification is incorrect (the specified value does not satisfy sector length $\times n - 8$ (n is a positive integer))	The value of b is used. ^{#2}	504 is assumed. ^{#2}

Legend:

- a: Value of the `dam_max_block_size` operand in the DAM service definition
- b: Block length in the file that has the largest block length, from among the logical

files defined in the DAM service definition

#1: KFCA00216-E and KFCA01644-I are output.

#2: KFCA02565-I is output.

■ `dam_kb_size=1000|1024~<<1000>>`

When the size of the buffer area allocated as the shared memory for the DAM service is specified in the `dam_cache_size` operand of the DAM service definition (`$DCDIR/conf/dam`) in kilobytes, the value is automatically converted to the number of bytes. In this case, specify whether 1 KB is handled as 1000 bytes or 1024 bytes.

1000

1 KB is handled as 1000 bytes.

1024

1 KB is handled as 1024 bytes.

■ `watch_time=maximum-response-waiting-time~<unsigned integer> ((0-65535))`
(Unit: seconds)

Specify the maximum waiting time between sending a service request and receipt of a response when communicating between processes by RPC.

OpenTP1 may suspend termination processing for the length of time specified in this operand. Therefore, if you specify a large value, the termination processing of OpenTP1 may take some time.

If no response is received within the specified time, RPC returns a transmission timeout error.

Specify 0 if the system is to wait for a response. When you specify 0, OpenTP1 may not terminate.

If this operand is omitted, the value specified with the `watch_time` operand of the system common definition is assumed.

Use the default of the `watch_time` operand of the system common definition for this operand.

We recommend that you do not change the operand unless special tuning is necessary.

If a value that is much greater or smaller than the default of the `watch_time` operand of the system common definition is specified, a failure may occur causing OpenTP1 to go down.

command format

Described on the following page.

damcache (Specify the boundary for reusing cache blocks)

Format

```
[damcache logical-file-name boundary-for-reusing-cache-blocks]
```

Function

Use this command to specify the boundary for reusing unused cache blocks among the cache blocks for a DAM file if the shared memory for the DAM file runs short.

Command arguments

- *logical-file-name*~<identifier of 1 to 8 characters>

Specify the name of the logical file that validates the boundary for reusing cache blocks. You need to define the logical file name specified here using the `damfile` command beforehand.

- *boundary-for-reusing-cache-blocks*~<unsigned integer>((0-4000000))

Specify the boundary for reusing cache blocks. If you do not specify the boundary for reusing cache blocks, the value specified in the `dam_default_cache_num` operand in the DAM service definition will be used as the default.

Until the boundary specified here is reached, the DAM service reuses cache blocks by prioritizing blocks from other DAM files over those in the DAM file to be accessed. If the number of cache blocks exceeds the boundary, the DAM service starts to reuse the cache blocks for the DAM file to be accessed. When you specify 0, the DAM service reuses the cache blocks connected to the cache block chain for the DAM file to be accessed, like the usual processing.

Notes

- The `damcache` command is valid only for the logical file that is defined using the `damfile` command. Therefore, you need to define the target logical file name using the `damfile` command beforehand. If you specify a boundary for reusing cache blocks before you specify the target logical file using the `damfile` command, the boundary will not be valid.
- If you do not specify a boundary for reusing cache blocks for a logical file using the `damcache` command, the value specified in the `dam_default_cache_num` operand is used as the boundary for reusing cache blocks.
- If you specify the `damcache` command more than once for a single logical file name, operation is not guaranteed.

damch1mt (Specify a threshold for the number of cache blocks)

Format

```
[damch1mt logical-file-name threshold-for-the-number-of-cache-blocks]
```

Function

Use this command to specify the upper limit for the number of cache blocks that can be managed by a single DAM file.

Command arguments

- *logical-file-name*~<identifier of 1 to 8 characters>

Specify the name of the logical file that validates a threshold for the number of cache blocks. You need to define the logical file name specified here using the `damfile` command beforehand.

- *threshold-for-the-number-of-cache-blocks*~<unsigned integer>((0-4000000))

Specify a threshold for the number of cache blocks that are managed by the specified logical file. If you do not specify this argument, the DAM service secures cache blocks until the shared memory resource is used up.

Notes

- The `damch1mt` command is valid only for the logical file that is defined using the `damfile` command. Therefore, you need to define the target logical file name using the `damfile` command beforehand. If you specify a threshold for the number of cache blocks before you specify the target logical file using the `damfile` command, the threshold will not be valid.
- If you specify the `damch1mt` command more than once for a single logical file name, operation is not guaranteed.

damfile (Specify logical file)

Format

```
{{damfile [-{d|n[-f]}] [-c] logical-file-name physical-file-name}}
```

Function

Specify the names of the logical file and physical file to be accessed using the DAM service on-line. The DAM service controls access according to the specified logical file name.

Options

- -d

Performs deferred updating of the specified file. If this operand is omitted, no deferred updating takes place. (Instead, the DAM file is real-updated at a synchronous point.)

If both a DAM file for which deferred updating is specified and a DAM file for which normal updating is specified are updated and output, they are real-updated at a synchronous point.

- -n

Specify this option if the specified files are processed as a file not to be recovered.

- -f

Specify this option to perform cacheless access for the specified file. This option must be specified together with the -n option.

- -c

Specify this option to continue the normal startup processing of the DAM service even if an error occurs in the specified DAM file. If the normal startup processing of the DAM service cannot continue, it ends. When the DAM service starts, the applicable DAM file is shut down due to the error. When you use `dc_dam_open()` to access the file, an error is returned with `DCDAMER_OHOLD`. To use the DAM file that has an error in a UAP, use the `damrm` command to disconnect the file from online processing, eliminate the cause of the error, and then use the `damadd` command to register the file for online processing.

Command arguments

- *logical-file-name*~<1-8 character identifier>

Specify a logical file name.

■ *physical-file-name*~<1-63 digit path name>

Specify the complete path name as the name of the physical file corresponding to the logical file name. No environment variables can be used.

Note

- The DAM service compares the following two values and uses the greater value as the maximum block length of the DAM file:
 - Block length of the file with the largest block length, from among the logical files defined in the `damfile` definition command
 - Value specified in the `dam_max_block_size` operand

If no logical file is defined in the `damfile` definition command and the `dam_max_block_size` operand is not specified, the maximum block length of the DAM file is 504 bytes.

- The maximum block length of the DAM file in the OpenTP1 system is assumed by the DAM service. The DAM service assumes the block length in the logical file that has the largest block length, from among the logical files defined in the `damfile` definition command in the DAM service definition. If no logical file is defined in the DAM service definition, the maximum block length is 504 bytes.
- When you specify the `-f` option, the DAM file data area in the special shared memory for the DAM service is not used and I/O operations are always performed for the file. Therefore, depending on the number of blocks in the DAM file to be accessed while the system is online, the performance may degrade. When you specify cacheless access for all the DAM files used online, you can specify 10 for the `dam_cache_size_fix` operand to start the system with the minimum DAM cache memory. For some cautionary notes on this type of operation, see the section on the `dam_cache_size_fix` operand.
- If the total of the number of `damfile` definition commands and the value specified in the `dam_added_file` operand exceeds 3600, the DAM service might not be able to start.

TAM service definition

Format

■ set format

```

set tam_max_tblnum=maximum-online-TAM-table-count
set tam_max_filesize=maximum-online-TAM-table-capacity
set tam_max_recsize=maximum-TAM-table-record-length
[set tam_jnl_err_flag=STOP|CONTINUE]
[set tam_pool_attri=fixed|free]
[set tam_tbl_lock_mode=LOCK|NOLOCK]
[set tam_cbl_level=COBOL-API-lock-level]
[set tam_max_trnnum=maximum-number-of-concurrent-transaction-branches]
[set tam_max_trnfilnum=maximum-number-of-access-tables-in-a-transaction]
[set watch_time=maximum-response-waiting-time]

```

■ command format

```

{{tamtable [-o loading-point] [-a access-format] [-i] [-j]
TAM-table-name physical-file-name}}

```

Function

The TAM service definition defines the execution environment to manage TAM files.

Explanation

set format

- `tam_max_tblnum=maximum-online-TAM-table-count~<unsigned integer>`
 ((1-65535))

Specify the maximum number of TAM tables to be used online. Files in an amount up the specified value can be added during online operation, therefore consider the number of files to be added in specifying a value.
- `tam_max_filesize=maximum-online-TAM-table-capacity~<unsigned integer>`
 ((136-1000000000)) (Unit: bytes)

Specify the maximum capacity of TAM tables to be used online. Consider the capacity of both files at online startup and files to be added online.
- `tam_max_recsize=maximum-TAM-table-record-length~<unsigned integer>`
 ((1-1000000000)) (Unit: bytes)

Specify the maximum record length of TAM tables to be used online.

- `tam_jnl_err_flag=STOP|CONTINUE~<<STOP>>`

Specify whether TAM service should be suspended if a journal reading error occurs during a restart of the TAM service.

STOP

TAM service is suspended.

CONTINUE

All TAM tables are shutdown, and TAM service is restarted.

- `tam_pool_attri=fixed|free~<<For HP-UX or Solaris: fixed; for AIX, Linux, or Windows: free>>`

Specify whether a memory pool for exclusive TAM service use should be fixed in the shared memory. This memory pool is used, for example, to manage the tables for loading or accessing TAM tables. Consider the amount of mounted memory, the capacity of the shared memory pool as a ratio of overall memory usage, and other factors in specifying this value.

`fixed`

A memory pool for TAM service is fixed. Processing will not slow down due to paging of the shared memory. However, if the amount of mounted memory is small, paging of text and data segments in other than shared memory could occur.

`fixed` can be specified only when the OS is HP-UX or Solaris. Note that even when the OS is Solaris, `fixed` cannot be specified in some cases, depending on the environment being used. For details, see the *Release Notes*.

`free`

A memory pool for TAM service use is not fixed. If the amount of mounted memory is too small, paging of shared memory could occur, causing processing speed to slow down.

- `tam_tbl_lock_mode=LOCK|NOLOCK~<<LOCK>>`

Specify the table lock mode for TAM tables whose access mode is "reference" or "update but not add/delete".

LOCK

The table when accessed is locked.

NOLOCK

The table when accessed is not locked.

This mode enhances the processing performance of the table when accessed. Although a lock is specified by UAP, the table will not be locked.

- `tam_cbl_level=COBOL-API-lock-level~<unsigned integer> ((0-2)) <<0>>`

Specify the lock level if the lock of COBOL API conflicts.

This specification is valid only for COBOL API.

0

Unlock is waited unconditionally.

Specifying data name I of COBOL API is invalid.

1

An error return occurs without waiting for unlock.

Specifying data name I of COBOL API is invalid.

2

Specifying this value follows the unlock of data name I of COBOL API.

- `tam_max_trnnum=maximum-number-of-concurrent-transaction-branches~<unsigned integer> ((1-8192)) <<20>>`

Specify the number of concurrent transaction branches that access to the TAM table. If this specified value is large, the memory on the TAM server is shared greatly. If the shared memory cannot be secured, the TAM server may not be started. If the specified value is small, a memory shortage may occur in the API function.

- `tam_max_trnfilnum=maximum-number-of-access-tables-in-a-transaction~<unsigned integer> ((1-1024)) <<5>>`

Specify the maximum number of TAM tables to be accessed in one transaction branch. If this specified value is large, the memory on the TAM server is shared greatly. If the shared memory cannot be secured, the TAM server may not be started. If the specified value is small, a memory shortage may occur in the API function.

- `watch_time=maximum-response-waiting-time~<unsigned integer> ((0-65535))`
(Unit: seconds)

Specify the maximum waiting time between sending a service request and receipt of a response when communicating between processes by RPC.

OpenTP1 may suspend termination processing for the length of time specified in this operand. Therefore, if you specify a large value, the termination processing of OpenTP1 may take some time.

If no response is received within the specified time, RPC returns a transmission timeout error.

Specify 0 if the system is to wait for a response. When you specify 0, OpenTP1 may not terminate.

Use the default of the `watch_time` operand of the system common definition for this operand.

We recommend that you do not change the operand unless special tuning is necessary.

If a value that is much greater or smaller than the default of the `watch_time` operand of the system common definition is specified, a failure may occur causing OpenTP1 to go down.

When this operand is omitted, the value is as follows:

- When the `watch_time` operand of the system common definition is also omitted, 0 is assumed.
- When the `watch_time` operand of the system common definition is specified, the specified value is assumed.

When this operand is specified in both the system common definition and TAM service definition, the priorities of specified values are (1.>2.):

1. TAM service definition
2. System common definition

command format

Described on the following page.

tamtable (Specify TAM table attribute)

Format

```
{{tamtable [-o loading-point] [-a access-mode] [-i] [-j]  
          TAM-table-name physical-file-name}}
```

Function

This command specifies the name and attributes of the tables accessed using the TAM service online.

Options

- `-o loading-point`~<<start>

Specify the point at which the TAM table is to be loaded.

`start`

The table is loaded with startup of the TAM service.

`cmd`

The table is loaded with entry of a `tamload` command.

`lib`

The table is loaded when a `dc_tam_open` function is issued and the TAM table is opened.

- `-a access-mode`~<<read>>

Specify the access mode for the TAM table.

`read`

Retrieval only.

`rewrite`

Updates only with no additions or deletions.

`write`

Updates with additions and deletions.

`reclck`

Updates with additions and deletions without securing table locks.

- `-i`

Specify this option if access is continued regardless of occurrence of an input/output

error when updating the TAM table. When this option is specified, the TAM table is not shut down on the same online although an input/output error occurs. Therefore, the TAM table is accessible.

If an online failure occurs after occurrence of the input/output error, the TAM service is restarted by isolating the table from online.

■ -j

Specify this option to collect the differential in the updated journal when the TAM record is updated. This option can reduce the amount of the journal when updating the TAM record.

■ *TAM table name*~<1-32 character identifier>

Specify the TAM table name.

■ *physical-file-name*~<1-63 digit path name>

Specify the full path name as the name of the physical file for storage of the TAM table. No environment variables can be used.

Client service definition

Format

■ set format

```
[set parallel_count=number-of-resident-processes [, maximum-
number-of-processes]]
[set balance_count=number-of-service-requests-processed-by-a-process]
[set trn_expiration_time=transaction-branch-expiration-time]
[set trn_expiration_time_suspend=Y|N|F]
[set trn_cpu_time=transaction-branch-CPU-check-time]
[set open_rm=OpenTP1_ALL|OpenTP1_NONE]
[set clt_inquire_time=maximum-time-interval-between-permanent-
connection-inquiries]
[set clt_port=port-number-of-client-extension-service]
[set clt_trn_conf=Y|N]
[set clt_cup_conf=Y|N]
[set cup_parallel_count=number-of-resident-processes, [maximum-
number-of-processes]]
[set cup_balance_count=number-of-remaining-service-requests]
[set cltrn_port=transactional-RPC-execution-process-port-number]
[set cltcon_port=CUP-execution-process-port-number]
[set trn_statistics_item=statistical-item [, statistical-item] ...]
[set trn_optimum_item=transaction-optimization-item [, transaction-
optimization-item] ...]
[set trn_watch_time=maximum-wait-time-for-transaction-synchronization-
point-processing]
[set trn_rollback_information_put=no|self|remote|all]
[set trn_limit_time=transaction-branch-maximum-executable-time]
[set trn_rollback_response_receive=Y|N]
[set trn_partial_recovery_type=type1|type2|type3]
[set trn_completion_limit_time=time-limit-for-completing-transaction]
[set message_store_bufllen=size-of-the-message-storage-buffer-pool]
[set watch_time=maximum-response-wait-time]
```

■ Command format

None

Function

The client service definition defines the execution environment for a server to support the OpenTP1 client functions. The operands describes below must be specified when the CUP starts up transactions.

Explanation

set format

- `parallel_count=number-of-resident-processes [, maximum-number-of-processes] ~<unsigned integer> ((1-1024)) <<1>>`

Specify the number of transactions that are started up by CUPs (processed concurrently by the server). When this number is specified, all the specified execution processes are started up at the same time, being ready to accept a transaction startup request from a CUP. If transaction startup requests come from more than one CUP, the transactions are processed in parallel resulting in enhanced performance.

With the maximum number of processes specified, any excess is processed by dynamically starting up non-resident processes. Because server process startup is controlled within the specified maximum number of processes, OpenTP1 system performance is prevented from reducing.

The conditions for specifying the number of processes are as follows:

1. The number of resident processes and the maximum number of processes must be not less than 1.
2. The maximum number of processes specified must be larger than that of resident processes specified.
3. If the maximum number of processes is not specified, all processes are assumed resident.
4. It is impossible to use all processes as non-resident ones (to be started up as necessary).

- `balance_count=number-of-service-requests-processed-by-a-process~<unsigned integer> ((0-512)) <<3>>`

Specify the number of service requests, which are remaining in the schedule queue corresponding to this user server, to be processed by a single process. If the number of service requests remaining in the schedule queue exceeds the value determined by (Value specified in this operand) x (Number of started processes), start non-resident processes and have them process the service requests. This operand is effective only for the service group that is specified by the `parallel_count` operand to start non-resident processes.

If 0 is specified, non-resident processes are started up while all processes started up upon a serve request are being service-processed.

- `trn_expiration_time=transaction-branch-expiration-time~<unsigned integer> ((0-65535)) <<0>> (Unit: seconds)`

Specify the expiration time for checking the processing of transaction branches.

If neither commitment nor roll-back instruction is given within the specified time after startup of transactions from a CUP, the system terminates the transaction branch process abnormally and rolls back.

This operand can also be specified in the DCCLTTREXPTM operand in the client environment definition. For the client environment definition, see the manual *OpenTP1 TP1/Client User's Guide TP1/Client/W, TP1/Client/P*.

The priority of specified values is (1.>2.):

1. Client environment definition
2. Client service definition

If the RPC function is used, whether the processing time for transaction branches to be executed in other processes is included in the check time can be specified by the `trn_expiration_time_suspend` operand.

■ `trn_expiration_time_suspend=Y|N|F~<<N>>`

Specify whether to include, in the transaction branch process check time, the time required for a transaction branch to wait until processing of another branch called by RPC terminates.

1. Time required for the monitored transaction branch to call another transaction branch using the RPC facility and wait until its processing is terminated
2. Time required for the server UAP called with the chained RPC to wait for the next service request
3. Time required for the monitored transaction branch to call another transaction branch using the asynchronous RPC facility and receive the result of processing

Y

The monitor time includes all of 1., 2., and 3.

N

The monitor time includes only 3.

F

The monitor time includes none of 1., 2., and 3.

This operand can also be specified in the DCCLTTREXPSP operand in the client environment definition. For the client environment definition, see the manual *OpenTP1 TP1/Client User's Guide TP1/Client/W, TP1/Client/P*.

The priority of specified values is (1.>2.):

1. Client environment definition
2. Client service definition

For details about the relationship between this operand and the timer monitoring options, see *A.2 Time monitoring for transactions*.

- `trn_cpu_time=transaction-branch-CPU-check-time~<unsigned integer> ((0-65535)) <<0>>` (Unit: seconds)

Specify the CPU time that can be used by a transaction branch until synchronization point processing. If 0 is specified, no time check is performed. If the specified time is exceeded, the transaction branch process terminates abnormally and rolls back.

This operand can also be specified in the `DCCLTTRCPUTM` operand in the client environment definition. For the client environment definition, see the manual *OpenTP1 TP1/Client User's Guide TP1/Client/W, TP1/Client/P.*

The priority of specified values is (1.>2.):

1. Client environment definition
2. Client service definition

- `open_rm=OpenTP1_ALL|OpenTP1_NONE~<<OpenTP1_NONE>>`

Specify the name of the resource manager opened by the client service executable program when the transactional RPC facility is used from CUP. This specification optimizes the synchronization point processing by the transactional RPC facility executed from CUP, improving the transaction performance.

When this operand is specified, the resource manager's resource is used as much as for the number of processes specified by the `paralled_count` operand.

Either of the following resource manager names can be specified:

`OpenTP1_ALL`

At the start of OpenTP1, all the OpenTP1-provided resource managers registered in OpenTP1 are opened by the client service executable program.

`OpenTP1_NONE`

At the start of OpenTP1, no resource managers are opened by the client service executable program (the synchronization point processing cannot be optimized).

- `clt_inquire_time=maximum-time-interval-between-permanent-connection-inquiries~<unsigned integer> ((0-1048575)) <<180>>` (Unit: seconds)

Specify the maximum interval between an inquiry from the CUP to the server and the next inquiry.

The CUP execution process monitors this interval, and forcibly releases the permanent connection if no inquiry is made within the specified period of time.

If expiration of the maximum interval is detected in a transaction, the transaction is rolled back.

Specify 0 to have the system wait infinitely for an inquiry from the CUP.

This operand can also be specified in the `DCCLTINQUIRETIME` operand in the client environment definition. For details, see the manual *OpenTP1 TP1/Client User's Guide TP1/Client/W, TP1/Client/P*.

The priority of specified values is (1.>2.).

1. Client environment definition
2. Client service definition

- `clt_port=port-number-of-client-extension-service~<unsigned integer>`
(5001-65535)

Specify the port number of the client extension service.

Specify the port number that differs from any well-known port numbers used in other system servers.

Assuming that this operand is omitted, if the `rpc_port_base` operand as a system common definition has been specified, the system assigns any port number in the range from the specified value of `rpc_port_base` to the specified value of `rpc_port_base` plus the `prc_process_count` value. If the `rpc_port_base` operand as a system common definition has not been specified, the system uses any assigned port number.

The port number specified using this operand must not be used by other programs.

Note that the operating system assigns certain numbers automatically. You should not use such a number for the port number. The numbers assigned by the operating system differ depending on the type and version of the operating system. For details, see the documentation for your operating system.

- `clt_trn_conf=Y|N`

Specify whether to start the transactional RPC execution processes in the local OpenTP1 node. If nothing or Y is specified for this operand, the transactional RPC execution processes as many as those specified in the `parallel_count` operand are started.

- `clt_cup_conf=Y|N`

Specify whether to start the CUP execution processes in the local OpenTP1 node. If Y is specified for this operand, the CUP execution processes as many as those specified in the `cup_parallel_count` operand are started.

Specify Y to establish a permanent connection from the CUP using the `dc_clt_connect` or `dc_clt_connect_s` function.

- `cup_parallel_count=number-of-resident-processes, [maximum-number-of-processes]~<unsigned integer> ((1-1024)) <<1>>`

Specify the number of permanent connections established by CUPs (concurrently processed by the server).

When the number of resident processes is specified, all the specified CUP execution processes are started up at the same time, being ready to accept a permanent connection establishment request from a CUP. If permanent connection establishment requests come from more than one CUP, the requests are processed in parallel resulting in enhanced performance.

When the maximum number of processes is specified, any excess is processed by dynamically starting non-resident processes. Because server process startup is controlled within the specified maximum number of processes, OpenTP1 system performance is prevented from reducing.

The conditions for specifying the number of processes are as follows:

1. The number of resident processes and maximum number of processes must be not less than 1.
2. The maximum number of processes specified must be larger than that of resident processes specified.
3. If the maximum number of processes is not specified, all processes are assumed resident.
4. It is impossible to use all processes as non-resident ones (to be started up as necessary).

For the `parallel_count` operand of the client service definition, specify the number of resident transactional RPC execution processes and maximum number of transactional RPC execution processes.

- `cup_balance_count=number-of-remaining-service-requests~<unsigned integer> ((0-512)) <<3>>`

Specify the number of remaining permanent connection establishment requests.

Permanent connection establishment requests sent from CUPs are entered in the scheduling queue. If the number of requests exceeds the value specified in the operand, the scheduling facility starts non-resident processes to process these requests. This operand is effective only when the maximum number of processes is specified by the `cup_parallel_count` operand.

Specify 0 to start non-resident processes when a permanent connection establishment request is made where all processes started have established permanent connections.

For the `balance_count` operand of the client service definition, specify the number of remaining service requests to be processed by the transactional RPC execution

processes.

- `clttrn_port=port-number-for-transactional-RPC-execution-process~ <unsigned integer> ((5001-65535))`

This specifies the port number for a process that executes transactional RPC.

Specify a port number different from the well-known port number used in the other system server.

Assuming that this operand is omitted, if the `rpc_port_base` operand as a system common definition has been specified, the system assigns any port number in the range from the specified value of `rpc_port_base` to the specified value of `rpc_port_base` plus the `prc_process_count` value. If the `rpc_port_base` operand as a system common definition has not been specified, the system uses any assigned port number.

From the port number specified here, the system assigns the number specified by the `parallel_count` operand as a port number. Therefore, you should make sure that the sum of the value specified by this operand and the value specified by the `parallel_count` operand does not exceed 65535.

The port number specified using this operand must not be used by other programs.

Note that the operating system assigns certain numbers automatically. You should not use such a number for the port number. The numbers assigned by the operating system differ depending on the type and version of the operating system. For details, see the documentation for your operating system.

- `cltcon_port=port-number-for-CUP-execution-process<unsigned integer> ((5001-65535))`

This specifies the port number for a CUP that execution process.

Specify a port number different from the well-known port number used in the other system server.

Assuming that this operand is omitted, if the `rpc_port_base` operand has been specified as a system common definition, the system assigns any port number in the range from the specified value of `rpc_port_base` to the specified value of `rpc_port_base` plus the `prc_process_count` value.

If the `rpc_port_base` operand as a system common definition has not been specified, the system uses any assigned port number.

From the port number specified here, the system assigns the number specified by the `cup_parallel_count` operand as a port number. Therefore, you should make sure that the sum of the value specified by this operand and the value specified by the `cup_parallel_count` operand does not exceed 65535.

The port number specified using this operand must not be used by other programs.

Note that the operating system assigns certain numbers automatically. You should not use such a number for the port number. The numbers assigned by the operating system differ depending on the type and version of the operating system. For details, see the documentation for your operating system.

- `trn_statistics_item=statistical-item [, statistical-item]`
`...~<<executiontime>>`

This specifies an item or items from which statistics regarding the transaction branch are to be obtained.

nothing

You do not obtain any statistics.

base

You obtain the following information as basic information.

- Identifier of a transaction branch
- Result of settlement of a transaction branch
- Execution process type of a transaction branch
- Execution server name of a transaction branch
- Execution service name of a transaction branch

executiontime

You obtain both basic information and the execution time information regarding a transaction branch.

cputime

You obtain both basic information and the CPU time information regarding a transaction branch.

Note that you can specify `nothing` only once. Specifying `nothing` together with any other item of statistics will nullify the `nothing` assignment.

When obtaining statistics about transactions, use one of the following:

- Give Y to the `trn_tran_statistics` operand in the transaction service definition.
- Specify the `-s` option in the `trnstics` command.

This operand can also be specified in the `DCCLTTRSTATISITEM` operand in the client environment definitions. For details about client environment definitions, see the manual *OpenTP1 TP1/Client User's Guide TP1/Client/W, TP1/Client/P*.

The priority of specified values is (1.>2.):

1. Client environment definition
2. Client service definition

- `trn_optimum_item=transaction-optimization-item [, transaction-optimization-item] ... ~ <<base>>`

The following character string is used to specify an optimization item or items that will improve the performance of global transactions consisting of multiple user servers.

`base`

This optimizes all the processing to obtain synchronization points (prepare, commit, and rollback processing). Since the transaction control of OpenTP1 is executed on a two-phase commit basis, the commit control between transaction branches requires four cycles of inter-process communication.

Under the following conditions, the parent transaction branch conducts commit processing for its child transaction branch, so that it is possible to reduce the four cycles of inter-process communication required in commit control.

1. Both the parent and child transaction branches exist under the same OpenTP1.
2. The parent transaction branch uses a synchronization response RPC to call the child transaction branch.
3. The XA interface object of the resource manager that is accessed in the child transaction branch has also been linked with the parent transaction branch.

`asynprepare`

This optimizes the prepare processing when it is impossible to conduct all the processing to obtain synchronization points because the conditions specified in `base` are not satisfied.

Under the following conditions, if the child transaction branch executes a service request in accordance with the RPC that is issued from the parent transaction branch, the prepare processing is performed before the RPC returns. This reduces two cycles of inter-process communication.

1. It is impossible to perform optimization from the `base` specification.
2. The parent transaction branch uses a synchronization response RPC to call the child transaction branch.

However, this optimization will elongate the response time for the synchronization response RPC issued by the parent transaction branch. Meanwhile, the child transaction branch will increase the interval from the prepare processing to the commit processing (a status in which no transactions can be settled unless there is support from the parent transaction branch). If, therefore, OpenTP1 for the parent transaction branch encounters

a system down and the communication between transaction branches fails, it will take more time to swap journal files and validate checkpoint dump files. As a result, OpenTP1 for the child transaction branch may encounter a system down.

You can specify the same transaction optimization items more than once. Note that the priority goes as follows.(1.>2.)

1. base
2. asyncprepare

This operand can also be specified in the DCCLTTROPTIITEM operand in the client environment definitions. For details about client environment definitions, see the manual *OpenTP1 TP1/Client User's Guide TP1/Client/W, TP1/Client/P*.

The priority of specified values is (1.>2.):

1. Client environment definition
2. Client service definition

- `trn_watch_time=maximum-communication-wait-time-for synchronization-point-processing-of-transactions~ <unsigned integer> ((1-65535)) <<120>> (units: seconds)`

Specify the maximum waiting time for receiving the communication (such as an instruction of prepare, commit, or rollback, and a response) between transaction branches during the synchronization point processing of transactions.

If the transaction branch receives no instruction or response within the specified time, the transaction branch will be rolled back if it is before completion of the first phase of two-phase commit. If the first phase has completed, the system process of the transaction service retries to determine the transaction.

This operand can also be specified in the DCCLTTRWATCHTIME operand in the client environment definition. For details, see the manual *OpenTP1 TP1/Client User's Guide TP1/Client/W, TP1/Client/P*.

The priority of specified values is (1.>2.):

1. Client environment definition
2. Client service definition

- `trn_rollback_information_put=no|self|remote|all~ <<no>>`

Specify whether to log information on the cause of rollback when transaction branches are rolled back.

no

Rollback information is not logged.

`self`

Rollback information is logged only for the transaction branch that caused rollback.

`remote`

In addition to information of `self` rollback information is logged for transaction branches for which the remote node transaction branch requested rollback.

`all`

In addition to information of `remote` rollback information is logged for transaction branches for which the local node transaction branch requested rollback.

This operand can also be specified in the `DCCLTTRRBINFO` operand in the client environment definitions. For details about client environment definitions, see the manual *OpenTPI TPI/Client User's Guide TPI/Client/W, TPI/Client/P*.

The priority of specified values is (1.>2.):

1. Client environment definition
2. Client service definition

- `trn_limit_time=maximum-executable-time-for-transaction-branch` <unsigned integer> ((0-65535)) <<0>> (unit: seconds)

This specifies the maximum executable time for transaction branches. From the time a transaction branch is started until processing for the synchronization point terminates, the time does not exceed the value specified in this operand, it is necessary to automatically set the timeout values for the `dc_rpc_call` function, the `dc_rpc_poll_any_replies` function, and the communication within synchronization point processing.

- Timeout value for the `dc_rpc_call` and `dc_rpc_poll_any_replies` functions

When `K` is greater than, or equal to, the time specified in this operand, the system does not perform the request processing but returns an error upon the timeout.

Both when `K` is smaller than the time specified in this operand and when the time specified in this operand minus `K` is greater than, or equal to, `W`, the value of `W` is regarded as the timeout value.

Both when `K` is smaller than the time specified in this operand and when the time specified in this operand minus `K` is smaller than `W`, the time specified in this operand minus `K` is regarded as the timeout value.

`K`

Current time minus transaction branch start time

W

Time specified in the `watch_time` operand for the `dc_rpc_call` function; or time specified in the `timeout` argument for the `dc_rpc_poll_any_replies` function

- Timeout value for communication within synchronization point processing

When `K` is greater than or equal to the time specified in this operand, the timeout value is handled as 1 second.

Both when `K` is smaller than the time specified in this operand and when the time specified in this operand minus `K` is greater than or equal to `W`, the value of `W` is regarded as the timeout value.

Both when `K` is smaller than the time specified in this operand and when the time specified in this operand minus `K` is smaller than `W`, the time specified in this operand minus `K` is regarded as the timeout value.

K

Current time minus starting time for the transaction branch

W

Time specified in the `trn_watch_time` operand; or time specified in the `trn_time` operand when the `trn_watch_time` operand has been omitted

If any processing other than the above receive waiting takes time, the transaction branch may not terminate within the time specified in this operand.

If the time specified in this operand has been reached before the start of synchronization point processing, the transaction undergoes a rollback.

Specifying a value of 0 means that there will be not time monitor.

This operand can also be specified in the `DCCLTTRLIMITTIME` operand in the client environment definitions. For details about client environment definitions, see the manual *OpenTP1 TP1/Client User's Guide TP1/Client/W, TP1/Client/P*.

The priority of specified values is (1.>2.):

1. Client environment definition
2. Client service definition

- `trn_rollback_response_receive=Y|N~ <<Y>>`

This specifies whether or not to receive an end-of-rollback notice after sending a rollback information to the RPC destination transaction branch. With `N` specified, the system terminates its own transaction branch without receiving an end-of-rollback notice from the RPC destination transaction branch (without waiting for the rollback processing at the RPC destination transaction branch to be completed).

This operand can also be specified in the `DCCLTTRRBRCV` operand in the client environment definitions. For details about client environment definitions, see the manual *OpenTP1 TP1/Client User's Guide TP1/Client/W, TP1/Client/P*.

The priority of specified values is (1.>2.):

1. Client environment definition
2. Client service definition

■ `trn_partial_recovery_type=type1 | type2 | type3~ <<type1>>`

This specifies the method of processing transaction synchronization points when there is a UAP error.

Specifying this operand in a client service definition is effective only when a transaction is started from the CPU.

If an RPC timeout causes, the address of a destination process for issuing the RPC not to be settled or if the UAP where a transaction is underway fails, the communication between transaction branches will degrade so that it may take time to settle transactions.

With this operand, the method of processing transaction synchronization points for any of the following faults is selected among from the three methods shown in the specified values.

Error 1

When there is an RPC timeout

In this case, the RPC-issuing transaction branch cannot identify the process executing the service request. Since the branch cannot identify the process, sending a message about the transaction synchronization point to the RPC-receiving transaction branch is impossible. Both the RPC-issuing and RPC-receiving transaction branches have to wait for the message about the transaction synchronization point, which requires time to settle the transaction.

Error 2

When the RPC-issuing UAP fails before receiving an RPC response

In this case, the RPC-issuing transaction branch cannot identify the process executing the service request. It thus cannot send a message about the transaction synchronization point to the RPC-receiving transaction branch. Therefore, the RPC-receiving transaction branch has to wait for the transaction synchronization point message, so that it will take time to settle the transaction.

Error 3

When the RPC-issuing UAP and the RPC-receiving UAP fails almost simultaneously after the reception of a response from the RPC-receiving UAP

In this case, the transaction recovery process taking over both of the transaction branches does not know that the other party's UAP process is down. The transaction recovery process will send a message about a transaction synchronization point to a non-existing UAP process, which may take time to settle the transaction.

type1

If Error 1 occurs, the RPC-issuing transaction branch and the RPC-receiving transaction branch both settle the transaction when the processing of the message about the transaction synchronization point causes a timeout.

If Error 2 occurs, the RPC-issuing transaction branch settles the transaction without sending the message about the transaction synchronization point to the RPC-receiving transaction branch. The RPC-receiving transaction branch settles the transaction when the processing of the message about the transaction synchronization point causes a timeout.

If Error 3 occurs, the RPC-issuing transaction branch and the RPC-receiving transaction branch both settle the transaction when the processing of the message about the transaction synchronization point causes a timeout.

type2

If Error 1 occurs and transaction is committed, the procedure is the same as type1.

If Error 1 occurs and the transaction is rolled back or if Error 2 occurs, the RPC-issuing transaction branch sends the message about the transaction synchronization point to the transaction service process at the node where the RPC-receiving transaction branch exists, and then settles the transaction. When the transaction service process receives the message about the transaction synchronization point, a transaction synchronization point instruction is sent to the process that is currently processing the transaction branch.

If Error 3 occurs, the RPC-issuing transaction branch and the RPC-receiving transaction branch both settle the transaction when the processing of the message about the transaction synchronization point causes a timeout.

type3

If Error 1 occurs and transaction is committed, the procedure is the same as type1.

If Error 1 occurs and the transaction is rolled back, or if Error 2 occurs, or if Error 3 occurs, the RPC-issuing transaction branch sends the message about the transaction synchronization point to the transaction service process at the node where the other party's transaction branch exists, and then settles the transaction. The transaction service process, when it has received the message about the transaction synchronization point, sends an instruction for transaction synchronization point to the process that is currently processing the transaction branch.

In the following cases, even if this operand is given type2 or type3, it may take time to settle the transaction.

1. During an RPC execution, the RPC-receiving UAP undergoes a status change (such as load increase, UAP termination, and UAP blocking) and a service request is retransferred to the same UAP of another node.
2. In this version, this option does not support the other party's OpenTP1.
3. The other party's transaction branch takes time other than in the reception of the message of the transaction synchronization point.

This operand can also be specified in the `DCCLTTRRECOVERYTYPE` operand in the client environment definitions. For details about client environment definitions, see the manual *OpenTP1 TP1/Client User's Guide TP1/Client/W, TP1/Client/P*.

The priority of specified values is (1.>2.):

1. Client environment definition
 2. Client service definition
- `trn_completion_limit_time=time-limit-for-completing-transaction~<unsigned integer> ((0-65535))<<0>>` (units: seconds)

Specify the maximum execution time of a transaction branch. If the execution time of the transaction branch reaches the maximum, the transaction branch process terminates abnormally, and the recovery process commits or rolls back the transaction branch. If 0 is specified, the maximum execution time of a transaction branch is not monitored.

Whether an abnormally terminated UAP is shut down depends on the specification of the `hold` and `term_watch_time` operands. For details, see the descriptions of these operands of the user service definition.

Monitoring of the execution time specified by this operand starts when a transaction is started by invoking the `dc_trn_begin` function or by starting a service function. The monitoring ends when the transaction branch terminates after acquisition of information about the synchronization point processing of the transaction (TJ). However, if the transaction is optimized, monitoring of the transaction branch on the server terminates after a response is returned to the client. For details about the section for which the execution time specified by this operand is monitored and about the relationship between this operand and the timer monitoring options, see *A.2 Time monitoring for transactions*.

- `message_store_bufllen=size-of-the-message-storage-buffer-pool~<unsigned integer> ((1024-31457280))<<8196>>` (units: bytes)

Specify the size of the shared memory pool that stores transactional RPC requests and permanent connection requests from a CUP before the requests are passed to the CUP executing process.

The following shows the formula for calculating the value to be specified in this operand:

Size of the message storage buffer pool = D x C

D: Control data size (256 bytes)

C: The number of transactional RPC requests or the number of permanent connection requests, whichever is larger.

If the result of this formula is less than 8196, you do not need to specify this operand.

- `watch_time=maximum-response-wait-time~<unsigned integer>((0-65535))(unit: seconds)`

The execution process of the client extended service executes the RPC issued from a CUP as a proxy if the CUP starts a transaction or establishes a permanent connection. In this operand, specify the maximum length of wait time from the transmission of a service request up to the return of a response from the service when processes communicate using the RPC executed by the execution process as a proxy.

If no response is returned after the specified time, a reception timeout error is returned to the CUP.

When you specify 0, the system waits until it receives a response.

If `DCWATCHTIMINHERIT=Y` is specified in the client environment definition, the timer value of the CUP takes precedence over the timer value specified in this operand.

If this operand is omitted, the value of the `watch_time` operand in the system common definition is assumed.

We recommend that you do not change the operand unless special tuning is necessary.

If a value that is much greater or smaller than the default of the `watch_time` operand of the system common definition is specified, a failure may occur causing OpenTP1 to go down.

Command format

None

Notes

As many transactions started up from CUPs as the processes specified in the `parallel_count` operand are executed in parallel. The server name for the process is `_clttrn`. The `trnls` command enables display of the transaction condition of the process.

The server name is indicated in a message that appears when the process is cancelled because of a factor such as the transaction branch expiration time.

IST service definition

Format

- set format

```
[set ist_node=node-name[,node-name]. . .]
[set ist_node_group=node-group-name]
```

- Command format

```
istdef table-name record-length record-count
```

Function

The execution environment is defined to use an IST service.

Explanation

set format

- `ist_node=node-name[,node-name]. . .~<<4-character identifier>>`

Specify the node name to operate the internode shared table.

Specify the node identifier specified in the `node_id` operand of each node system common definition. If the internode shared table is updated, it is reflected to the node specified here. Up to 128 nodes can be specified.

If you do not specify the `ist_node_group` operand, you must specify at least one node name in the `ist_node` operand.

- `ist_node_group=node-group-name~<<1-8 character identifier>>`

Specify the node group name to operate the internode shared table.

Specify the multinode area identifier specified in the `dcmarea -m` command of the multinode configuration definition or the multinode subarea identifier specified in the `dcmarea -g` command.

If the `ist_node` and `ist_node_group` operands are specified, the `ist_node_group` operand is given to priority.

If you do not specify the `ist_node` operand, you must specify the `ist_node_group` operand.

Command format

The command format is described on the next page.

istdef (table name definition of IST service)

Format

```
istdef table-name record-length record-count
```

Function

Specify the internode shared table name to be accessed using an IST service.

Specify all table names, record length and the number of records. Define at least one internode shared table in the IST service definition.

The number of tables that can be defined in one node is up to 64. The sum of the table length on the internode shared table must be 64 Kilobytes or less. Shown below is a calculation.

n

$$\sum_{1}^{n} (\text{one-record length on the table} \times \text{record count}) \leq 64 \text{ Kilobytes}$$

1

where,

n: number of tables defined

Option

- *table-name*~<1-8 character identifier>

Specify the unique name in all the internode shared tables.

- *record-length*~<unsigned integer> ((4-65536)) (Unit: bytes)

Specify the record length of the internode shared table in a multiple of 4. The overall record length of the internode shared table is fixed.

- *record-count*~<unsigned integer> ((1-16384)) (Unit: records)

Specify the record count of the internode shared table.

RMM service definition

Format

- set format

```
set rmm_check_services=name-of-RM-to-be-monitored
[set rmm_system_behavior=down|giveup]
[set rmm_down_with_system=Y|N]
[set rmm_sysdown_with_rm=Y|N]
```

- Command format

None

Function

The resource manager (monitored RM) that uses an RMM service is defined.

Explanation

set format

- `rmm_check_services=name-of-monitored-RM~<1-7 character identifier>`

Specify the resource manager that monitors in the RMM service. Specify the same name as for the definition file of the monitored resource manager.

- `rmm_system_behavior=down|giveup~<<down>>`

Specify whether startup processing of the entire system is to be continued if the RMM service fails to start or restart the monitored resource manager.

`down`

OpenTP1 is not started.

`giveup`

Startup of OpenTP1 is continued.

- `rmm_down_with_system=Y|N~<<Y>>`

Specify whether the monitored resource manager is also terminated abnormally when OpenTP1 has terminated abnormally or the `dcstop -f` command is executed.

`Y`

Terminate abnormally.

`N`

Do not terminate abnormally.

■ `rmm_sysdown_with_rm=Y|N~<<N>>`

Specify whether OpenTP1 is also terminated abnormally when the monitored resource manager has terminated abnormally.

Y

Terminate abnormally.

N

Do not terminate abnormally. The monitored resource manager is restarted.

When Y is specified by the `ha_conf` operand in the system service configuration definition, omit this operand or specify N by this operand.

Command format

None

Monitored RM definition

Format

■ set format

```

set rmm_start_command=command-that-starts-monitored-RM
set rmm_stop_command=command-that-terminates-monitored-RM
set rmm_abort_command=command-that-terminates-forcibly-monitored-RM
set rmm_get_pid_command=command-that-collects-monitored-process-ID
[set rmm_command_watch_time=command-monitor-time-of-monitored-RM]
set rmm_command_uid=command-execution-user-ID
set rmm_command_gid=command-execution-group-ID
[set rmm_start_watch_time=command-monitor-time-of-starting-
monitored-RM]

```

■ Command format

None

Function

The command of the RMM service is defined. For creating a command, see the manual *OpenTPI Operation*.

Explanation

set format

- `rmm_start_command=command-that-starts-monitored-RM~<1-127 byte path name>`
Specify the command name to start the monitored resource manager. Specify the command name with the full path name from the root directory.
- `rmm_stop_command=command-that-terminates-monitored-RM~<1-127 byte path name>`
Specify the command name to terminate the monitored resource manager. Specify the command name with the full path name from the root directory.
- `rmm_abort_command=command-that-terminates-forcibly-monitored-RM~<1-127 byte path name>`
Specify the command name to terminate forcibly the monitored resource manager. Specify the command name with the full path name from the root directory.
- `rmm_get_pid_command=command-that-collects-monitored-process-ID~<1-127 byte path name>`
Specify the command name to collect the process ID of the monitored process. Specify

the command name with the full path name from the root directory.

- `rmm_command_watch_time=command-monitor-time-of-monitored-RM~<unsigned integer> ((0-7200)) <<1800>>` (Unit: seconds)

Specify the monitor time of each command for the monitored resource manager. If the command does not terminate although the specified time passed, the RMM service nullifies the command regarding that the command fails.

If a 0 is specified, the monitor time is infinite. To specify this operand, set so that it is within the monitor time specified by the `dcstop` command.

- `rmm_command_uid=command-execution-user-ID~<unsigned integer> ((0-59999))`

Specify the user ID that executes the command (startup command, terminate command, forcible terminate command or process ID collection command) of the monitored resource manager. In the RMM service, the user ID of each command is specified and executed following this specification.

This user ID is inherited to the command executed in a command or to the child process.

- `rmm_command_gid=command-execution-group-ID~<unsigned integer> ((0-59999))`

Specify the group ID that executes the command (startup command, terminate command, forcible terminate command or process ID collection command) of the monitored resource manager. In the RMM service, the group ID of each command is specified and executed following this specification.

This user ID is inherited to the command executed in a command or to the child process.

- `rmm_start_watch_time=command-monitor-time-of-starting-monitored-RM~<unsigned integer> ((0-7200)) <<300>>` (Unit: seconds)

Specify the maximum time period during which the RMM service waits for restart of the monitored resource manager. When 0 is specified, the RMM service waits permanently until the monitored resource manager is restarted.

This operand is valid when restarting the monitored resource manager by the automatic restart facility. For details, see the manual *OpenTPI Operation*.

Command process

None

Extended RM registration definition

Format

- set format
 - None
- command format

```
trnlnkrm [[-a name-of-additional-RM-provided-by-other-than-OpenTP1
          [, name-of-additional-RM-provided-by-other-than-OpenTP1]. . .]
          -s RM-switch-name [, RM-switch-name]. . .
          -o 'RM-related-object-name [, M-related-object-name]. . . '
          [, 'RM-related-object-name [, M-related-object-name]. . . '
          . . .] [-l] [-f]
```

Function

This definition determines the execution environment to register the resource managers that are provided by other than OpenTP1 after the resource managers provided by OpenTP1 are registered in the `dcsetup` command.

If the extended RM registration definition does not exist, the resource managers that are provided by other than OpenTP1 are not registered.

Write the extended RM registration definition in the Bourne shell (`/bin/sh`) format.

Explanation

- set format
 - None
- command format
 - See the following page.

trnlnkrm (Register resource managers provided by other than OpenTP1)

Format

```
trnlnkrm [-a name-of-additional-RM-provided-by-other-than-OpenTP1
          [, name-of-additional-RM-provided-by-other-than-OpenTP1]... ]
          -s RM-switch-name [, RM-switch-name]...
          -o 'RM-related-object-name
             [, RM-related-object-name]... '
             [, 'RM-related-object-name
             [, RM-related-object-name]... ' ]... ] [-1] [-f]
```

Function

This command registers the resource managers that are provided by other than OpenTP1 after the resource managers provided by OpenTP1 are registered in the `dcsetup` command.

Options

- `-a name-of-additional-RM-provided-by-other-than-OpenTP1 [, name-of-additional-RM-provided-by-other-than-OpenTP1]... ~<1-31 character alphanumerics>`

Specify the name of the additional resource manager that is provided by other than OpenTP1. Do not specify the resource manager that is provided by OpenTP1.

For the resource manager specified in this option, specify the RM switch name and the RM-related object name.

When specifying more than one RM name, delimit them using commas (,).

- `-s RM-switch-name [, RM-switch-name]... ~<1-32 character alphanumerics beginning with an alphabetic character or underscore>`

Specify the switch name of the additional resource manager that is provided by other than OpenTP1.

For switch names, see the specifications of the resource manager to be added. To specify more than one RM switch name, delimit them using commas (,).

The RM switch names and RM names correspond to each other in the sequence they are specified.

- -o '*RM-related-object-name* [, *RM-related-object-name*] . . . ' [, '*RM-related-object-name* [, *RM-related-object-name*] . . . '] . . . ~<alphanumerics>

Specify the name of the object file (for XA interface) that is related to the additional resource manager provided by other than OpenTP1.

Multiple RM-related object names can be specified for a resource manager. For the RM-related object names, see the specifications of the additional resource manager.

To write a comma (,) in an RM-related object name, write a yen mark (\) before the comma.

To specify more than one RM-related object name, delimit them using spaces.

To specify RM-related object names for multiple resource managers, enclose the group of RM-related object names for a resource manager between apostrophes (') and delimit the groups using commas (,).

The RM-related object names and resource managers correspond to each other in the sequence they are specified.

- -l

Outputs the execution progress of the `trnlncrm` command to standard output.

- -f

Forcibly executes the `trnlncrm` command regardless of the OpenTP1 status. However, the `trnlncrm` command cannot be forcibly executed while OpenTP1 is online since the transaction service control program and the client service executable program of OpenTP1 are recreated.

Specify this option only when OpenTP1 is terminated other than normally (planned termination A, planned termination B, forced termination, and abnormal termination) and then OpenTP1 is started normally by changing the resource manager to be used.

When the `trnlncrm` command with this option is normally terminated, OpenTP1 cannot be restarted.

Notes

Write the extended RM registration definition in the Bourne shell (/bin/sh) format.

When more than one `trnlncrm` command is written, the commands are executed from the first one.

OpenTP1 cannot be restarted after the `trnlncrm` command is normally terminated. OpenTP1 must be started normally.

To specify options using more than one line, insert a continuation symbol (\) between options for linefeed. The command may not be correctly executed if a linefeed is entered in the middle of a specification value of an option (for example, between two

RM-related object names when multiple RM-related object names are specified in the -o option).

XATMI communication service definition

Format

■ set format

```
[set xatinitapt="local-AP-name" ]
[set xatinitaeq="local-AE-modifier" ]
[set xat_aso_con_event_svcname="service-group-name" ,
                               "service-name" ]
[set xat_aso_discon_event_svcname="service-group-name" ,
                                   "service-name" ]
[set xat_aso_failure_event_svcname="service-group-name" ,
                                    "service-name" ]
[set max_open_fds=maximum-FDS-value-used-by-OSI-TP-
communication-association]
[set max_socket_descriptors=maximum-FDS-value-used-by-
communication-between-XATMI-
communication-service-and-UAP]
```

■ command format

```
xatsrvadd -p "remote-AP-name" -q "remote-AE-modifier"
          [-s "service-name" [ , "service-name" ] ... ]
```

Function

This definition determines the execution environment for OSI TP communication via XATMI interface using TP1/NET/OSI-TP-Extended.

This definition is not required when TP1/NET/OSI-TP-Extended is not used.

Explanation

set format

- xatinitapt="*local-AP-name*" ~<1-24 character hexadecimal number>

Specify the local AP name for each OpenTP1 system.

Specify the same AP name as that of the initiating side when the local system is the initiating side specified in the protocol native definition of TP1/NET/OSI-TP-Extended.

- xatinitaeq="*local-AE-modifier*" ~<unsigned integer> ((0-2147483647))

Specify the local AE modifier attached to each OpenTP1 system.

Specify the same AE modifier as that of the initiating side when the local system is the initiating side specified in the protocol native definition of TP1/NET/

OSI-TP-Extended.

- `xat_aso_con_event_svcname="service-group-name" , "service-name"`

Specify the service group name and the service name of the SPP that receives the notification of association establishment.

service-group-name~<1-31 character identifier>

Specify the service group name of the SPP that receives the notification of association establishment.

service-name~<1-31 character identifier>

Specify the service name of the SPP that receives the notification of association establishment.

The service group name and the service name specified in this operand can be the same service group name and service name specified in the `xat_aso_discon_event_svcname` operand and the `xat_aso_failure_event_svcname` operand. When the same service group name and service name are specified, a single service function can receive both the notification of association establishment and that of release.

If this operand is not specified, the communication event is not notified.

- `xat_aso_discon_event_svcname="service-group-name" , "service-name"`

Specify the service group name and the service name of the SPP that receives the notification of normal release of association.

service-group-name~<1-31 character identifier>

Specify the service group name of the SPP that receives the notification of normal release of association.

service-name~<1-31 character identifier>

Specify the service name of the SPP that receives the notification of normal release of association.

The service group name and the service name specified in this operand can be the same service group name and service name specified in the `xat_aso_con_event_svcname` operand and the `xat_aso_failure_event_svcname` operand. When the same service group name and service name are specified, a single service function can receive both the notification of association establishment and that of release.

If this operand is not specified, the communication event is not notified.

- `xat_aso_failure_event_svcname="service-group-name" , "service-name"`

Specify the service group name and the service name of the SPP that receives the

notification of abnormal release of association.

service-group-name~<1-31 character identifier>

Specify the service group name of the SPP that receives the notification of abnormal release of association.

service-name~<1-31 character identifier>

Specify the service name of the SPP that receives the notification of abnormal release of association.

The service group name and the service name specified in this operand can be the same service group name and service name specified in the *xat_aso_con_event_svcname* operand and the *xat_aso_discon_event_svcname* operand. When the same service group name and service name are specified, a single service function can receive both the notification of association establishment and that of release.

If this operand is not specified, the communication event is not notified.

- *max_open_fds=maximum-FDS-value-used-by-OSI-TP-communication-association*~ <unsigned integer> ((16-2016)) <<50>>

This specifies the maximum FDS value used by the OSI TP communication association. It is dependent on the number of TP1/NET/OSI-TP-Extended associations (connections).

- *max_socket_descriptors=maximum-FDS-value-used-by-communication-between-XATMI-communication-service-and-UAP*~ <unsigned integer> ((4-2047)) <<64>>

This specifies the maximum FDS value used by communication between the XATMI communication service and the UAP using OSI TP communication. Preferably, the maximum value should be greater than, or equal to, the value obtained from the following calculation:

↑ Number of UAPs using OSI TP communication/0.8 ↑

↑ ↑: The part below the decimal point is to be rounded up.

command format

See the following page.

xatsrvadd (Specify names of services provided by the remote system)

Format

```
xatsrvadd -p "remote-AP-name" -q "remote-AE-modifier"
          [-s "service-name" [ , "service-name" ] . . . ]
```

Function

When executing OSI TP communication with XATMI interface using TP1/NET/OSI-TP-Extended, specify the remote AP name and remote AE modifier that indicate a remote system. If a remote system provides a service, specify the name of that service. If the remote system does not provide a service, specify only the remote AP name and the remote AE identifier.

Options

- `-p "remote-AP-name" ~<1-24 character hexadecimal number>`

Specify the AP name of the recipient side when the local system is the initiating side specified in the protocol native definition of TP1/NET/OSI-TP-Extended.
- `-q "remote-AE-modifier" ~<unsigned integer> ((0-2147483647))`

Specify the AE modifier of the recipient side when the local system is the initiating side specified in the protocol native definition of TP1/NET/OSI-TP-Extended.
- `-s "service-name" [, "service-name"] . . . ~<1-15 character hexadecimal number>`

Specify the name of the service that is provided by the remote system indicated by the remote AP name and remote AE modifier. The name must be unique in the system.

When specifying more than one service name, delimit them using commas (,).

Message queue service definition

Format

■ set format

```
[set que_xidnum=concurrent-transaction-count]
[set que_io_maxrecsize=maximum-record-length-for-overwriting-delay]
```

■ command format

```
{{quegrp -g queue-group-ID -f physical-file-name
  [-n I/O-buffer-count] [-m retained-message-count]
  [-w used-memory-warning-ratio]
  [-c warning-cancel-percentage]}}
```

Function

The message queue service definition defines the execution environment to manage queuing of the I/O messages. Only information related to the physical files are defined here. The message queue service dynamically adds information related to the queue files according to requests from MCF.

A queue file is a logical file allocated by the message queue service to the physical file. A logical file can be an input queue or output queue, and several of each type can be created. However, input queues and output queues cannot be allocated to the same physical file. Input queues or output queues allocated to the same physical file use the same defined environment (I/O buffer count, retained message count, etc.)

Explanation

set format

- `que_xidnum=concurrent-transaction-count~<unsigned integer> ((1-4096)) <<256>>`

Specify the maximum number of transactions to be executed concurrently. Be sure to specify sufficient transactions to enable all read, write, and other requests executed concurrently for the queue files generated by MCF processing.

- `que_io_maxrecsize=maximum-record-length-for-overwriting-delay~<unsigned integer> ((0-32000)) <<0>> (Unit: bytes)`

Specify the maximum record length of an I/O message when overwritten in a physical file with delay. If 0 is specified, no delay-overwriting takes place.

To execute a delay writing request, it is necessary to specify a value greater than the total length of the message per transaction. The formula for calculating the total

message length is:

Total message length = send/receive message length + user information length + number of segments x 16 + number of records on physical file x 36

The user information length means a total of information used uniquely by the MCF of (0-960 bytes) x *number of messages*.

The number of records on physical file is:

$\uparrow (\text{send/receive message length} + \text{user information length} + \text{number of messages} \times 16) / (\text{physical file record length} - 36) \uparrow$

$\uparrow \uparrow$: Rounded up to the nearest whole integer.

command format

Described on the following page.

quegrp (Specify message queue file)

Format

```
{ { quegrp -g queue-group-ID -f physical-file-name
  [-n I/O-buffer-count] [-m retained-message-count]
  [-w usage-warning-ratio]
  [-c warning-cancel-percentage] }
```

Function

A physical file and the corresponding physical file environment (I/O buffer count, retained message count, etc.) is called a queue group; and the same resources are used by each queue group. The identifier allotted to a queue group is known as a queue group ID. This queue group ID is specified to dynamically add a queue file to the physical file of a given queue group upon a request from MCF. Queue group IDs and physical file names must be unique for all queue groups.

No physical file name must be duplicated with other message queue service definitions.

Options

- -g *queue-group-ID*~<1-8 character identifier>

Specify the queue group ID allotted to the physical file.

MCF uses this identifier to determine which queue groups to allocate to a queue file. Specify this queue group ID if defining the `mcfmqgid` command with the MCF manager definition.

- -f *physical-file-name*~<path name>

Specify the complete path name as the name of the corresponding physical file. No environment variables can be used.

- -n *I/O-buffer-count*~<unsigned integer> ((2-1024)) <<128>>

Specify the number of input/output buffers for buffer cache use for the corresponding physical file. Buffer caching is performed by allocating several queue files to a physical file. For this the input/out buffers use shared memory. The larger the number of I/O buffers, the smaller will be the number of I/O operations to the disk.

Compute the number of I/O buffers by the following formula:

$$L = \uparrow \text{Average message length} / \text{Physical file record length} \uparrow \times \text{Average number of messages per transaction} \times \text{Number of transactions concurrently accessing queue files allocated to the same physical file.}$$

$N = L + \text{number of records to be overwritten with delay at message validation at intervals of overwriting delay}^\#$

$M = L + \uparrow \text{Length of message to be overwritten with delay/Physical file record length}$
 $\uparrow \times \text{Number of retained messages} \times \text{Proportion of messages to be over written with delay}^\# \times \text{Number of queue files allocated to physical file}$

$\uparrow \uparrow$: Rounded up to the nearest whole integer.

$\#$: The value is collected from the statistics. Specify N or M, whichever may be smaller.

- `-m retained-message-count~<unsigned integer> ((0-1024)) <<10>>`

Specify the number of messages to be retained in each queue file of the queue group so that the user can re-send retained messages with the UAP function `dc_mcf_resend`. The number of retained messages is the number specified in this operand \times the number of queue files.

Messages that the MCF communication service has retrieved from queue files and sent to the other system may be lost before either reaching the other system or in the other system due to a communication or other type of error. If this situation occurs, you may have to resend the messages. The maximum number of messages that you can resend is the value of this operand.

If the number of messages you have sent is greater than the value of this operand, some of the oldest messages cannot be retrieved or resent.

This option can be specified only when the queue group is used as a send queue. If the queue group is used as an input queue, specify 0 in this operand.

- `-w usage-warning-ratio~<unsigned integer> ((0-95)) <<80>> (Unit: %)`

Specify a warning ratio to indicate the amount of a used physical file. Used memory is the memory being used by messages waiting to be read and by retained messages. A warning message is issued if the size of the used physical file (size of the physical file used by messages waiting to be read and by retained messages) exceeds a specified percentage of the physical file size.

- `-c warning-cancel-percentage~<unsigned integer>((0-95))<<0>> (Unit: %)`

For each physical file, specify the percentage for canceling the warning issued for the size of a used physical file (size of the physical file used by messages waiting to be read and by retained messages). If the percentage of the used physical file is lower than the value specified in this operand, warning status is canceled. If the usage warning ratio is exceeded again after the warning status is canceled, a warning message is output. If you specify a value greater than the usage warning ratio for this operand, the system assumes the usage warning ratio.

User service network definition

Format

- set format
 - None.
- Command format

```

{{dcsvgdef -g service-group-name [ , service-group-name ] . . .
  {-h host-name[:port-number] [ , host-name[:port-number]] . . .
  [-p port-number]
  [-t destination-reselection-interval][-w]} }
```

Function

When using an SPP service under the control of TP1/Server Base at another node through the remote API facility, this definition specifies the SPP service group name, as well as the host name and port number that serve as the receive port for the service through the remote API facility.

In addition, when using an SPP service under the control of TP1/Server Base at a node not specified by the `all_node` operand, this definition specifies the SPP service group name. This definition also specifies the host name at any node in the global domain where the SPP exists and the port number specified by the `scd_port` operand for schedule service definition. You can specify multiple host names and port numbers (unless you use the remote API facility).

This command executes the `dc_rpc_call` service request called by the UAP specified with `namd` or `definition` in the `rpc_destination_mode` operand in the user service definition, without requesting a destination search by the name server.

When `namd` is specified in the `rpc_destination_mode` operand for the UAP, the UAP executes the service request based on the information specified in this definition command if the destination search request to the name server fails. When `definition` is specified in the `rpc_destination_mode` operand and multiple hosts are specified in this definition command for the UAP, the UAP executes the service request based on the information specified in this definition command. If the request fails, the UAP requests the destination search by the name server. If only one host is specified in this definition command, the UAP does not request the destination search by the name server.

For `dc_rpc_call` called from the UAP whose name or definition is specified in the `rpc_destination_mode` operand of the user service definition, OpenTP1 retrieves the service group name specified by the first argument from among the service group names specified by the user service network definition. If the system finds a definition

having the same service group name, the system sends a service request to the host and port number specified by the definition.

When you specify multiple host names, OpenTP1 selects a host at random and sends a service request. If an error occurs during the transmission of a service request, OpenTP1 selects another host at random from the remaining host names. If a service request to all the hosts fails, `dc_rpc_call` returns an error. Once a service request is successful, if a destination reselection interval is not specified, service requests from subsequent `dc_rpc_call` invocations made in the UAP for the same service group continue to be sent to the same host until an error occurs. If an error occurs during continuing transmission of service requests, OpenTP1 selects a different host at random from the remaining host names and tries to send service requests to the newly selected host.

Note that in certain situations, OpenTP1 selects a host at random and sends a service request to the host the next time `dc_rpc_call` is invoked. Those situations are as follows:

When `rpc_destination_mode` is `definition` or omitted and either of the following occurs:

- A service request is not successfully sent to any host, a destination search request to the name server fails, and, as a result, `dc_rpc_call` returns an error.
- A service request is not successfully sent to any host, a destination search request to the name server is successful, and `dc_rpc_call` is successful.

When `rpc_destination_mode` is `namd` and all of the following conditions are satisfied:

- A destination search request to the name server fails.
- A service request is not successfully sent to any host.
- `dc_rpc_call` returns an error.
- Another destination search request to the name server fails the next time `dc_rpc_call` is invoked.

In case more than one `dcsvgdef` specifies the same service group name, the `dcsvgdef` specification that appears earlier in the user service network definition file is regarded valid. The presence or absence of the `-w` option determines whether the information is the service information requested through the remote API facility or the service information on a node that is not specified in the `all_node` operand.

Do not give the `dcsvgdef` service group name a service request through the XATMI interface; otherwise, the operation cannot be guaranteed.

If the `dcsvgdef` service group (SPP) that does not specify the `-w` option is `atomic_update = N`, and if `dc_rpc_call` is issued to this service group from

within the transaction, `dc_rpc_call` returns an error with `DCRPCER_TRNCHK`. In this case, you must specify `Y` in the SPP's `atomic_update` operand or specify `DCRPC_TPNOTRAN` in the flags part of `dc_rpc_call`.

If you execute `dc_rpc_call` for a service group name in `dcsvgdef` without the `-w` option and acquire the trace for performance verification, the acquired trace is not linked with the trace information for performance verification on the server. In other words, the serial number of the trace for performance verification acquired by the client UAP is not inherited by the server and a new serial number is output to the trace for performance verification acquired on the server.

Giving an asynchronous RPC request to the `dcsvgdef` service group name by specifying the `-w` option will make this user service network definition invalid; as before, processing follows the retrieval of name information. Even if you give a transaction service request to the `dcsvgdef` service group by specifying the `-w` option, processing is conducted unconditionally in the non-transaction mode.

When you execute `dc_rpc_call` to the service group name in `dcsvgdef` specified with the `-w` option, OpenTP1 does not acquire the RPC trace. When executing `dc_rpc_call` to the service group defined in the user service network definition as a service on a node using the remote API facility, OpenTP1 does not acquire the client's trace information even if you specify the acquisition of the RPC trace in the system definition of the client UAP.

When you execute `dc_rpc_call` to the service group name in `dcsvgdef` specified with the `-w` option, OpenTP1 acquires the performance verification trace. However, this trace is not linked with the performance verification trace information which is acquired when `dc_rpc_call` is executed on the RAP-processing server as a proxy. Since the RAP-processing server does not inherit the serial number of the performance verification trace acquired by the client UAP, a new serial number is output for the performance verification trace that is acquired by `dc_rpc_call` when executed by the RAP-processing server as a proxy.

When you execute `dc_rpc_call` to the service group name in `dcsvgdef` specified with the `-w` option, OpenTP1 does not acquire the response statistics or the communication delay time statistics. When executing `dc_rpc_call` to the service group defined in the user service network definition as a service on a node using the remote API facility, OpenTP1 does not acquire statistics even if you specify to acquire these statistics in the system definition.

When you specify the `-w` option and use the remote API facility between TP1/Server Bases (for example, to make RPCs via a gateway such as an application gateway-type firewall), no transaction is created even if you issue the `dc_rpc_call` function using the transaction attribute. When you use the remote API facility, you cannot correctly start a chained RPC from a transaction and cannot terminate a chained RPC using the synchronous processing. You need to specify `DCNOFLAGS` in the flags argument in the `dc_rpc_call` function and explicitly terminate the chained RPC.

Explanation

- set format
None.
- Command format
See the next page.

dcsvgdef (Specify the service information of the destination)

Format

```
{ {dcsvgdef -g service-group-name [ , service-group-name ] . . .
  { -h host-name [ :port-number ] [ , host-name [ :port-number ] ] . . .
  [ -p port-number ]
  [ -t destination-reselection-interval ] [ -w ] } }
```

Function

When using SPP services under TP1/Server Base of another node via the remote API facility, the `dcsvgdef` command specifies the SPP service group name, and the host name and port number of the receiving side of the services of the remote API facility. This command also specifies whether to use the remote API facility.

Alternatively, when using SPP services under TP1/Server Base of a node that is not specified in the `all_node` operand, the `dcsvgdef` command specifies: the SPP service group name; the host name of a node in the global domain where the SPP resides; and the port number specified in the `scd_port` operand of the schedule service definition. You can specify multiple host names and port numbers (no more than one host name or port number can be specified when using the remote API facility).

The version of TP1/Server Base on the server side where SPP is running must be 03-03 or later.

This command executes the `dc_rpc_call` service request called by the UAP specified with `namd` or `definition` in the `rpc_destination_mode` operand in the user service definition, without requesting a destination search by the name server.

When `namd` is specified in the `rpc_destination_mode` operand for the UAP, the UAP executes the service request based on the information specified in this definition command if the destination search request to the name server fails. When `definition` is specified in the `rpc_destination_mode` operand and multiple hosts are specified in this definition command for the UAP, the UAP executes the service request based on the information specified in this definition command. If the request fails, the UAP requests the destination search by the name server. If only one host is specified in this definition command, the UAP does not request the destination search by the name server.

OpenTP1 searches for the service group name specified in the first argument of `dc_rpc_call` invoked from a UAP. This UAP has `namd` or `definition` specified in the `rpc_destination_mode` operand of the user service definition, which is determined out of service group names specified in the user service network definition. When OpenTP1 finds the definition having the service group name, it sends a service request

to the host and port number specified in the definition.

When multiple host names are specified, OpenTP1 randomly selects a host to send a service request. If an error occurs when sending a service request, OpenTP1 randomly selects a host again from the remaining hosts. If sending the service request failed for all the hosts, `dc_rpc_call` returns an error. Once a service request is successful, if a destination reselection interval is not specified, the subsequent `dc_rpc_call` invocations made in the UAP to the same service group continue to send service requests to the same host until an error occurs. If a failure occurs while sending a service request to the same host, OpenTP1 selects a host randomly from all the hosts except the one which failed this time and sends a service request.

Note that in certain situations, OpenTP1 selects a host at random and sends a service request to the host the next time `dc_rpc_call` is invoked. Those situations are as follows:

When `rpc_destination_mode` is `definition` or omitted and either of the following occurs:

- A service request is not successfully sent to any host, a destination search request to the name server fails, and, as a result, `dc_rpc_call` returns an error.
- A service request is not successfully sent to any host, a destination search request to the name server is successful, and `dc_rpc_call` is successful.

When `rpc_destination_mode` is `namd` and all of the following conditions are satisfied:

- A destination search request to the name server fails.
- A service request is not successfully sent to any host.
- `dc_rpc_call` returns an error.
- Another destination search request to the name server fails the next time `dc_rpc_call` is invoked.

The following figure shows an example of `dc_rpc_call` operation when multiple host names are specified.

Figure 3-5: Example of dc_rpc_call operation when multiple host names are specified in the dcsvgdef definition command

Definition

```
User service network definition
dcsvgdef -g sv1 -h host1,host2,host3:5002 -p 5001

User service definition
rpc_destination_mode = definition
```

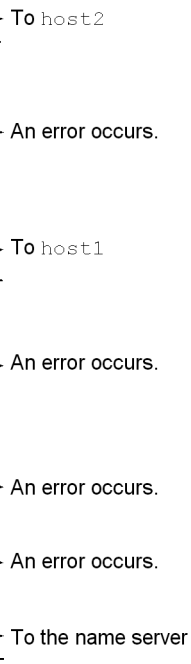
dp_rpc_call action

```
dc_rpc_call("sv1",...)
  Randomly select a host (host1, host2, or host3).
  host2 is selected. (1)
  Issue a service request to the scheduler service of host2, port=5001.
  Successful service request reported.

dc_rpc_call("sv1",...)
  Issue a service request to the same scheduler service of host2,
  port=5001 as in (1).
  An error occurs.
  Randomly select a host (host1 or host3).
  host1 is selected. (2)
  Issue a service request to the scheduler service of host1, port=5001.
  Successful service request reported.

dc_rpc_call("sv1",...)
  Issue a service request to the same scheduler service of host1,
  port=5001 as in (2).
  An error occurs.
  Randomly select a host (host2 or host3).
  host2 is selected.
  Issue a service request to the scheduler service of host2, port=5001.
  An error occurs.
  Randomly select host3.
  Issue a service request to the scheduler service of host3, port=5002.
  An error occurs.

  Issue a search request to the name server.
  An error occurs (no applicable service information).
dc_rpc_call returns the error.
```



If the same service group name is specified in more than one dcsvgdef definition, the first dcsvgdef definition appearing in the user service network definition file becomes effective. The -w option lets you determine whether the information is about the service requested via the remote API facility. The -w option lets you determine whether the service in a node is not specified in the all_node operand.

Do not issue a service request from the XATMI interface for the service group name

specified in the `dcsvgdef` definition. Otherwise, the operation cannot be assured.

If `dc_rpc_call` is issued from the transaction to the service group (SPP) specified in the `dcsvgdef` definition without the `-w` option and with `atomic_update=N` specified, `dc_rpc_call` returns an error with `DCRPCER_TRNCHK`. In this case, you must specify `Y` in the `atomic_update` operand of the SPP or specify `DCRPC_TPNOTRAN` in the `flags` operand of `dc_rpc_call`.

If you execute `dc_rpc_call` for a service group name in `dcsvgdef` without the `-w` option and acquire the trace for performance verification, the acquired trace is not linked with the trace information for performance verification on the server. In other words, the serial number of the trace for performance verification acquired by the client UAP is not inherited by the server and a new serial number is output to the trace for performance verification acquired on the server.

If an asynchronous RPC is requested for the service group name specified in the `dcsvgdef` definition with the `-w` option specified, this user service network definition is regarded as invalid. If this happens, OpenTP1 processes the request using a name information search as usual. Even if a service request is issued as a transaction for the service group specified in the `dcsvgdef` definition with the `-w` option specified, it is unconditionally processed in the non-transaction mode.

If `dc_rpc_call` is executed for the service group specified in the `dcsvgdef` definition with the `-w` option specified, no RPC trace is acquired. For `dc_rpc_call` issued to the service group defined as a service on the node via the remote API facility in the user service network definition, no client trace information is acquired even if the system definition of the client UAP is set to acquire the client trace information.

If `dc_rpc_call` is executed for the service group specified in the `dcsvgdef` definition with the `-w` option specified, the performance verification trace information is acquired. However, the trace information does not link with the performance verification trace information of `dc_rpc_call` executed by proxy on the RAP-processing server. That is, the serial numbers of the performance verification trace information acquired by the client UAP are not inherited to the RAP-processing server. Therefore, the newly allocated serial numbers are output for the performance verification trace information of `dc_rpc_call` executed by proxy on the RAP-processing server.

If `dc_rpc_call` is executed for the service group specified in the `dcsvgdef` definition with the `-w` option specified, response statistics/communication delay statistics is not acquired. No statistics is acquired for `dc_rpc_call` to the service group defined as a service on the node via the remote API facility in the user service network definition. This happens even if the system definition is set to acquire the response statistics/communication delay statistics.

When using the remote API facility in communication to TP1/Server Base with the `-w` option specified (for example, performing an RPC via a gateway such as the application gateway type fire wall), even if the `dc_rpc_call` function is issued with

a transaction attribute specified, it cannot be a transaction. Therefore, an operation to start a chain RPC from a transaction and terminate it by synchronous point processing does not perform correctly if the remote API facility is used. Explicitly terminate the chain RPC by using the `dc_rpc_call` function with `DCNOFLAGS` specified in the `flags` argument.

Options

- `-g service-group-name~` (identifier consisting of up to 31 characters)

This option specifies the service group name of either a service that is used through the remote API facility or a service on any node that is not specified by the `all_node` operand. Using the "SC + *" format, where SC is the starting character (or characters) of a service group name, it can collectively specify multiple service groups.

If you specify the service group name of a service on any node that is not specified by the `all_node` operand, this service must be the SPP in which `queue` is specified in the `receive_from` operand of a user service definition.

- `-h host-name:port-number~` (identifier consisting of up to 255 characters)

This option specifies the host name of the receive port for a service through the remote API facility or the host name used by the OpenTP1 communication at any node that is not specified by the `all_node` operand of a system common definition. The identifier you specify can consist of alphanumeric characters, periods, and hyphens. You cannot specify the identifier in an IP address format. The host name must be mapped with an IP address in the `/etc/hosts` file or by using DNS.

You can specify a port number after a host name by separating them with a colon. You can specify a port number between 5001 and 65535. If you do not specify a port number here, the port number specified in the `-p` option is assumed. You cannot omit both port numbers in the `-h` option and the `-p` option. If you do not specify either port number, the KFCA00340-W message is output.

You can specify multiple host names by separating them with a comma. When you use the remote API facility (when you specify the `-w` option), you cannot specify multiple host names. If you specify multiple host names when you use the remote API facility, the KFCA00340-W message is output.

When you specify only one host name in this option, the destination search request is not sent to the name server even if `definition` is specified in the `rpc_destination_mode` operand in the user service definition.

- `-p port-number~ <unsigned integer> ((1-65535))`

This option specifies the port number of the receive port for a service through the remote API facility or the port number specified by the `scd_port` operand of an OpenTP1 schedule service definition at any node that is not specified by the `all_node` operand of a system common definition.

With the `-w` option specified, if you specify the port number of the receive port for a service through the remote API facility, the port number may range from 1 to 65535. Without the `-w` option specified, if you specify the port number specified by the `scd_port` operand of a schedule service definition, the port number may range from 5001 to 65535. In case the specified port number is outside the specified range, the system issues a KFCA00340-W message.

- `-t destination-reselection-interval~<unsigned integer> ((0-65534))` (units: seconds)

When multiple host names are specified in the `-h` option, enabling OpenTP1 to continue sending a service request, specify in seconds the interval at which the destination of the service request is reselected at random.

When only one host name is specified in the `-h` option, the value of the `-t` option does not take effect. After a service request is successfully sent to a destination specified in the `-h` option and communication with the destination starts, OpenTP1 checks whether the time specified in the `-t` option has expired each time a service request is sent. If the specified time has expired, OpenTP1 reselects the destination at random. Even when the specified time has expired, OpenTP1 will not reselect the destination unless there is a service request to be sent to the destination.

Note that the previous destination can be reselected again. When 0 is specified in this option, OpenTP1 reselects the destination at random each time a service request is sent. If this option is omitted, OpenTP1 continues to send service requests to the same destination that has successfully received a service request until an error occurs at the destination.

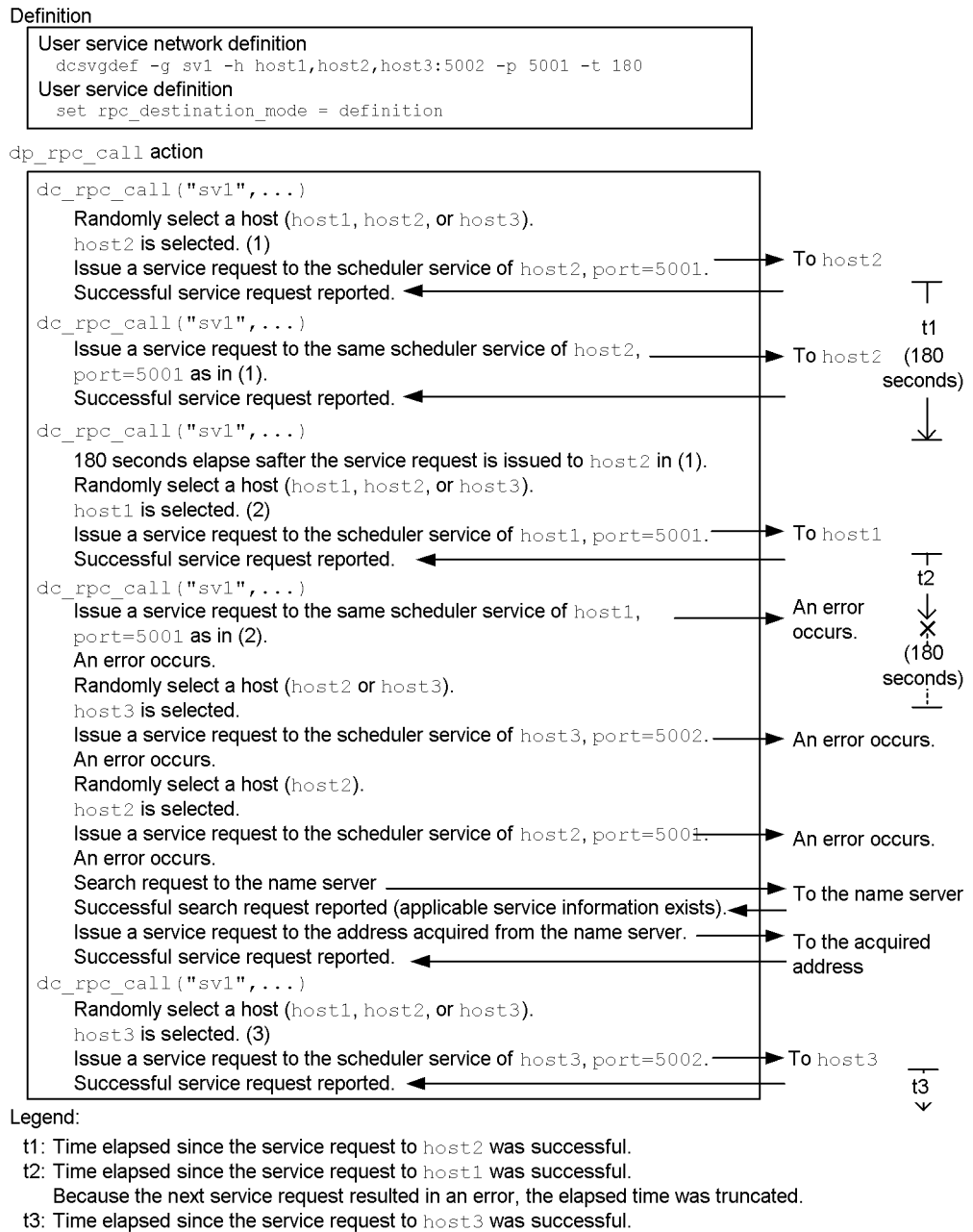
The following describes how OpenTP1 monitors the elapsed time.

- When `definition` is specified in the `rpc_destination_mode` operand of the user service definition

When a service request is successfully sent to a destination specified in the `-h` option, OpenTP1 starts monitoring the destination reselection interval. If OpenTP1 fails to send a service request, OpenTP1 starts monitoring the interval when another host specified in the `-h` option is selected at random and a service request is successfully sent to that host. OpenTP1 does not start monitoring the interval when a service request is successfully sent to a destination acquired from the name server by a destination search.

The following figure shows how OpenTP1 monitors the destination reselection interval when `definition` is specified in the `rpc_destination_mode` operand of the user service definition.

Figure 3-6: Monitoring of the destination reselection interval when the definition is specified in the `rpc_destination_mode` operand of the user service definition



- When `namd` is specified in the `rpc_destination_mode` operand of the user service definition

When a service request is successfully sent to a destination specified in the `-h` option, OpenTP1 starts monitoring the destination reselection interval. OpenTP1 continues to monitor the interval as long as subsequent service requests are successfully sent to a destination found on the name server.

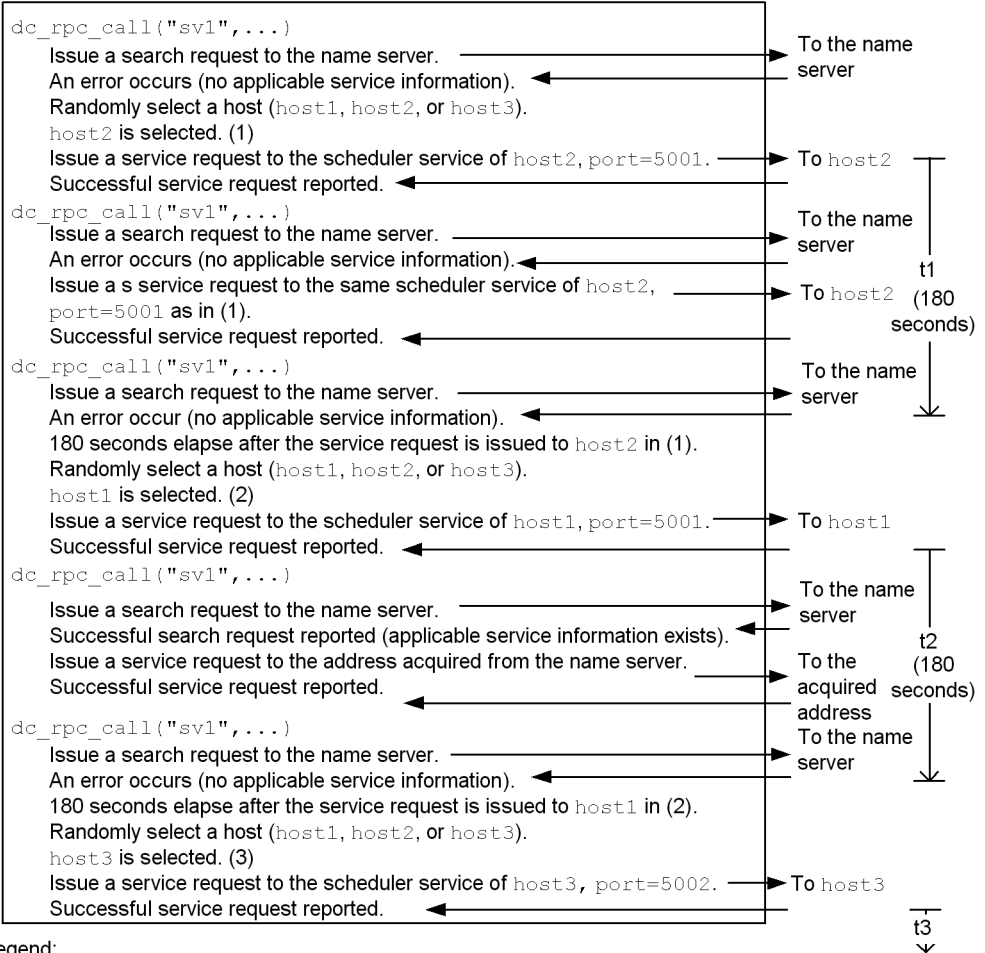
The following figure shows how OpenTP1 monitors the destination reselection interval when `namd` is specified in the `rpc_destination_mode` operand of the user service definition.

Figure 3-7: Monitoring of the destination reselection interval when namd is specified in the rpc_destination_mode operand of the user service definition

Definition

```
User service network definition
dcsvgdef -g sv1 -h host1,host2,host3:5002 -p 5001 -t 180
User service definition
set rpc_destination_mode = namd
```

dp_rpc_call action



Legend:

- t1: Time elapsed since the service request to host2 was successful.
- t2: Time elapsed since the service request to host1 was successful.
- The service request issued to the address acquired from the name server is also included in the elapsed time.
- t3: Time elapsed since the service request to host3 was successful.

- When a chained RPC call is used

When a service request for starting a chained RPC call is successfully sent to a destination specified in the `-h` option, OpenTP1 starts monitoring the destination reselection interval. Whether the destination is to be selected at random is determined when a new service request for starting chained RPCs is sent. OpenTP1 does not make the determination by using any service request issued during the chained RPC call or a service request for terminating the chained RPC call.

The following figure shows how OpenTP1 monitors the destination reselection interval when a chained RPC call is used.

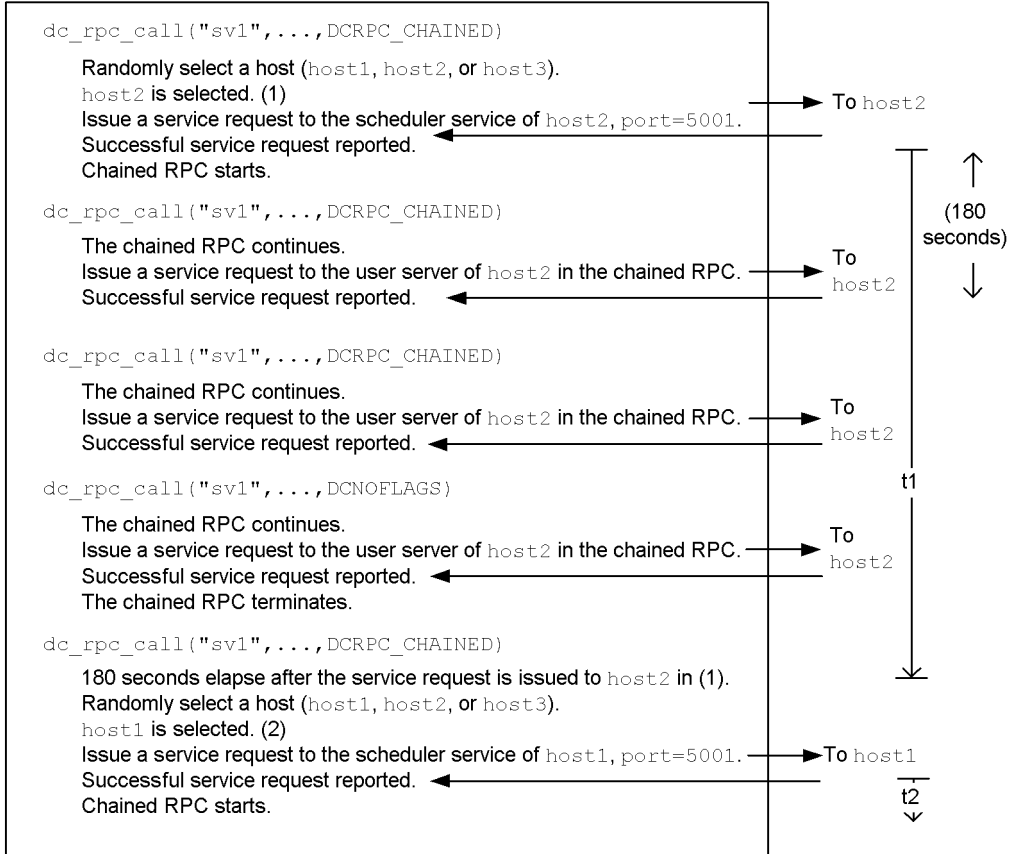
Figure 3-8: Monitoring of the destination reselection interval when a chained RPC call is used

Definition

```
User service network definition
dcsvgedf -g sv1 -h host1,host2,host3:5002 -p 5001 -t 180

User service definition
set rpc_destination_mode = definition
```

dp_rpc_call action



- Legend:
- t1: Time elapsed since the service request to host2 was successful. The service requests in the chained RPC and the service request for terminating the chained RPC are also included in the elapsed time.
 - t2: Time elapsed since the service request to host1 was successful.

■ -w

You can specify this option when using the remote API facility. With this option

specified, the values specified in the `-h` and `-p` options refer to the information about the receive port for a service through the remote API facility.

RAP-processing listener service definition

Format

■ set format

```

set rap_listen_port=RAP-processing-listener-port-number
[set rap_parallel_server=number-of-RAP-processing-servers]
[set rap_watch_time=maximum-monitor-time-for-message-send/receive]
[set rap_inquire_time=maximum-inquiry-interval]
[set nice=change-in-process-priority]
[set uap_trace_max=maximum-number-of-UAP-traces-stored]
  set uid=user-identifier-for-OpenTPI-system-administrator
[set rpc_response_statistics=Y|N]
[set rpc_trace=Y|N]
[set rpc_trace_name="RPC-trace-output-file"]
[set rpc_trace_size=size-of-RPC-trace-output-file]
[set trn_expiration_time=transaction-branch-timeout]
[set trn_expiration_time_suspend=Y|N|F]
[set trn_cpu_time=transaction-branch-CPU-time]
[set trf_put=Y|N]
[set trn_statistics_item=statistical-information-item [ , statistical-
  information-item ] . . . ]
[set trn_optimum_item=transaction-optimization-level
  [ , transaction-optimization-level ] . . . ]
[set trn_watch_time=timeout-of-transaction-synchronization-point-
  processing]
[set trn_rollback_information_put=no|self|remote|all]
[set trn_limit_time=maximum-execution-time-of-transaction-branch]
[set trn_rollback_response_receive=Y|N]
[set trn_partial_recovery_type=type1|type2|type3]
[set rap_inquire_timeout_message=Y|N]
[set rap_connection_assign_type=dynamic|static]
[set rap_max_client=maximum-number-of-clients-simultaneously-
  connected-to-RAP-processing-listener]

[set rap_notify=Y|N]
[set rap_client_manager_node=host-name:port-number
  [ , host-name:port-number ] . . . ]
[set rap_max_buff_size=socket-window-size]
[set rap_io_retry_interval=interval-between-retries-to-send/receive-
  a-message]

[set rap_sock_count=number-of-retries-to-create-a-socket]
[set rap_sock_interval=interval-of-retries-to-create-a-socket]
[set rap_connect_retry_count=number-of-retries-to-establish-a-
  connection]

```



```
[set rap_connect_retry_interval=interval-between-retries-to-
establish-a-connection]
[set rap_listen_backlog=maximum-number-of-requests-that-can-be-
stored-in-connection-waiting-queue]
[set rap_msg_output_interval=interval-between-output-client-count-
messages]
[set rap_recovery_server=number-of-standby-RAP-processing-servers-
for-recovery-requests]
[set rap_connect_interval=interval-between-attempts-to-establish-
connection]
[set rpc_extend_function=RPC-service-facility-extension-level]
[set max_socket_descriptors=maximum-number-of-file-descriptors-
for-sockets]
[set trn_completion_limit_time=time-limit-for-completing-transaction]
[set rap_message_id_change_level=message-ID-change-level]
[set
rap_term_disconnect_time=wait-time-for-disconnection-when-the-RAP-processing-listener-terminates]
[set
rap_stay_watch_time=maximum-monitoring-time-for-a-request-waiting-for-allocation-of-an-RAP-processin-
g-server]
[set
rap_stay_warning_interval=interval-for-outputting-a-warning-message-for-a-request-remaining-in-the-q-
ueue]
[set log_audit_out_suppress=Y|N]
[set log_audit_message=message-ID-for-an-item-for-which-audit-log-data-is-to-be-acquired
[ ,message-ID-for-an-item-for-which-audit-log-data-is-to-be-acquired] . . . ]
[set ipc_sockctl_highwater= percentage-of-sockets-at-which-temporary-closing-starts
[ ,percentage-of-sockets-for-which-temporary-closing-is-not-performed]]
[set ipc_sockctl_watchtime=length-of-time-to-wait-until-the-sockets-are-reusable]
[set watch_time=maximum-time-to-wait-for-a-response]
```

■ Command format

None.

Function

This definition specifies the RAP-processing listener service for using the remote API facility. With this definition specified, executing the rapdfgen command automatically creates a user service definition for the RAP-processing listener user service definition and the RAP-processing service user service definition for the RAP-processing server required for the use of the remote API facility.

Explanation

set format

- rap_listen_port=*RAP-processing-listener-port-number*~ <unsigned integer> ((5001-65535))

This operand specifies the well-known port number used by a RAP-processing listener and a RAP-processing server. In case you activate more than one RAP-processing

listener, be sure to specify different port numbers.

The port number specified using this operand must not be used by other programs.

Note that the operating system assigns certain numbers automatically. You should not use such a number for the port number. The numbers assigned by the operating system differ depending on the type and version of the operating system. For details, see the documentation for your operating system.

- `rap_parallel_server=number-of-RAP-processing-servers~ <unsigned integer> ((1-1024)) <<1>>`

This operand specifies the number of RAP-processing servers under the control of the related RAP-processing listener.

- `rap_watch_time=maximum-monitor-time-for-message-send/receive~ <unsigned integer> ((0-65535)) <<180>> (unit: seconds)`

This operand specifies the monitor time between starting and completing a message send/receive operation between a RAP-processing listener and a RAP-processing server. In case the message send/receive operation is not completed after the specified monitor time has elapsed, the system issues a message and takes correction action in the manner as a network error.

Specifying a value of 0 means that the time monitoring did not provide.

- `rap_inquire_time=maximum-inquiry-interval~ <unsigned integer> ((0-1048575)) <<180>> (unit: seconds)`

This operand specifies the maximum of the wait interval between inquiry responses from the client to the RAP-processing listener and RAP-processing server. This value is a timer that the RAP-processing listener and RAP-processing server monitors. If there is no inquiry even after the specified time has been exceeded, the system considers the client to have gone down.

Specifying a value of 0 means that the time interval is infinite.

When using the remote API facility from the resident SPP, do not specify 0 in this operand or the `rpc_rap_inquire_time` operand in the user service definition. If 0 is specified, the OpenTP1 system waits an unlimited amount of time for the resident SPP to terminate, because the RAP-processing listener cannot be terminated even if you try to terminate the OpenTP1 system of the node where the RAP-processing listener resides.

When the `rpc_rap_inquire_time` operand is omitted in the user service definition for an SPP or SUP, the value specified in this operand is regarded as the maximum amount of wait time. When both are omitted, 180 seconds is assumed.

- `nice=change-in-process-priority~ <unsigned integer> ((0-39)) <<0>>`

This operand specifies the value to add to the nice value in this service group process.

The process's nice value is a positive integer; the larger the value, the lower the CPU priority. For details about the nice value, see the manual for your operating system.

- `uap_trace_max=maximum-UAP-trace-count~ <unsigned integer> ((0-4095)) <<32>>`

This operand specifies the number of records in UAP tracing.

If the UAP terminates abnormally, the system saves into the save core file the flow of the UAP's processing up to the point the error occurred.

When 0 is specified:

The UAP trace is not acquired.

When 1 or a greater value is specified:

The UAP trace of the specified value + 1 is acquired.

- `uid=user-identifier-for-OpenTP1-system-administrator~<unsigned integer> ((0-4294967294))`

This operand specifies the user identifier that refers to the process owner of the service group.

In this case, specify the user identifier of the OpenTP1 manager.

The maximum value depends on the operating system. Check the documentation for your operating system.

- `rpc_response_statistics=Y|N~ <<N>>`

This operand specifies whether or not to collect response statistics.

Y

Response statistics are collected.

N

Response statistics are not collected.

The response statistics include the response time for RPC calls, the execution time for services, and the CPU time for the server.

- `rpc_service_retry_count=maximum-number-of-service-retries~ <unsigned integer> ((0-65535)) <<0>>`

This operand specifies the maximum number of times you can retry the service function using the service retry facility.

Specifying a value of 0 means not to use the service retry facility. Therefore, the `dc_rpc_service_retry` function returns an error; the service function will not be retried.

With a non-0 value specified, the service function is retried according to the count specified. If the `dc_rpc_service_retry` function is called after there has been more retries than the specified count, the function returns an error; the service function will not be retried.

■ `rpc_trace=Y|N`

Specify whether to acquire the RPC trace.

Y

Acquires the RPC trace.

N

Does not acquire the RPC trace.

You can also specify this operand in the system common definition or in the user service default definition.

The priority of the specified values is (1.>2.>3.):

1. RAP-processing listener service definition
2. User service default definition
3. System common definition

When an RPC trace is acquired, the processing speed may be reduced and the RPC may return an error due to a timeout. In this case, increase either of the following values, which are the maximum amount of response waiting time (default: 180 sec.), to an appropriate value:

1. The maximum response waiting time specified in the `watch_time` operand of the system common definition, user service definition, or user service default definition
2. The maximum response waiting time that the RAP-processing server inherited from the client

Whether the RAP-processing server inherits the maximum response waiting time from the client is specified in the `DCWATCHTIMINHERIT` operand of the client environment definition (for TP1/Client/W or TP1/Client/P) or in the `dcwatchtiminherit` operand of the TP1/Client/J environment definition (for TP1/Client/J).

If Y is specified in the `DCWATCHTIMINHERIT` or `dcwatchtiminherit` operand, use the maximum response waiting time indicated in 2 above.

If N is specified in the `DCWATCHTIMINHERIT` or `dcwatchtiminherit` operand, or if these operands are not specified, use the maximum response waiting time indicated in 1 above.

Specifying the `rpc_trace` operand in the RAP-processing listener service acquires

only the messages received or sent regarding the service requests that the RAP-processing server executed by proxy. The messages do not include those that the RAP-processing server received from the RAP-processing client.

- `rpc_trace_name="RPC-trace-output-file"~<path name>`

Specify the path name of the file for storing the RPC trace.

In the path name, the maximum length of the name of the file for acquiring the RPC trace is 13 characters. The default file name is `rpctr`.

To specify an environment variable in a path name, make sure that the path name begins with the environment variable (example: `$DCDIR/tmp/file-name`).

You can also specify this operand in the system common definition. If you specify this operand both in the RAP-processing listener service definition and in the system common definition, the value of the operand in the RAP-processing listener service definition prevails.

- `rpc_trace_size=size-of-RPC-trace-output-file~<unsigned integer>`
(1024-2147483648) (units: bytes)

Specify the size of the file for storing the RPC trace.

You can also specify this operand in the system common definition. If you specify this operand both in the RAP-processing listener service definition and in the system common definition, the value of the operand in the RAP-processing listener service definition prevails.

- `trn_expiration_time=transaction-branch-timeout~<unsigned integer>`
(0-65535) (units: seconds)

Specify the timeout of the transaction branch processing. If a timeout occurs, the system abnormally terminates the process of the transaction branch and performs a rollback. If you specify 0, a timeout does not occur.

You can also specify this operand in the transaction service definition or in the user service default definition.

The priorities of the definitions are (1.>2.>3.):

1. RAP-processing listener service definition
2. User service default definition
3. Transaction service definition

Instead of specifying this operand, you can also specify the timeout by issuing a function. For details on functions, see the *OpenTPI Programming Guide*.

- `trn_expiration_time_suspend=Y|N|F`

When performing the time monitoring of transaction branch processing, specify

whether to include the following periods of time:

1. The time that the monitored transaction branch uses the RPC facility to call another transaction branch and waits until the called transaction branch terminates
2. The time that a server UAP called by chained RPCs waits for the next service request
3. The time that the monitored transaction branch uses an asynchronous RPC to call another transaction branch and then to receive the processing result

Y

Includes all of the periods of time in 1., 2. and 3. above.

N

Includes only 3.

F

Includes none of 1., 2., and 3.

You can also specify this operand in the transaction service definition or in the user service default definition.

The priorities of the definitions are (1.>2.>3.):

1. RAP-processing listener service definition
2. User service default definition
3. Transaction service definition

For details about the relationship between this operand and timer monitoring options, see *A.2 Time monitoring for transactions*.

- `trn_cpu_time=transaction-branch-CPU-time~<unsigned integer> ((0-65535))`
(units: seconds)

Specify the CPU time that the transaction branch can use before the synchronization point processing. If you specify 0, the system does not monitor the CPU time. If the specified CPU time expires, the system abnormally terminates the process of the transaction branch and performs a rollback.

You can also specify this operand in the transaction service definition or in the user service default definition.

The priorities of the definitions are (1.>2.>3.):

1. RAP-processing listener service definition
2. User service default definition

3. Transaction service definition

■ `trf_put=Y|N`

Specify whether the journal output by the transaction started on the server should be output to the transaction recovery journal file.

Y

Outputs the journal to the transaction recovery journal file.

N

Does not output the journal to the transaction recovery journal file.

When the transaction recovery journal file is created, you can prevent a journal error from occurring caused by a long-term transaction. You can also reduce the rerun time. On the other hand, this function causes an overhead for performance and memory. Therefore, you should create the transaction recovery journal file for a server that uses a transaction for a long time.

In the OpenTP1 system that uses the system switchover function, you cannot use this function. Therefore, specify N for the `trf_put` operand in the RAP-processing listener service definition and the user service definition.

■ `trn_statistics_item=statistical-information-item[, statistical-information-item] ...`

Specify an item that collects statistics of a transaction branch.

`nothing`

Statistics are not collected.

`base`

The following is collected as basic information.

- Transaction branch identifier
- Transaction branch decision results
- Execution process type of transaction branch
- Execution server name of transaction branch
- Execution service name of transaction branch

`executiontime`

The basic information and the execution time information of the transaction branch are collected.

`cputime`

The basic information and the transaction branch CPU check time information are

collected.

Only one `nothing` is specified. If `nothing` and other statistics concurrently, specifying `nothing` will be invalid.

When collecting statistics about transactions, use either of the following two ways:

- Specify `Y` in the `trn_tran_statistics` operand.
- Specify the `-s` option of the `trnstics` command.

You can also specify this operand in the transaction service definition or in the user service default definition.

The priorities of the definitions are (1.>2.>3.):

1. RAP-processing listener service definition
2. User service default definition
3. Transaction service definition

- `trn_optimum_item=transaction-optimization-level[,transaction-optimization-level]...`

You can specify the level of optimizing the performance of the global transaction consisting of multiple user servers.

`base`

Optimizes all the processing of synchronization point acquisition (prepare, commit, and rollback). Since OpenTP1 uses the two-phase commit method to control transactions, a commit between two transaction branches requires inter-process communication four times.

This optimization eliminates inter-process communication that occurs four times per commit by referring the commit execution of a child transaction branch to its parent transaction branch when all the following conditions are satisfied:

1. A parent transaction branch and its child transaction branch belong to the same OpenTP1 system.
2. A parent transaction branch uses a synchronous-response RPC to call the child transaction branch.
3. An object which a child transaction branch accessed for the XA interface of the resource manager is linked with the parent transaction branch.

`asynprepare`

Optimizes only the prepare processing if optimization of the entire processing of synchronization point acquisition is impossible because not all of the conditions are satisfied.

When a service request is executed by a child transaction branch called by an RPC from the parent transaction branch, inter-process communication occurs twice. This optimization eliminates this inter-process communication by executing the prepare processing before returning the RPC. This optimization is possible when all the following conditions are satisfied:

1. The optimization for all the processing of synchronization point acquisition by specifying the keyword `base` cannot be performed.
2. A parent transaction branch uses a synchronous-response RPC to call the child transaction branch.

Note that executing this optimization (`asynprepare`) slows the response of the synchronous-response RPC issued by the parent transaction branch. For the child transaction branch, the interval between the prepare processing and the commit processing becomes longer (because the child transaction branch cannot be resolved until the parent transaction branch makes an instruction). If a system failure occurs in the OpenTP1 system of a parent transaction branch, the communication between transaction branches also fails.

This slows swapping the journal file and applying the checkpoint dump file, thus possibly causing the OpenTP1 system of the child transaction branch to fail.

If you specify more than one keyword, the priorities of the keywords are (1.>2.):

1. `base`
2. `asynprepare`

You can also specify this operand in the transaction service definition or in the user service default definition.

The priorities of the definitions are (1.>2.>3.):

1. RAP-processing listener service definition
2. User service default definition
3. Transaction service definition

- `trn_watch_time=timeout-of-transaction-synchronization-point-processing~<unsigned integer> ((1-65535))` (units: seconds)

Specify the timeout of communication between transaction branches (timeout of waiting for an instruction or response about the prepare, commit, or rollback processing).

If an instruction or response is not received until the specified time expires, OpenTP1 rolls back the transaction branch (if the phase-1 commit is not completed yet) or uses the system process of the transaction service to retry resolving the transaction (if the phase-1 commit is completed).

You can also specify this operand in the transaction service definition or in the user service default definition.

The priorities of the definitions are (1.>2.>3.):

1. RAP-processing listener service definition
2. User service default definition
3. Transaction service definition

If you omit this operand from all these definitions, the default is the value of the `watch_time` operand specified in the user server that started the transaction. Note that you cannot specify 0 in `trn_watch_time`. If 0 is specified in the `watch_time` operand on the user server, the command assumes 120 (seconds), which is the default of `trn_watch_time`.

■ `trn_rollback_information_put=no|self|remote|all`

If a rollback of a transaction branch occurs, you can log the information about the cause of the rollback.

`no`

Does not log the rollback information.

`self`

Logs the rollback information about only the transaction branches where the cause of the rollback occurred.

`remote`

In addition to the information logged by specifying the keyword `self`, OpenTP1 logs the rollback information about the transaction branches for which a rollback request was sent by a transaction branch of the remote node.

`all`

In addition to the information logged by specifying the keyword `remote`, OpenTP1 logs the rollback information about the transaction branches for which a rollback request was sent by a transaction branch of your own node.

You can also specify this operand in the transaction service definition or in the user service default definition.

The priorities of the definitions are (1.>2.>3.):

1. RAP-processing listener service definition
2. User service default definition
3. Transaction service definition

- `trn_limit_time=maximum-execution-time-of-transaction-branch~` <unsigned integer> ((0-65535)) (units: seconds)

Specify the time that can be used for executing the transaction branch. The timeouts of the communication for the function `dc_rpc_call()`, for the function `dc_rpc_poll_any_replies()` and for the synchronization point processing are automatically set as shown below so that the time period from the start of the transaction branch until completion of the synchronization point processing does not exceed the value specified in this operand.

- Timeout of the function `dc_rpc_call()` and the function `dc_rpc_poll_any_replies()`

If $K \geq M$, the transaction branch does not execute the request and returns an error due to a timeout.

If $(K < M)$ and $(M - K \geq W)$, W is used as the timeout.

If $(K < M)$ and $(M - K < W)$, $(M - K)$ is used as the timeout.

Where,

K

Current time - Start time of the transaction branch

M

Value specified in this operand
(maximum-execution-time-of-transaction-branch)

W

Value specified in the `watch_time` operand (for the function `dc_rpc_call()`) or in the timeout argument (for the function `dc_rpc_poll_any_replies()`)

- Timeout of the communication performed during the synchronization point processing

If $K \geq M$, the timeout is set to one second.

If $(K < M)$ and $(M - K \geq W)$, W is used as the timeout.

If $(K < M)$ and $(M - K < W)$, $(M - K)$ is used as the timeout.

where,

K

Current time - Start time of the transaction branch

M

Value specified in this operand

(maximum-execution-time-of-transaction-branch)

W

Value specified in the `trn_watch_time` operand (If the `trn_watch_time` operand is not specified, *W* is the value specified in the `watch_time` operand.)

If a long time is also taken for other processing than the above timeout, the transaction branch may not be terminated in the time specified in this operand.

If the value specified in this operand expires before starting the synchronization point processing, the transaction is rolled back.

If you specify 0, the time monitoring is not performed.

You can also specify this operand in the transaction service definition or in the user service default definition.

The priorities of the definitions are (1.>2.>3.):

1. RAP-processing listener service definition
2. User service default definition
3. Transaction service definition

■ `trn_rollback_response_receive=Y|N~<<Y>>`

After sending a rollback instruction to the RPC destination transaction branch, you can be notified of completion of the rollback. When you specify *N*, your transaction branch terminates without receiving the notification of the rollback completion from the RPC destination transaction branch (without waiting until the rollback of the RPC destination transaction branch is completed).

If you omit this specification here and in the user service default definition, the system assumes the value in the transaction service definition.

■ `trn_partial_recovery_type=type1|type2|type3`

Specify how to handle the transaction synchronization-point processing if the UAP fails.

If the timeout of an RPC prevents the transaction from determining the address of the process that issued the RPC or the timeout causes the UAP executing the transaction to fail, communication between transaction branches cannot be performed smoothly. As a result, it may take a long time to resolve the transaction.

There are three kinds of processing at the transaction synchronization point for the following errors.

Error 1

The timeout of an RPC occurs

In this case, the transaction branch that issued the RPC does not know which process executed the service request. Therefore, the transaction branch that issued the RPC cannot send a transaction synchronization-point message to the RPC-destination transaction branch. This causes both transaction branches to wait a transaction synchronization-point message. As a result, it takes a long time to resolve the transaction.

Error 2

The UAP that issued an RPC fails before receiving the response of the RPC

In this case, the transaction branch that issued the RPC does not know which process executed the service request. Therefore, the transaction branch that issued the RPC cannot send a transaction synchronization-point message to the RPC-destination transaction branch. This causes the RPC-destination transaction branch to wait a transaction synchronization-point message. As a result, it takes a long time to resolve the transaction.

Error 3

After reception of the response from the RPC-destination UAP, both the RPC-issuer UAP and the RPC-destination UAP fail at nearly the same time

In this case, a transaction recovery process is activated to inherit the transaction branch for each UAP process, but each of the transaction recovery processes is not notified that the other UAP process has failed. This causes the transaction recovery processes to send a transaction synchronization-point message to the UAP processes that no longer exist. As a result, it may take a long time to resolve the transaction.

You can specify one of the following three types of error handling:

type1

If error 1 occurs, a timeout is applied to reception of the transaction synchronization-point message for the transaction branch that issued the RPC and for the RPC-destination transaction branch. The transaction can be resolved after the timeout.

If error 2 occurs, the transaction branch that issued the RPC resolves the transaction without sending a transaction synchronization-point message to the RPC-destination transaction branch. The RPC-destination transaction branch resolves the transaction when a timeout occurs for reception of the transaction synchronization-point message.

If error 3 occurs, the transaction branch that issued the RPC and the RPC-destination transaction branch resolve the transaction when a timeout occurs for reception of the transaction synchronization-point message.

type2

For error 1, the error handling is the same as type1 when performing a commit for the transaction. If a rollback of the transaction should be performed due to error 1 or if error 2 occurs, the transaction branch that issued the RPC sends a transaction synchronization-point message to the transaction service process of the node where the RPC-destination transaction branch exists. Then, transaction branch that issued the RPC resolves the transaction. Receiving the message, the transaction service process sends an instruction of transaction synchronization-point processing to the process that is executing the transaction branch.

If error 3 occurs, the transaction branch that issued the RPC and the RPC-destination transaction branch resolve the transaction when a timeout occurs for reception of the transaction synchronization-point message.

type3

For error 1, the error handling is the same as type1 when performing a commit for the transaction.

If a rollback of the transaction should be performed due to error 1, if error 2 occurs, or if error 3 occurs, the transaction branch sends a transaction synchronization-point message to the transaction service process of the node where the other transaction branch exists. Receiving the message, the transaction service process sends an instruction of transaction synchronization-point processing to the process that is executing the transaction branch.

In the following cases, it may take a long time to resolve the transaction even when you specify type2 or type3:

1. During execution of the RPC, the status of the UAP that issued the RPC is changed (the load is increased, the UAP is terminated, the UAP is shut down, etc.) and the service request is re-transferred to the same UAP running on another node.
2. The OpenTP1 of the other transaction branch is not a version supporting this option.
3. It takes a long time for the other transaction branch to execute processing other than reception of a transaction synchronization-point message.

You can also specify this operand in the transaction service definition or in the user service default definition.

The priorities of the definitions are (1.>2.>3.):

1. RAP-processing listener service definition
2. User service default definition
3. Transaction service definition

■ `rap_inquire_timeout_message=Y|N~<<Y>>`

This operand specifies whether to output an error message if the system detects that the maximum wait time for a request from a client has been reached. An error message is output if you specify `Y` for this operand or if you specify nothing.

`Y`

Outputs an error message if the system detects that the maximum wait time for a request from a client has been reached.

`N`

Does not output an error message if the system detects that the maximum wait time for a request from a client has been reached.

This operand suppresses the following messages:

- Reason code = 71 of the KFCA26956-E message
- Reason code = 71 of the KFCA26965-E message

■ `rap_connection_assign_type=dynamic|static~<<static>>`

This operand specifies whether to use the dynamic connection schedule facility.

`dynamic`

Uses the dynamic connection schedule facility.

`static`

Does not use the dynamic connection schedule facility.

If you use the dynamic connection schedule facility and the server load increases, the response performance may decrease compared to the static connection schedule facility. When you are using the dynamic connection schedule facility, the RAP-processing server processes the requests other than connect requests (the RAP-processing listener processes connect requests). If there is no RAP-processing server to be allocated when a client issues a request, the request will remain in the RAP-processing listener. Check the number of running RAP-processing servers if the `dc_rpc_call()` that the RAP-processing server requests to execute elsewhere takes too much time or if there is a client in the transaction status. If too few RAP-processing servers are running, requests from clients may time out and return an error.

■ `rap_max_client=maximum-number-of-clients-simultaneously-connected-to-RAP-processing-listener~<unsigned integer>((128-1024))<<256>>`

This operand specifies the maximum number of clients that are simultaneously connected to the RAP-processing listener.

■ `rap_notify=Y|N~<<N>>`

Specify whether to issue a startup notification to the RAP-processing client manager

to be started in the node specified in the `rap_client_manager_node` operand when the RAP-processing listener in the local node starts up.

Y

Issues a startup notification.

N

Does not issue a startup notification

When Y is specified, the `rap_client_manager_node` operand cannot be omitted.

- `rap_client_manager_node="host-name:port-number"`
`["host-name:port-number"] . . .`

When Y is specified in the `rap_notify` operand to use the startup notification facility, a startup notification is issued to the RAP-processing client manager of OpenTP1 to be started in the node specified in this operand. With the startup notification facility, you can manage the time when a connection is established. This ensures that messages are transmitted.

When Y is specified in the `rap_notify` operand, this operand cannot be omitted.

host-name~<1-255 alphanumeric characters, including periods and hyphens>

Specifies the host name of the OpenTP1 system having the RAP-processing client which connects to the RAP-processing listener in the local node. Use the host name defined in `/etc/hosts`.

port-number~<unsigned integer> ((1-65535))

Specifies the port number of the RAP-processing client manager of the OpenTP1 system having the RAP-processing client which connects to the RAP-processing listener in the local node.

- `rap_max_buff_size=socket-window-size~<unsigned integer>`
`((4-2147483647))<<4>>(unit: kilobytes)`

Specify the window size of the socket.

- `rap_io_retry_interval=interval-between-retries-to-send/
receive-a-message~<unsigned integer>((1-999))<<35>>(unit: milliseconds)`

Specify the interval between retries to send or receive a message.

- `rap_sock_count=number-of-retries-to-create-a-socket~<unsigned integer>`
`((0-65535))<<1>>`

Specify the number of retries to create a socket if an EAGAIN or EWOULDBLOCK error occurs during socket creation.

- `rap_sock_interval=interval-of-retries-to-create-a-socket~<unsigned integer> ((15-500))<<30>>(unit: milliseconds)`

Specify the interval between retries to create a socket if an EAGAIN or EWOULDBLOCK error occurs during socket creation.
- `rap_connect_retry_count=number-of-retries-to-establish-a-connection~<unsigned integer>((8-2147483647))<<8>>`

Specify the number of retries to establish a connection if an ECONNREFUSED error occurs during connection establishment of the communication control part.
- `rap_connect_retry_interval=interval-between-retries-to-establish-a-connection~<unsigned integer>((10-999))<<100>>(unit: milliseconds)`

Specify the interval between retries to establish a connection if an ECONNREFUSED error occurs during connection establishment of the communication control part.
- `rap_listen_backlog=maximum-number-of-requests-that-can-be-stored-in-connection-waiting-queue~<unsigned integer>((SOMAXCONN to 2147483647)) <<SOMAXCONN>>`

Specify the maximum number of requests held in the connection waiting queue. SOMAXCONN that is used as the minimum value and default value of the `rap_listen_backlog` operand is the value of SOMAXCONN in the environment in which OpenTP1 was compiled. For details, see the *Release Notes*.

Note that the setting of this operand takes effect only when the following condition is satisfied:

The value of SOMAXCONN in the environment in which OpenTP1 was compiled \leq the value of SOMAXCONN in the production environment

The value specified in this operand is only set in the backlog count of the `listen()` system call that the RAP-processing listener issues, and the actual control of backlog depends on the OS.

Different OSs may provide different defaults. For details about OS-specific defaults (real number values), see the *Release Notes*.
- `rap_msg_output_interval=interval-between-output-client-count-messages~<unsigned integer>((0-32767))<<0>> (unit: minutes)`

Specify the interval between messages indicating the number of clients. These messages are output when a client is connected when the RAP-processing listener is ending. When a client is connected even after this message is output and the length of time specified in this operand is exceeded, another message indicating the number of clients is output.

When you specify 0 for this operand, the message indicating the number of clients is output only once.

Note that the RAP-processing listener monitors events every three seconds.

- `rap_recovery_server=number-of-standby-RAP-processing-servers-for-recovery-requests~<unsigned integer>((0-value specified in the rap_parallel_server operand - 1)) <<0>>`

Specify the number of standby RAP-processing servers that are waiting for recovery requests from clients when the XA resource service is used. These RAP-processing servers receive only recovery requests, and do not receive normal service requests. The recommended number of standby RAP-processing servers for recovery requests is one per J2EE server.

- `rap_connect_interval=interval-between-attempts-to-establish-connection~<unsigned integer>((0-999))<<40>> (unit: milliseconds)`

Specify the interval at which an attempt is made to establish a connection between a RAP-processing listener and a RAP-processing server when the remote API service starts.

Connection is established at the interval specified in this operand for the maximum number of requests that can be queued in the connection wait queue.

- `rpc_extend_function=RPC-service-facility-extension-level~<hexadecimal number>((00000000-0000000F))<<00000000>>`

Specify an extension level of the RPC service facility from the following.

If you want to specify multiple extension levels, specify a logical OR for the specified values.

00000000

The RPC service facility is not extended.

00000001

If the SPP that is currently executing a service request terminates abnormally, the `dc_rpc_call`, `dc_rpc_call_to` and `dc_rpc_poll_any_replies` functions return `DCRPCER_SERVICE_TERMINATED (00378)`.

00000002

Non-transaction chained RPC calls (made by using the `dc_rpc_call` or `dc_rpc_call_to` function with `DCRPC_TPNOTRAN` set in `flags`) started in a transaction do not stop at synchronization point processing. The non-transaction chained RPC calls continue until they are explicitly terminated by using the `dc_rpc_call` or `dc_rpc_call_to` function with `DCNOFLAGS` specified in `flags`.

00000004

The response message of the asynchronous response RPC with the

non-transaction attribute is not discarded when the response message of the asynchronous response RPC is not received and the asynchronous point processing of the transaction is performed. Only the response message of the asynchronous response RPC with the transaction attribute is deleted.

00000008

The KFCA00339-W message is output when processing stops and the service request is discarded because the response to the `dc_rpc_call` or `dc_rpc_call_to` function caller times out in the SPP process.

- `max_socket_descriptors=maximum-number-of-file-descriptors-for-sockets~<unsigned integer>((32-2032))`

Specify the maximum number of file descriptors to be used for sockets by the processes under control of OpenTP1[#].

The processes under control of OpenTP1[#] exchange the process information with the system servers or user servers through the TCP/IP communication using sockets. Therefore, you must change the maximum number of file descriptors for sockets depending on the number of UAP processes that run concurrently and the number of other nodes to communicate with.

#: OpenTP1 processes other than the MCF services (MCF manager service, MCF communication service, and application startup service). For the MCF services, see the sections on the system service information definition and the system service common information definition.

Use the following formula for calculating the maximum number of file descriptors for sockets:

$\uparrow (\text{Number of UAP processes communicated by the user server}^{\#1} + \text{number of system service processes}^{\#2}) / 0.8 \uparrow$

$\uparrow \uparrow$: Rounded up to the nearest whole integer.

#1: The number of UAP processes communicated by the user server is the sum of the following values:

- Number of UAP processes in the local OpenTP1 the user server communicates with
- Number of UAP processes in other nodes the user server communicates with

#2: Number of system service processes in the local OpenTP1

If the value specified for this operand is too small, the connection cannot be set with other processes under control of OpenTP1. The process terminates abnormally after outputting the KFCA00307-E error message.

The order of priority of the specified values is 1 > 2 > 3.

1. RAP-processing listener service definition
2. User service default definition
3. System common definition

If this operand is omitted here and in the user service default definition, the system assumes the value in the system common definition.

- `trn_completion_limit_time=time-limit-for-completing-transaction~<unsigned integer> ((0-65535))` (units: seconds)

Specify the maximum execution time of a transaction branch. If the execution time of the transaction branch reaches the maximum, the transaction branch process terminates abnormally, and the recovery process commits or rolls back the transaction branch. If 0 is specified, the maximum execution time of the transaction branch is not monitored.

Whether an abnormally terminated UAP is shut down depends on the specification of the `hold` and `term_watch_time` operands. For details, see the descriptions of these operands of the user service definition.

Monitoring of the execution time specified by this operand starts when a RAP-processing server alternatively executes an API function such as `dc_trn_begin` to start a transaction. The monitoring ends when the transaction branch terminates after acquisition of information about the synchronization point processing of the transaction (TJ). For details about the section for which the execution time specified by this operand is monitored and about the relationship between this operand and the timer monitoring options, see *A.2 Time monitoring for transactions*.

Note that the `trn_completion_limit_time` operand can be specified in the transaction service definition or user service default definition.

The priority of specified values is (1.>2.>3):

1. RAP-processing listener service definition
2. User service default definition
3. Transaction service definition

- `rap_message_id_change_level=message-ID-change-level ~<unsigned integer> ((0-2))`

For an error message that is likely to be output when the remote API facility is used, you can specify level 0 to 2 to change the message ID in order to change the message type from E to W. Each level is described below.

Use this operand when you monitor the message log and use it to change the management method depending on whether the message type is E or W.

Note that specification of this operand changes only the message ID, and does not change the message text.

0

The message ID is not changed. The message is output with its original message ID.

1

The message ID is changed in order to change the message type from E to W under conditions in which a specific reason code is output.

2

The message ID is always changed in order to change the message type from E to W.

The following table shows how the message to be output changes according to the value of this operand.

Table 3-7: Values of the rap_message_id_change_level operand and the messages to be output

Possible message ID change		From KFC A26965-E to KFC A27790-W			From KFC A26970-E to KFC A27791-W			From KFC A26971-E to KFC A27792-W		
		0	1	2	0	1	2	0	1	2
Reason code	8	--	--	--	E	W	W	--	--	--
	22	E	E	E	E	E	E	E	E	E
	24	--	--	--	E	E	E	--	--	--
	31	E	E	W	E	E	W	E	E	W
	32	E	E	W	E	E	W	E	E	W
	35	E	E	W	--	--	--	E	E	E
	36	E	W	W	E	W	W	E	W	W
	37	E	E	E	E	E	E	E	E	E
	38	--	--	--	E	W	W	--	--	--
	71	E	W	W	--	--	--	--	--	--
	81	--	--	--	E	E	E	--	--	--

Possible message ID change	From KFCA26965-E to KFCA27790-W			From KFCA26970-E to KFCA27791-W			From KFCA26971-E to KFCA27792-W			
	0	1	2	0	1	2	0	1	2	
Value of the rap_message_id_change_level operand										
	82	--	--	--	E	W	W	--	--	--
	83	--	--	--	E	E	E	--	--	--
	91	E	W	W	--	--	--	--	--	--

Legend:

E: A message with type E is output.

W: A message with type W is output.

--: Not applicable

If specification of this operand is omitted, the corresponding specification in the user service default definition is assumed.

- rap_term_disconnect_time=*wait-time-for-disconnection-when-the-RAP-processing-listener-terminates* ~<unsigned integer> ((0-3600)) <<0>> (units: seconds)

Specify the time to wait for RAP-processing client disconnection when the RAP-processing listener terminates. When the time specified in this operand has elapsed following termination of the RAP-processing listener, the connection is closed and either message KFCA27763-W or FCA27765-W is output. However, the connection is not closed if the RAP-processing server is alternatively executing an API function. If this operand is omitted or specified as 0, the connection is not closed until a disconnection request from the RAP-processing client arrives or the maximum inquiry interval expires.

For this operand, we recommend that you specify a value smaller than the value of the system_terminate_watch_time operand in the system environment definition. In the following cases, the dctestop command might time out because it is waiting for termination of the RAP-processing listener:

- The value of this operand is larger than the value of the system_terminate_watch_time operand.
- The value of this operand is 0.
- This operand is omitted.

Note that because the RAP-processing listener performs an event check at three-second intervals, there might be a maximum error of three seconds for the time

specified in this operand.

- `rap_stay_watch_time=maximum-monitoring-time-for-a-request-waiting-for-allocation-of-an-RAP-processing-server ~<unsigned integer> ((0-65535)) <<30>>` (units: seconds)

Specify the monitoring time for a RAP-processing client request that remains in the queue. If no RAP-processing servers that can process a request from an RAP-processing client are available, the request waits until an RAP-processing server becomes available. If the time that the request waits for allocation exceeds the time specified in this operand, the KFCA27764-W message is output. If 0 is specified in this operand, no time monitoring is performed.

For this operand, we recommend that you specify a value smaller than the maximum response wait time specified on the RAP-processing client. If the value of this operand is greater than the maximum response wait time specified on the RAP-processing client, the KFCA27764-W message might be output even for a request that the client has already assumed to have timed out.

Note that because the RAP-processing listener performs an event check at three-second intervals, there might be a maximum error of three seconds for the time specified in this operand.

- `rap_stay_warning_interval=interval-for-outputting-a-warning-message-for-a-request-remaining-in-the-queue ~<unsigned integer> ((3-65535)) <<180>>` (units: seconds)

Specify the interval for outputting the KFCA27764-W message if a request from a RAP-processing client is queued for a long time. After the KFCA27764-W message is output, the message is not output again until the time specified in this operand elapses. This operand is ignored if 0 is specified for the `rap_stay_watch_time` operand.

Note that because the RAP-processing listener performs an event check at three-second intervals, there might be a maximum error of three seconds for the time specified in this operand.

- `log_audit_out_suppress>=Y|N ~<<N>>`

Specify whether to suppress output of audit log data from the RAP-processing listener and server.

Y

Output of audit log data from the RAP-processing listener and server is suppressed.

N

Output of audit log data from the RAP-processing listener and server is not suppressed.

This operand takes effect only when Y is set for the `log_audit_out` operand in the log service definition.

- `log_audit_message=message-ID-for-an-item-for-which-audit-log-data-is-to-be-acquired[,message-ID-for-an-item-for-which-audit-log-data-is-to-be-acquired] . . . ~<unsigned integer> ((33400-99999))`

Specify the message IDs for audit log data items that are acquired by OpenTP1 and that can be specified in the RAP-processing listener service definition. You can specify a maximum of 2048 message IDs.

For the message IDs that can be specified in this operand, see *Appendix C*.

If this operand is omitted in the RAP-processing listener service definition when it is also omitted in the user service default definition, the value of this operand in the log service definition is assumed. This operand takes effect when Y is specified for the `log_audit_out` operand in the log service definition and N is specified for the `log_audit_out_suppress` operand in the RAP-processing listener service definition.

- `ipc_sockctl_highwater=percentage-of-sockets-at-which-temporary-closing-starts[,percentage-of-sockets-for-which-temporary-closing-is-not-performed] ~<unsigned integer>((0-100))`

For the `max_socket_descriptors` operand specification value, specify a percentage of sockets at which temporary closing starts.

When the number of file descriptors that are used for the sockets in a process exceeds the following value, OpenTP1 starts temporary closing.

value-specified-in-the-max_socket_descriptors-operand \times
(*percentage-of-sockets-at-which-temporary-closing-starts* \div 100)

If you specify 0 for the percentage of sockets at which temporary closing starts, temporary closing is executed each time a connection is established. For details about temporary closing, see the manual *OpenTP1 Description*.

You can also specify the percentage of connections that are not to be temporarily closed. The system calculates the number of connections that are not to be temporarily closed as follows:

value-specified-in-the-max_socket_descriptors-operand \times
(*percentage-of-sockets-for-which-temporary-closing-is-not-performed* \div 100)

The percentage of sockets for which temporary closing is not performed should be less than the percentage of sockets at which temporary closing starts. If you specify a value greater than the percentage of sockets at which temporary closing starts, the system assumes the same value as the percentage of sockets at which temporary closing starts.

OpenTP1 chronologically manages the connections that are established within a

process. When you specify the percentage of sockets for which temporary closing is not performed, the temporary closing requests are sent starting with the earliest connection that was established.

This operand is used to specify the percentage of sockets at which temporary closing starts, as a percentage of the value specified in the `max_socket_descriptors` operand. If a small value is specified for the `max_socket_descriptors` operand and also for this operand (the percentage of sockets at which temporary closing starts), many temporary closing requests occur, affecting performance or causing communications failures.

If you omit this specification here and in the user service default definition, the system assumes the value in the system common definition.

- `ipc_sockctl_watchtime=length-of-time-to-wait-until-the-sockets-are-reusable`
~<unsigned integer>((0-65535)) (Unit: seconds)

Specify the length of time (seconds) to wait, from the moment the number of file descriptors used for the sockets in the process reaches the value specified in the `max_socket_descriptors` operand until the sockets become reusable due to temporary closing.

Since temporary closing uses mutual agreement to disconnect the connection between processes, the process that sends the request for temporary closing cannot disconnect the connection until it receives the response. When the process receives the response, the connection is disconnected, and the sockets can be reused.

If no process returns a response to the request for temporary closing after the length of time specified in the `ipc_sockctl_watchtime` operand is exceeded, the process that sent the request is forcibly terminated. If you specify 0 for the `ipc_sockctl_watchtime` operand, the wait time is unlimited.

If you omit this specification here and in the user service default definition, the system assumes the value in the system common definition.

- `watch_time=maximum-time-to-wait-for-a-response` ~<unsigned integer>
((0-65535)) (units: seconds)

Specify the maximum time to wait from the time that a service request is sent until a service response is returned when the RAP-processing server alternatively executes an RPC.

OpenTP1 termination processing might wait for the time specified in this operand. Therefore, if you specify a large value in this operand, OpenTP1 termination processing might take time.

If there is no response for the specified period of time, the RPC returns a timeout error. If 0 is specified, OpenTP1 waits until it receives a response. Note also that if 0 is specified, OpenTP1 might not be able to terminate.

Make sure that you use this operand as the default value for the `watch_time` operand in the system common definition.

We recommend that you do not change the operand setting unless special tuning is necessary.

Note that if the value of this operand is very much larger or smaller than the default value of the `watch_time` operand in the system common definition, difficulties that can cause OpenTP1 to fail might occur.

If this operand is omitted in the RAP-processing listener service definition when it is also omitted in the user service default definition, the value of this operand in the system common definition is assumed. However, if the RAP-processing client has been set so that the maximum time to wait for a response is inherited, the value set on the RAP-processing client is used.

Command format

None.

Cautions

- The RAP-processing listener service definition is a definition file to be used as input for the `rapdfgen` command. If the RAP-processing listener service definition is placed under `$DCCONFPATH`, a newly created user service definition for the RAP-processing listener overwrites the RAP-processing listener service definition. Therefore, do not place the RAP-processing listener service definition under `$DCCONFPATH`. Otherwise, the operation cannot be assured.
- The user service definitions for the RAP-processing listener and RAP-processing server are assumed to be under `$DCCONFPATH`. Therefore, do not move the user service definitions from under `$DCCONFPATH` to under `$DCUAPCONFPATH`. Otherwise, the operation cannot be assured.
- When using the remote API facility you must pay attention to the values specified in the following system service definitions.
 - System environment definition

Add the number of RAP-processing listeners and the RAP-processing server parallel count to the `server_count` operand. By considering the RAP-processing service termination time, review the value specified in the `system_terminate_watch_time` operand.
 - User service structure definition

The RAP-processing listener service to be activated in synchronization with the TP1/Server Base should be defined in `dcsvstart`. In this case, specify the RAP-processing listener service name as the user server name.
 - System common definition

There is no need to specify the client host name at the node name specified by the `all_node` operand. Take care not to give the same value to the port number specified in the `name_port` and `prc_port` operands and the port number used by the RAP-processing listener. Otherwise, the operation will not be guaranteed.

- Process service definition
 - Review the `prc_process_count` operand by considering the number of processes in the RAP-processing server.
- Schedule service definition
 - Review the `scd_server_count` operand by considering the number of RAP-processing servers.
- For the following operands, their values specified in the user service default definition are assumed if the operands are omitted in the RAP-processing listener service definition:

```
rpc_trace
rpc_trace_name
rpc_trace_size
rpc_extend_function
trn_expiration_time
trn_expiration_time_suspend
trn_cpu_time
trn_statistics_item
trn_optimum_item
trn_rollback_information_put
trn_watch_time
trn_limit_time
trn_rollback_response_receive
trn_partial_recovery_type
trn_completion_limit_time
max_socket_descriptors
log_audit_message
watch_time
```

- The following operands are ignored in the RAP-processing listener service

definition even when they are specified:

- For the RAP-processing listener:
 - module
 - type
 - atomic_update
 - receive_from
 - auto_restart
 - critical
 - trf_put
 - node_down_restart
 - term_watch_time
 - max_open_fds
 - rpc_destination_mode
 - status_change_when_termining
- For the RAP-processing server:
 - module
 - atomic_update
 - type
 - hold
 - hold_recovery
 - server_security
 - service
 - balance_count
 - auto_restart
 - critical
 - service_hold
 - service_priority_control
 - node_down_restart
 - server_type
 - term_watch_time

```

max_open_fds
message_store_bufllen
schedule_delay_limit
schedule_delay_abort
scd_pool_warning_use_rate
scd_pool_warning_interval

```

Both the RAP-processing listener and the RAP-processing server operate, assuming that the default values in the user service default definition are specified in all other operands.

- Due to the OpenTP1 restrictions, adjust the values of the applicable operands in the following cases:
 - When specifying `dynamic` in the `rap_connection_assign_type` operand

Make sure that the sum of the `rap_parallel_server` operand, the `rap_max_client` operand, and the `max_socket_descriptors` operand is no more than 1993.
 - When specifying `static` in the `rap_connection_assign_type` operand

Make sure that the sum of the `rap_max_client` operand and the `max_socket_descriptors` operand is no more than 1993.
- When you use TP1/Client/J, do not set the 00000002 bit in the `rpc_extend_function` operand to ON. If the bit is set to ON, the operation is not guaranteed.
- Do not specify the `rpc_rap_auto_connect` operand of the user service definition in the RAP-processing listener service definition. The RAP-processing server operates, assuming that Y is specified in the `rpc_rap_auto_connect` operand. Operation of the RAP-processing server is not guaranteed if N is specified in the `rpc_rap_auto_connect` operand.
- If the number of files that can be opened in each process exceeds the limit while the RAP-processing listener is starting, the RAP-processing listener abnormally terminates after issuing message KFCA00105-E (abort code: r902109). Therefore, estimate the values for the `max_open_fds` and `max_socket_descriptors` operands so that the number of files that can be opened in each process is not exceeded.

The maximum number of files that can be opened in OpenTP1 processes is the total of the values specified in the `max_open_fds` and `max_socket_descriptors` operands of the user service definition. While the

value in the `max_socket_descriptors` operand is applied as is, the value in the `max_open_fds` operand is automatically set to the value calculated using one of the following formulas when a definition is generated with the `rapdfgen` command:

- When `dynamic` is specified in the `rap_connection_assign_type` operand

User service definition for the RAP-processing listener:

```
max_open_fds = rap_parallel_server + rap_max_client + 23
```

User service definition for the RAP-processing server:

```
max_open_fds = 22
```

- When `static` is specified in the `rap_connection_assign_type` operand or when the specification is omitted

User service definition for the RAP-processing listener:

```
max_open_fds = rap_max_client + 23
```

User service definition for the RAP-processing server:

```
max_open_fds = 22
```

For details on the number of files that can be opened in each process, see the *Release Notes* or the documentation for the OS being used.

RAP-processing client manager service definition

Format

- set format

```
set rap_client_manager_port=rap-processing-client-manager's-port-
number
set rap_listen_inf="node-identifier:port-number=host-name:port-
number" [ , "node-identifier:port-number=
host-name:port-number" ] . . .
set uid=OpenTPI-administrator's-user-identifier
[set log_audit_out_suppress=Y|N]
[set log_audit_message=message-ID-for-which-audit-log-data-is-to-be-acquired
[ , message-ID-for-which-audit-log-data-is-to-be-acquired ] . . . ]
[set rap_watch_time=maximum-monitoring-time-for-message-send/receive ]
```

- Command format

None

Function

The RAP-processing client manager service definition defines the execution environment for using the remote API client manager facility.

Explanation

set format

- `rap_client_manager_port=rap-processing-client-manager's-port-number~<unsigned integer> ((5001-65535))`

Specify the port number of the RAP-processing client manager monitoring for the startup of the RAP-processing listener.

The port number specified using this operand must not be used by other programs.

Note that the operating system assigns certain numbers automatically. You should not use such a number for the port number. The numbers assigned by the operating system differ depending on the type and version of the operating system. For details, see the documentation for your operating system.

- `rap_listen_inf="node-identifier:port-number=host-name:port-number" [, "node-identifier:port-number=host-name:port-number"] . . .`

Specify the RAP-processing listeners to be monitored. Up to 1024 RAP-processing listeners can be specified, delimited by commas.

`"node-identifier#1 : port-number#2 = host-name#3 : port-number#4"`

#1: *node-identifier*~<1-4 character identifier>

Specifies the node identifier of the OpenTP1 node which starts up the RAP-processing listener.

#2: *port-number*~<unsigned integer> ((5001-65535))

Specifies the port number of the RAP-processing listener.

#3: *host-name*~<1-255 alphanumeric characters, including periods and hyphens>

Specifies the host name on the receiving side of the service of the remote API facility, which is the one defined in the user service network definition.

#4: *port-number*~<unsigned integer> ((1-65535))

Specifies the port number of the receiving side of the service of the remote API facility, which is the one defined in the user service network definition.

- *uid=OpenTP1-administrator's-user-identifier*~<unsigned integer> ((0-4294967294))

Specify the user ID for the process owner of this service group.

In this case, specify the user identifier of the OpenTP1 administrator.

The maximum value depends on the operating system. Check the documentation for your operating system.

- *log_audit_out_suppress=Y|N* ~<<N>>

Specify whether to suppress output of audit log data from the RAP-processing client manager.

Y

Output of audit log data from the RAP-processing client manager is suppressed.

N

Output of audit log data from the RAP-processing client manager is not suppressed.

This operand takes effect only when Y is set for the *log_audit_out* operand in the log service definition.

- *log_audit_message=message-ID-for-an-item-for-which-audit-log-data-is-to-be-acquired*[, *message-ID-for-an-item-for-which-audit-log-data-is-to-be-acquired*] . . . ~<unsigned integer> ((33400-99999))

Specify the message IDs for audit log data items that are acquired by OpenTP1 and that can be specified in the RAP-processing client manager service definition. You can specify a maximum of 2048 message IDs.

For the message IDs that can be specified in this operand, see *Appendix C*.

If this operand is omitted in the RAP-processing client manager service definition when it is also omitted in the user service default definition, the value of this operand in the log service definition is assumed. This operand takes effect when *Y* is specified for the `log_audit_out` operand in the log service definition and *N* is specified for the `log_audit_out_suppress` operand in the RAP-processing client manager service definition.

- `rap_watch_time=maximum-monitoring-time-for-message-send/receive~<unsigned integer> ((0-65535))<<180>>(unit: seconds)`

Specify the monitoring time between when the RAP-processing client manager starts sending or receiving a message and when sending or receiving is completed. When sending or receiving is not completed within the monitoring time, the system outputs a message and takes action as in the case for a network failure.

When 0 is specified, the system does not monitor the time.

Command format

None

Cautions

- The RAP-processing client manager service definition is a definition file to be used as input for the `rapdfgen` command. If the RAP-processing client manager service definition is placed under `$DCCONFPATH`, a newly created user service definition for the RAP-processing client manager overwrites the RAP-processing client manager service definition. Therefore, do not place the RAP-processing client manager service definition under `$DCCONFPATH`. Otherwise, the operation cannot be assured.
- The user service definitions for the RAP-processing client manager is assumed to be under `$DCCONFPATH`. Therefore, do not move the user service definitions from under `$DCCONFPATH` to under `$DCUAPCONFPATH`. Otherwise, the operation cannot be assured.
- To change a value specified in the RAP-processing client manager service definition, terminate the RAP-processing client manager normally before making the change.

Performance verification trace definition

Format

- set format

```
[set prf_file_size=performance-verification-trace-information-file-size]
[set prf_information_level=1|0]
[set prf_file_count=number-of-performance-verification-trace-information-file-generations]
[set prf_trace_backup=Y|N]
```

- Command format

None

Function

The performance verification trace definition defines the execution environment for acquiring performance verification trace information.

Explanation

set format

- `prf_file_size=performance-verification-trace-information-file-size~<unsigned integer> ((1024-1048576)) <<1024>>` (units: kilobytes)

Specify the size of the performance verification trace information file.

Normally, trace information is output to regular files in OpenTP1. The number of trace output files is specified in the `prf_file_count` operand of the performance verification trace definition. If all trace output files are full, the oldest file is overwritten with the new trace information. Therefore, you can only retain the trace of a certain period of time. You can increase the interval at which the oldest file is overwritten by increasing the value of the `prf_file_size` operand.

You can calculate the size of each trace file using the following formula (unit: bytes):

File size = 128 + (Trace data length necessary for one transaction[#] x Number of transactions to be executed)

[#]: For details on how to calculate the trace data length necessary for one transaction, see the manual *OpenTP1 Operation*.

- `prf_information_level=1|0~<<1>>`

Specify the display level of the messages related to the performance verification trace.

0

Outputs the level-0 messages related to the performance verification trace

(warnings and error messages) to syslog.

1

Outputs the level-1 or lower-level messages related to the performance verification trace to syslog.

The following table describes the relationship between the messages related to the performance verification trace and display levels.

Message	Display level
KFCA26700-W	0
KFCA26705-W	0
KFCA26710-I	1

To suppress the output of level-0 messages, specify 0 in the DCSYSLOGOUT environment variable in the system common definition or the performance verification trace definition. If the DCSYSLOGOUT environment variable is specified in both the system common definition and the performance verification trace definition, the specification in the system common definition takes precedence.

For details about the DCSYSLOGOUT environment variable, see the description about the DCSYSLOGOUT environment variable in *Log service definition*.

- `prf_file_count=number-of-performance-verification-trace-information-file-generations~<unsigned integer> ((3-256)) <<3>>`

Specify the number of generations for the performance verification trace information file.

- `prf_trace_backup=Y|N ~<<Y>>`

Specify whether to back up the prf trace files when OpenTP1 terminates.

Y

The prf trace files are backed up.

N

The prf trace files are not backed up.

When Y is specified, backup files are created in `$DCDIR/spool/save`.

The following table lists the files that are backed up when Y is specified.

Trace file	File name	Backup file name#1
Performance verification trace information file	<code>prf_nnn</code> #2	<code>prf_nnn.bk1</code> and <code>prf_nnn.bk2</code>

Trace file	File name	Backup file name ^{#1}
XAR performance verification trace information file	_xr_nnn ^{#2}	_xr_nnn.bk1 and _xr_nnn.bk2
JNL performance verification trace information file	_jl_nnn ^{#2}	_jl_nnn.bk1 and _jl_nnn.bk2
LCK performance verification trace information file	_lk_nnn ^{#2}	_lk_nnn.bk1 and _lk_nnn.bk2
MCF performance verification trace information acquisition file	_mc_nnn ^{#2}	_mc_nnn.bk1 and _mc_nnn.bk2
TRN event trace information file	_tr_nnn ^{#2}	_tr_nnn.bk1 and _tr_nnn.bk2
NAM event trace information file	_nm_001, _nm_002, and _nm_003	_nm_nnn.bk1 and _nm_nnn.bk2
Process service event trace information file	_pr_001, _pr_002, and _pr_003	_pr_nnn.bk1 and _pr_nnn.bk2
FIL event trace information file	_fl_001, _fl_002, and _fl_003	_fl_nnn.bk1 and _fl_nnn.bk2

#1

nnn: A value that corresponds to the name of a trace file.

#2

nnn: A value that begins with 001. The maximum of the value is specified by the `prf_file_count` operand in each of the following definitions:

Performance verification trace: Performance verification trace definition

XAR performance verification trace: XAR performance verification trace definition

JNL performance verification trace: JNL performance verification trace definition

LCK performance verification trace: LCK performance verification trace definition

MCF performance verification trace: MCF performance verification trace definition

TRN event trace: TRN event trace definition

For details about each trace file, see the manual *OpenTPI Description*.

The `prf` trace files contain information useful for troubleshooting. If these files are not backed up, information current at the time of an error might no longer exist. If this information is lost, troubleshooting could take time. If the `prf` trace files will not be

backed up, we recommend that you increase the values of `prf_file_size` and `prf_file_count` operands.

For the JNL performance verification trace information file, this operand can also be specified in the JNL performance verification trace definition. The priority of the specified values is (1. > 2.):

1. JNL performance verification trace definition
2. Performance verification trace definition

command format

None

Note

You can use this definition when TP1/Extension 1 is already installed. If TP1/Extension 1 is not installed, the operation of this definition command cannot be assured.

XAR performance verification trace definition

Format

- set format

```
[set prf_file_size=XAR-performance-verification-trace-information-file-size]
[set prf_information_level=1|0]
[set prf_file_count=number-of-generations-for-XAR-performance-verification-trace-information-files]
```

Command format

None

Function

The XAR performance verification trace definition defines the execution environment for acquiring XAR performance verification trace information.

Explanation

set format

- `prf_file_size=XAR-performance-verification-trace-information-file-size`
~<unsigned integer> ((1024-1048576)) <<10240>> (units: kilobytes)

Specify the size of an XAR performance verification trace information file.

Normally, trace information is output to regular files in OpenTP1. The number of generations of this file is specified by the `prf_file_count` operand in the XAR performance verification trace definition. When all generations have been used, the oldest file is overwritten with new trace information. Accordingly, old trace information is lost as time passes. You can increase the interval at which the oldest file is overwritten by increasing the value of this operand.

You can use the following formula to calculate the size of one trace file acquired during the execution of a transaction (units: bytes):

Size of one file $\# = 128 + (384 \times (4 + \text{number of RPC calls performed in one transaction}) \times \text{number of transactions})$

#:

The amount of trace information varies depending on conditions such as whether transactions are optimized.

- `prf_information_level=1|0` ~<<1>>

Specify the display level of messages related to the XAR performance verification trace.

0

Messages related to the XAR performance verification trace whose display level is 0 (warning and error messages) are output to syslog.

1

Messages related to the XAR performance verification trace whose display level is 1 or lower are output to syslog.

The following table shows the message IDs for the XAR performance verification trace and their display levels.

Message	Display level
KFCA26700-W	0
KFCA26705-W	0
KFCA26710-I	1

To suppress the output of messages whose display level is 0, set the DCSYSLOGOUT environment variable to 0 in the system common definition or the performance verification trace definition. If the DCSYSLOGOUT environment variable is specified in both the system common definition and the performance verification trace definition, the specification in the system common definition takes precedence.

For details about the DCSYSLOGOUT environment variable, see the description of the DCSYSLOGOUT environment variable in *Log service definition*.

- `prf_file_count=number-of-generations-for-XAR-performance-verification-trace-information-files ~<unsigned integer> ((3-256)) <<3>>`

Specify the number of generations for the XAR performance verification trace information file.

Command format

None

Note

This operand requires the installation of TP1/Extension 1. If this operand is specified when TP1/Extension 1 has not been installed, operation cannot be guaranteed.

JNL performance verification trace definition

Format

- set format

```
[set prf_file_size=JNL-performance-verification-trace-information-file-size ]
[set prf_file_count=number-of-generations-for-JNL-performance-verification-trace-information-files ]
[set prf_trace_backup=Y|N]
```

- Command format

None

Function

The JNL performance verification trace definition defines the execution environment for acquiring JNL performance verification trace information.

Explanation

set format operands

- `prf_file_size=JNL-performance-verification-trace-information-file-size`

~<unsigned integer> ((1024-1048576))<<1024>> (units: kilobytes)

Specify the size of a JNL performance verification trace information file.

Normally, the trace information is output to regular files in OpenTP1. The number of generations of this file is specified by the `prf_file_count` operand in the JNL performance verification trace definition. When all generations have been used, the oldest file is overwritten with new trace information. Accordingly, old trace information is lost as time passes. You can increase the interval at which the oldest file is overwritten by increasing the value of this operand.

You can use the following formulas to calculate the size of one trace file (units: bytes):

- When 00000001 is specified in the `jnl_prf_event_trace_level` operand of the system common definition

$$\text{Size of one file} = 128 \times a + 128 \times b$$

- When 00000002 is specified in the `jnl_prf_event_trace_level` operand of the system common definition

- When the OS is UNIX

$$\text{Size of one file} = 512 \times a + 128 \times b + 256 \times c$$

- When the OS is Windows

$$\text{Size of one file} = 576 \times a + 128 \times b + 256 \times c$$

Where:

a: Number of journal write processes that occur inside one transaction

b: Number of buffer waits that occur inside one transaction

c: Number of journal records acquired in one transaction

- `prf_file_count=number-of-generations-for-JNL-performance-verification-trace-information-files`

~<unsigned integer>((3-256)) <<3>>

Specify the number of generations for the JNL performance verification trace information file.

- `prf_trace_backup=Y|N`

~<<Y>>

Specify whether to back up the JNL performance verification trace files when OpenTP1 terminates.

Y

The JNL performance verification trace information files are backed up.

N

The JNL performance verification trace information files are not backed up.

The backup files, when collected, are created in `$DCDIR/spool/save`.

The following table lists the files that are backed up when Y is specified.

Trace file name	File name	Backup file name#1
JNL performance verification trace information file	<code>_j1_nnn</code> #2	<code>_j1_nnn.bk1</code> and <code>_j1_nnn.bk2</code>

#1

nnn: A value that corresponds to the name of a trace file.

#2

nnn: A value that begins with 001. The maximum of the value is specified by the `prf_file_count` operand in the JNL performance verification trace definition.

For details about the JNL performance verification trace information file, see the manual *OpenTP1 Description*.

The JNL performance verification trace information file provides information useful for troubleshooting. If no backup is collected when a problem occurs, no information is available for troubleshooting and problem resolution may take a long time. If you do not plan to collect backups, consider the possibility of expanding the `prf_file_size` and `prf_file_count` operands.

You can also specify this operand in the performance verification trace definition. The priority of the specified values is (1.>2.):

1. JNL performance verification trace definition
2. Performance verification trace definition

Command format

None

Note

Use this definition only when TP1/Extension 1 is installed. If TP1/Extension 1 is not installed, the definition might not work correctly.

LCK performance verification trace definition

Format

- set format

```
[set prf_file_size=LCK-performance-verification-trace-information-file-size]
[set prf_information_level=1|0]
[set prf_file_count=
number-of-generations-for-LCK-performance-verification-trace-information-files]
```

- Command format

None

Function

The LCK performance verification trace definition defines the execution environment for acquiring LCK performance verification trace information.

Explanation

set format operands

- `prf_file_size=LCK-performance-verification-trace-information-file-size`

~<unsigned integer>((1024-1048576))<<5120>> (units: kilobytes)

Specify the size of an LCK performance verification trace information file.

Normally, trace information is output to regular files in OpenTP1. The number of generations of this file is specified by the `prf_file_count` operand in the LCK performance verification trace definition. When all generations have been used, the oldest file is overwritten with new trace information. Accordingly, old trace information is lost as time passes. You can increase the interval at which the oldest file is overwritten by increasing the value of this operand.

You can use the following formula to calculate the size of one trace file acquired during the execution of a transaction (units: bytes):

Size of one file = $128 + ((1024 \times (D + T + M) + R \times 128) \times$
number-of-transactions-executed)

D: Number of accesses (referencing or updating) to the DAM service per transaction branch

T: Number of accesses (referencing or updating) to the TAM service per transaction branch

M: Number of accesses (referencing or updating) to the MQA service per transaction branch

R: Number of times the locking function is executed per transaction branch

Note that the file size calculated using the formula is merely an estimate. The actual file size may be greater than the calculated value, depending on the UAP configuration or the like.

■ `prf_information_level=1|0`

~<<1>>

Specify the display level of messages related to the LCK performance verification trace.

0

Messages related to the LCK performance verification trace whose display level is 0 (warning and error messages) are output to syslog.

1

Messages related to the LCK performance verification trace whose display level is 1 or lower are output to syslog.

The following table shows the message IDs for the LCK performance verification trace and their display levels.

Message	Display level
KFCA26700-W	0
KFCA26705-W	0
KFCA26710-I	1

To suppress the output of messages whose display level is 0, set the `DCSYSLOGOUT` environment variable to 0 in the system common definition or the performance verification trace definition. If the `DCSYSLOGOUT` environment variable is specified in both the system common definition and the performance verification trace definition, the specification in the system common definition takes precedence.

For details about the `DCSYSLOGOUT` environment variable, see the description of the `DCSYSLOGOUT` environment variable in *Log service definition*.

■ `prf_file_count=number-of-generations-for-LCK-performance-verification-trace-information-files`

~<unsigned integer>((3-256)) <<3>>

Specify the number of generations for the LCK performance verification trace information file.

Command format

None

Note

Use this definition only when TP1/Extension 1 is installed. If TP1/Extension 1 is not installed, the definition might not work correctly.

TRN event trace definition

Format

- set format

```
[set prf_file_size=TRN-event-trace-information-file-size]
[set prf_information_level=1|0]
[set prf_file_count=number-of-generations-of-TRN-event-trace-information-files]
```

- command format

None

Function

The TRN event trace definition defines the execution environment for acquiring TRN event trace information.

Explanation

set format

- `prf_file_size=TRN-event-trace-information-file-size~<unsigned integer>`
`((1024-1048576)) <<1024>>` (units: kilobytes)

Specify the size of each TRN event trace information file.

Normally, the trace information is output to regular files in OpenTP1. The number of the files is specified in the `prf_file_count` operand of the TRN event trace definition. If all TRN event trace files are full, the oldest file is overwritten with the new trace information. This means that trace information that is collected at a point of time will be lost after a certain period of time. You can increase the interval at which the oldest file is overwritten by increasing the value of the `prf_file_size` operand.

You can use the following formula to calculate the size of each trace file acquired during transaction execution:

size of 1 file* = 128 + (12 x number of accessed resource managers x 320 x number of executed transactions)

*For a transaction committed in two phases, the trace amount collected per transaction branch is 12 x number of resource managers. However, the trace amount varies depending on the conditions, such as the XA interface object files linked to the user server and the transaction optimization settings.

- `prf_information_level=1|0 ~<<1>>`

Specify the level of displaying TRN event trace messages.

0

Level-0 TRN event trace messages (warning and error messages) are output to syslog.

1

Level-0 and level-1 TRN event trace messages are output to syslog. The following table lists the TRN event trace messages and their display levels.

Message ID	Display level
KFCA26700-W	0
KFCA26705-W	0
KFCA26710-I	1

To suppress the output of messages whose display level is 0, set the DCSYSLOGOUT environment variable to 0 in the system common definition or the performance verification trace definition. If the DCSYSLOGOUT environment variable is specified in both the system common definition and the performance verification trace definition, the specification in the system common definition takes precedence.

For details about the DCSYSLOGOUT environment variable, see the description of the DCSYSLOGOUT environment variable in the log service definition.

- `prf_file_count=number-of-generations-of-TRN-event-trace-information-files~<unsigned integer> ((3 to 256))<<3>>`

Specify the number of generations for the TRN event trace information file.

command format

None

Cautions

Use this definition only when TP1/Extension 1 is installed. If TP1/Extension 1 is not installed, the definition might not work correctly.

Real-time statistics service definition

Format

■ set format

```
[set rts_trcput_interval=statistics-acquisition-interval]
[set rts_service_max=maximum-number-of-acquisition-target-services]
[set rts_item_max=maximum-number-of-acquisition-target-items]
[set rts_log_file=Y|N]
[set rts_log_file_name=RTS-log-file-name]
[set rts_log_file_size=RTS-log-file-size]
[set rts_log_file_count=number-of-RTS-log-files]
[set rts_log_file_backup=Y|N]
[set rts_swap_message=Y|N]
```

■ command format

```
[rtsput -u{sys|srv|svc|obj}
  [-s server-name][ -v service-name]
  [-o acquisition-target-name-1][ -b acquisition-target-name-2]
  [-e item-ID[ ,item-ID] . . . ]
  [-f file-name-of-the-real-time-statistics-acquisition-target-definition]]
```

Function

The real-time statistics service definition defines the execution environment in which the real-time statistics service acquires statistics.

Explanation

set format

- `rts_trcput_interval=statistics-acquisition-interval~<unsigned integer>`
 ((10-86400)) <<600>> (units: seconds)

Specify in seconds the interval for acquiring and editing real-time statistics.

- `rts_service_max=maximum-number-of-acquisition-target-services~<unsigned integer>`
 ((1-1000))<<64>>

Specify the maximum number of services for which statistics are to be acquired by the real-time statistics service.

- `rts_item_max=maximum-number-of-acquisition-target-items~<unsigned integer>`
 ((1-1000))<<64>>

Specify the maximum number of events that the real-time statistics service can acquire from one target.

■ `rts_log_file=Y|N~<<Y>>`

Specify whether to output the statistics acquired in the shared memory for the RTS service to the RTS log file.

Y

The acquired statistics are output to the RTS log file.

N

The acquired statistics are not output to the RTS log file.

■ `rts_log_file_name=RTS-log-file-name~<1-to-63-character path name>
<<$DCDIR/spool/dcrtsinf/rtslog>>`

Specify the absolute path name of the RTS log file to which statistics are to be output.

If the RTS log file specified in this operand already exists, the existing file is overwritten.

Do not create a file or directory that has the same name as the name of the RTS log file in the RTS log file destination directory. If you create such a file or directory, the system may operate incorrectly.

If you specify a user other than the OpenTP1 system administrator in the `uid` operand of the user service default definition, in the `rts_log_file_name` operand, specify a path that provides the specified user with the write authority.

The real-time statistics service always operates correctly as long as the user has the write authority for the directory that will contain the RTS log file, regardless of the user ID with which the service was started. If the user does not have the write authority, the service outputs the KFCA32734-W message and stops outputting log information to the RTS log file. Note that the `uid` and `groups` operands are not specified in the definition files created using the `rtsetup` command (`RTSSUP` and `RTSSPP`). For this reason, if these operands have been specified in the user service default definition, the real-time statistics service is started as the specified user and group.

■ `rts_log_file_size=RTS-log-file-size~<unsigned integer> ((1024-1048576))
<<1024>> (units: kilobytes)`

Specify the size of each RTS log file that contains statistics.

The maximum number of RTS log files is specified in the `rts_log_file_count` operand. That is, the disk must have at least as much space as the value calculated by multiplying the `rts_log_file_size` value by the `rts_log_file_count` value. If all RTS log files are full, the oldest file is overwritten with the new statistics. This means that statistics that are collected at a point of time will be lost after a certain period of time. By increasing the `rts_log_file_size` value, you can retain the collected trace information for a longer period.

Note that the value of the `rts_log_file_size` operand must be larger than the

amount of real-time statistics output at one time. This amount can be calculated using the following formula:

Amount of real-time statistics output at one time

= (96 + (40 x `rts_item_max` value)) x number of real-time statistics acquisition targets[#]

#

The number of real-time statistics acquisition targets is the value specified in the `rtspout` definition command of the real-time statistics service definition.

However, when `srv` is specified in the `-u` option and a user server is specified as an argument of the `-s` option, the number of real-time statistics acquisition targets is the number of services specified in the `service` operand + 2. If you use the `rtstats` command to change the number of acquisition targets, also take this increment into account.

More than one `rtspout` definition command can be specified for the same service or server. If multiple `rtspout` definition commands are specified for the same service or server, the real-time statistics service acquires the items that are specified in the separate commands and merges them with the duplicated items removed.

The statistics on the entire system are not included in the number of real-time statistics acquisition targets for reasons having to do with the operation of real-time statistics. However, the statistics on output of the RTS log files must be included in the number of acquisition targets. Therefore, when statistics on the entire system are being acquired, add 1 to the *number of real-time statistics acquisition targets* in the above formula.

- `rts_log_file_count=number-of-RTS-log-files~<unsigned integer> ((1-10)) <<3>>`

Specify the maximum number of RTS log files for storing statistics.

- `rts_log_file_backup=Y|N ~<<Y>>`

Specify whether to back up RTS log files when the real-time statistics service starts.

Y

RTS log files are backed up.

Backup files are given the same names as the RTS log files and suffixed with the extension `.bk`. The backup files are created in the RTS log file directory.

N

RTS log files are not backed up.

When \mathcal{Y} is specified, the maximum amount of disk space required for the RTS log file directory is as follows:

`rts_log_file_size` value x `rts_log_file_count` value x 2 (kilobytes)

Before you specify \mathcal{Y} , make sure that there is enough disk space for the RTS log file directory.

Also make sure that the RTS log file directory does not contain a file or directory whose name a backup file would duplicate. If such a file exists, it will be replaced by the backup file. If there is a directory whose name a backup file would duplicate, the backup file cannot be created.

■ `rts_swap_message=Y|N~<<N>>`

Specify whether to output the KFCA32740-I message when the current RTS log file used for output of the real-time statistics is swapped.

Y

The swap message for the RTS log file is output.

N

The swap message for the RTS log file is not output.

Cautions

- Once the real-time statistics service starts, changes to the `rts_service_max` and `rts_item_max` operands are not applied while OpenTP1 is performing online processing. If you want to apply the changes immediately, terminate OpenTP1.
- If the output of statistics to the RTS log file takes time, the acquisition of statistics may take longer than the interval specified in the `rts_trcput_interval` operand.
- When the value of the DCDIR environment variable is longer than 41 characters, do not omit the `rts_log_file_name` operand. If you omit the operand, an error occurs during parsing of the definitions.

command format

See the next page.

rtspout (Specify the statistics acquisition service)

Format

```
[rtspout -u{sys|srv|svc|obj}
  [-s server-name][-v service-name]
  [-o acquisition-target-name-1][-b acquisition-target-name-2]
  [-e item-ID[, item-ID]...]
  [-f file-for-defining-the-items-for-which-real-time-statistics-
  are-to-be-acquired]]
```

Function

The real-time statistics service definition specifies the targets for which the real-time statistics service acquires statistics, and the statistics items to be acquired.

Options

- -u {sys|srv|svc|obj}

Specify the type of real-time statistics to be acquired.

sys

The statistics for the entire system are acquired.

When *sys* is specified, the value of the *rts_service_max* operand in the real-time statistics service definition is not reduced.

srv

The statistics for the specified server are acquired.

When a user server name is specified in the *-s* option, the following statistics are acquired:

- Statistics for the entire server
- Statistics for all services specified in the *service* operand of the user service definition for the specified user server
- Statistics for processing that is not related to services

That is, statistics are acquired from two more targets than the number of services specified in the *service* operand.

If the specified server is a server that does not have any services, such as a system server or SUP, only the statistics for the entire server are acquired.

svc

Statistics for each service of the specified user server are acquired.

obj

The object for which statistics are to be acquired is specified using the combination of the `-o` and `-b` options. For details, see the explanation of the `-o` and `-b` options.

- `-s server-name~<1-8 alphanumeric characters beginning with an alphabetic character>`

Specify the name of the server for which you want to acquire statistics.

When `srv` or `svc` is specified in the `-u` option, always specify the `-s` option. When `sys` or `obj` is specified in the `-u` option, the `-s` option cannot be specified.

- `-v service-name~<1-to-31-character identifier>`

Specify the name of the service for which you want to acquire statistics.

The statistics for the specified service on the server specified in the `-s` option are acquired.

When `svc` is specified in the `-u` option, always specify the `-v` option. When `sys`, `srv`, or `obj` is specified in the `-u` option, the `-v` option cannot be specified.

- `-o acquisition-target-name-1 ~<1-8 characters>`
`-b acquisition-target-name-2 ~<1-63 characters>`

When `obj` is specified in the `-u` option, the arguments specified in these options determine the object for which real-time statistics are to be acquired.

The following table shows the arguments of the `-o` and `-b` options, and the object determined from the specified arguments. When `obj` is specified in the `-u` option, specify arguments in the `-o` and `-b` options according to the table.

Table 3-8: Options in the `rtspout` definition command and the acquisition-target object that can be specified

Argument of the <code>-o</code> option	Argument of the <code>-b</code> option	Acquisition-target object that can be specified
Port number [#]	IP address [#]	Node for which the specified service information is referenced
Logical terminal name	Specification omitted	Specified logical terminal
Specification omitted	Service group name	Specified service group

[#]: Specify the port number and IP address of a node specified in the `all_node` operand of the system common definition or in the domain definition file.

When `sys`, `srv`, or `svc` is specified in the `-u` option, the `-o` or `-b` option cannot be

specified.

- `-e item-ID~<unsigned integer>((1000-9999))`

Specify the ID of the item for which you want to acquire statistics.

For details about item IDs, see the manual *OpenTP1 Operation*.

- `-f file-for-defining-the-items-for-which-real-time-statistics-are-to-be-acquired~<1-to-8-character identifier>`

Specify the file for defining the real-time statistics items to be acquired.

Cautions

- When `srv` is specified in the `-u` option and a user server name is specified in the `-s` option, the service names are acquired by parsing the user service definition file on the specified server. If you specify a user server name in the `-s` option, always prepare a corresponding user service definition file.
- The number of statistics acquisition targets that can be specified in the `rtspout` definition command cannot exceed the value specified in the `rts_service_max` operand of the real-time statistics service definition. The maximum number of events that can be acquired from one target is the value specified in the `rts_item_max` operand of the real-time statistics service definition.
- When the `-f` and `-e` options are omitted, an area for acquiring statistics is secured. However, the acquired information is only the information about the user server execution time for a particular section.
- More than one `rtspout` definition command can be specified for the same service or server. If multiple `rtspout` definition commands are specified for the same service or server, the real-time statistics service acquires the items that are specified in the separate commands and merges them with duplicated items removed. Table 3-9 shows examples of specifying the `rtspout` definition command and the file for defining the real-time statistics items to be acquired. Table 3-10 shows the items that the real-time statistics service will acquire when the command is specified as shown in Table 3-9.

For details about examples of specifying the `rtspout` definition command, see 8.2 *Examples of defining the real-time statistics items that are to be acquired*.

Table 3-9: Examples of specifying the `rtspout` definition command and the file for defining the real-time statistics items to be acquired

rtspout definition command specification	Items to be acquired specified in the definition file
<code>rtspout -u srv -s SERVER_A -f definition-file-1</code>	item-A, item-C

rtspat definition command specification	Items to be acquired specified in the definition file
<code>rtspat -u svc -s SERVER_A -v SERVICE_B -f definition-file-2</code>	item-B
<code>rtspat -u svc -s SERVER_A -v SERVICE_C -f definition-file-3</code>	item-A, item-D

Table 3-10: Items to be acquired by the real-time statistics service

Server name	Service name	Item A	Item B	Item C	Item D
SRVER_A	All services	Y	N	Y	N
	Processing not related to services	Y	N	Y	N
	SRVICE_A	Y	N	Y	N
	SRVICE_B	Y	Y	Y	N
	SRVICE_C	Y	N	Y	Y

Legend:

Y: Acquired

N: Not acquired

- When `svc` is specified in the `-u` option, the command does not check whether the server specified in the `-s` option and the service specified in the `-v` option exist. When `obj` is specified in the `-u` option, whether the values specified in the `-o` and `-b` options are valid is not checked. If unnecessary acquisition targets have been registered, execute the `rtsls` command to check their configuration, and delete them by executing the `rtstats` command with the `-d` option specified.
- Any additions or deletions of services made to the user service definition after the real-time statistics service has started are not reflected in the settings for the real-time statistics acquisition items. This also holds true even when `srv` is specified for the `-u` option in the `rtspat` definition command. To change the settings for the real-time statistics acquisition items after the real-time statistics service has started, use the `rtstats` command or restart the real-time statistics service (RTSSUP).

Furthermore, any additions or deletions of services made by dynamic loading of service functions are not reflected to the settings for the real-time statistics acquisition items. In this case as well, use the `rtstats` command or restart the real-time statistics service (RTSSUP) to change the settings for the real-time statistics acquisition items after the real-time statistics service has started.

Real-time statistics acquisition-item definition

Format

■ set format

```
[set rts_cpd_collect_cpd=Y|N]
[set rts_cpd_validt_cpd=Y|N]
[set rts_jnl_buf_full=Y|N]
[set rts_jnl_wait_buf=Y|N]
[set rts_jnl_jnl_output=Y|N]
[set rts_jnl_io_wait=Y|N]
[set rts_jnl_write=Y|N]
[set rts_jnl_swap=Y|N]
[set rts_jnl_jnl_input=Y|N]
[set rts_jnl_read=Y|N]
[set rts_lck_lock_acqst=Y|N]
[set rts_lck_lock_wait=Y|N]
[set rts_lck_deadlock=Y|N]
[set rts_nam_global_cache_hit=Y|N]
[set rts_nam_local_cache_hit=Y|N]
[set rts_nam_lookup=Y|N]
[set rts_nam_node_lookup=Y|N]
[set rts_nam_node_lookup_responce=Y|N]
[set rts_osl_stamem_acq=Y|N]
[set rts_osl_stamem_pol=Y|N]
[set rts_osl_dynmem_acq=Y|N]
[set rts_osl_dynmem_pol=Y|N]
[set rts_prc_prc_genert=Y|N]
[set rts_prc_uap_abnml=Y|N]
[set rts_prc_sys_abnml=Y|N]
[set rts_prc_prc_term=Y|N]
[set rts_prc_prc_num=Y|N]
[set rts_que_read=Y|N]
[set rts_que_write=Y|N]
[set rts_que_read_err=Y|N]
[set rts_que_write_err=Y|N]
[set rts_que_wait_buf=Y|N]
[set rts_que_real_read=Y|N]
[set rts_que_real_write=Y|N]
[set rts_que_delay_wrt=Y|N]
[set rts_que_delay_rec=Y|N]
[set rts_que_delay_msg=Y|N]
[set rts_rpc_rpc_call=Y|N]
[set rts_rpc_rpc_call_chained=Y|N]
[set rts_rpc_usr_srvc=Y|N]
```



```

[set rts_rpc_rpc_ovrtim=Y|N]
[set rts_scd_scd_wait=Y|N]
[set rts_scd_schedule=Y|N]
[set rts_scd_using_buf=Y|N]
[set rts_scd_lack_buf=Y|N]
[set rts_scd_scd_stay=Y|N]
[set rts_scd_svc_scd_wait=Y|N]
[set rts_scd_svc_using_buf=Y|N]
[set rts_scd_parallel=Y|N]
[set rts_trn_commit=Y|N]
[set rts_trn_rollback=Y|N]
[set rts_trn_cmt_cmd=Y|N]
[set rts_trn_rbk_cmd=Y|N]
[set rts_trn_haz_cmd=Y|N]
[set rts_trn_mix_cmd=Y|N]
[set rts_trn_branch=Y|N]
[set rts_trn_sync_point=Y|N]
[set rts_dam_read=Y|N]
[set rts_dam_read_err=Y|N]
[set rts_dam_write=Y|N]
[set rts_dam_write_err=Y|N]
[set rts_dam_fj=Y|N]
[set rts_dam_trn_branch=Y|N]
[set rts_dam_cache_block=Y|N]
[set rts_dam_shm_pool=Y|N]
[set rts_tam_real_renew=Y|N]
[set rts_tam_real_renew_time=Y|N]
[set rts_tam_rec_refer=Y|N]
[set rts_tam_rec_renew=Y|N]
[set rts_tam_read=Y|N]
[set rts_tam_read_err=Y|N]
[set rts_tam_write=Y|N]
[set rts_tam_write_err=Y|N]
[set rts_xar_start=Y|N]
[set rts_xar_start_err=Y|N]
[set rts_xar_call=Y|N]
[set rts_xar_call_err=Y|N]
[set rts_xar_end=Y|N]
[set rts_xar_end_err=Y|N]
[set rts_xar_prepare=Y|N]
[set rts_xar_prepare_err=Y|N]
[set rts_xar_commit=Y|N]
[set rts_xar_commit_err=Y|N]
[set rts_xar_rollback=Y|N]
[set rts_xar_rollback_err=Y|N]
[set rts_xar_recover=Y|N]
[set rts_xar_recover_err=Y|N]
[set rts_xar_forget=Y|N]
[set rts_xar_forget_err=Y|N]
[set rts_mcf_ap_scd_stay=Y|N]
[set rts_mcf_ap_usr_srvc=Y|N]
[set rts_mcf_in_msg_scd_wait=Y|N]
[set rts_mcf_out_msg_sync_scd_wait=Y|N]
[set rts_mcf_out_msg_resp_scd_wait=Y|N]
[set rts_mcf_out_msg_prio_scd_wait=Y|N]
[set rts_mcf_out_msg_norm_scd_wait=Y|N]
[set rts_mcf_que_scd_wait_num=Y|N]

```

- command format

None

Function

The real-time statistics acquisition-item definition specifies the statistical items to be acquired by the real-time statistics service.

Explanation

set format

Checkpoint dump information

- `rts_cpd_collect_cpd=Y|N~<<N>>`

Specify whether to acquire checkpoint dump acquisition events.

Y

The real-time statistics service acquires checkpoint dump acquisition events.

N

The real-time statistics service does not acquire checkpoint dump acquisition events.

- `rts_cpd_validt_cpd=Y|N~<<N>>`

Specify whether to acquire events indicating that a checkpoint dump was made valid.

Y

The real-time statistics service acquires events indicating that a checkpoint dump was made valid.

N

The real-time statistics service does not acquire events indicating that a checkpoint dump was made valid.

Journal information

- `rts_jnl_buf_full=Y|N~<<N>>`

Specify whether to acquire buffer full events.

Y

The real-time statistics service acquires buffer full events.

N

The real-time statistics service does not acquire buffer full events.

■ `rts_jnl_wait_buf=Y|N~<<N>>`

Specify whether to acquire free buffer wait events.

Y

The real-time statistics service acquires free buffer wait events.

N

The real-time statistics service does not acquire free buffer wait events.

■ `rts_jnl_jnl_output=Y|N~<<N>>`

Specify whether to acquire journal output (block) events.

Y

The real-time statistics service acquires journal output (block) events.

N

The real-time statistics service does not acquire journal output (block) events.

■ `rts_jnl_io_wait=Y|N~<<N>>`

Specify whether to acquire I/O wait events.

Y

The real-time statistics service acquires I/O wait events.

N

The real-time statistics service does not acquire I/O wait events.

■ `rts_jnl_write=Y|N~<<N>>`

Specify whether to acquire journal information write events.

Y

The real-time statistics service acquires journal information write events.

N

The real-time statistics service does not acquire journal information write events.

■ `rts_jnl_swap=Y|N~<<N>>`

Specify whether to acquire swap events.

Y

The real-time statistics service acquires swap events.

N

The real-time statistics service does not acquire swap events.

- `rts_jnl_jnl_input=Y|N~<<N>>`

Specify whether to acquire journal input events.

Y

The real-time statistics service acquires journal input events.

N

The real-time statistics service does not acquire journal input events.

- `rts_jnl_read=Y|N~<<N>>`

Specify whether to acquire journal information read events.

Y

The real-time statistics service acquires read events.

N

The real-time statistics service does not acquire read events.

Lock information

- `rts_lck_lock_acqst=Y|N~<<N>>`

Specify whether to acquire lock acquisition events.

Y

The real-time statistics service acquires lock acquisition events.

N

The real-time statistics service does not acquire lock acquisition events.

- `rts_lck_lock_wait=Y|N~<<N>>`

Specify whether to acquire lock wait events.

Y

The real-time statistics service acquires lock wait events.

N

The real-time statistics service does not acquire lock wait events.

- `rts_lck_deadlock=Y|N~<<N>>`

Specify whether to acquire deadlock events.

Y

The real-time statistics service acquires deadlock events.

N

The real-time statistics service does not acquire deadlock events.

Name information

- `rts_nam_global_cache_hit=Y|N~<<N>>`

Specify whether to acquire global cache hit events.

Y

The real-time statistics service acquires global cache hit events.

N

The real-time statistics service does not acquire global cache hit events.

- `rts_nam_local_cache_hit=Y|N~<<N>>`

Specify whether to acquire local cache hit events.

Y

The real-time statistics service acquires local cache hit events.

N

The real-time statistics service does not acquire local cache hit events.

- `rts_nam_lookup=Y|N~<<N>>`

Specify whether to acquire events indicating the number of times a search was made for service information.

Y

The real-time statistics service acquires events indicating the number of times a search was made for service information.

N

The real-time statistics service does not acquire events indicating the number of times a search was made for service information.

- `rts_nam_node_lookup=Y|N~<<N>>`

Specify whether to acquire events indicating the number of times a send was performed to the specified reference node for finding a service.

Y

The real-time statistics service acquires events indicating the number of times a send was performed to the specified reference node for finding a service.

N

The real-time statistics service does not acquire events indicating the number of times a send was performed to the specified reference node for finding a service.

- `rts_nam_node_lookup_responce=Y|N~<<N>>`

Specify whether to acquire events indicating the number of times a response to a service search request for the specified reference node was received.

Y

The real-time statistics service acquires events indicating the number of times a response to a service search request for the specified reference node was received.

N

The real-time statistics service does not acquire events indicating the number of times a response to a service search request for the specified reference node was received.

Shared memory management information

- `rts_osl_stamem_acq=Y|N~<<N>>`

Specify whether to acquire events indicating the usage of static shared memory.

Y

The real-time statistics service acquires events indicating the usage of static shared memory.

N

The real-time statistics service does not acquire events indicating the usage of static shared memory.

- `rts_osl_stamem_pol=Y|N~<<N>>`

Specify whether to acquire events indicating the maximum size of the required static shared memory pool.

Y

The real-time statistics service acquires events indicating the maximum size of the required static shared memory pool.

N

The real-time statistics service does not acquire events indicating the maximum size of the required static shared memory pool.

- `rts_osl_dynmem_acq=Y|N~<<N>>`

Specify whether to acquire events indicating the usage of dynamic shared memory.

Y

The real-time statistics service acquires events indicating the usage of dynamic shared memory.

N

The real-time statistics service does not acquire events indicating the usage of dynamic shared memory.

- `rts_osl_dynmem_pol=Y|N~<<N>>`

Specify whether to acquire events indicating the maximum size of the required dynamic shared memory pool.

Y

The real-time statistics service acquires events indicating the maximum size of the required dynamic shared memory pool.

N

The real-time statistics service does not acquire events indicating the maximum size of the required dynamic shared memory pool.

Process information

- `rts_prc_prc_genert=Y|N~<<N>>`

Specify whether to acquire process generation events.

Y

The real-time statistics service acquires process generation events.

N

The real-time statistics service does not acquire process generation events.

- `rts_prc_uap_abnml=Y|N~<<N>>`

Specify whether to acquire UAP abnormal termination events.

Y

The real-time statistics service acquires UAP abnormal termination events.

N

The real-time statistics service does not acquire UAP abnormal termination events.

- `rts_prc_sys_abnml=Y|N~<<N>>`

Specify whether to acquire system-server abnormal termination events.

Y

The real-time statistics service acquires system-server abnormal termination events.

N

The real-time statistics service does not acquire system-server abnormal termination events.

- `rts_prc_prc_term=Y|N~<<N>>`

Specify whether to acquire process termination events.

Y

The real-time statistics service acquires process termination events.

N

The real-time statistics service does not acquire process termination events.

- `rts_prc_prc_num=Y|N~<<N>>`

Specify whether to acquire events indicating monitoring of the number of active processes.

Y

The real-time statistics service acquires events indicating monitoring of the number of active processes.

N

The real-time statistics service does not acquire events indicating monitoring of the number of active processes.

Message queue information

- `rts_que_read=Y|N~<<N>>`

Specify whether to acquire read message events.

Y

The real-time statistics service acquires read message events.

N

The real-time statistics service does not acquire read message events.

- `rts_que_write=Y|N~<<N>>`

Specify whether to acquire write message events.

Y

The real-time statistics service acquires write message events.

N

The real-time statistics service does not acquire write message events.

■ `rts_que_read_err=Y|N~<<N>>`

Specify whether to acquire read error events for the message queue information.

Y

The real-time statistics service acquires read error events.

N

The real-time statistics service does not acquire read error events.

■ `rts_que_write_err=Y|N~<<N>>`

Specify whether to acquire write error events for the message queue information.

Y

The real-time statistics service acquires write error events.

N

The real-time statistics service does not acquire write error events.

■ `rts_que_wait_buf=Y|N~<<N>>`

Specify whether to acquire free buffer wait events for the message queue information.

Y

The real-time statistics service acquires free buffer wait events.

N

The real-time statistics service does not acquire free buffer wait events.

■ `rts_que_real_read=Y|N~<<N>>`

Specify whether to acquire real read events for the message queue information.

Y

The real-time statistics service acquires real read events.

N

The real-time statistics service does not acquire real read events.

■ `rts_que_real_write=Y|N~<<N>>`

Specify whether to acquire real write events for the message queue information.

Y

The real-time statistics service acquires real write events.

N

The real-time statistics service does not acquire real write events.

- `rts_que_delay_wrt=Y|N~<<N>>`

Specify whether to acquire lazy write (count) events.

Y

The real-time statistics service acquires lazy write (count) events.

N

The real-time statistics service does not acquire lazy write (count) events.

- `rts_que_delay_rec=Y|N~<<N>>`

Specify whether to acquire events (records) indicating a lazy write on a physical file basis.

Y

The real-time statistics service acquires events (records) indicating a lazy write on a physical file basis.

N

The real-time statistics service does not acquire events (records) indicating a lazy write on a physical file basis.

- `rts_que_delay_msg=Y|N~<<N>>`

Specify whether to acquire events (messages) indicating a lazy write on a physical file basis.

Y

The real-time statistics service acquires events (messages) indicating a lazy write on a physical file basis.

N

The real-time statistics service does not acquire events (messages) indicating a lazy write on a physical file basis.

RPC information

- `rts_rpc_rpc_call=Y|N~<<N>>`

Specify whether to acquire RPC call (synchronous-response type) events.

Y

The real-time statistics service acquires RPC call (synchronous-response type) events.

N

The real-time statistics service does not acquire RPC call (synchronous-response

type) events.

- `rts_rpc_rpc_call_chained=Y|N~<<N>>`

Specify whether to acquire RPC call (chained type) events.

Y

The real-time statistics service acquires RPC call (chained type) events.

N

The real-time statistics service does not acquire RPC call (chained type) events.

- `rts_rpc_usr_srvc=Y|N~<<N>>`

Specify whether to acquire user service execution events.

Y

The real-time statistics service acquires user service execution events.

N

The real-time statistics service does not acquire user service execution events.

- `rts_rpc_rpc_ovrtim=Y|N~<<N>>`

Specify whether to acquire RPC timeout events.

Y

The real-time statistics service acquires RPC timeout events.

N

The real-time statistics service does not acquire RPC timeout events.

Schedule information

- `rts_scd_scd_wait=Y|N~<<N>>`

Specify whether to acquire schedule wait events.

Y

The real-time statistics service acquires schedule wait events.

N

The real-time statistics service does not acquire schedule wait events.

- `rts_scd_schedule=Y|N~<<N>>`

Specify whether to acquire schedule events.

Y

The real-time statistics service acquires schedule events.

N

The real-time statistics service does not acquire schedule events.

- `rts_scd_using_buf=Y|N~<<N>>`

Specify whether to acquire events indicating usage of the message storage pool.

Y

The real-time statistics service acquires events indicating usage of the message storage pool.

N

The real-time statistics service does not acquire events indicating usage of the message storage pool.

- `rts_scd_lack_buf=Y|N~<<N>>`

Specify whether to acquire events indicating the size of a message that could not be scheduled due to a message storage buffer pool shortage.

Y

The real-time statistics service acquires events indicating the size of a message that could not be scheduled due to a message storage buffer pool shortage.

N

The real-time statistics service does not acquire events indicating the size of a message that could not be scheduled due to a message storage buffer pool shortage.

- `rts_scd_scd_stay=Y|N~<<N>>`

Specify whether to acquire schedule delay events.

Y

The real-time statistics service acquires schedule delay events.

N

The real-time statistics service does not acquire schedule delay events.

- `rts_scd_svc_scd_wait=Y|N~<<N>>`

Specify whether to acquire an event indicating a wait for scheduling on a service basis.

Y

The real-time statistics service acquires an event indicating a wait for scheduling on a service basis.

N

The real-time statistics service does not acquire an event indicating a wait for scheduling on a service basis.

- `rts_scd_svc_using_buf=Y|N ~<<N>>`

Specifies whether to acquire an event indicating use of the message storage buffer pool on a service basis.

Y

The real-time statistics service acquires an event indicating use of the message storage buffer pool on a service basis.

N

The real-time statistics service does not acquire an event indicating use of the message storage buffer pool on a service basis.

- `rts_scd_parallel=Y|N ~<<N>>`

Specify whether to acquire an event indicating the number of services being executed concurrently.

Y

The real-time statistics service acquires an event indicating the number of services being executed concurrently.

N

The real-time statistics service does not acquire an event indicating the number of services being executed concurrently.

Transaction information

- `rts_trn_commit=Y|N ~<<N>>`

Specify whether to acquire commit events.

Y

The real-time statistics service acquires commit events.

N

The real-time statistics service does not acquire commit events.

- `rts_trn_rollback=Y|N ~<<N>>`

Specify whether to acquire rollback events.

Y

The real-time statistics service acquires rollback events.

N

The real-time statistics service does not acquire rollback events.

- `rts_trn_cmt_cmd=Y|N~<<N>>`

Specify whether to acquire commit events caused by commands.

Y

The real-time statistics service acquires events caused by commands.

N

The real-time statistics service does not acquire events caused by commands.

- `rts_trn_rbk_cmd=Y|N~<<N>>`

Specify whether to acquire rollback events caused by commands.

Y

The real-time statistics service acquires rollback events caused by commands.

N

The real-time statistics service does not acquire rollback events caused by commands.

- `rts_trn_haz_cmd=Y|N~<<N>>`

Specify whether to acquire hazard events caused by commands.

Y

The real-time statistics service acquires hazard events caused by commands.

N

The real-time statistics service does not acquire hazard events caused by commands.

- `rts_trn_mix_cmd=Y|N~<<N>>`

Specify whether to acquire mix events caused by commands.

Y

The real-time statistics service acquires mix events caused by commands.

N

The real-time statistics service does not acquire mix events caused by commands.

- `rts_trn_branch=Y|N~<<N>>`

Specify whether to acquire branch execution time events.

Y

The real-time statistics service acquires branch execution time events.

N

The real-time statistics service does not acquire branch execution time events.

■ `rts_trn_sync_point=Y|N~<<N>>`

Specify whether to acquire events indicating the execution time for branch synchronization point processing.

Y

The real-time statistics service acquires events indicating the execution time for branch synchronization point processing.

N

The real-time statistics service does not acquire events indicating the execution time for branch synchronization point processing.

DAM information

■ `rts_dam_read=Y|N~<<N>>`

Specify whether to acquire DAM information read events.

Y

The real-time statistics service acquires read events.

N

The real-time statistics service does not acquire read events.

■ `rts_dam_read_err=Y|N~<<N>>`

Specify whether to acquire DAM information read error events.

Y

The real-time statistics service acquires read error events.

N

The real-time statistics service does not acquire read error events.

■ `rts_dam_write=Y|N~<<N>>`

Specify whether to acquire DAM information write events.

Y

The real-time statistics service acquires write events.

N

The real-time statistics service does not acquire write events.

■ `rts_dam_write_err=Y|N~<<N>>`

Specify whether to acquire DAM information write error events.

Y

The real-time statistics service acquires write error events.

N

The real-time statistics service does not acquire write error events.

■ `rts_dam_fj=Y|N~<<N>>`

Specify whether to acquire FJ output count events.

Y

The real-time statistics service acquires FJ output count events.

N

The real-time statistics service does not acquire FJ output count events.

■ `rts_dam_trn_branch=Y|N~<<N>>`

Specify whether to acquire events indicating the number of concurrently executed DAM transaction branches.

Y

The real-time statistics service acquires events indicating the number of concurrently executed DAM transaction branches.

N

The real-time statistics service does not acquire events indicating the number of concurrently executed DAM transaction branches.

■ `rts_dam_cache_block=Y|N~<<N>>`

Specify whether to acquire events indicating the number of DAM cache block allocations.

Y

The real-time statistics service acquires events indicating the number of DAM cache block allocations.

N

The real-time statistics service does not acquire events indicating the number of DAM cache block allocations.

■ `rts_dam_shm_pool=Y|N~<<N>>`

Specify whether to acquire events indicating usage of the shared memory for the DAM

cache.

Y

The real-time statistics service acquires events indicating usage of the shared memory for the DAM cache.

N

The real-time statistics service does not acquire events indicating usage of the shared memory for the DAM cache.

TAM information

- `rts_tam_real_renew=Y|N~<<N>>`

Specify whether to acquire TAM file real update events.

Y

The real-time statistics service acquires TAM file real update events.

N

The real-time statistics service does not acquire TAM file real update events.

- `rts_tam_real_renew_time=Y|N~<<N>>`

Specify whether to acquire events indicating the real update time for a TAM file.

Y

The real-time statistics service acquires events indicating the real update time for a TAM file.

N

The real-time statistics service does not acquire events indicating the real update time for a TAM file.

- `rts_tam_rec_refer=Y|N~<<N>>`

Specify whether to acquire commit or rollback (record reference) events.

Y

The real-time statistics service acquires commit or rollback (record reference) events.

N

The real-time statistics service does not acquire commit or rollback (record reference) events.

- `rts_tam_rec_renew=Y|N~<<N>>`

Specify whether to acquire commit or rollback (record update) events.

Y

The real-time statistics service acquires commit or rollback (record update) events.

N

The real-time statistics service does not acquire commit or rollback (record update) events.

■ `rts_tam_read=Y|N~<<N>>`

Specify whether to acquire TAM information read events.

Y

The real-time statistics service acquires read events.

N

The real-time statistics service does not acquire read events.

■ `rts_tam_read_err=Y|N~<<N>>`

Specify whether to acquire TAM information read error events.

Y

The real-time statistics service acquires read error events.

N

The real-time statistics service does not acquire read error events.

■ `rts_tam_write=Y|N~<<N>>`

Specify whether to acquire TAM information write events.

Y

The real-time statistics service acquires write events.

N

The real-time statistics service does not acquire write events.

■ `rts_tam_write_err=Y|N~<<N>>`

Specify whether to acquire TAM information write error events.

Y

The real-time statistics service acquires write error events.

N

The real-time statistics service does not acquire write error events.

XA resource service information

- `rts_xar_start=Y|N~<<N>>`

Specify whether to acquire events indicating the number of transaction start requests issued from the application server to the RAP-processing server.

Y

The real-time statistics service acquires events indicating the number of transaction start requests issued from the application server to the RAP-processing server.

N

The real-time statistics service does not acquire events indicating the number of transaction start requests issued from the application server to the RAP-processing server.

- `rts_xar_start_err=Y|N~<<N>>`

Specify whether to acquire error events indicating a transaction start request issued from the application server to the RAP-processing server.

Y

The real-time statistics service acquires error events indicating a transaction start request issued from the application server to the RAP-processing server.

N

The real-time statistics service does not acquire error events indicating a transaction start request issued from the application server to the RAP-processing server.

- `rts_xar_call=Y|N~<<N>>`

Specify whether to acquire events indicating the number of service requests issued from the application server to the RAP-processing server.

Y

The real-time statistics service acquires events indicating the number of service requests issued from the application server to the RAP-processing server.

N

The real-time statistics service does not acquire events indicating the number of service requests issued from the application server to the RAP-processing server.

- `rts_xar_call_err=Y|N~<<N>>`

Specify whether to acquire error events for a service request issued from the application server to the RAP-processing server.

Y

The real-time statistics service acquires error events for a service request issued from the application server to the RAP-processing server.

N

The real-time statistics service does not acquire error events for a service request issued from the application server to the RAP-processing server.

■ `rts_xar_end=Y|N~<<N>>`

Specify whether to acquire events indicating the number of transaction termination requests issued from the application server to the RAP-processing server.

Y

The real-time statistics service acquires events indicating the number of transaction termination requests issued from the application server to the RAP-processing server.

N

The real-time statistics service does not acquire events indicating the number of transaction termination requests issued from the application server to the RAP-processing server.

■ `rts_xar_end_err=Y|N~<<N>>`

Specify whether to acquire error events for a transaction termination request issued from the application server to the RAP-processing server.

Y

The real-time statistics service acquires events for a transaction termination request issued from the application server to the RAP-processing server.

N

The real-time statistics service does not acquire events for a transaction termination request issued from the application server to the RAP-processing server.

■ `rts_xar_prepare=Y|N~<<N>>`

Specify whether to acquire events indicating the number of transaction preparation requests issued from the application server to the RAP-processing server.

Y

The real-time statistics service acquires events indicating the number of transaction preparation requests issued from the application server to the RAP-processing server.

N

The real-time statistics service does not acquire events indicating the number of transaction preparation requests issued from the application server to the RAP-processing server.

■ `rts_xar_prepare_err=Y|N~<<N>>`

Specify whether to acquire error events for a transaction preparation request issued from the application server to the RAP-processing server.

Y

The real-time statistics service acquires error events for a transaction preparation request issued from the application server to the RAP-processing server.

N

The real-time statistics service does not acquire error events for a transaction preparation request issued from the application server to the RAP-processing server.

■ `rts_xar_commit=Y|N~<<N>>`

Specify whether to acquire events indicating the number of transaction commit requests issued from the application server to the RAP-processing server.

Y

The real-time statistics service acquires events indicating the number of transaction commit requests issued from the application server to the RAP-processing server.

N

The real-time statistics service does not acquire events indicating the number of transaction commit requests issued from the application server to the RAP-processing server.

■ `rts_xar_commit_err=Y|N~<<N>>`

Specify whether to acquire error events for a transaction commit request issued from the application server to the RAP-processing server.

Y

The real-time statistics service acquires error events for a transaction commit request issued from the application server to the RAP-processing server.

N

The real-time statistics service does not acquire error events for a transaction commit request issued from the application server to the RAP-processing server.

■ `rts_xar_rollback=Y|N~<<N>>`

Specify whether to acquire events indicating the number of transaction rollback requests issued from the application server to the RAP-processing server.

Y

The real-time statistics service acquires events indicating the number of transaction rollback requests issued from the application server to the RAP-processing server.

N

The real-time statistics service does not acquire events indicating the number of transaction rollback requests issued from the application server to the RAP-processing server.

■ `rts_xar_rollback_err=Y|N~<<N>>`

Specify whether to acquire error events for a transaction rollback request issued from the application server to the RAP-processing server.

Y

The real-time statistics service acquires error events for a transaction rollback request issued from the application server to the RAP-processing server.

N

The real-time statistics service does not acquire error events for a transaction rollback request issued from the application server to the RAP-processing server.

■ `rts_xar_recover=Y|N~<<N>>`

Specify whether to acquire events indicating the number of notification requests for a prepared transaction or heuristically completed transaction issued from the application server to the RAP-processing server.

Y

The real-time statistics service acquires events indicating the number of notification requests for a prepared transaction or heuristically completed transaction issued from the application server to the RAP-processing server.

N

The real-time statistics service does not acquire events indicating the number of notification requests for a prepared transaction or heuristically completed transaction issued from the application server to the RAP-processing server.

■ `rts_xar_recover_err=Y|N~<<N>>`

Specify whether to acquire error events for a notification request for a prepared transaction or heuristically completed transaction issued from the application server to

the RAP-processing server.

Y

The real-time statistics service acquires error events for a notification request for a prepared transaction or heuristically completed transaction issued from the application server to the RAP-processing server.

N

The real-time statistics service does not acquire error events for a notification request for a prepared transaction or heuristically completed transaction issued from the application server to the RAP-processing server.

■ `rts_xar_forget=Y|N~<<N>>`

Specify whether to acquire events indicating the number of requests to discard a transaction issued from the application server to the RAP-processing server.

Y

The real-time statistics service acquires events indicating the number of requests to discard a transaction issued from the application server to the RAP-processing server.

N

The real-time statistics service does not acquire events indicating the number of requests to discard a transaction issued from the application server to the RAP-processing server.

■ `rts_xar_forget_err=Y|N~<<N>>`

Specify whether to acquire error events for a request to discard a transaction issued from the application server to the RAP-processing server.

Y

The real-time statistics service acquires error events for a request to discard a transaction issued from the application server to the RAP-processing server.

N

The real-time statistics service does not acquire error events for a request to discard a transaction issued from the application server to the RAP-processing server.

MCF information

■ `rts_mcf_ap_scd_stay=Y|N`

`~<<N>>`

Specify whether to acquire schedule wait information.

Y

Schedule wait information is acquired.

N

Schedule wait information is not acquired.

- `rts_mcf_ap_usr_srvc=Y|N`

~<<N>>

Specify whether to acquire user service execution information.

Y

User service execution information is acquired.

N

User service execution information is not acquired.

- `rts_mcf_in_msg_scd_wait=Y|N`

~<<N>>

Specify whether to acquire received message processing wait information for each logical terminal.

Y

Received message processing wait information is acquired for each logical terminal.

N

Received message processing wait information is not acquired for each logical terminal.

- `rts_mcf_out_msg_sync_scd_wait=Y|N`

~<<N>>

Specify whether to acquire processing wait information for synchronous sent messages.

Y

Processing wait information for synchronous sent messages is acquired.

N

Processing wait information for synchronous sent messages is not acquired.

- `rts_mcf_out_msg_resp_scd_wait=Y|N`

~<<N>>

Specify whether to acquire processing wait information for inquiry response mode sent messages.

Y

Processing wait information for inquiry response mode sent messages is acquired.

N

Processing wait information for inquiry response mode sent messages is not acquired.

■ `rts_mcf_out_msg_prio_scd_wait=Y|N`

~<<N>>

Specify whether to acquire processing wait information for priority branch type sent messages.

Y

Processing wait information for priority branch type sent messages is acquired.

N

Processing wait information for priority branch type sent messages is not acquired.

■ `rts_mcf_out_msg_norm_scd_wait=Y|N`

~<<N>>

Specify whether to acquire processing wait information for normal branch type sent messages.

Y

Processing wait information for normal branch type sent messages is acquired.

N

Processing wait information for normal branch type sent messages is not acquired.

■ `rts_mcf_que_scd_wait_num=Y|N`

~<<N>>

Specify whether to acquire the number of items remaining in the input queue.

Y

The number of items remaining in the input queue is acquired.

N

The number of items remaining in the input queue is not acquired.

Command format

None

Cautions

If you set γ for the items whose statistics cannot be acquired for a target specified in the `rtspat` definition command or the `rtstats` command, the area for acquiring the statistics is secured but the statistics are not acquired.

User service default definition

Format

■ set format

```
[set nice=changing-process-priority]
[set parallel_count=resident-process-count [ ,maximum-process-count]]

[set hold=Y|N]
[set hold_recovery=Y|N]
[set deadlock_priority=deadlock-priority]
[set schedule_priority=schedule-priority]
[set message_buflen=maximum-message-length]
[set message_store_buflen=message-storage-buffer-pool-length]
[set trn_expiration_time=transaction-branch-expiration-time]
[set trn_expiration_time_suspend=Y|N|F]
[set watch_next_chain_time=chained-RPC-maximum-time-interval]
[set atomic_update=Y|N]
[set receive_from=queue|socket|none]
[set uap_trace_max=maximum-UAP-trace-count]
[set uap_trace_file_put=Y|N]
[set term_watch_time=abnormal-termination-check-expiry-time]
[set mcf_jnl_buff_size=MCF-journal-buffer-size]
[set type=other|MHP]
[set balance_count=number-of-service-requests-processed-by-a-process]
[set uid=user-ID]
[set auto_restart=Y|N]
[set critical=Y|N]
[set lck_wait_priority=lock-waiting-priority]
[set mcf_psv_id=application-startup-process-ID]
[set trn_cpu_time=transaction-branch-CPU-check-time]
[set service_hold=Y|N]
[set service_priority_control=Y|N]
[set message_cell_size=storage-cell-length-of-schedule-message]
[set max_socket_msg=maximum-number-of-messages-that-the-server-can-receive-from-the-socket]
[set max_socket_msglen=maximum-length-of-messages-that-the-server-can-receive-from-the-socket]

[set trf_put=Y|N]
[set mcf_mgrid=application-startup-process-MCF-manager-identifier]
[set mcf_service_max_count=maximum-number-of-issued-MCF-communication-functions]
[set trn_statistics_item=statistical-information-item[ ,statistical-information-item]...]
```

```

[set node_down_restart=Y|N]
[set rpc_response_statistics=Y|N]
[set server_type="betran"|"xatmi"|"xatmi_cbl"]
[set trn_rm_open_close_scope=process|transaction]
[set trn_optimum_item=transaction-optimization-item
    [,transaction-optimization-item]...]

[set purge_msgget=Y|N]
[set cancel_normal_terminate=Y|N]
[set prc_abort_signal=abort-signal-number]
[set rpc_service_retry_count=maximum-number-of-service-retries]
[set rpc_extend_function=facility-extension-level-of-RPC-service]
[set max_socket_descriptors=maximum-number-of-file-descriptors-for-
    sockets]
[set max_open_fds=maximum-number-of-files-and-pipes-accessed-by-a-
    UAP-process]
[set service_term_watch_time=abnormal-termination-check-expiration-
    time-for-service]

[set termed_after_service=Y|N]
[set xat_trn_expiration_time=period-of-time-to-monitor-the-expiration-
    of-synchronization-point-processing]

[set xat_osi_usr=Y|N]
[set rpc_trace=Y|N]
[set rpc_trace_name="RPC-trace-collection-file-name"]
[set rpc_trace_size=RPC-trace-collection-file-capacity]
[set trn_rollback_information_put=no|self|remote|all]
[set schedule_method=msgque|namedpipe]
[set service_wait_time=service-request-waiting-time-for-non-resident-
    server-processes-of-the-user-server]

[set mcf_spp_obj=Y|N]
[set adm_message_option=message-output-specification]
[set trn_watch_time=maximum-communication-wait-time-for-
    synchronization-point-processing-of-transactions]

[set trn_limit_time=maximum-time-to-execute-transaction-branch]
[set trn_rollback_response_receive=Y|N]
[set trn_partial_recovery_type=type1|type2|type3]
[set rpc_destination_mode=namdonly|namd|definition]
[set rpc_rap_auto_connect=Y|N]
[set rpc_rap_inquire_time=maximum-inquiry-interval-for-request-
    service-using-the-remote-API-facility]

[set rpc_request_cancel_for_timedout=Y|N]
[set status_change_when_termining=Y|N]
[set service_expiration_time=execution-monitor-time-from-service-
    function-startup-to-termination]

[set multi_schedule=Y|N]
[set make_queue_on_starting=Y|N]
[set loadcheck_interval=load-check-interval]

```

```

[set levelup_queue_count=U1,U2]
[set leveldown_queue_count=D0,D1]
[set ipc_sockctl_highwater=percentage-of-sockets-at-which-temporary-closing-starts[ ,percentage-of-sockets-for-which-temporary-closing-is-not-performed]]
[set ipc_sockctl_watchtime=length-of-time-to-wait-until-the-sockets-are-reusable]
[set ipc_conn_interval=length-of-time-to-wait-until-the-connection-is-established]
[set ipc_send_interval=interval-for-monitoring-data-transmission]
[set ipc_send_count=number-of-times-data-transmission-is-monitored]
[set ipc_header_rcv_time=length-of-time-to-wait-until-the-communication-control-data-is-received]
[set rpc_send_retry_count=number-of-retries-if-an-error-occurs-during-TCP/IP-connection]
[set rpc_send_retry_interval=interval-between-retries-if-an-error-occurs-during-TCP/IP-connection]
[set ipc_recvbuf_size=receive-buffer-size-of-TCP/IP]
[set ipc_sendbuf_size=send-buffer-size-of-TCP/IP]
[set ipc_listen_sockbufset=Y|N]
[set polling_control_data=Y|N]
[set thread_yield_interval=interval-for-issuing-a-trigger-to -receive-a-socket-reuse-instruction]

[set groups=group-identifier[ ,group-identifier]...]
[set loadlevel_message=Y|N|A]
[set ipc_backlog_count=length-of-queue-storing-connection-establishment-requests]
[set rpc_buffer_pool_max=number-of-buffers-to-be-pooled]
[set schedule_delay_limit=schedule-delay-limit]
[set schedule_delay_abort=Y|N]
[set rap_autoconnect_con_error_msg=Y|N]
[set core_shm_suppress=Y|N]
[set xat_connect_resp_time=maximum-response-wait-time-for-association-establishment-of-SPP-for-processing-communication-events]
[set scd_poolfull_check_interval=interval-at-which-message-KFCA00853-E-is-output]
[set scd_poolfull_check_count=threshold-for-determining-whether-to-output-message-KFCA00853-E]
[set scd_pool_warning_use_rate=maximum-use-rate-for-the-message-storage-buffer-pool-triggering-output-of-a-warning-message]

```

```
[set scd_pool_warning_interval=interval-at-which-a-warning-message-
is-output-if-the-use-rate-for-the-
message-storage-buffer-pool-is-
exceeded]

[set ipc_tcpnodelay=Y|N]
[set stay_watch_queue_count=number-of-service-requests-triggering-
the-start-of-judgment-of-the-schedule-
queue-accumulation-status]

[set stay_watch_check_rate=service-request-processing-rate-used-for-
monitoring-the-service-requests-remaining-
in-the-schedule-queue]

[set stay_watch_abort=Y|N]
[set stay_watch_start_interval=interval-for-checking-the-number-of-
service-requests-remaining-in-the-
schedule-queue]

[set stay_watch_check_interval=interval-for-judging-the-schedule-
queue-accumulation-status]

[set trn_completion_limit_time=time-limit-for-completing-transaction]
[set rap_message_id_change_level=message-ID-change-level]
[set log_audit_out_suppress=Y|N]
[set log_audit_message=message-ID-for-items-for-which-audit-log data-is-to-be-acquired
[ , message-ID-for-items-for-which-audit-log data-is-to-be-acquired] ... ]

[set mcf_prf_trace=Y|N]
[set watch_time=maximum-time-to-wait-for-a-response]
```

■ command format

```
[trnrmid -n resource-manager-name
-i resource-manager-extension [ , resource-manager-
extension] ... ]
[scdbufgrp -g schedule-buffer-group-name]
[scdmulti [-g multi-scheduler-group-name]]
[scdsvcdef [-c service-name]
[-p number-of-services-that-can-be-executed-concurrently]
[-n number-of-service-requests-that-can-be-queued]
[-l length-of-the-buffer-pool-storing-messages-that-can-be-queued]]
```

■ putenv format

```
{{[putenv environment-variable-name environment-variable-value]}}
```

```
[putenv XAT_CONNECT_RESP_TIME maximum-response-wait-time-for-
association-establishment-of-SPP-for-
processing-communication-events]
```

■ dcputenv format

```
{{[dcputenv environment-variable-name environment-variable-value]}}
```

Function

The user service default definition defines the defaults for the user service definitions as follows.

Also, the user service default definition defines the defaults for the RAP-processing listener service definition. Note that some operands and values are not applied to the RAP-processing listener service definition. For details on those operands and values, see the Note on the RAP-processing Listener Service Definition page.

Explanation

set format

- `nice=changing-process-priority~<unsigned integer> ((0-39)) <<0>>`
Specify the default for the `nice` operand.
- `parallel_count=resident-process-count [,maximum-process-count]~<unsigned integer> ((0-1024)) <<1>>`
Specify the default for the `parallel_count` operand.
- `hold=Y|N~<<Y>>`
Specify the default for the `hold` operand.
- `hold_recovery=Y|N~<<Y>>`
Specify the default for the `hold_recovery` operand.

When `BEFORE` is specified in the `start_scheduling_timing` operand of the system environment definition, the shutdown status is not carried over, regardless of the specification of the `hold_recovery` operand. If you want to carry over the shutdown status, specify `F` in the `scd_hold_recovery` operand of the schedule service definition. For details about operand specification for carrying over the shutdown status, see the description of the `scd_hold_recovery` operand of the schedule service definition.
- `deadlock_priority=deadlock-priority-position~<unsigned integer> ((1-127)) <<64>>`
Specify the default for the `deadlock_priority` operand.
- `schedule_priority=schedule-priority-position~<unsigned integer> ((1-16)) <<8>>`
Specify the default for the `schedule_priority` operand.
- `message_bufllen=maximum-message-length~<unsigned integer> ((1024-31457280)) <<4096>> (Unit: bytes)`
Specify the default for the `message_bufllen` operand.

- `message_store_buflen=message-storage-buffer-pool-length~<unsigned integer> ((1024-31457280)) <<4096>> (Unit: bytes)`

Specify the default for the `message_store_buflen` operand.
- `trn_expiration_time=transaction-branch-expiration-time~<unsigned integer> ((0-65535)) (Unit: seconds)`

Specify the default for the `trn_expiration_time` operand.

If this operand is omitted in both the user service default definition and the user service definition, the default of the transaction service definition is used.
- `trn_expiration_time_suspend=Y|N|F`

Specify the default for the `trn_expiration_time_suspend` operand.

For details about the relationship between this operand and the timer monitoring options, see *A.2 Time monitoring for transactions*.

If this operand is omitted in both the user service default definition and the user service definition, the default of the transaction service definition is used.
- `watch_next_chain_time=chained-RPC-maximum-time-interval~<unsigned integer> ((0-66535)) <<180>> (Unit: seconds)`

Specify the default for the `watch_next_chain_time` operand.

For details about the relationship between this operand and the timer monitoring options, see *A.2 Time monitoring for transactions*.
- `atomic_update=Y|N~<<Y>>`

Specify the default for the `atomic_update` operand.
- `receive_from=queue|socket|none~<<queue>>`

Specify the default for the `receive_from` operand.
- `uap_trace_max=maximum-UAP-trace-count~<unsigned integer> ((0-4095)) <<32>>`

Specify the default for the `uap_trace_max` operand.
- `uap_trace_file_put=Y|N`

Specify the default value for the `uap_trace_file_put` operand in the user service definition. If you omit this specification here and in the user service definition, the system assumes the value in the system common definition.
- `term_watch_time=abnormal-termination-check-expiration-time~<unsigned integer> ((0-32767)) <<30>> (Unit: minutes)`

Specify the default for the `term_watch_time` operand.

- `mcf_jnl_buff_size=MCF-journal-buffer-size~<unsigned integer>`
`((4096-131072)) (Unit: bytes)`

Specify the default for the `mcf_jnl_buff_size` operand.
- `type=other|MHP~<<other>>`

Specify the default for the `type` operand.
- `balance_count=number-of-service-requests-processed-by-a-process~<unsigned integer>`
`((0-512)) <<3>>`

Specify the default for the `balance_count` operand.
- `uid=user ID~<unsigned integer>` `((0-4294967294))`

Specify the default for the `uid` operand.

If not specified, the user ID of the OpenTP1 manager is used.

The maximum value depends on the operating system. Check the documentation for your operating system.
- `auto_restart=Y|N~<<N>>`

Specify the default for the `auto_restart` operand.
- `critical=Y|N~<<N>>`

Specify the default for the `critical` operand.
- `lck_wait_priority=lock-waiting-priority~<unsigned integer>` `((0-127)) <<0>>`

Specify the default for the `lck_wait_ priority` operand.
- `mcf_psv_id=application-startup-process-ID~<hexadecimal number>` `((01-ff))`

Specify the default for the `mcf_psv_id` operand.
- `trn_cpu_time=transaction-branch-CPU-check-time~<unsigned integer>`
`((0-65535)) (Unit: seconds)`

Specify the default value of the `trn_cpu_time` operand in the user service definition.

If this operand is omitted in both the user service default definition and the user service definition, the default of the transaction service definition is used.
- `service_hold=Y|N~<<N>>`

Specify the default value of the `service_hold` operand in the user service definition.
- `service_priority_control=Y|N~<<N>>`

Specify the default value of the `service_priority` operand in the user service definition.

- `message_cell_size=storage-cell-length-of-schedule-message~<unsigned integer> ((512-31457280)) <<512>> (Unit: bytes)`

Specify the default value of the `message_cell_size` operand in the user service definition.
- `max_socket_msg=maximum-number-of-messages-that-the-server-can-receive-from-the-socket~<unsigned integer> ((1-500)) <<100>>`

Specify the default value of the `max_socket_msg` operand in the user service definition.
- `max_socket_msglen=maximum-length-of-messages-that-the-server-can-receive-from-the-socket~<unsigned integer> ((1-30270)) <<10240>> (Unit: kilobytes)`

Specify the default value of the `max_socket_msglen` operand in the user service definition.
- `trf_put=Y|N~<<N>>`

Specify the default value of the `trf_put` operand in the user service definition.
- `mcf_mgrid=application-startup-process-MCF-manager-identifier~<identifier> ((A-Z, a-z)) <<A>>`

Specify the default value of the `mcf_mgrid` operand in the user service definition.
- `mcf_service_max_count=maximum-number-of-issued-MCF-communication-functions~<unsigned integer> ((0-65535))`

Specify the default value of the `mcf_service_max_count` operand in the user service definition.
- `trn_statistics_item=statistical-information-item [, statistical-information-item] . . .`

Specify the default value of the `trn_statistics_item` operand in the user service definition.

If this operand is omitted in both the user service default definition and the user service definition, the default of the transaction service definition is used.
- `node_down_restart=Y|N~<<Y>>`

Specify the default value of the `node_down_restart` operand in the user service definition.
- `rpc_response_statistics=Y|N~<<N>>`

Specify the default value of the `rpc_response_statistics` operand in the user service definition.

- `server_type="betran" | "xatmi" | "xatmi_cbl" ~<<"betran">>`

Specify the default value of the `server_type` operand in the user service definition.
- `trn_rm_open_close_scope=process | transaction`

Specify the default for the `trn_rm_open_close_scope` operand in the user service definition.

If this operand is omitted in both the user service default definition and the user service definition, the default of the transaction service definition is used.
- `trn_optimum_item=transaction-optimization-item[, transaction-optimization-item] ...`

Specify the default for the `trn_optimum_item` operand in the user service definition.

If this operand is omitted in both the user service default definition and the user service definition, the default of the transaction service definition is used.
- `purge_msgget=Y | N ~<<N>>`

Specify the default for the `purge_msgget` operand in the user service definition.
- `cancel_normal_terminate=Y | N ~<<N>>`

Specify the default for the `cancel_normal_terminate` operand in the user service definition.
- `prc_abort_signal=abort-signal-number~<unsigned integer> ((1-128)) <<3>>`

Specify the default for the `prc_abort_signal` operand in the user service definition.
- `rpc_service_retry_count=maximum-number-of-service-retries~<unsigned integer> ((0-65535)) <<0>>`

Specify the default for the `rpc_service_retry_count` operand in the user service definition.
- `rpc_extend_function=facility-extension-level-of-RPC-service~<hexadecimal number> ((00000000-0000000F)) <<00000000>>`

Specify the default for the `rpc_extend_function` operand in the user service definition.
- `max_socket_descriptors=maximum-number-of-file-descriptors-for-sockets~<unsigned integer> ((32-2032))`

Specify the default for the `max_socket_descriptors` operand in the user service definition.

If this specification is omitted here and in the user service definition, the value in the system common definition is assumed.

- `max_open_fds=maximum-number-of-files-and-pipes-accessed-by-a-UAP-process~<unsigned integer> ((16-2016)) <<50>>`

Specify the default for the `max_open_fds` operand in the user service definition.
- `service_term_watch_time=abnormal-termination-check-expiration-time-for-service~<unsigned integer> ((0-32767)) <<0>> (Unit: minutes)`

Specify the default for the `service_term_watch_time` operand in the user service definition.
- `termed_after_service=Y|N~<<N>>`

Specify the default for the `termed_after_service` operand in the user service definition.
- `xat_trn_expiration_time=period-of-time-to-monitor-the-expiration-of-synchronization-point-processing~<unsigned integer> ((1-2147483647)) <<180>> (Unit: seconds)`

Specify the default for the `xat_trn_expiration_time` operand in the user service definition.
- `xat_osi_usr=Y|N~<<N>>`

Specify the default for the `xat_osi_usr` operand in the user service definition.
- `rpc_trace=Y|N`

Specify the default for the `rpc-trace` operand.

If you omit this specification here, in the RAP-processing listener service definition, and in the user service definition, the system assumes the value in the system common definition.
- `rpc_trace_name="RPC-trace-collection-file-name" ~<path name>`

Specify the default for the `rpc_trace_name` operand.

In the path name, the maximum length of the name of the file for acquiring the RPC trace is 13 characters (the default file name is `rpctr`).

To specify an environment variable in a path name, make sure that the path name begins with the environment variable (example: `$DCDIR/tmp/file-name`).

If you omit this specification here, in the RAP-processing listener service definition, and in the user service definition, the system assumes the value in the system common definition.
- `rpc_trace_size=RPC-trace-collection-file-capacity~<unsigned integer> ((1024-2147483648)) (Unit: bytes)`

Specify the default for the `rpc_trace_size` operand.

If you omit this specification here, in the RAP-processing listener service definition, and in the user service definition, the system assumes the value in the system common definition.

- `trn_rollback_information_put=no|self|remote|all`

Specify the default for the `trn_rollback_information_put` operand.

If this operand is omitted in both the user service default definition and the user service definition, the default of the transaction service definition is used.

- `schedule_method=msgque|namedpipe~ <<msgque>>`

Specify the default for the `schedule_method` operand.

- `service_wait_time=service-request-waiting-time-for-non-resident-server-processes-of-the-user-server~<unsigned integer> ((1-4096)) (Unit: seconds)`

Specify the default for the `service_wait_time` operand.

- `mcf_spp_oj=Y|N~ <<Y>>`

Specify the default for the `mcf_spp_oj` operand.

- `adm_message_option=message-output-specification~<one-digit hexadecimal number> <<F>>`

Specify the default for the `adm_message_option` operand.

- `trn_watch_time=maximum-communication-wait-time-for-synchronization-point-processing-of-transactions~<unsigned integer> ((1-65535)) <<120>> (Unit: seconds)`

Specify the default for the `trn_watch_time` operand.

If this operand is omitted in both the user service default definition and the user service definition, the default of the transaction service definition is used.

If you also omit this operand in the transaction service definition, the system assumes the `watch_time` value of the user server that executed the transaction. However, if you specify 0 for `watch_time`, the system assumes 120 seconds.

- `trn_limit_time=maximum-time-to-execute-transaction-branch~<unsigned integer> ((0-65535)) (Unit: seconds)`

Specify the default for the `trn_limit_time` operand.

If this operand is omitted in both the user service default definition and the user service definition, the default of the transaction service definition is used.

- `trn_rollback_response_receive=Y|N`

Specify the default for the `trn_rollback_response_receive` operand.

If this operand is omitted in both the user service default definition and the user service definition, the default of the transaction service definition is used.

- `trn_partial_recovery_type=type1 | type2 | type3`

This operand specifies the default value assumed when the `trn_partial_recovery_type` operand of a user service definition is omitted.

If the operand is omitted here and in the user service definition, the system assumes the value for the transaction service definition.
- `rpc_destination_mode=namdonly | namd | definition~ <<definition>>`

This operand specifies the default assumed when the `rpc_destination_mode` operand of a user service definition is omitted.
- `rpc_rap_auto_connect=Y | N~<<Y>>`

This operand specifies the default assumed when the `rpc_rap_auto_connect` operand of a user service definition is omitted.
- `rpc_rap_inquire_time=maximum-inquiry-interval-for-request-service-using-the-remote-API-facility~ <unsigned integer> ((0-1048575)) <<0>> (unit: seconds)`

This operand specifies the default assumed when the `rpc_rap_inquire_time` operand of a user service definition is omitted.
- `rpc_request_cancel_for_timedout=Y | N~ <<Y>>`

This operand specifies the default assumed when the `rpc_request_cancel_for_timedout` operand of a user service definition is omitted.
- `status_change_when_termining=Y | N~ <<Y>>`

This operand specifies the default assumed when the `status_change_when_termining` operand of a user service definition is omitted.
- `service_expiration_time=execution-monitor-time-from-service-function-startup-to-termination~<unsigned integer> ((0-65535)) <<0>> (units: seconds)`

This operand specifies the default assumed when the `service_expiration_time` operand of a user service definition is omitted.
- `multi_schedule=Y | N~<<N>>`

This operand specifies the default assumed when the `multi_schedule` operand of a user service definition is omitted.
- `make_queue_on_starting=Y | N~<<N>>`

This operand specifies the default assumed when the `make_queue_on_starting` operand of a user service definition is omitted.
- `loadcheck_interval=load-check-interval~<unsigned integer>((0-65535))`

Specify the default of the `loadcheck_interval` operand in the user service

definition.

- `levelup_queue_count=U1,U2`
- `leveldown_queue_count=D0,D1 ~<unsigned integer>((0-32767))`
Specify the default of the `levelup_queue_count` operand and the `leveldown_queue_count` operand in the user service definition.
 - U1
Number of remaining service requests, which determines that the server's load level is upgraded to LEVEL1
 - U2
Number of remaining service requests, which determines that the server's load level is upgraded to LEVEL2
 - D0
Number of remaining service requests, which determines that the server's load level is downgraded to LEVEL0
 - D1
Number of remaining service requests, which determines that the server's load level is downgraded to LEVEL1
- `ipc_sockctl_highwater=percentage-of-sockets-at-which-temporary-closing-starts [, percentage-of-sockets-for-which-temporary-closing-is-not-performed] ~<unsigned integer>((0-100))<<100,0>>`
Specify the default of the `ipc_sockctl_highwater` operand in the user service definition. If you specify this operand neither here nor in the user service definition, the system assumes the value in the system common definition.
- `ipc_sockctl_watchtime=length-of-time-to-wait-until-the-sockets-are-reusable ~<unsigned integer>((0-65535))<<180>> (unit: seconds)`
Specify the default of the `ipc_sockctl_watchtime` operand in the user service definition.
If you specify this operand neither here nor in the user service definition, the system assumes the value in the system common definition.
- `ipc_conn_interval=length-of-time-to-wait-until-the-connection-is-established ~<unsigned integer>((8-65535))<<8>> (unit: seconds)`
Specify the default of the `ipc_conn_interval` operand in the user service definition. If you specify this operand neither here nor in the user service definition, the system assumes the value in the system common definition.

- `ipc_send_interval=interval-for-monitoring-data-transmission~<unsigned integer>((5-32767))<<5>>(unit: seconds)`

Specify the default of the `ipc_send_interval` operand in the user service definition. If you specify this operand neither here nor in the user service definition, the system assumes the value in the system common definition.

- `ipc_send_count=number-of-times-data-transmission-is-monitored~<unsigned integer>((1-32767))<<5>>`

Specify the default of the `ipc_send_count` operand in the user service definition. If you specify this operand neither here nor in the user service definition, the system assumes the value in the system common definition.

- `ipc_header_rcv_time=length-of-time-to-wait-until-the-communication-control-data-is-received~<unsigned integer>((5-32767))<<10>>(unit: seconds)`

Specify the default of the `ipc_header_rcv_time` operand in the user service definition. If you specify this operand neither here nor in the user service definition, the system assumes the value in the system common definition.

- `rpc_send_retry_count=number-of-retries-if-an-error-occurs-during-TCP/IP-connection~<unsigned integer>((0-65535))<<0>>`

Specify the default of the `rpc_send_retry_count` operand in the user service definition. If you do not specify this operand here or in the user service definition, the system assumes the value in the system common definition.

- `rpc_send_retry_interval=interval-between-retries-if-an-error-occurs-during-TCP/IP-connection~<unsigned integer>((0-300000))<<0>>(Unit: milliseconds)`

Specify the default of the `rpc_send_retry_interval` operand in the user service definition. If you do not specify this operand here or in the user service definition, the system assumes the value in the system common definition.

- `ipc_listen_sockbufset=Y|N~<<N>>`

Specify the default of the `ipc_listen_sockbufset` operand in the user service definition. If you do not specify this operand here or in the user service definition, the system assumes the value in the system common definition.

- `ipc_rcvbuf_size=receive-buffer-size-of-TCP/IP~<unsigned integer>((8192-1048576))<<8192>>(Unit: bytes)`

Specify the default of the `ipc_rcvbuf_size` operand in the user service definition.

- `ipc_sndbuf_size=send-buffer-size-of-TCP/IP~<unsigned integer>((8192-1048576))<<8192>>(Unit: bytes)`

Specify the default of the `ipc_sndbuf_size` operand in the user service definition.

- `polling_control_data=Y|N~<<N>>`

Specify the default of the `polling_control_data` operand in the user service definition.
- `thread_yield_interval=interval-for-issuing-a-trigger-to-receive-a-socket-reuse-instruction~<unsigned integer>((1-86400))<<90>>(Unit: seconds)`

Specify the default of the `thread_yield_interval` operand in the user service definition.
- `groups=group-identifier [, group-identifier] . . . ~<unsigned integer>((0-4294967294))`

Specify the default of the `groups` operand in the user service definition.

The maximum value depends on the operating system. Check the documentation for your operating system.
- `loadlevel_message=Y|N|A~<<N>>`

Specify the default of the `loadlevel_message` operand in the user service definition.
- `ipc_backlog_count=length-of-queue-storing-connection-establishment-requests~<unsigned integer>((0-4096))<<0>>`

Specify the default of the `ipc_backlog_count` operand in the user service definition.
- `rpc_buffer_pool_max=number-of-buffers-to-be-pooled~<unsigned integer>((1-64))<<64>>`

Specify the default of the `rpc_buffer_pool_max` operand in the user service definition.
- `schedule_delay_limit=schedule-delay-limit~<unsigned integer>((0-32767))<<0>>(unit: seconds)`

Specify the default of the `schedule_delay_limit` operand in the user service definition.
- `schedule_delay_abort=Y|N~<<N>>`

Specify the default of the `schedule_delay_abort` operand in the user service definition.
- `rap_autoconnect_con_error_msg=Y|N~<<Y>>`

Specify the default of the `rap_autoconnect_con_error_msg` operand in the user service definition.

- `core_shm_suppress=Y|N~<<N>>`

Specify the default of the `core_shm_suppress` operand in the user service definition.
- `xat_connect_resp_time=maximum-response-wait-time-for-association-establishment-of-SPP-for-processing-communication-events~<unsigned integer> ((0-65535))<<180>> (units: seconds)`

Specify the default of the `xat_connect_resp_time` operand in the user service definition in the set format. If you specify both this operand and the `XAT_CONNECT_RESP_TIME` operand in the `putenv` format, the specification of this operand takes precedence and the specification of the `XAT_CONNECT_RESP_TIME` operand in the `putenv` format is ignored.
- `scd_poolfull_check_interval=interval-at-which-message-KFCA00853-E-is-output~<unsigned integer> ((0-32767)) <<0>> (units: seconds)`

Specify the default of the `scd_poolfull_check_interval` operand in the user service definition.
- `scd_poolfull_check_count=threshold-for-determining-whether-to-output-message-KFCA00853-E~<unsigned integer> ((1-32767)) <<10>> (units: times)`

Specify the default of the `scd_poolfull_check_count` operand in the user service definition.
- `scd_pool_warning_use_rate=maximum-use-rate-for-the-message-storage-buffer-pool-triggering-output-of-a-warning-message~<unsigned integer> ((0-99)) <<0>> (units: %)`

Specify the default of the `scd_pool_warning_use_rate` operand in the user service definition.
- `scd_pool_warning_interval=interval-at-which-a-warning-message-is-output-if-the-use-rate-for-the-message-storage-buffer-pool-is-exceeded~<unsigned integer> ((0-32767)) <<0>> (units: seconds)`

Specify the default of the `scd_pool_warning_interval` operand in the user service definition.
- `ipc_tcpnodelay=Y|N~<<N>>`

Specify the default of the `ipc_tcpnodelay` operand in the user service definition.
- `stay_watch_queue_count=number-of-service-requests-triggering-the-start-of-judgment-of-the-schedule-queue-accumulation-status~<unsigned integer> ((0-32767)) <<0>>`

Specify the default of the `stay_watch_queue_count` operand in the user service definition. If you specify 0 in this operand or if you do not specify this operand, the command does not monitor the service requests remaining in the schedule queue.

- `stay_watch_check_rate=service-request-processing-rate-used-for-monitoring-the-service-requests-remaining-in-the-schedule-queue~<unsigned integer> ((1-100))` (units: %)

Specify the default of the `stay_watch_check_rate` operand in the user service definition. This operand does not have a default. Always specify this operand even when you omit the user service definition. If this operand is not specified, server startup processing will stop because of a definition error.

- `stay_watch_abort=Y|N~<<N>>`

Specify the default of the `stay_watch_abort` operand in the user service definition.

- `stay_watch_start_interval=interval-for-checking-the-number-of-service-requests-remaining-in-the-schedule-queue~<unsigned integer> ((1-32767)) <<10>>` (units: seconds)

Specify the default of the `stay_watch_start_interval` operand in the user service definition.

- `stay_watch_check_interval=interval-for-judging-the-schedule-queue-accumulation-status~<unsigned integer> ((1-65534)) <<10>>` (units: seconds)

Specify the default of the `stay_watch_check_interval` operand in the user service definition.

- `trn_completion_limit_time=time-limit-for-completing-transaction~<unsigned integer> ((0-65535))` (units: seconds)

Specify the default value for the `trn_completion_limit_time` operand of the user service definition.

If the `trn_completion_limit_time` operand is omitted in both the user service definition and the user service default definition, the value of the `trn_completion_limit_time` operand in the transaction service definition is used.

- `rap_message_id_change_level=message-ID-change-level ~<unsigned integer> ((0-2)) <<0>>`

Specify the default value for the `rap_message_id_change_level` operand of the user service definition or RAP-processing listener service definition. For details about the correspondence between the values of this operand and the messages that will be output, see the description of the `rap_message_id_change_level` operand of the RAP-processing listener service definition.

- `log_audit_out_suppress=Y|N ~<<N>>`

Specify the default value for the `log_audit_out_suppress` operand of the user service definition.

- `log_audit_message=message-ID-for-an-item-for-which-audit-log-data-is-to-be-acquired[,message-ID-for-an-item-for-which-audit-log-data-is-to-be-acquired] . . . ~<unsigned integer> ((33400-99999))`

Specify the default value for the `log_audit_message` operand of the user service definition.

- `mcf_prf_trace=Y|N ~<<Y>>`

Specify the default value for the `mcf_prf_trace` operand of the user service definition.

- `watch_time=maximum-time-to-wait-for-a-response ~<unsigned integer> ((0-65535)) (units: seconds)`

Specify the default value for the `watch_time` operand of the user service definition.

If this operand is omitted in both the user service default definition and the user service definition, the value of this operand specified in the system common definition is assumed.

command format

See the next page.

putenv format

- `environment-variable-name environment-variable-value~<character string>`

Specify the default for the environment variable name.

- `XAT_CONNECT_RESP_TIME=maximum-response-wait-time-for-association-establishment-of-SPP-for-processing-communication-events~<unsigned integer> ((0-65535))<<180>> (units: seconds)`

Specify the default of the `XAT_CONNECT_RESP_TIME` operand in the user service definition in the `putenv` format. If you specify both this operand and the `xat_connect_resp_time` operand in the `set` format, the specification of this operand is ignored and the specification of the `xat_connect_resp_time` operand in the `set` format takes precedence.

dcputenv format

- `environment-variable-name environment-variable-value~<character string>`

Specify the default for the environment variable name.

trnrmid (Specify resource manager extension)

Format

```
[trnrmid -n resource-manager-name
-i resource-manager-extension [ , resource-manager-
extension] ... ]
```

Function

Specifies the defaults for the trnrmid definition command in the user service definition.

Option

- `-n resource-manager-name`~<1-31 character identifier>
Specify the default resource manager name in the user service definition.
- `-i resource-manager-extension`~<1-2 character identifier>
Specify the default resource manager extension in the user service definition.

Note

Care must be exercised when specifying the `-i` option in the trnrmid definition command in both the user service definition and the user service default definition. For example, the specifications in both the user service definition and the user service default definition take effect when the following are specified:

- Specification in the user service definition: `trnrmid -n RM-name -i s1`
- Specification in the user service default definition: `trnrmid -n RM-name -i s2`

scdbufgrp (Specify schedule buffer group)

Format

```
scdbufgrp -g schedule-buffer-group-name
```

Function

Specifies the default for the `scdbufgrp` definition command in the user service definition.

Option

- `-g schedule-buffer-group-name~<1-8 character identifier>`

Specify the default scheduler buffer group name in the user service definition.

scdmulti (Specify multi-scheduler facility)

Format

```
scdmulti [-g multi-scheduler-group-name]
```

Function

Specifies the default for the `scdmulti` definition command in the user service definition.

Option

- `-g multi-scheduler-group-name~<1-8 character identifier> <<scdmltgp>>`

Specify the default multi-scheduler group name in the user service definition.

scdsvcdef (Specify operation of the schedule service on a service basis)

Format

```
[scdsvcdef [-c service-name]  
           [-p number-of-services-that-can-be-executed-concurrently]  
           [-n number-of-service-requests-that-can-be-queued]  
           [-l length-of-the-buffer-pool-storing-messages-that-can-be-queued]]
```

Function

The user service default definition defines the default settings for the `scdsvcdef` definition command in the user service definition.

Options

- `-c service-name` ~<1-to-31-character identifier>
Specify the default service name in the user service definition.
- `-p number-of-services-that-can-be-executed-concurrently` ~<unsigned integer> ((1-1024))
Specify the default value for the number of services that can be executed concurrently in the user service definition.
- `-n number-of-service-requests-that-can-be-queued` ~<unsigned integer> ((1-65535))
Specify the default value for the number of service requests that can be queued in the user service definition.
- `-l length-of-the-buffer-pool-storing-messages-that-can-be-queued` ~<unsigned integer> ((512-31457280)) (units: bytes)
Specify the default value for the length of the buffer pool storing messages that can be queued in the user service definition.

User service definition

Format

■ set format

```

set service_group="service-group-name"
set module="execution-format-program-name"
set service="service-name=entry-point-name[ ; UAP-shared-library-name ] "
           [ , "service-name=entry-point-name[ ; UAP-shared-library-name ] " ] . . .
[set nice=changing-process-priority]
[set parallel_count=resident-process-count [ , maximum-process-
           count]]

[set hold=Y|N]
[set hold_recovery=Y|N]
[set deadlock_priority=deadlock-priority-position]
[set schedule_priority=schedule-priority-position]
[set message_buflen=maximum-message-length]
[set message_store_buflen=message-storage-buffer-pool-length]
[set trn_expiration_time=transaction-branch-expiration-time]
[set trn_expiration_time_suspend=Y|N|F]
[set watch_next_chain_time=chained-RPC-maximum-time-interval]
[set atomic_update=Y|N]
[set receive_from=queue|socket|none]
[set uap_trace_max=maximum-UAP-trace-count]
[set uap_trace_file_put=Y|N]
[set term_watch_time=abnormal-termination-check-expiration-time]
[set mcf_jnl_buff_size=MCF-journal-buffer-size]
[set type=other|MHP]
[set balance_count=number-of-service-requests-processed-by-a-process]
[set uid=user-ID]
[set auto_restart=Y|N]
[set critical=Y|N]
[set lck_wait_priority=lock-waiting-priority]
[set mcf_psv_id=application-startup-process-ID]
[set trn_cpu_time=transaction-branch-CPU-check-time]
[set service_hold=Y|N]
[set service_priority_control=Y|N]
[set message_cell_size=storage-cell-length-of-schedule-message]
[set max_socket_msg=maximum-number-of-messages-that-the-server-can-
           receive-from-the-socket]
[set max_socket_msglen=maximum-length-of-messages-that-the-server-
           can-receive-from-the-socket]

[set trf_put=Y|N]
[set mcf_mgrid=application-startup-process-MCF-manager-identifier]

```

```

[set mcf_service_max_count=maximum-number-of-issued-MCF-communication-functions]
[set trn_statistics_item=statistical-information-item [ ,statistical-information-item]... ]
[set node_down_restart=Y|N]
[set rpc_response_statistics=Y|N]
[set server_type="betran" | "xatmi" | "xatmi_cbl" ]
[set trn_rm_open_close_scope=process|transaction]
[set trn_optimum_item=transaction-optimization-item [ ,transaction-optimization-item]... ]
[set purge_msgget=Y|N]
[set cancel_normal_terminate=Y|N]
[set prc_abort_signal=abort-signal-number]
[set rpc_service_retry_count=maximum-number-of-service-retries]
[set rpc_extend_function=facility-extension-level-of-RPC-service]
[set max_socket_descriptors=maximum-number-of-file-descriptors-for-sockets]
[set max_open_fds=maximum-number-of-files-and-pipes-accessed-by-a-UAP-process]
[set service_term_watch_time=abnormal-termination-check-expiration-time-for-service]
[set termed_after_service=Y|N]
[set xat_trn_expiration_time=period-of-time-to-monitor-the-expiration-of-synchronization-point-processing]

[set xat_osi_usr=Y|N]
[set rpc_trace=Y|N]
[set rpc_trace_name="RPC-trace-collection-file-name" ]
[set rpc_trace_size=RPC-trace-collection-file-capacity]
[set trn_rollback_information_put=no|self|remote|all]
[set schedule_method=msggque|namedpipe]
[set service_wait_time=service-request-waiting-time-for-non-resident-server-processes-of-the-user-server]

[set mcf_spp_oj=Y|N]
[set adm_message_option=message-output-specification]
[set trn_watch_time=maximum-communication-wait-time-for-synchronization-point-processing-of-transactions]
[set trn_limit_time=maximum-time-to-execute-transaction-branch]
[set trn_rollback_response_receive=Y|N]
[set trn_partial_recovery_type=type1|type2|type3]
[set rpc_destination_mode=namdonly|namd|definition]
[set rpc_rap_auto_connect=Y|N]
[set rpc_rap_inquire_time=maximum-inquiry-interval-for-request-service-using-the-remote-API-facility]

[set rpc_request_cancel_for_timeout=Y|N]
[set status_change_when_termining=Y|N]

```

```

[set service_expiration_time=execution-monitor-time-from-service-
function-startup-to-termination]

[set multi_schedule=Y|N]
[set make_queue_on_starting=Y|N]
[set loadcheck_interval=load-check-interval]
[set levelup_queue_count=U1,U2]
[set leveldown_queue_count=D0,D1]
[set ipc_sockctl_highwater=percentage-of-sockets-at-which-temporary-
closing-starts[,percentage-of-sockets-for-
which-temporary-closing-is-not-
performed]]

[set ipc_sockctl_watchtime=length-of-time-to-wait-until-the-sockets-are-
reusable]

[set ipc_conn_interval=length-of-time-to-wait-until-the-connection-is-
established]

[set ipc_send_interval=interval-for-monitoring-data-transmission]
[set ipc_send_count=number-of-times-data-transmission-is-monitored]
[set ipc_header_rcv_time=length-of-time-to-wait-until-the-
communication-control-data-is-received]

[set rpc_send_retry_count=number-of-retries-if-an-error-occurs-
during-TCP/IP-connection]

[set rpc_send_retry_interval=interval-between-retries-if-an-error-
occurs-during-TCP/IP-connection]

[set ipc_rcvbuf_size=receive-buffer-size-of-TCP/IP]
[set ipc_sndbuf_size=send-buffer-size-of-TCP/IP]
[set ipc_listen_sockbufset=Y|N]
[set polling_control_data=Y|N]
[set thread_yield_interval=interval-for-issuing-a-trigger-to-receive-
a-socket-reuse-instruction]

[set groups=group-identifier [,group-identifier]...]
[set loadlevel_message=Y|N|A]
[set ipc_backlog_count=length-of-queue-storing-connection-
establishment-requests]

[set rpc_buffer_pool_max=number-of-buffers-to-be-pooled]
[set schedule_delay_limit=schedule-delay-limit]
[set schedule_delay_abort=Y|N]
[set rap_autoconnect_con_error_msg=Y|N]
[set core_shm_suppress=Y|N]
[set xat_connect_resp_time=maximum-response-wait-time-for-
association-establishment-of-SPP-for-
processing-communication-events]

[set scd_poolfull_check_interval=interval-at-which-message-
KFCA00853-E-is-output]

```

```

[set scd_poolfull_check_count=threshold-for-determining-whether-to-
output-message-KFCA00853-E]
[set scd_pool_warning_use_rate=maximum-use-rate-for-the-message-
storage-buffer-pool-triggering-output-
of-a-warning-message]
[set scd_pool_warning_interval=interval-at-which-a-warning-message-
is-output-if-the-use-rate-for-the-
message-storage-buffer-pool-is-
exceeded]

[set ipc_tcpnodelay=Y|N]
[set stay_watch_queue_count=number-of-service-requests-triggering-
the-start-of-judgment-of-the-schedule-
queue-accumulation-status]
[set stay_watch_check_rate=service-request-processing-rate-used-for-
monitoring-the-service-requests-remaining-
in-the-schedule-queue]

[set stay_watch_abort=Y|N]
[set stay_watch_start_interval=interval-for-checking-the-number-of-
service-requests-remaining-in-the-
schedule-queue]
[set stay_watch_check_interval=interval-for-judging-the-schedule-
queue-accumulation-status]

[set trn_completion_limit_time=time-limit-for-completing-transaction]
[set rap_message_id_change_level=message-ID-change-level]
[set log_audit_out_suppress=Y|N]
[set log_audit_message=message-ID-for-which-audit-log-data-is-to-be-acquired]
[ , message-ID-for-which-audit-log-data-is-to-be-acquired ] . . . ]
[set mcf_prf_trace=Y|N]
[set watch_time=maximum-time-to-wait-for-a-response]

```

■ command format

```

[trnrmid -n resource-manager-name
-i resource-manager-extension [ , resource-manager-
extension ] . . . ]
[scdbufgrp -g schedule-buffer-group-name]
[scdmulti [-g multi-scheduler-group-name]]
[scdsvcdef [-c service-name]
[-p number-of-services-that-can-be-executed-concurrently]
[-n number-of-service-requests-that-can-be-queued]
[-l length-of-the-buffer-pool-storing-messages-that-can-be-queued]]

```

■ putenv format

```

{[putenv environment-variable-name environment-variable-value]}
[putenv DCFPL_CONNECT_RETRY_COUNT number-of-retries-to-establish-
a-connection]
[putenv DCFPL_CONNECT_RETRY_INTERVAL interval-between-retries-to-
establish-a-connection]
[putenv XAT_CONNECT_RESP_TIME maximum-response-wait-time-for-
association-establishment-of-SPP-for-
processing-communication-events]

```

■ dcputen format

```

{[dcputen environment-variable-name environment-variable-value]}

```

Function

The user service definition defines the user server execution environment for each user server.

Specify the service group name plus the service name if requesting an RPC service. The service group name corresponds to the UAP (SPP, MHP) execution form program; and the service name corresponds to the individual functions (service functions) making up the execution form program.

OpenTP1 registers service requests into the schedule queue corresponding to each specified service group name.

File names of the user service definition become user server names. Specify these user server names in the user service configuration definition.

If the user service definition is omitted, values specified with the user service default definition are assumed.

Explanation

set format

- `service_group="service-group-name" ~<1-31 character identifier>`

Specify the service group names. Each name in all OpenTP1 systems connected to the network should be unique.

This operand need not be specified for an SUP.

- `module="executable-program-name" ~<1-14 character identifier>`

Specify the name of the execution form program to execute these service groups. This execution form program is in the directory specified with the process service definition.

When the operating system is HP-UX, if an executable file whose bind mode at the

linkage is other than `immediate` is specified, the operation of OpenTP1 is not guaranteed. To check if the bind mode of the application is `immediate`, use the `chatr` command of the operating system.

- `service="service-name=entry-point-name[; UAP-shared-library-name]" [, "service-name=entry-point-name[; UAP-shared-library-name]"] . . .`

service-name and *entry-point-name* ~<1-to-31-character identifier>

Specify the names of all services belonging to these service groups, and the names of all entry points providing those services. Note that a space or tab code must not be placed before or after the equal sign (=) between *service-name* and *entry-point-name*.

The entry point name is a C-language function name, and is the COBOL program or entry point name. For a service that uses a stub, specify the same entry point name as the name specified in the RPC interface definition.

Associate service names and entry point names, one to one. It is impossible to associate one entry point name to more than one service name. You can specify any number of *service-name=entry-point-name* entries.

UAP-shared-library-name ~<1-to-255-character path name>

Specify the path name of the UAP shared library for a service that loads service functions dynamically. Make sure that the UAP shared library names you specify do not contain a space or tab code.

Note that the definition check only checks whether UAP shared library names contain a space or tab code. If no space nor tab codes are found, the UAP shared libraries are unconditionally loaded.

If you use dynamic loading of service functions, you do not need to specify entry point names in the RPC interface definition. If no UAP shared libraries are specified, the service will use stubs.

If you use dynamic loading of service functions with the AIX version of OpenTP1, specify `libbetran2.a` as the linkage library for SPPs and both `libbetran2.a` and `libmcf2.a` as the linkage library for MHPs. If these libraries are not used, operation is not guaranteed. Note that for the AIX version of uCosminexus TP1/Server Base(64), both `libbetran.a` and `libbetran2.a` can be used.

- If only services that use stubs are specified

If you specify an entry such as the one shown in the example below, OpenTP1 searches for the services in the order of the entry point names specified in the RPC interface definition.

Example:

```
set service = "serviceA=serviceA"
```

- If only services that use dynamic loading of service functions are specified

If only services that load service functions dynamically are specified in this operand, OpenTP1 searches for services in the order of the services specified in this operand.

- If an environment variable is used to specify a UAP library

Example:

```
set service = "serviceA=serviceA; $USRDIR/lib/usrlib.so"
putenv USRDIR /OLTP1/usrdir
```

If you want to use an environment variable in the path name of a UAP shared library name, you can only specify it at the beginning of the path name. Note that the environment variable that is specified here can also be specified in the user service default definition or user service definition.

For this operand only, an environment variable defined after the operand is also valid. Note that if an environment variable is used, the path name after expansion of the environment variable must not exceed 255 characters.

- If an absolute path name is used to specify a UAP library

Example:

```
set service = "serviceA=serviceA;/OLTP1/usrdir/lib/
usrlib.so"
```

If an absolute path name is used to specify a UAP shared library name, OpenTP1 searches for the specified UAP shared library, and uses the library it finds.

- If only a library name is used to specify a UAP library

Example:

```
set service = "serviceA=serviceA;usrlib.so"
```

If only a library name is used to specify a UAP library, OpenTP1 searches the OS library search path (environment variable) for the specified UAP shared library, and uses the library it finds.

When specifying only a library name to specify a UAP library, specify the directory in which the UAP shared library is stored in either the user service definition or the user service default definition as the OS library search path (environment variable), as shown in the following specification example:

Specification example:

In this example, the directory path in which the UAP shared library is stored

```
is /usr/local/lib.
```

For the `putenv` format: `putenv` OS library search path (environment variable): *OpenTP1-home-directory/lib*: /usr/local/lib

For the `dcputenv` format: `dcputenv` OS library search path (environment variable): `$DCDIR/lib`: /usr/local/lib

- If both services that use stubs and services that use dynamic loading of service functions are specified

If both services that use stubs and services that use dynamic loading of service functions are specified in this operand, OpenTP1 searches for services in the order of the services specified in this operand.

Example:

```
set service = "serviceA=serviceA", "serviceB=serviceB; /
OLTP1/usrdir/lib/usrlib.so"
```

For details of RPC service functions, and the RPC service definition, see the manual *OpenTP1 Programming Guide*.

- `nice=changing-process-priority~<unsigned integer> ((0-39))`

Specify the `nice` value for these service group processes. The `nice` value is a positive integer, and the higher this value, the lower is the CPU priority position. For details on `nice`, see the appropriate manual for the operating system in use.

- `parallel_count=resident-process-count [,maximum-process-count]~<unsigned integer> ((0-1024))`

For the services within these service groups, specify the number of processes to be processed in parallel.

Specifying the number of resident processes enables use of the multiserver function which starts several server processes concurrently to process services within the same service group. Use of the multiserver function improves processing of service requests. The multiserver function can still be used if the resident process count is 0, but the maximum process count is specified.

Specifying the maximum number of processes dynamically increases or decreases the number of non-resident processes in excess of the resident process count. This controls the startup of server processes within the specified maximum process count, thus preventing deterioration of OpenTP1 system performance.

Conditions for specifying the number of processes are as follows:

1. 0 cannot be specified for both the resident process count and the maximum process count,
2. the maximum process count, if specified, must be equal to or greater than the

resident process count,

3. omission of a maximum process count causes all processes to become resident processes, and
4. to make all processes non-resident (started as required), specify the resident process count as 0, and specify the number of non-resident processes as the maximum process count.

If the resident process count is set to 0 and the maximum process count is omitted, a definition error occurs.

For the transaction processing by a service in this service group, the process of the service cannot process the next service until the current transaction terminates. Therefore, if the maximum process count is set to 1, more than one service in this service group cannot be called within one transaction.

This operand need not be specified for an SUP and an SPP server that receives requests from the socket.

■ hold=Y|N

Specify whether to shut down the service group or service if the server process terminates abnormally during execution of the service under this service group.

Y

The service group or service is shut down.

N

The service group or service is not shut down.

The `service_hold` operand specifies which service group or service to be shut down.

Shutting down a service group means that the server process is not started up in response to a schedule request from the service group. Note that, for service shutdown, the server process is started up unless another service within the same service group is shut down. In this case, the service request returns with an error to the program originating the service.

This operand does not need to be specified for SUPs, or for SPP servers that receive requests from sockets.

For MHPs, the operation specified in this operand is performed if MHPs end abnormally before the service start function is called. The operation after the start of a service depends on the specification in the application attribute definition (`mcfaalcap` definition command).

■ hold_recovery=Y|N

Specify whether service groups and services should inherit shutdown during a full

recovery.

Y

Service groups and services are to inherit shutdown.

N

Service groups and services do not inherit shutdown.

This operand need not be specified for an SPP server that receives requests from the socket, SUP, and MHP.

When BEFORE is specified in the `start_scheduling_timing` operand of the system environment definition, the shutdown status is not carried over, regardless of the specification of the `hold_recovery` operand. If you want to carry over the shutdown status, specify F in the `scd_hold_recovery` operand of the schedule service definition. For details about operand specification for carrying over the shutdown status, see the description of the `scd_hold_recovery` operand of the schedule service definition.

- `deadlock_priority=deadlock-priority-position~<unsigned integer> ((1-127))`

Specify the priority positions of UAP deadlocks. The smaller the value, the higher will be the priority position. Should a deadlock occur, an error is returned for the lock request of the UAP with the lowest priority position.

- `schedule_priority=schedule-priority-position~<unsigned integer> ((1-16))`

Specify the priority positions of the schedules of the service groups. The smaller the value, the higher will be the priority position.

Priority positions are compared when server processes up to the maximum concurrent server process count specified with the process service definition have been started, and new service requests occur. Server processes are suspended sequentially in the service group having the lowest priority position. Server processes of service groups of higher priority are started.

This operand need not be specified for an SUP and an SPP server that receives requests from the socket.

- `message_bufilen=maximum-message-length~<unsigned integer> ((1024-31457280)) (Unit: bytes)`

Specify the size of the user data storage area for messages from the client which are in shared memory and to be received by the user servers. This area is owned by the process.

OpenTP1 adds 512 bytes to each message for control information; include this amount in specifying a value.

For SPPs other than the server that receives requests from the socket, the value you

specify is (`in_len` value of the `dc_rpc_call` function + 512) bytes.

For MHPs, specify 1024 bytes.

This operand need not be specified for an SUP and an SPP server that receives requests from the socket.

- `message_store_bufLen=message-storage-buffer-pool-length~<unsigned integer>`
(1024-31457280)) (Unit: bytes)

Specify the size of a pool in shared memory for temporary storage of messages from the client. This pool is used to store the messages before transferring them to the user servers. Therefore, specify a value equal to or greater than the maximum length of the messages to be sent from the client plus 512 bytes for OpenTP1 control information.

Messages stored in the pool are transferred to the user servers by the FIFO method. If message retrieval by the user servers is delayed, messages will pile up in the pool, and service requests from the client can no longer be received. Therefore, specify a value with sufficient surplus storage.

If using any of the following functions, specify an integral multiple of the value specified in the `message_cell_size` operand.

- Priority scheduling function (specify `Y` in the `service_priority_control` operand)
- Service-based shutdown function (specify `Y` in the `service_hold` operand)
- Service-based schedule control function (specify the `scdsvcdef` definition command)

If the specified value is not an integral multiple, the system rounds it up to a multiple and uses the value as the size of the buffer pool for storing schedule messages.

For SPPs except the server that receives requests from the socket, specify the value that is obtained by the following formula:

Length of the message storage buffer pool = (`in_len` value of the `dc_rpc_call` function + 512 bytes) x number of messages remaining in the queue

For MHPs, use the following formula to calculate the message storage pool length.

1. When all the MHPs are all resident on the memory or when 0 is specified in the `balance_count` operand:

$$\text{Message-storage buffer pool length} = C \times P$$

2. For the other cases:

$$\text{Message-storage buffer pool length} = C \times P \times B$$

`C`

Additional control information (512 bytes)

P

Maximum number of processes specified in the `parallel_count` operand

B

Value specified in the `balance_count` operand

If the value obtained from the calculation is smaller than 1024, specify 1024.

This operand need not be specified for an SUP and an SPP server that receives requests from the socket.

- `trn_expiration_time=transaction-branch-expiration-time~<unsigned integer>`
((0-65535)) <<0>> (Unit: seconds)

Specify the maximum time to monitor processing of a transaction branch. OpenTP1 abnormally terminates and rolls back the transaction branch when processing goes beyond the specified time. Specify 0 to have no time check.

Whether the service or service group is to be shut down if a UAP terminates abnormally depends on the specification of the `hold` and `term_watch_time` operands. For details, see the descriptions of the `hold` and `term_watch_time` operands of the user service definition.

If this operand is omitted in both the user service default definition and the user service definition, the default of the transaction service definition is used.

A monitoring time can also be specified by issuing other functions. For details of these functions, see the *OpenTP1 Programming Guide*. If using the RPC function, use the `trn_expiration_time_suspend` operand to specify whether the processing time of other processes executed by the transaction branch are to be included in the time check.

Use the `trn_expiration_time_suspend` operand to specify whether the message receiving/sending time is to be included in the monitor time when synchronous messaging is performed using the message control facility (TP1/Message Control).

- `trn_expiration_time_suspend=Y|N|F`

Specify whether the next processing time is to be included in the specified time check of the processing of a transaction branch.

1. Time required for the monitored transaction branch to call another transaction branch using the RPC facility and wait until its processing terminates
2. Time required for the server UAP called with the chained RPC to wait for the next service request
3. Time required for the monitored transaction branch to call another transaction branch using the asynchronous RPC facility and receive the result of processing
4. Time required for the monitored transaction branch to perform synchronous

messaging using the message control facility (TP1/Message Control).

Y

The monitor time includes all of 1., 2., 3., and 4.

N

The monitor time includes only 3.

F

The monitor time includes none of 1., 2., 3., and 4.

If this operand is omitted in both the user service default definition and the user service definition, the default of the transaction service definition is used.

For the relationship between this operand and the timer monitoring options, see *A.2 Time monitoring for transactions*.

- `watch_next_chain_time=chained-RPC-maximum-time-interval~` <unsigned integer> ((0-65535)) (Unit: seconds)

If the server UAP is called by a chained RPC, specify in units of seconds, either:

1. the maximum time interval between return of a response to a previous service request until receipt of the next service request, or
2. the maximum time interval until the transaction terminates.

The UAP terminates abnormally should the specified time elapse.

Whether the service or service group is to be shut down if a UAP terminates abnormally depends on the specification of the `hold` and `term_watch_time` operands. For details, see the descriptions of the `hold` and `term_watch_time` operands of the user service definition.

This specified value is effective only for the server which becomes the UAP. If 0 is specified, OpenTP1 waits indefinitely until the next chained RPC request is received, or until the transaction terminates.

For the relationship between this operand and the timer monitoring options, see *A.2 Time monitoring for transactions*.

- `atomic_update=Y|N`

Specify whether transactions are to be generated by the process of this service group.

Y

These processes are entered into the range of transactions with either of the following:

1. a new `dc_trn_begin` function was issued with this process, or

2. the OpenTP1 system receives a service request from another UAP, and automatically enters the process.

N

This process is not entered into the transaction range. The `dc_trn_begin` function, `dc_trn_unchained_commit` function or any other transaction service function cannot be used. Journal output is also forbidden.

Note that if `Y` has been specified for the `jnl_fileless_option` operand in the system common definition, OpenTP1 assumes that the `atomic_update` operand has been set to N even when `Y` is set.

- `receive_from=queue|socket|none`

Specify what means is to be used for receiving a message that is received by the service function.

`queue`

The schedule queue of the schedule service is used. Specify `queue` for an SPP or an MHP. Use of the schedule queue enables use of the function to start and call new server processes not started with a `dc_rpc_call` function. It also enables the load to be balanced with a multiple start of the same server process.

`socket`

The UNIX domain or internet domain is used. Specify `socket` for an SUP. This server can use neither on-demand startup nor inter-node load-balancing facility.

`none`

Neither the schedule queue of the schedule service, a UNIX domain nor internet domain is used. Specify `none` for an SUP.

- `uap_trace_max=maximum-UAP-trace-count~<unsigned integer> ((0-4095))`

Specify the number of records for a UAP trace.

The following types of information are acquired in the UAP trace data file or a core file:

- The flow of processes executed by the UAP before it terminated normally
- The flow of processes executed by the UAP before it terminated abnormally or an error occurred

When 0 is specified:

The UAP trace is not acquired.

When 1 or a greater value is specified:

The UAP trace of the specified value + 1 is acquired.

■ `uap_trace_file_put=Y|N`

Specify whether to acquire UAP trace information into a file.

Y

Trace information is acquired into a UAP trace data file.

If the trace information cannot be acquired into a file, it is acquired into a process-specific area.

N

Trace information is acquired into a process-specific area.

When Y is specified, a maximum of six generations of backup files for the UAP trace data file are acquired by each server when the user server fails or restarts after the termination of OpenTP1. Three generations of backup files are acquired when the applicable server is normally terminated, and also during abnormal termination accompanied by a core file output. Backup files are stored in the core file storage destination specified in the `prc_coresave_path` operand of the process service definition.

■ `term_watch_time=abnormal termination-check-expiration-time~<unsigned integer> ((0-32767))` (Unit: minutes)

Specify the maximum time interval to check the number of times that a server process of this user server terminates abnormally. For SPPs except the server that receives requests from the socket, this operand is valid when N is specified in the `hold` operand.

For an SUP and an SPP server that receives requests from the socket, the operand is valid when Y is specified in the `auto_restart` operand.

In OpenTP1, UAP processes may be stopped due to a timeout. The following table lists the conditions for shutting down the server if a UAP process is stopped due to a timeout.

Table 3-11: Specification of the `hold` and `term_watch_time` operands for determining whether to shut down the server

Value of the <code>hold</code> operand	Value of the <code>term_watch_time</code> operand	Whether the server is shut down
Y	Any (When the value of the <code>hold</code> operand is Y, the server is unconditionally shut down regardless of the <code>term_watch_time</code> operand specification.)	The server is unconditionally shut down regardless of the cause of the abnormal termination.

Value of the hold operand	Value of the term_watch_time operand	Whether the server is shut down
N	0	The server is not shut down.
	Other than 0	The server is shut down if it terminates abnormally three times within the time specified in the term_watch_time operand. Note that whether an abnormal termination is counted depends on the cause of the abnormal termination.

The following table shows the causes of abnormal terminations that are counted and those that are not counted.

Table 3-12: Causes of abnormal terminations that are counted and those that are not counted

Cause of abnormal termination	Whether the abnormal termination is counted
A problem with a UAP	Counted
Timeout value in ipc_socketl_watchtime exceeded	Counted
Timeout value in trn_cpu_time exceeded	Counted
Timeout value in watch_next_chain_time exceeded	Counted
Timeout value in xat_trn_expiration_time exceeded	Counted
Timeout value in service_expiration_time exceeded	Not counted
Timeout value in trn_expiration_time exceeded	Not counted
Abnormal termination due to expiration of trn_completion_limit_time	Not counted
Abnormal termination due to expiration of mcfaalcap -v ntmetim	Not counted
Abnormal termination due to the prckill or dcsvstop -fd command	Not counted

If the server process of this user server terminates abnormally three times consecutively within the specified time, the SPP (except the one that receives requests from the socket) shuts down the service group independently of the specification of the hold operand. An SPP server that receives requests from the socket or SUP is forced to terminate independently of the specification of auto_restart operand.

For the MHP, if the server process of the user server terminates abnormally for three

consecutive times or more within the specified time before the service is started, the schedule of the service group is shut down and the user server is forcibly terminated. Specify 0 to have no time check.

The following provides an example of server behavior when the user server has terminated abnormally with the `hold` operand set to `N` and the `term_watch_time` operand to a non-0 value:

1. The server terminated abnormally because the value specified in the `trn_cpu_time` operand was exceeded.

This is the first abnormal termination. The server is not shut down.

2. The server terminated abnormally because the value specified in the `trn_expiration_time` operand was exceeded.

This is not counted as an abnormal termination. The server is not shut down.

3. The server terminated abnormally due to a problem with a UAP.

This is the second abnormal termination. The server is not shut down.

4. The server terminated abnormally because the value specified in the `trn_cpu_time` operand was exceeded.

This is the third abnormal termination. The server is shut down.

- `mcf_jnl_buff_size=MCF-journal-buffer-size~<unsigned integer>`
(4096-131072) (Unit: bytes)

Specify the size of the area for storing the journal data collected during MCF execution.

For details on how to calculate the value to be specified, see the description about the `-j` option in the `mcfmuap` definition command in *MCF manager definition*.

The larger the specified area, the fewer will be the number of read/write operations to the disc during collection.

If this operand is not specified, the value specified with the user service default definition is assumed. If not specified there, the value specified with the `-j` option of the `mcfmuap` command in the MCF communication configuration definition is assumed.

This operand is valid only for an MHP or an SPP that uses the MCF function. It need not be specified for an SUP.

- `type=other|MHP`

Specify the type of this service group.

`other`: Queue-receiving SPP

MHP: MHP

This operand need not be specified for an SUP.

- `balance_count=number-of-service-requests-processed-by-a-process~` <unsigned integer> ((0-512))

Specify the number of service requests, which are remaining in the schedule queue corresponding to this user server, to be processed by a single process. If the number of service requests remaining in the schedule queue exceeds the value determined by (Value specified in this operand) x (Number of started processes), start non-resident processes and have them process the service requests. This operand is effective only for the service group that is specified by the `parallel_count` operand to start non-resident processes.

Specify 0 for the following cases:

- the recursive call is used with a server structured from non-resident processes only (resident process count is 0, and maximum process count is at least 2),
- the recursive call is used with a server structured from one resident process and other non-resident processes (resident process count is 1, and the maximum process count is at least 2).

If 0 is specified, a non-resident process will be started for a service request if all active processes are processing other services.

This operand need not be specified for an SPP server that receives requests from the socket and SUP.

- `uid=user-ID~`<unsigned integer> ((0-4294967294))

Specify the ID of the user who will be in possession of the processes of this service group. Specify an ID registered in the operating system.

The maximum value depends on the operating system. Check the documentation for your operating system.

- `auto_restart=Y|N`

Specify the handling of service groups if a UAP terminates abnormally during execution.

Y

The process is restarted.

N

The process is not restarted.

This operand need not be specified for an SPP (except one that receives requests from the socket) and MHP.

- `critical=Y|N`

Specify the handling of the OpenTP1 system if a UAP terminates abnormally during execution.

Y

OpenTP1 suspends processing.

N

OpenTP1 continues processing.
- `lck_wait_priority=lock-waiting-priority~<unsigned integer> ((0-127))`

Specify the priority with which a wait-type lock request issued by an user server enters the wait state.

The smaller the specified value, the higher will be the priority position; the lock state is released starting from requests of lower priority. Specify 0 to have requests registered last in the waiting queue.

Take note that setting the priority position too low could cause a request to be preceded by a lock request issued later but of higher priority.
- `mcf_psv_id=application-startup-process-ID~<hexadecimal number> ((01-ff))`

Specify the identifier of the process to start an application.

This operand must be specified for all SPPs which are to start an application. It need not be specified for an SUP, MHP, or SPP which will not start an application.
- `trn_cpu_time=transaction-branch-CPU-check-time~<unsigned integer> ((0-65535)) <<0>> (Unit: seconds)`

Specify the CPU time that can be used by a transaction branch until synchronous point processing.

If 0 is specified, no time check is performed. If the specified time is exceeded, the transaction branch process is terminated and rolled back.

If this operand is omitted in both the user service default definition and the user service definition, the default of the transaction service definition is used.

Whether the service or service group is to be shut down if a UAP terminates abnormally depends on the specification of the `hold` and `term_watch_time` operands. For details, see the descriptions of the `hold` and `term_watch_time` operands of the user service definition.
- `service_hold=Y|N`

Specify whether service-based shutdown control is carried out for the services under the indicated service group.

Y

Service-based shutdown control is carried out.

N

Service-based shutdown control is not carried out.

When Y is specified for this operand, the specification in the `message_cell_size` operand takes effect.

Service-based shutdown control enables each service to be shut down when the server terminates abnormally or to be shut down by an operation command. Note that shutting down a service when the server terminates abnormally is valid only when the `hold` operand has Y specified or when the `service_term_watch_time` operand is specified.

If receiving a schedule request for the service, it is returned with an error to the program originating the request.

This operand need not be specified for an SPP server that receives requests from the socket, SUP and MHP.

■ `service_priority_control=Y|N`

Specify whether scheduling is to be made according to the priority specified for each service request.

Y

Scheduling is made according to the priority specified for each service request.

N

Scheduling is not made according to the priority specified for each service request.

When Y is specified for this operand, the specification in the `message_cell_size` operand takes effect. This operand need not be specified for an SPP server that receives requests from the socket, SUP and MHP.

■ `message_cell_size=storage-cell-length-of-schedule-message~<unsigned integer> ((512-31457280)) (Unit: bytes)`

In either of the following cases, the schedule-message storage buffer pool specified in the `message_store_buflen` operand is divided into cells to store the messages. Specify the cell size in this operand.

- Y specified in the `service_priority_control` operand
- Y specified in the `service_hold` operand
- `scdsvcdef` definition command specified

When specifying the cell size, note that a cell control table (16 bytes) is created in each cell of the schedule message storage pool.

Specify an integer multiple of 8 in this operand. If the specified value is not an integral multiple of 8, the value is rounded up to an integer multiple of 8.

The value of the `message_store_bufllen` operand must be an integral multiple of `message_cell_size`. If it is not, the system rounds it up to a multiple and uses the rounded-up value as the size of the buffer pool for storing schedule messages.

If both the `service_priority_control` and `service_hold` operands have been set to N, and the `scdsvcdef` operand has been omitted, you do not need to specify the `message_cell_size` operand.

It need not be specified, either, for an SPP server that receives requests from the socket, SUP and MHP.

- `max_socket_msg=maximum-number-of-messages-that-the-server-can-receive-from-the-socket~<unsigned integer> ((1-500))`

Specify the maximum number of messages that the server receives request from the socket.

When not ready to accept services (while waiting for transaction commitment or roll-back direction, waiting for a response to an RPC nest call, or during chained RPC), the server that receives requests from the socket stores new service requests without processing them promptly until normal service acceptance state is reached.

If the number of messages received by the server exceeds the value specified in this operand, the `dc_rpc_call` function returns with a `DCRPCER_SERVER_BUSY` error.

This operand need not be specified for an SPP (except the server that receives requests from the socket), SUP, and MHP.

- `max_socket_msglen=maximum-length-of-messages-that-the-server-can-receive-from-the-socket~<unsigned integer> ((1-30270)) (Unit: kilobytes)`

Specify the maximum length of messages that the server receives request from the socket.

If the total length of messages received by the server exceeds the value specified in this operand, the `dc_rpc_call` function returns with a `DCRPCER_SERVER_BUSY` error.

The value to be specified must be greater than the maximum length of messages that are sent to the server. Also, the size of control information appended to messages (0.3 Kbytes approximately) must be added to the value specified.

This operand need not be specified for an SPP (except the server that receives requests from the socket), SUP, and MHP.

- `trf_put=Y|N`

Specify whether a journal output from the transaction started up by the server is to be output to the transaction recovery journal.

Y

The journal is output to the transaction recovery journal.

N

The journal is not output to the transaction recovery journal.

A transaction recovery journal file prevents a journal error from being caused by a long-time transaction and reduces rerun time. Note that this function is needed only for a server that uses transactions for a long time because it places a lot of overhead on performance and memory.

In the OpenTP1 system that uses the system switchover function, you cannot use this function. Therefore, specify N for the `trf_put` operand in the RAP-processing listener service definition and the user service definition.

- `mcf_mgrid=application-startup-process-MCF-manager-identifier~<identifier>`
((A-Z, a-z))

Specify the identifier of the MCF manager belonging to the application startup process.

This operand need not be specified for an SUP, MHP and SPP that does not start up an application.

- `mcf_service_max_count=maximum-number-of-issued-MCF-communication-functions~<unsigned integer>` ((0-65535))

Specify the maximum number of MCF communication functions issued by UAPs to check UAP overrun.

If the number of MCF communication functions issued exceeds the value specified in the operand, the UAP terminates abnormally.

If 0 is specified, the number of issued communication functions is not checked. If it is omitted, the value in the `mcf_service_max_count` operand of the user service default definition is assumed.

For an MHP, if both options are omitted, the value in the `-d` option of the `mcfmuap` command of the MCF manager definition is assumed.

For an SPP, if both options are omitted, no check is performed.

The operand is valid only for an MHP and an SPP that uses the MCF function.

This operand need not be specified for an SUP.

- `trn_statistics_item=statistical-information-item[,statistical-information-item]`
...

Specify the items that collect the statistics in the transaction branch.

`nothing`

Statistics in the transaction branch are not collected.

`base`

The following information in the transaction branch is collected as basic information.

- Identifier in the transaction branch
- Decision results in the transaction branch
- Execution process type in the transaction branch
- Execution server name in the transaction branch
- Execution service name in the transaction branch

`executiontime`

The basic information and the execution time information in the transaction branch are collected.

`cputime`

The basic information and the CPU time information in the transaction branch are collected.

Specifying to `nothing` must be one. If `nothing` and other statistical item are specified simultaneously, specifying to `nothing` will be nullified.

When collecting statistics about transactions, use either of the following two ways:

- Specify `Y` in the `trn_tran_statistics` operand of the transaction service definition.
- Specify the `-s` option of the `trnstics` command.

If this operand is omitted in both the user service default definition and the user service definition, the default of the transaction service definition is used.

The more types of statistics are collected, the lower the transaction performance. It is recommended to collect statistics only during system tuning or when checking on trouble when transaction performance is not a problem.

- `node_down_restart=Y|N`

Specify whether to start up the user server automatically when an OpenTP1 system restarts.

This specification is invalid if the applicable user server normally terminates before the `dcstop` command is executed. In the following cases, whether a normally terminated user server will be started is decided based on the specification in the `status_change_when_termining` operand:

- During normal system termination, the system stops after the user server has normally terminated.
- During planned system termination, the SUP terminates normally before the termination process is completed by the `dcstop` command.

Y

The user server is automatically started up.

N

The user server is not automatically started up.

When an attempt is made to restart (rerun) OpenTP1 that has terminated abnormally, the user servers for which the `node_down_restart` operand has been set to N are not restarted. If an attempt is made to normally stop OpenTP1 when there are user servers that have terminated abnormally, OpenTP1 stops abnormally. If OpenTP1 has stopped abnormally, take either of the following actions:

- Normally start or normally stop the relevant user servers. Then execute the `dcstop` command to stop OpenTP1 normally.
- Execute the `dcstop` command with the `-n` option specified to force OpenTP1 to stop normally.

■ `rpc_response_statistics=Y|N`

Specify whether to collect response statistics.

Y

Response statistics are collected.

N

Response statistics are not collected.

The response statistics contain the RPC call response time, service execution time, and server CPU time.

This operand can be specified by each individual client server of `dc_rpc_call` function. Response statistics collected by a synchronous response RPC (including a chained RPC) and an asynchronous response RPC.

■ `server type="betran"|"xatmi"|"xatmi_cbl"`

Specify whether the service function is to be called according to the OpenTP1 paradigm or the XATMI paradigm.

"betran"

The service function is called according to the OpenTP1 paradigm and the XATMI functions cannot be used.

"xatmi"

The service function is called according to the XATMI paradigm.

"xatmi_cbl"

The service function is called according to the COBOL service paradigm of XATMI.

This operand need not be specified for an SUP and MHP.

■ `trn_rm_open_close_scope=process|transaction`

Specify the issue timing of the two functions (`xa_open` and `xa_close` functions) that are an XA interface to the resource manager other than the OpenTP1 system offers.

`process`

The `xa_open` function is issued when issuing the `dc_rpc_open` function and the `xa_close` function is issued when issuing the `dc_rpc_close` function.

`transaction`

The `xa_open` function is issued when the transaction starts and the `xa_close` function is issued when the transaction terminates.

If `process` is specified, the resource of the resource manager is occupied from the issue of the `dc_rpc_open` function to the issue of the `dc_rpc_close` function. If the transaction performance is focused on, specify `process`.

If `transaction` is specified, the `xa_open` and `xa_close` functions are issued whenever the transaction starts and terminates. If the resource of the resource manager must be used efficiently, specify `transaction`.

If this operand is omitted in both the user service default definition and the user service definition, the default of the transaction service definition is used.

■ `trn_optimum_item=transaction-optimization-item[, transaction-optimization-item] ...`

Specify the items to be optimized, with the following character strings to improve the performance of the global transaction distributed to multiple user servers.

`base`

The entire synchronization point processing (prepare processing, commit, and rollback) is optimized. Since the OpenTP1 transaction control uses the two-phase commit method, the commit control between two transaction branches requires an inter-process communication four times.

However, when all the following conditions are satisfied, the four occurrences of inter-process communications required for the commit control can be eliminated by having the parent transaction branch execute the commit of the childtransaction branch, instead.

1. The parent transaction branch and the childtransaction branch are under control of the same OpenTP1.
2. The parent transaction branch has called the childtransaction branch by the synchronous-response RPC.
3. The XA interface object for the resource manager accessed with the childtransaction branch is linked also to the parent transaction branch.

asyncprepare

If optimization of the entire synchronization point processing cannot be performed because the specification conditions of `base` are not satisfied, only the prepare processing is optimized.

When all the following conditions are satisfied and the childtransaction branch issues a service request by the RPC issued by the parent transaction branch, two-time inter-process communications can be eliminated by executing the prepare processing before the RPC is returned.

1. The optimization by specifying `base` cannot be performed.
2. The parent transaction branch has called the childtransaction branch by the synchronous-response RPC.

When this optimization is performed, the response of the synchronous-response RPC issued by the parent transaction branch is slowed. For the childtransaction branch, the interval between the prepare processing and commit (the status in which the transaction cannot be determined without the instruction from the parent transaction branch) becomes longer. If the OpenTP1 of the parent transaction branch fails, disabling the communication between transaction branches, the swapping of the journal file and the validating of the checkpoint dump file are slowed and the OpenTP1 of the childtransaction branch may also fail.

More than one transaction optimization item can be specified. When both of them are specified, the specification takes precedence according to the following priority (1.>2.):

1. `base`
2. `asyncprepare`

If this operand is omitted in both the user service default definition and the user service definition, the default of the transaction service definition is used.

■ `purge_msgget=Y|N`

If the server process for a nonresident server is not found, specify whether OpenTP1 releases the message queue of the operating system allocated to the service group (by the `msgget` system call).

Y

The message queue of the operating system is released if the server process is not found.

N

The message queue of the operating system is not released even if the server process is not found.

Specifying Y by this operand can eliminate a waste of the message queue of the operating system. The message queue is released when no service request is issued for ten seconds after the server process disappears. When a service request is issued after the message queue of the operating system is released, the message queue is re-allocated to process the service request.

When specifying Y by this operand, specify Y for the other service groups. This is because there is one message queue of the operating system for one service group. Therefore, specify Y also by the `purge_msgget` operand in the user service default definition.

This operand is valid for only the service group for which `queue` is specified by the `receive_from` operand and the `parallel_count` operand (resident process count) is set to 0 in the user service definition. This operand is ignored for the other service groups.

Note that re-allocation of the message queue of the operating system takes tens of milliseconds. Do not forget this when using the system for which that level of delay affects its performance.

■ `cancel_normal_terminate=Y|N`

Specify whether to cancel the normal termination for the `dcsvstop` command in this user server.

Y

The normal termination is canceled.

N

The normal termination is not canceled.

When Y is specified, this user server accepts only the forced termination by the `dcsvstop` command and the termination by the `dcstop` command.

- `prc_abort_signal=abort-signal-number~<unsigned integer> ((1-128))`

Specify the signal number that is used when aborting a server under OpenTP1. As the abort signal number, specify the signal number that performs core file output. If such a signal number is not specified, the core file will not be created when the forced termination is performed by the `dcstop` command and `dcsvstop` command even if the `-d` option is specified.

The signal number specified in the `prc_abort_signal` operand is sent to a server as shown in the following table.

Table 3-13: Time and destination for sending the signal number

Time when the signal number is sent	Server to which the signal number is sent
When any of the following times expires: <ul style="list-style-type: none"> • Transaction branch expiration time (specified in the <code>trn_expiration_time</code> operand) • Period of time for monitoring the execution between startup and termination of a service function (specified in the <code>service_expiration_time</code> operand) • Time limit for completing a transaction (specified in the <code>trn_completion_limit_time</code> operand) • Non-transaction MHP expiration time (specified in the <code>ntmetim</code> operand of the <code>-v</code> option in the <code>mcfaalcap</code> command) 	Server for which the time monitoring expired
When an attempt is made to forcibly stop the server by using any of the following methods: <ul style="list-style-type: none"> • Executing the <code>prckill</code> command • Executing the <code>dcsvstop</code> command with the <code>-df</code> option specified • Executing the <code>dcstop</code> command with the <code>-fd</code> option specified 	Server to be forcibly stopped

- `rpc_service_retry_count=maximum-number-of-service-retries~ <unsigned integer> ((0-65535))`

Specify the maximum number of service function retries performed by the service retry facility. When 0 is specified, the service retry facility is not used. Therefore, the `dc_rpc_service_retry` functions returns an error and the service function is not retried.

When a number other than 0 is specified, the service function is retried for the specified number of times consecutively. The `dc_rpc_service_retry` function that is called exceeding the specified number of times returns an error and the service function is not retried.

Only the SPP can use the service retry facility.

- `rpc_extend_function=facility-extension-level-of-RPC-service~` <hexadecimal number> ((00000000-0000000F))

Specify one of the following as the extension level of the RPC service facility.

To specify two or more extension levels, specify logical ADD of the values specified.

00000000

The RPC service facility is not extended.

00000001

If the SPP that is currently executing a service request terminates abnormally, the `dc_rpc_call`, `dc_rpc_call_to` and `dc_rpc_poll_any_replies` functions return `DCRPCER_SERVICE_TERMINATED` (00378).

00000002

Non-transaction chained RPC calls (`dc_rpc_call` and `dc_rpc_call_to` functions with `DCRPC_TPNOTRAN` set as flags) started in a transaction do not stop at synchronization point processing. The non-transaction chained RPC calls continue until they are explicitly terminated by using the `dc_rpc_call` and `dc_rpc_call_to` functions with `DCNOFLAGS` specified as flags.

00000004

When the synchronization point processing of transactions is performed with no response message received from an asynchronous-response type RPC, only the response messages of the transactional attribute asynchronous-response type RPC are deleted without aborting those of the non-transactional attribute asynchronous-response type RPC.

00000008

The `KFCA00339-W` message is output when processing stops and the service request is discarded because the response to the `dc_rpc_call` or `dc_rpc_call_to` function caller times out in the SPP process.

- `max_socket_descriptors=maximum-number-of-file-descriptors-for-sockets~`<unsigned integer> ((32-2032))

Specify the maximum number of file descriptors to be used for sockets by the processes under the OpenTP1 control[#].

The processes under the OpenTP1 control[#] exchange the process information with the system service or user server through the TCP/IP communication using sockets. Therefore, you must change the maximum number of file descriptors for sockets depending on the number of UAP processes that run concurrently and the number of other nodes to communicate with.

For this operand, specify a value that satisfies the following condition:

Value specified in this operand + value specified in the `max_open_fds` operand in the same definition ≤ 2048

If you specify a value that does not satisfy the above condition, the value specified in this operand is forcibly corrected as follows:

Value specified in this operand + value specified in the `max_open_fds` operand in the same definition = 2048

#: OpenTP1 processes other than the MCF services (MCF manager service, MCF communication service, and application startup service). For the MCF services, see the sections on the system service information definition and the system service common information definition.

Calculate the maximum number of file descriptors for sockets using the following formula.

\uparrow (Number of UAP processes that communicate with the user server^{#1} + number of system service processes^{#2}) / 0.8 \uparrow

\uparrow \uparrow : Rounded up to the nearest whole integer.

#1: The number of UAP processes that communicate with the user server is the sum of the following values:

- Number of UAP processes in the local OpenTP1 that communicate with the user server
- Number of UAP processes in the other nodes that communicate with the user server

#2: The number of system service processes in the local OpenTP1.

If the value specified by this operand is too small, the connection cannot be set with other processes under the OpenTP1 control and the process terminates abnormally after outputting the KFCA00307-E error message.

The order of priority of the specified values is 1 > 2 > 3.

1. User service definition
2. User service default definition
3. System common definition

If the specification is omitted here and in the user service default definition, the value in the system common definition is assumed.

- `max_open_fds=maximum-number-of-files-and-pipes-accessed-by-a-UAP-process~<unsigned integer> ((16-2016))`

Specify the maximum number of files and pipes that are accessed by a user server

process.

File descriptors are used to access files and pipes.

When the user server process accesses too many files, the number of file descriptors for sockets that are used to exchange the process information with the system server or user server becomes insufficient. Therefore, the number of files and pipes to be accessed needs to be set beforehand.

Calculate the maximum number of files and pipes that are accessed by a user server process using the following formula.

(Total number of OpenTP1 file systems that are specified in the system definitions of the DAM service, TAM service, journal service, and status service^{#1}) + (Number of ISAM keys) + 20^{#2} + (Number of user files^{#3})

#1: Number of OpenTP1 file system areas that are used online

#2: When making a service request using the remote API facility, add 16 to the fixed number of 20.

#3: Files not under the OpenTP1 control and those that are independently used by users

If the value specified in this operand is too small, the connection cannot be set with other processes under the OpenTP1 control and the process terminates abnormally after outputting the KFCA00307-E error message.

- `service_term_watch_time=abnormal-termination-check-expiration-time-for-service~<unsigned integer> ((0-32767))` (Unit: minutes)

Specify the period of time to monitor the number of times the server process of this user server terminates abnormally during the same service execution. When zero is specified, this operand is assumed to be not specified and the monitoring is not performed.

When this operand is specified, if the server process terminates abnormally three times during the same service execution (in the `dc_rpc_mainloop` function) within the specified time, that service is shut down. If the server process terminates abnormally three times other than during the service execution (other than in the `dc_rpc_mainloop` function), the service group is shut down.

This operand is valid when managing the service shutdown without shutting down the service group even if the server process terminates abnormally (when `N` is specified in the `hold` operand and `Y` is specified in the `service_hold` operand). This operand is ignored even if it is specified for the SPP server that receives requests from the socket, SUP, and MHP.

If a value other than 0 is specified in this operand, the number of abnormal terminations is monitored for each service. Therefore, the `term_watch_time` operand is ignored even if it is specified.

See the following table for the relationship among the `service_term_watch_time` operand specification and the specification of the `hold` operand, `service_hold` operand, and `term_watch_time` operand.

Operand specification				Number of abnormal terminations of the server process and OpenTP1 processing		
hold	service_hold	term_watch_time	service_term_watch_time	1st time	2nd time	3rd time
Y	Y	U	U	Service shutdown	--	--
	N	U	U	Service group shutdown	--	--
N	Y	0	Not specified	Process restart	Process restart	Process restart
		Other than 0	Not specified	Process restart	Process restart	Service group shutdown
		0	0	Process restart	Process restart	Process restart
		Other than 0	0	Process restart	Process restart	Service group shutdown
		U	Other than 0	Process restart	Process restart	Service shutdown [#]
	N	0	U	Process restart	Process restart	Process restart
		Other than 0	U	Process restart	Process restart	Service group shutdown

Legend:

U: Unspecifiable (ignored even if specified)

--: Nothing is performed.

[#]: If the server process terminates abnormally three times during other than the service execution (other than in the `dc_rpc_mainloop` function), the service group is shut down.

■ `termed_after_service=Y|N`

Specify whether to terminate the non-resident process when the load is decreased at the termination of the service in this user server.

Y

The non-resident process is terminated.

N

The unnecessary non-resident process is terminated by the schedule service at an interval.

Normally, OpenTP1 checks the status of processes regularly (every 10 seconds) and terminates unnecessary non-resident processes. However, in a system with many servers, the number of processes to be terminated at the same time increases, which decreases the processing performance of the service request that occurs at the same time when a process is terminated.

Specifying Y in this operand checks the status of processes at the termination of the service. This reduces the number of processes to be terminated at the same time and prevents degrading the processing performance of the service request that occurs when a process is terminated. In addition, by reducing the number of processes started in the system, the load of the system can be reduced.

However, since the process status is checked each time the service is terminated, the processing performance of service requests degrades each time. In addition, depending on the system type, the non-resident processes start and terminate so frequently that the processing performance of service requests may degrade.

This operand is ignored even if it is specified for the SPP server that receives requests from the socket and for the SUP.

- `xat_trn_expiration_time=period-of-time-to-monitor-the-expiration-of-synchronization-point-processing~<unsigned integer> ((1-2147483647))` (Unit: seconds)

Specify the period of time to monitor the expiration of the synchronization point processing with the remote system when executing OSI/TP communication with XATMI interface using TP1/NET/OSI-TP-Extended.

Whether the service or service group is to be shut down if a UAP terminates abnormally depends on the specification of the `hold` and `term_watch_time` operands. For details, see the descriptions of the `hold` and `term_watch_time` operands of the user service definition.

For the MHP, this operand is ignored even if it is specified.

- `xat_osi_usr=Y|N`

Specify whether to use the stub for OSI TP communication with XATMI interface using TP1/NET/OSI-TP-Extended in this server.

Y

The stub for OSI TP communication is used.

N

The stub for OSI TP communication is not used.

When `N` is specified, the OSI TP communication with XATMI interface using TP1/NET/OSI-TP-Extended cannot be performed.

For the MHP, this operand is ignored even if it is specified.

■ `rpc_trace=Y|N`

Specify whether an RPC trace is to be collected.

`Y`

An RPC trace is collected.

`N`

An RPC trace is not collected.

When an RPC trace is acquired, the processing speed may be reduced and the RPC may return an error due to a timeout. In this case, increase either of the following values, which are the maximum amount of response waiting time (default: 180 sec.), to an appropriate value:

1. The maximum response waiting time specified in the `watch_time` operand of the system common definition, user service definition, or user service default definition
2. The maximum response waiting time that the RAP-processing server inherited from the client

Whether the RAP-processing server inherits the maximum response waiting time from the client is specified in the `DCWATCHTIMINHERIT` operand of the client environment definition (for TP1/Client/W or TP1/Client/P) or in the `dcwatchtiminherit` operand of the TP1/Client/J environment definition (for TP1/Client/J).

If `Y` is specified in the `DCWATCHTIMINHERIT` or `dcwatchtiminherit` operand, use the maximum response waiting time indicated in 2 above.

If `N` is specified in the `DCWATCHTIMINHERIT` or `dcwatchtiminherit` operand, or if these operands are not specified, use the maximum response waiting time indicated in 1 above.

When the remote API facility is used, the RPC trace for RAP-processing clients cannot be acquired if `Y` is specified in this operand.

You can also specify this operand with the user service default definition or the system common definition.

The priority of the specified values is (1.>2.>3.).

1. User service definition
2. User service default definition
3. System common definition

- `rpc_trace_name="RPC-trace-collection-file-name"~<path name>`

Specify the path name of the file for collection of the RPC trace.

In the path name, the maximum length of the name of the file for acquiring the RPC trace is 13 characters (the default file name is `rpctr`).

To specify an environment variable in a path name, make sure that the path name begins with the environment variable (example: `$DCDIR/tmp/file-name`).

- `rpc_trace_size=RPC-trace-collection-file-capacity~<unsigned integer>`
(1024-2147483648) (Unit: bytes)

Specify the capacity of the file for collection of the RPC trace.

Even if you specify 4096 or less for this operand, if the length of the transmitted text exceeds the specified value, the size of the trace file to be created may be larger than the value specified by this operand.

- `trn_rollback_information_put=no|self|remote|all`

Specify whether to log information on the cause of rollback when transaction branches are rolled back.

`no`

Rollback information is not logged.

`self`

Rollback information is logged only for the transaction branch that caused rollback.

`remote`

In addition to information of `self`, rollback information is logged for transaction branches for which the remote node transaction branch requested rollback.

`all`

In addition to information of `remote`, rollback information is logged for transaction branches for which the local node transaction branch requested rollback.

If this operand is omitted in both the user service definition and the user service default definition, the default of the transaction service definition is used.

- `schedule_method=msgque|namedpipe`

Specify the scheduling method of the user server.

`msgque`

The message facility of the operating system is used for scheduling service requests.

`namedpipe`

The named pipe of the operating system is used for scheduling service requests.

Specify `namedpipe` when you specify the `service_wait_time` operand in the user service definition.

Note that the `namedpipe` specification:

- Provides less processing performance than that provided by a `msgque` specification.
- Increases the number of file descriptors used for the scheduling service by the number of user servers that specify the operand.

This operand does not need to be specified for the SPP server that receives requests from the socket and for the SUP.

- `service_wait_time=service-request-waiting-time-for-non-resident-server-processes-of-the-user-server~<unsigned integer> ((1-4096))` (Unit: seconds)

Specify the period of time for non-resident server process of the user server should wait for a service request.

The non-resident processes of the user server which specified this operand should wait for service requests for the specified period of time, and will be terminated if no service request is sent.

If this operand is not specified, the scheduling service monitors the load on the server at a regular interval and terminates non-resident processes.

This operand is effective when `namedpipe` is specified for the `schedule_method` operand of the user service definition. Specifying the `service_wait_time` operand invalidates the specification of the `termed_after_service` operand of the user service definition.

This operand does not need to be specified for the SPP server that receives requests from the socket and for the SUP.

- `mcf_spp_oj=Y|N`

Specify whether OJ historical information is to be collected when the SPP requests branch message transmission, application startup, or message retransmission.

Y

OJ historical information is collected.

N

OJ historical information is not collected.

- `adm_message_option=message-output-specification~<one-digit hexadecimal number>`

Specify with the logical AND of bit masks whether to output the following messages. A message with the bit mask turned on will be output. A message with the bit mask turned off will not be output.

Message ID	Bit mask (hex.)	Contents of the message
KFCA01811-I	1	Server starting
KFCA01813-I	2	Server online
KFCA01842-I	4	Server terminating
KFCA01843-I	8	Server suspended

Example

To output the KFCA01813-I and KFCA01843-I messages, specify set `adm_message_option=A`.

- `trn_watch_time=maximum-communication-wait-time-for-synchronization-point-processing-of-transactions~<unsigned integer> ((10-1024)) (Unit: seconds)`

Specify the maximum waiting time for receiving the communication (such as an instruction of prepare, commit, or rollback, and a response) performed between transaction branches during the synchronization point processing of transactions.

If no instruction or response is made after the specified time, the transaction branch will be rolled back if it is before completion of the first phase of two-phase commit. If the first phase is completed, the system process of the transaction service retries to determine the transaction.

If this operand is omitted in both the user service definition and the user service default definition, the default of the transaction service definition is used.

If you also omit this operand in the transaction service definition, the system assumes the `watch_time` value of the user server that executed the transaction. However, if you specify 0 for `watch_time`, the system assumes 120 seconds.

- `trn_limit_time=maximum-time-to-execute-transaction-branch~<unsigned integer> ((0-65535)) (Unit: seconds)`

Specify the maximum time to execute a transaction branch. The expiration time are automatically specified for the `dc_rpc_call` and `dc_rpc_poll_any_replies` functions and for the communication during the synchronization point processing as shown below, so that the time between startup of a transaction branch and termination of the synchronization point processing does not exceed the value specified in this operand.

- Expiration time for the `dc_rpc_call` function and the `dc_rpc_poll_any_replies` function

For $K \geq \text{Value of the operand}$, the system returns a timeout error without executing the requested processing.

For $K < \text{Value of the operand}$, and $(\text{Value of the operand}) - K \geq W$, W is set for the expiration time.

For " $K < \text{Value of the operand}$ ", and " $(\text{Value of the operand}) - K < W$ ", the value of the operand minus K is set for the expiration time.

K

(Current time) - (Transaction branch startup time)

W

Value specified in the `watch_time` operand for the `dc_rpc_call` function, or value of the `timeout` argument for the `dc_rpc_poll_any_replies` function.

- Expiration time for the communication during the synchronization point processing

For $K \geq \text{Value of the operand}$, the expiration time is 1 second.

For $K < \text{Value of the operand}$, and $(\text{Value of the operand}) - K \geq W$, W is set for the expiration time.

For $K < \text{Value of the operand}$, and $(\text{Value of the operand}) - K < W$, the value of the operand minus K is set for the expiration time.

K

(Current time) - (Transaction branch startup time)

W

Value specified in the `trn_watch_time` operand, or in the `watch_time` operand if the `trn_watch_time` operand is not specified.

If processing other than above takes a long time, the transaction branch may not terminate within the specified time.

If the time specified with this operand has expired before the synchronization point processing starts, the transaction will be rolled back. Specify 0 to have no time check.

If this operand is omitted in both the user service definition and the user service default definition, the default of the transaction service definition is used.

- `trn_rollback_response_receive=Y|N`

Specify whether to receive a rollback completion report after sending a rollback

instruction to the RPC destination transaction branch. Specify `N` to terminate the local transaction branch without receiving the rollback completion report from the RPC destination transaction branch (i.e., without waiting for the RPC destination transaction branch to complete rollback processing).

If this operand is omitted in both the user service definition and the user service default definition, the default of the transaction service definition is used.

■ `trn_partial_recovery_type=type1|type2|type3`

This specifies the method of processing transaction synchronization points when there is a UAP error.

If an RPC timeout, causes the address of a destination process for issuing the RPC not to be settled or if the UAP where a transaction is underway fails, the communication between transaction branches will degrade so that it may take time to settle transactions.

With this operand, the method of processing transaction synchronization points for any of the following faults is selected among from the three methods shown in the specified values.

Error 1

When there is an RPC timeout

In this case, the RPC-issuing transaction branch cannot identify the process executing the service request. Since the branch cannot identify the process, sending a message about the transaction synchronization point to the RPC-receiving transaction branch is impossible. Both the RPC-issuing and RPC-receiving transaction branches have to wait for the transaction synchronization point message, which requires time to settle the transaction.

Error 2

When the RPC-issuing UAP goes down before receiving an RPC response

In this case, the RPC-issuing transaction branch cannot identify the process executing the service request. Since the branch cannot identify the process it cannot send a message about the transaction synchronization point to the RPC-receiving transaction branch. The RPC-receiving transaction branch has to wait for the transaction synchronization point message, which requires time to settle the transaction.

Error 3

When the RPC-issuing UAP and the RPC-receiving UAP go down almost simultaneously after the reception of a response from the RPC-receiving UAP

In this case, the transaction recovery process taking over both of the transaction branches does not know that the other party's UAP process is down. That recovery

process will send a transaction synchronization point message to a non-existing UAP process, which requires time to settle the transaction.

type1

If Error 1 occurs, the RPC-issuing transaction branch and the RPC-receiving transaction branch both settle the transaction when the processing of the transaction synchronization point message causes a timeout.

If Error 2 occurs, the RPC-issuing transaction branch settles the transaction without sending the transaction synchronization point message to the RPC-receiving transaction branch. The RPC-receiving transaction branch settles the transaction when the processing of the transaction synchronization point message causes a timeout.

If Error 3 occurs, the RPC-issuing transaction branch and the RPC-receiving transaction branch both settle the transaction when the processing of the transaction synchronization point message causes a timeout.

type2

If Error 1 occurs and transaction is committed, the procedure is the same as type1.

If Error 1 occurs and the transaction is rolled back or if Error 2 occurs, the RPC-issuing transaction branch sends the message about the transaction synchronization point to the transaction service process at the node where the RPC-receiving transaction branch exists, and then settles the transaction. Upon receiving the transaction synchronization point message the transaction service process, sends a transaction synchronization point instruction to the process that is currently processing the transaction branch.

If Error 3 occurs, the RPC-issuing transaction branch and the RPC-receiving transaction branch both settle the transaction when the processing of the transaction synchronization point message causes a timeout.

type3

If Error 1 occurs and transaction is committed, the procedure is the same as type1.

If Error 1 occurs and the transaction is rolled back, or if Error 2 or Error 3 occurs, the RPC-issuing transaction branch sends the transaction synchronization point message to the transaction service process at the node where the other party's transaction branch exists, and then settles the transaction. When the transaction service process has received the transaction synchronization point message, the transaction service process sends a transaction synchronization point instruction to the process that is currently processing the transaction branch.

In the following cases, even if this operand is given type2 or type3, it may take time to settle the transaction.

1. During an RPC execution, the RPC-receiving UAP undergoes a status change

(such as load increase, UAP termination, and UAP blocking) and a service request is retransferred to the same UAP of another node.

2. In this version, this option does not support the other party's OpenTP1.
3. The other party's transaction branch takes time other than in the reception of the transaction synchronization point message.

If the operand is omitted here and in the user service default definition, the system assumes the value for the transaction service definition.

■ `rpc_destination_mode=namdonly|namd|definition`

This operand specifies which of the information obtained from the name service and the value specified in the user service network definition is to be given priority when determining the destination of a service required by the `dc_rpc_call` function.

`namdonly`

As before, the system sends the service to the address selected from the name service information. However, the system never search the value specified in the user service network definition.

`namd`

The system sends the service to the address selected from the name service information. It searches the value specified in the user service network definition only when it has failed to find the service in the name service information.

`definition`

The system sends the service to the address searched from the value specified in the user service network definition. The system requests the name service to make an address search only when the system failed to find the service in the user service network definition.

Specify this operand to use an SUP, SPP, or MHP to call the `dc_rpc_call` function.

With `namd` or `definition` specified in this operand, the system searches the value in the user service network definition and sends a service request. If service information defined at a node was not specified in the `all_node` operand of a system common definition, the service requested after restarting any down OpenTP1 at this node may encounter a timeout error.

■ `rpc_rap_auto_connect=Y|N`

This operand specifies whether or not the connection between the UAP and the remote API control process is under the automatic control of OpenTP1 when a service request is issued using a resident connection in the remote API facility.

`Y`

Autoconnect mode; the connection between the UAP and the remote API control

process is under the automatic control of OpenTP1.

N

Non-autoconnect mode; the connection between the UAP and the remote API control process is controlled by the user using the `dc_rap_connect` or `dc_rap_disconnect` function.

- `rpc_rap_inquire_time=maximum-inquiry-interval-for-request-service-using-the-remote-API-facility~ <unsigned integer> ((0-1048575))` (unit: seconds)

This operand specifies the maximum wait time for processing of the next service request after the remote API control process executes a service request issued from the UAP using the remote API facility. The remote API control process monitors this timer value. In case there is no more service request when the specified time has elapsed, the remote API control process assumes that the UAP to have gone down and continues processing.

Specifying a value of 0 means that the value specified by the remote API control process definition is valid.

Specify this operand when using SUP, SPP, or MHP to call the `dc_rpc_call` function using the remote API facility.

When using the remote API facility from the resident SPP, do not specify 0 in this operand or the `rpc_rap_inquire_time` operand in the RAP-processing listener service definition. If 0 is specified, the OpenTP1 system waits an unlimited amount of time for the resident SPP to terminate, because the RAP-processing listener cannot be terminated even if you try to terminate the OpenTP1 system of the node where the RAP-processing listener resides.

When the `rpc_rap_inquire_time` operand is omitted in the user service definition for an SPP or SUP, the value specified in this operand of the RAP-processing listener service definition is regarded as the maximum amount of wait time. When both are omitted, 180 seconds is assumed.

- `rpc_request_cancel_for_timeout=Y|N`

This operand specifies whether or not make the server recognize that the client is in wait status by taking over the service response wait time after sending the service request. This wait time is set with the client UAP.

Once the server takes over the response wait time for client UAP, it is possible to prevent the server from executing the service or waiting for execution of point processing if a timeout occurs at the client UAP.

Y

Makes the server be aware of the response wait time for client UAP.

N

Does not make the server be aware of the response wait time for client UAP.

Set N, however, if the version of TP1/Server Base of the server is 03-02 and if the domain-specified synchronous `dc_rpc_call` function is used. Otherwise, an RPC error will result.

■ `status_change_when_terminating=Y|N`

This operand specifies whether or not to reflect the server status at the next restart when the system has gone down after the user server normally terminated during normal system termination or when SUP normally terminated before the termination processing with the `dcstop` command during scheduled system termination.

Y

Reflects the final status change.

Normally-ended user servers are not restarted at the next OpenTP1 restart.

N

Does not reflect the final status change.

Normally-ended user servers are restarted at the next OpenTP1 restart.

■ `service_expiration_time=execution-monitor-time-from-service-function-startup-to-termination~<unsigned integer> ((0-65535))` (units: seconds)

This operand specifies the period of time to monitor the execution of a service function between its startup and termination in an SPP process. If the service function does not return within the specified period of time, OpenTP1 forcibly stops this process.

Specify 0 to have no time monitoring.

Whether the service or service group is to be shut down if a UAP terminates abnormally depends on the specification of the `hold` and `term_watch_time` operands. For details, see the descriptions of the `hold` and `term_watch_time` operands of the user service definition.

■ `multi_schedule=Y|N`

This operand specifies whether to schedule a service request using the multi-scheduler facility. When you use the multi-scheduler facility, specify this operand on the user server on the RPC sending side.

Y

Uses the multi-scheduler facility to schedule a service request.

N

Does not use the multi-scheduler facility to schedule a service request.

When the multi-scheduler facility is enabled, if a service group in the OpenTP1 system

contains some user servers that use the facility and some that do not, service requests are distributed first to the user servers that use the facility.

If the user servers that use the multi-scheduler facility are inactive or the facility cannot perform scheduling (because of, for example, a shutdown or a message buffer shortage), service requests are distributed to the other user servers.

To use the multi-scheduler facility, you must specify this operand and `scdmulti` definition command of the schedule service definition and user service definition on the RPC receiving side.

You can use this facility when TP1/Extension 1 is already installed. If TP1/Extension 1 is not installed, the operation of this facility cannot be assured.

■ `make_queue_on_starting=Y|N`

This operand specifies whether a schedule queue that OpenTP1 allocates to a non-resident service group should be allocated at the start of the server.

Y

Allocates a schedule queue at the start of the server.

N

Does not allocate a schedule queue at the start of the server.

When you specify this operand, you can detect a status in which the non-resident server cannot schedule service requests because the system resource is insufficient, at the start of the server.

However, even if the system fails to allocate a schedule queue, the system does not cancel starting the server.

This operand is ignored when you specify `purge_msgget=Y` in the user service definition or in the user service default definition, or when you specify a value other than 0 as the number of resident processes in the `parallel_count` operand.

■ `loadcheck_interval=load-check-interval~<unsigned integer>((0-65535))(unit: seconds)`

Specify the interval between checks on the load level of the current service group. If the load level is changed during a load check, the server information is reported to the name service of each node. Therefore, in the worst case, the server information is sent out to the network at each load check interval. To prevent this, do not specify a short interval unless it is necessary. If you specify `scd_announce_server_status=N` in the schedule service definition, this operand is ignored even if it is specified. If you specify 0, load levels are not checked.

If you do not specify this operand, the load check interval will be 30 seconds. Whether to check the load is determined every 10 seconds. In other words, a load check is executed at every third check.

When you specify this operand, the value specified in this operand is the load check interval. This value determines whether the load check is executed at the interval that is calculated from the largest common factor of 10 and the value specified in this operand for each user server. For example, when you specify 3 for the `loadcheck_interval` operand of SPP1 and 5 for the `loadcheck_interval` operand of SPP2, the interval of the check is 1 second since 1 is the largest common factor of 10, 3, and 5. The load check of SPP1 is executed at every third check. The load check of SPP2 is executed at every fifth check.

Therefore, to keep the influence to the system to the minimum, specify a multiple of 5 as the value to be specified for the `loadcheck_interval` operand.

You do not need to specify this operand for the MHP, the SPP that receives requests from the socket, and the SUP. The operand will be ignored even if you specify it.

You can use this definition command when TP1/Extension 1 is already installed. If TP1/Extension 1 is not installed, the operation of this definition command cannot be assured.

■ `levelup_queue_count=U1,U2`

`leveldown_queue_count=D0,D1~<unsigned integer>((0-32767))`

Specify the number of remaining service requests, which determines the load level of the current service group.

U1

Number of remaining service requests, which determines that the server's load level is upgraded to LEVEL1

U2

Number of remaining service requests, which determines that the server's load level is upgraded to LEVEL2

D0

Number of remaining service requests, which determines that the server's load level is downgraded to LEVEL0

D1

Number of remaining service requests, which determines that the server's load level is downgraded to LEVEL1

The values specified in the `levelup_queue_count` operand and the `leveldown_queue_count` operand must satisfy the following condition:

Condition: $0 \leq D0 < U1 \leq D1 < U2$

If the specified values do not satisfy the condition, a definition error occurs when you start the server and the startup will fail.

If you specify `scd_announce_server_status=N` in the schedule service definition, this operand will be ignored even if you specify it. The `leveldown_queue_count` operand is valid only when the `levelup_queue_count` operand is specified. The `leveldown_queue_count` operand will be ignored if the `levelup_queue_count` operand is not specified. However, when the `levelup_queue_count` operand is specified, you can omit the `leveldown_queue_count` operand. In this case, the values to be specified in the `leveldown_queue_count` operand are assumed as follows:

$$D0=U1/2$$

$$D1=U1+(U2 - U1)/2 \text{ (fractions are discarded for both } D0 \text{ and } D1)$$

You do not need to specify this operand for the MHP, the SPP that receives requests from the socket, and the SUP. The operand will be ignored even if you specify it.

You can use this definition command when TP1/Extension 1 is already installed. If TP1/Extension 1 is not installed, the operation of this definition command cannot be assured.

- `ipc_sockctl_highwater=percentage-of-sockets-at-which-temporary-closing-starts[, percentage-of-sockets-for-which-temporary-closing-is-not-performed]~<unsigned integer>((0-100))`

For the `max_socket_descriptors` operand specification value, specify a percentage of sockets at which temporary closing starts.

When the number of file descriptors that are used for the sockets in the process exceeds the following value, OpenTP1 starts temporary closing.

Value specified in the `max_socket_descriptors` operand x (Percentage of sockets at which temporary closing starts/100)

If you specify 0 for the percentage of sockets at which temporary closing starts, temporary closing is executed each time a connection is established. For details about temporary closing, see the manual *OpenTP1 Description*.

You can specify the percentage of connections that are not to be temporarily closed. The system calculates the number of connections that are not to be temporarily closed as follows:

Value specified in the `max_socket_descriptors` operand x (Percentage of sockets for which temporary closing is not performed/100)

The percentage of sockets for which temporary closing is not performed should be less than the percentage of sockets at which temporary closing starts. If you specify a value greater than the percentage of sockets at which temporary closing starts, the system assumes the same value as the percentage of sockets at which temporary closing starts.

OpenTP1 chronologically manages the connections that are established within a

process. When you specify the percentage of sockets for which temporary closing is not performed, the temporary closing requests are sent starting with the oldest connection that was established.

This operand is used to specify the percentage of sockets at which temporary closing starts, as a percentage of the value specified in the `max_socket_descriptors` operand. If a small value is specified for the `max_socket_descriptors` operand and also for this operand (the percentage of sockets at which temporary closing starts), many temporary closing requests occur, affecting the performance or causing communication failures.

If you omit this specification here and in the user service default definition, the system assumes the value in the system common definition.

- `ipc_sockctl_watchtime=length-of-time-to-wait-until-the-sockets-are-reusable~<unsigned integer>((0-65535))` (unit: seconds)

Specify the length of time (seconds) to wait from the moment the number of file descriptors used for the sockets in the process reaches the value specified in the `max_socket_descriptors` operand until the sockets become reusable due to temporary closing.

Whether the service group or service is to be shut down if a UAP terminates abnormally depends on the specification of the `hold` and `term_watch_time` operands. For details, see the descriptions of the `hold` and `term_watch_time` operands of the user service definition.

Since temporary closing uses mutual agreement to disconnect the connection between processes, the process that sends the request for temporary closing cannot disconnect the connection until it receives the response. When the process receives the response, the connection is disconnected, and the sockets can be reused.

If no process returns a response to the request for temporary closing after the length of time specified in the `ipc_sockctl_watchtime` operand is exceeded, the process that sent the request is forcibly terminated. If you specify 0 for the `ipc_sockctl_watchtime` operand, the wait time is unlimited.

If you omit this specification here and in the user service default definition, the system assumes the value in the system common definition.

- `ipc_conn_interval=length-of-time-to-wait-until-the-connection-is-established~<unsigned integer>((8-65535))` (unit: seconds)

Specify the length of time to wait in seconds until the connection is established when you send data.

Specify the length of time to wait until the system receives the response to the `connect()` system call that is called in the nonblocking mode.

If you omit this specification here and in the user service default definition, the system

assumes the value in the system common definition.

- `ipc_send_interval=interval-for-monitoring-data-transmission~<unsigned integer>((5-32767))` (unit: seconds)

Specify the interval for monitoring data transmission.

If you omit this specification here and in the user service default definition, the system assumes the value in the system common definition.

- `ipc_send_count=number-of-times-data-transmission-is-monitored~ <unsigned integer>((1-32767))`

Specify the number of times data transmission is monitored until data transmission is completed.

The system monitors the data transmission monitoring time for OpenTP1 which is calculated in seconds as follows:

Value specified in the `ipc_send_interval` operand x Value specified in the `ipc_send_count` operand

If you omit this specification here and in the user service default definition, the system assumes the value in the system common definition.

- `ipc_header_recv_time=length-of-time-to-wait-until-the-communication-control-data-is-received~<unsigned integer>((5-32767))` (unit: seconds)

Specify the length of time to wait from when OpenTP1 is notified by TCP/IP that data reception is started until OpenTP1 receives the communication control data.

If you omit this specification here and in the user service default definition, the system assumes the value in the system common definition.

- `rpc_send_retry_count=number-of-retries-if-an-error-occurs-during-TCP/IP-connection~<unsigned integer>((0-65535))`

Even if any of the errors ECONNREFUSED (239), EHOSTUNREACH (242), and ENETUNREACH (229) occurs during a TCP/IP connection when the server sends a response, you may be able to avoid the error by specifying the number of retries in this operand.

When you specify 0 for this operand, no retry is performed even if any of the above errors occurs during a TCP/IP connection.

When you specify 1 to 65535 and if any of the errors occurs during a TCP/IP connection, retries are performed after waiting for the period of time specified in the `rpc_send_retry_interval` operand.

If you do not specify this operand here or in the user service definition, the system assumes the value in the system common definition.

- `rpc_send_retry_interval=interval-between-retries-if-an-error-occurs-during-TCP/IP-connection~<unsigned integer>((0-300000))` (Unit: milliseconds)

Even if any of the errors ECONNREFUSED (239), EHOSTUNREACH (242), and ENETUNREACH (229) occurs during a TCP/IP connection when the server sends a response, you may be able to avoid the error by specifying the interval in milliseconds between retries in this operand.

When you specify 0 for this operand, no interval is taken between retries to establish a TCP/IP connection. You cannot specify 1 to 19. If any value of 1 to 19 is specified, a retry is performed to establish a TCP/IP connection after 20 milliseconds.

This operand becomes valid when any value of 1 to 65535 is specified in the `rpc_send_retry_count` operand.

If you do not specify this operand here or in the user service definition, the system assumes the value in the system common definition.

- `ipc_listen_sockbufset=Y|N ~<<N>>`

Specify whether to set the TCP/IP send and receive buffer sizes for the listen socket that OpenTP1 uses for inter-process communication during generation of the socket as specified in the `ipc_sendbuf_size` and `ipc_rcvbuf_size` operands.

Y

Sets the TCP/IP send and receive buffer sizes for the listen socket.

N

Does not set the TCP/IP send and receive buffer sizes for the listen socket.

The TCP/IP send and receive buffer sizes specified in the `ipc_sendbuf_size` and `ipc_rcvbuf_size` operands are applied after the OpenTP1 process receives a connection establishment request and establishes a connection. Because the buffer sizes are changed after the connection is established, the buffer sizes differences between the connection source and destination might cause a communication delay.

If TP1/Client communicates with TP1/Server Base on the same node, Hitachi recommends that you specify Y in this operand.

If the `ipc_listen_sockbufset` operand is omitted in both the user service definition and the user service default definition, the value of the `ipc_listen_sockbufset` operand in the system common definition is used.

- `ipc_rcvbuf_size=receive-buffer-size-of-TCP/IP~<unsigned integer>((8192-1048576))` (unit: bytes)

Specify the size of the receive buffer of TCP/IP allocated for each connection. When using devices with high speed communication or using a large MTU, the performance can be improved if the value in this operand is increased.

Notes:

TCP returns a delivery acknowledge (ACK) packet in response to the received data. If the length of the received data is much smaller than the size of the receive buffer, TCP may not return ACK immediately (delayed ACK).

If a great value is specified in this operand and a small amount of data is exchanged, the performance may be degraded due to delayed ACK. For details about delayed ACK, see the TCP/IP documentation.

When you specify the operand, make sure that the value does not exceed the maximum TCP/IP receive buffer size that can be specified in the OS.

For the user server, if you do not specify this operand here or in the user service definition, the system assumes the value in the system common definition.

- `ipc_sendbuf_size=send-buffer-size-of-TCP/IP~<unsigned integer>`
(8192-1048576) (unit: bytes)

Specify the size of the send buffer of TCP/IP allocated for each connection. When using devices with high speed communication or using a large MTU, the performance can be improved if the value in this operand is increased.

Note:

When you specify the operand, make sure that the value does not exceed the maximum TCP/IP send buffer size that can be specified in the OS.

For the user server, if you do not specify this operand here or in the user service definition, the system assumes the value in the system common definition.

- `polling_control_data=Y|N`

This operand specifies whether to regularly poll into the waiting status where an SPP or MHP under OpenTP1 is waiting for a service request. Specify Y to check whether a temporary closing request has arrived.

Y

Regularly polls into the waiting status and checks whether a temporary closing request has arrived.

N

Does not poll into the waiting status, and keeps the waiting status until a service request arrives.

You must specify Y in this operand for a resident UAP where no service request occurs for a long time.

For a system that varies in its application traffic depending on the time zone, you must specify Y in this operand of the user service definition of a resident UAP.

- `thread_yield_interval=interval-for-issuing-a-trigger-to-receive-a-socket-reuse-instruction~<unsigned integer>((1-86400))` (unit: seconds)

Specify the interval in seconds for polling into the waiting status where an SPP or MHP under OpenTP1 is waiting for a service request. This specification checks whether a temporary closing request has arrived.

If the services are accepted one after another without waiting, the system checks whether a temporary closing request has arrived when the time period in which service requests are accepted successively exceeds a predetermined time. This operand is also used to specify this interval. (No signal interrupt occurs for checking whether a temporary closing request has arrived, when the time period in which service requests are accepted successively exceeds the value specified in this operand.)

Specify a smaller value than the time period in which a process issuing a temporary closing request waits for a response (180 seconds: default of `ipc_socket1_watchtime` operand).

The facility of checking whether a temporary closing request has arrived by polling into the service waiting status becomes active only when `Y` is specified in the `polling_control_data` operand. The facility of checking whether a temporary closing request has arrived when successive services are accepted becomes active regardless of the value specified in the `polling_control_data`.

If the maximum value is specified in this operand, the system does not check whether a temporary closing request has arrived, regardless of the value specified in the `polling_control_data` operand.

- `groups=group-identifier [, group-identifier] . . .]~<unsigned integer>` ((0-4294967294))

Sets a group access list of the service group.

Specify group IDs cataloged in the operating system. You can specify up to 16 group IDs.

The `setgid()` system call automatically sets the group ID for the OpenTP1 administrator regardless of the value specified in this operand.

The maximum value depends on the operating system. Check the documentation for your operating system.

- `loadlevel_message=Y|N|A`

Specify whether to output the load level notification message KFCA00849-W when the load level of the server is changed.

`Y`

Outputs a notification message when the load level of the server rises to a high-load status (LEVEL2) or when it drops to the normal status (LEVEL0).

N

Does not output a notification message even if the load level of the server is changed.

A

Outputs a notification message when the load level of the server is changed.

The time to output notification messages varies depending on the value of the load monitoring interval specified in the `loadcheck_interval` operand. If no load monitoring interval is specified, 30 seconds is assumed.

- `ipc_backlog_count=length-of-queue-storing-connection-establishment-requests~<unsigned integer>((0-4096))`

Specify the length of the queue storing connection establishment requests. (Number of backlogged `listen` system calls)

The actual number to be specified as the number of backlogged `listen` system calls when 0 (default) is specified depends on the OS. For details, see the *Release Notes*.

The actual length of the queue may be longer than the specified value.

The upper and lower limits on the length vary depending on the OS. If the length of the queue is restricted with the upper and lower limits by the OS, the specified value may not be valid. For details about the queue storing connection establishment requests, see your OS or TCP/IP documentation.

If you do not specify this operand here and in the user service default definition, the system assumes the value in the system common definition.

- `rpc_buffer_pool_max=number-of-buffers-to-be-pooled~<unsigned integer>((1-64))`

Specify the number of buffers to be pooled when a message is created during the message reception processing by the RPC.

The buffers to be used in the message reception processing are secured in the process-specific area and pooled when they become unnecessary. At this time, if the number of buffers in the buffer pool exceeds the value specified in this operand, the smallest buffer in the buffer pool, including the buffers that are pooled newly, is released.

If you specify a value smaller than the default for this operand, the number of buffers to be used in the message reception processing exceeds the number specified in this operand. Note the following in that case:

- The performance of the message reception processing may degrade to secure necessary buffers or release buffers.
- An error may occur when securing the needed buffers and the message reception

processing may fail.

This operand can also be specified in the user service default definition.

If you do not specify this operand, the system assumes the value in the user service default definition.

- `schedule_delay_limit=schedule-delay-limit~<unsigned integer>((0-32767))(unit: seconds)`

Specify the delay limit time for scheduling using the schedule queue.

If a timeout occurs due to this operand when service requests are left unfetched in the schedule queue, message KFCA00838-W is output to each application server. At this time, when Y is specified for the `schedule_delay_abort` operand, the SCD daemon ends abnormally and OpenTP1 goes down.

If you omit this operand or specify 0, schedule delay is not monitored.

The schedule service monitors for schedule delay at a 10-second interval. Therefore, it may take up to 10 seconds to detect schedule delay.

For this operand, specify a value greater than the startup processing time and the service processing time of the applicable server.

This operand is ignored when it is specified for an MHP, SPP that receives requests from sockets, and SUP.

- `schedule_delay_abort=Y|N`

Specify whether to allow the system to go down when the schedule is delayed.

Y

The system goes down when the schedule is delayed.

N

The system does not go down when the schedule is delayed.

If a timeout has occurred due to the `schedule_delay_limit` operand when service requests are left in the schedule queue and Y is specified in the `schedule_delay_abort` operand, OpenTP1 outputs message KFCA00839-E. After output of the message, the SCD daemon terminates abnormally and OpenTP1 goes down.

If you omit the `schedule_delay_limit` operand or specify 0, the specification of the `schedule_delay_abort` operand is ignored.

This operand is ignored when it is specified for an MHP, SPP that receives requests from sockets, or SUP.

■ `rap_autoconnect_con_error_msg=Y|N`

Specify whether to output an error message if the RAP-processing server is disconnected when substitution execution for API functions is requested even though (1) the RAP-processing client is using the auto connect mode and (2) the connection with the RAP-processing server is already established.

An error message is output when you specify `Y` for this operand or omit this operand.

`Y`

An error message is output when the connection with the RAP-processing server is severed when substitution execution for API functions is requested.

`N`

An error message is not output when the connection with the RAP-processing server is severed when substitutional execution for API functions is requested.

The following message is suppressed by this operand:

- KFCA26971-E message with reason code 36

■ `core_shm_suppress=Y|N`

Specify whether to suppress output of the shared memory dump to the core file.

`Y`

Suppresses output of the OpenTP1 shared memory dump to the core file.

`N`

Does not suppress output of the OpenTP1 shared memory dump to the core file.

If a process ends abnormally with a KFCA00105-E message, the currently attached shared memory dump may be output to the core file depending on the OS.

When you specify `Y` for this operand, the OS suppresses the output of the OpenTP1 shared memory dump to the core file. By doing so, the following problems can be avoided:

- Decreased disk capacity due to increased core file size
- Increased machine load due to an I/O lock when the dump is output to the core file

If a process ends abnormally with a KFCA00105-E message before this operand is enabled, the currently attached OpenTP1 shared memory dump is output to the core file. (Only OSs that output the shared memory dump to a core file do this.)

In addition, even when `Y` is specified for this operand, if monitoring of the CPU time times out and a process ends abnormally with a KFCA00105-E message, the currently attached OpenTP1 shared memory dump is output to the core file. Note that only OSs that output the shared memory dump to a core file do this.

Note:

The OpenTP1 shared memory dump is output only when the system goes down. Therefore, if a UAP detects an abnormality and ends, the shared memory dump is not output. When the OS outputs the shared memory dump to the core file, the shared memory dump in the core file is useful data. When you specify Y for this operand, the shared memory dump is not output, making troubleshooting difficult.

- `xat_connect_resp_time=maximum-response-wait-time-for-association-establishment-of-SPP-for-processing-communication-events~<unsigned integer>`
<<0-65535>> (units: seconds)

Specify the maximum response wait time for an association establishment request (`dc_xat_connect` function) in the SPP for processing communication events during the communication that uses OSI TP as the protocol. When you specify 0, the system waits for a response indefinitely.

You can specify the same setting in the `XAT_CONNECT_RESP_TIME` operand of the `putenv` format. The following table shows the relationship between the `xat_connect_resp_time` operand and the `XAT_CONNECT_RESP_TIME` operand of the `putenv` format.

Table 3-14: `xat_connect_resp_time` operand of the set format and `XAT_CONNECT_RESP_TIME` operand of the `putenv` format

Specification of <code>xat_connect_resp_time</code> operand of set format	Specification of <code>XAT_CONNECT_RESP_TIME</code> operand of <code>putenv</code> format	Valid value(unit: seconds)
Y	N	Value specified in the <code>xat_connect_resp_time</code> operand of the set format
N	Y	Value specified in the <code>XAT_CONNECT_RESP_TIME</code> operand of the <code>putenv</code> format
Y	Y	Value specified in the <code>xat_connect_resp_time</code> operand of the set format
N	N	180 [#]

Legend:

Y: Specified.

N: Not specified.

#: If you omit both the specification of the `xat_connect_resp_time` operand of the

set format and the XAT_CONNECT_RESP_TIME operand of the putenv format, 180 seconds is assumed.

- `scd_poolfull_check_interval=interval-at-which-message-KFCA00853-E-is-output~<unsigned integer> ((0-32767))` (units: seconds)

Specify the interval at which message KFCA00853-E is output if successive memory shortages occur for the message storage buffer pool.

If the number of memory shortages occurring for the message storage buffer pool reaches the value of the `scd_poolfull_check_count` operand within the time specified in the `scd_poolfull_check_interval` operand, one KFCA00853-E message is output.

The timer for the `scd_poolfull_check_interval` operand starts when a memory shortage for the message storage buffer pool has occurred. The timer is reset when another memory shortage occurs after the timer has expired.

If you specify 0 in this operand, message KFCA00853-E is not output.

This operand can be specified only for SPPs that receive requests from queues, and will be ignored if specified for other user servers.

- `scd_poolfull_check_count=threshold-for-determining-whether-to-output-message-KFCA00853-E~<unsigned integer> ((1-32767))` (units: times)

Specify the threshold for determining whether to output message KFCA00853-E if successive memory shortages for the message storage buffer pool occur.

If the number of memory shortages occurring for the message storage buffer pool reaches the value of the `scd_poolfull_check_count` operand within the time specified in the `scd_poolfull_check_interval` operand, message KFCA00853-E is output.

This operand can be specified only for SPPs that receive requests from queues, and will be ignored if specified for other user servers.

- `scd_pool_warning_use_rate=maximum-use-rate-for-the-message-storage-buffer-pool-triggering-output-of-a-warning-message~<unsigned integer> ((0-99))` (units: %)

Specify the use rate for the message storage buffer pool that triggers output of a warning message.

The value to be specified is the percentage of the used memory area in the message storage buffer pool. The size of the buffer pool is specified in the `message_store_buflen` operand of the user service definition or specified by the definition command `scdbufgrp`.

Whether warning message KFCA00829-W is to be output is determined by the use rate of the message storage buffer pool at the moment that a service request is put in the

schedule queue. Once the message is output, it will not be output again until the use rate falls below and then exceeds again the value of this operand.

If 0 is specified in this operand or if this operand is not specified, the warning message is not output.

If the message storage buffer pool has been shared by multiple user servers on the basis of the schedule buffer group, the use rate is calculated with the size of area used by all user servers that share the buffer pool. This means that warning message KFCA00829-W may be output even when the use rate for a specific user server is below the value of this operand.

Regardless of the specification of this operand, if a memory shortage for the message storage buffer pool occurs, error message KFCA00854-E, not warning message KFCA00829-W, is output.

You can specify this operand only for queue-receiving SPPs. If you specify the operand for other SPPs, the operand is ignored.

- `scd_pool_warning_interval=interval-at-which-a-warning-message-is-output-if-the-use-rate-for-the-message-storage-buffer-pool-is-exceeded~<unsigned integer> ((0-32767))` (units: seconds)

Specify the interval at which a warning message (KFCA00829-W) is output if the use rate for the message storage buffer pool (specified in the `scd_pool_warning_use_rate` operand) is exceeded.

When this operand has been specified, once warning message KFCA00829-W has been output, it is not output again until the time specified in this operand elapses, even if the use rate for the message storage buffer pool exceeds `scd_pool_warning_use_rate`.

- `ipc_tcpnodelay=Y|N`

Specify whether to use the `TCP_NODELAY` option for the socket that OpenTP1 uses for inter-node communication (INET domain).

When the `TCP_NODELAY` option is used (that is, when Y is specified in this operand), the Nagle algorithm is disabled. When the algorithm is disabled, you can send data without delay even during a wait for a response to data that has been sent. Note that if this option is used, the efficiency of sending data in INET domain communication may be degraded and the network load may increase. Before using the option, carefully consider whether the option is necessary by taking into account the `ipc_sendbuf_size` operand, the `ipc_recvbuf_size` operand, the network bandwidth, and other factors.

- `stay_watch_queue_count=number-of-service-requests-triggering-the-start-of-judgment-of-the-schedule-queue-accumulation-status~<unsigned integer> ((0-32767))`

Specify the number of service requests triggering the start of judgment of the schedule

queue accumulation status.

If the number of service requests in the schedule queue exceeds the value of this operand, monitoring of service requests remaining in the schedule queue starts. The interval for checking the number of service requests remaining in the schedule queue is specified in the `stay_watch_start_interval` operand. Once the judgment starts, the number of service requests remaining in the schedule queue is checked at the interval specified in the `stay_watch_check_interval` operand. When the number of remaining service requests falls below the value of this operand, judgment ends. When the number of remaining service requests reaches the value of this operand again, judgment starts again.

If 0 is specified in the `stay_watch_queue_count` operand, OpenTP1 does not monitor the number of service requests remaining in the schedule queue. This operand is ignored if specified for an RAP, an MHP, an SPP that receives messages from sockets, or an SUP.

For details about the monitoring of service requests remaining in the schedule queue, see the manual *OpenTP1 Operation*.

- `stay_watch_check_rate=service-request-processing-rate-used-for-monitoring-the-service-requests-remaining-in-the-schedule-queue~<unsigned integer> ((1-100))`
(units: %)

Specify the service request processing rate used for monitoring the service requests remaining in the schedule queue.

Judgment of the schedule queue accumulation status uses the following conditional expression to output message KFCA00833-W to each applicable server if the condition evaluates to true.

Conditional expression for judgment of the schedule queue accumulation status:

Number of processed service requests < value of this operand x number of service requests remaining in the schedule queue

If this condition evaluates to true when Y is specified in the `stay_watch_abort` operand, the SCD daemon terminates abnormally (abort code `hclen001` is output) and OpenTP1 stops.

If the `stay_watch_queue_count` operand is not specified or if 0 is specified in the operand, the `stay_watch_check_rate` operand is ignored.

The `stay_watch_check_rate` operand is ignored if specified for an RAP, an MHP, an SPP that receives messages from sockets, or an SUP.

For details about the monitoring of service requests remaining in the schedule queue, see the manual *OpenTP1 Operation*.

■ `stay_watch_abort=Y|N`

Specify whether to shut down OpenTP1 if the conditional expression for judging the schedule queue accumulation status evaluates to true.

Y

If the conditional expression evaluates to true, messages KFCA00833-W and KFCA00834-E are output. OpenTP1 goes down after forcibly terminating the relevant user server and the SCD daemon (abort code hclen001 is output).

N

If the conditional expression evaluates to true, message KFCA00833-W is output. OpenTP1 does not go down.

If the `stay_watch_queue_count` operand is not specified or if 0 is specified in the operand, the `stay_watch_abort` operand is ignored. Also, the `stay_watch_abort` operand is ignored if specified for an RAP, an MHP, an SPP that receives messages from sockets, or an SUP.

For details about the monitoring of service requests remaining in the schedule queue, see the manual *OpenTP1 Operation*.

■ `stay_watch_start_interval=interval-for-checking-the-number-of-service-requests-remaining-in-the-schedule-queue~<unsigned integer> ((1-32767))` (units: seconds)

Specify the interval for checking the number of service requests remaining in the schedule queue.

If the `stay_watch_queue_count` operand is not specified or if 0 is specified in the operand, the `stay_watch_start_interval` operand is ignored. Also, the `stay_watch_start_interval` operand is ignored if specified for an RAP, an MHP, an SPP that receives messages from sockets, or an SUP.

Normally, the SCD daemon checks the load every 10 seconds. When the `stay_watch_start_interval` operand has been specified, the daemon checks the load at the interval equal to the greatest common measure of the following values (in seconds): (1) 10, (2) the values of the `stay_watch_start_interval` operands of the user servers, and (3) the values of the `stay_watch_check_interval` operands of the user servers. To minimize the impact on the OpenTP1 system, Hitachi recommends that you specify a multiple of 5 in the `stay_watch_start_interval` operand.

For details about the monitoring of service requests remaining in the schedule queue, see the manual *OpenTP1 Operation*.

- `stay_watch_check_interval=interval-for-judging-the-schedule-queue-accumulation-status~<unsigned integer> ((1-65534))` (units: seconds)

Specify the interval for judging the schedule queue accumulation status by using the conditional expression for this judgment.

This judgment starts when the number of service requests remaining in the schedule queue exceeds the value of the `stay_watch_queue_count` operand.

If the `stay_watch_queue_count` operand is not specified or if 0 is specified in the operand, the `stay_watch_check_interval` operand is ignored. Also, the `stay_watch_check_interval` operand is ignored if specified for an RAP, an MHP, an SPP that receives messages from sockets, or an SUP.

Normally, the SCD daemon checks the load every 10 seconds. When the `stay_watch_check_interval` operand has been specified, the daemon checks the load at the interval equal to the greatest common measure of the following values (in seconds): (1) 10, (2) the values of the `stay_watch_start_interval` operands of the user servers, and (3) the values of the `stay_watch_check_interval` operands of the user servers. To minimize the impact on the OpenTP1 system, Hitachi recommends that you specify a multiple of 5 in the `stay_watch_check_interval` operand.

For details about the monitoring of service requests remaining in the schedule queue, see the manual *OpenTP1 Operation*.

- `trn_completion_limit_time=time-limit-for-completing-transaction~<unsigned integer> ((0-65535))` (units: seconds)

Specify the maximum time for execution of a transaction branch. If the execution time of a transaction branch reaches the maximum, the transaction branch process terminates abnormally, and the recovery process commits or rolls back the transaction branch. If 0 is specified, the execution time of the transaction branch is not monitored for this purpose.

Whether an abnormally terminated UAP is shut down depends on the specification of the `hold` and `term_watch_time` operands. For details, see the descriptions of these user service definition operands.

Monitoring of the execution time specified by this operand starts when a transaction is started by invoking the `dc_trn_begin` function or by starting a service function. The monitoring ends when the transaction branch terminates after acquisition of information about the synchronization point processing of the transaction (TJ). However, if the transaction is optimized, monitoring of the transaction branch on the server terminates after a response is returned to the client. For details about the section for which the execution time specified by this operand is monitored and about the relationship between this operand and timer monitoring options, see *A.2 Time monitoring for transactions*.

If the `trn_completion_limit_time` operand is omitted in both the user service definition and the user service default definition, the value of the `trn_completion_limit_time` operand in the transaction service definition is used.

- `rap_message_id_change_level=message-ID-change-level ~<unsigned integer> ((0-2))`

For an error message that is likely to be output when the remote API facility is used, you can specify level 0 to 2 to change the message ID in order to change the message type from E to W. Each level is described below.

Use this operand when you monitor the message log and use it to change the management method depending on whether the message type is E or W.

Note that specification of this operand changes only the message ID. It does not change the message text.

0

The message ID is not changed. The message is output with its original message ID.

1

The message ID is changed in order to change the message type from E to W under conditions in which a specific reason code is output.

2

The message ID is always changed in order to change the message type from E to W.

For the correspondence between the values of this operand and the messages that will be output, see the description of the `rap_message_id_change_level` operand of the RAP-processing listener service definition.

- `log_audit_out_suppress=Y|N ~<<N>>`

Specify whether to suppress output of audit log data from this user server.

Y

Output of audit log data from this user server is suppressed.

N

Output of audit log data from this user server is not suppressed. This operand takes effect only when Y is set for the `log_audit_out` operand in the log service definition.

- `log_audit_message=message-ID-for-an-item-for-which-audit-log-data-is-to-be-acquired[,message-ID-for-an-item-for-which-audit-log-data-is-to-be-acquired] . . . ~<unsigned integer> ((33400-99999))`

Specify the message IDs for items for which you want to acquire audit log data. You can specify message IDs in the range from 33400 to 99999. The maximum number of message IDs you can specify is 2048.

You can specify the following audit log message IDs:

- Message IDs for audit log data items that are acquired by OpenTP1 and that can be specified in the user service definition
- Message IDs for audit log data items that can be acquired arbitrarily by UAPs

For the message IDs that can be specified in this operand, see *Appendix C*.

If this operand is omitted in the user service definition when this operand is also omitted in the user service default definition, the value of this operand in the log service definition is assumed.

This operand takes effect when Y is specified for the `log_audit_out` operand in the log service definition and N is specified for the `log_audit_out_suppress` operand in the user service definition.

- `mcf_prf_trace=Y|N`
~<<Y>>

Specify whether to acquire MCF performance verification trace information for each user server. To enable the value specified in this operand, specify 00000001 in the `mcf_prf_trace_level` operand of the system service common information definition.

Y

MCF performance verification trace information is acquired.

N

MCF performance verification trace information is not acquired.

You can also specify this operand with the user service default definition.

The priority of the specified values is (1.>2.).

1. User service definition
2. User service default definition

If the operand specification or the value specified in it is invalid, the user server abnormally terminates during startup.

The table below shows the relationship between the value specified in the

mcf_prf_trace_level operand (whether the MCF performance verification trace information is acquired) in the user server and the value specified in the mcf_prf_trace operand.

Table 3-15: Relationship between the value specified in the mcf_prf_trace_level operand (whether the MCF performance verification trace information is acquired by the user server) in the user server and the value specified in the mcf_prf_trace operand

System service common information definition mcf_prf_trace_level operand specification value	User service definition mcf_prf_trace operand specification value	
	Y	N
00000000	Not acquired	Not acquired
00000001	Acquired	Not acquired

Use this definition only when TP1/Extension 1 is installed. If TP1/Extension 1 is not installed, the definition might not work correctly.

- *watch_time=maximum-time-to-wait-for-a-response* ~<unsigned integer> ((0-65535)) (units: seconds)

Specify the maximum time to wait for a response to a service request sent in inter-process communication that uses RPCs.

OpenTP1 might wait for the time specified in this operand during termination processing. Therefore, if you specify a large value in this operand, OpenTP1 termination processing might take time.

If there is no response for the specified period of time, the RPC returns a timeout error.

If 0 is specified in this operand, OpenTP1 waits until it receives a response. If 0 is specified, OpenTP1 might not be able to terminate.

Make sure that you use this operand as the default value for the *watch_time* operand in the system common definition.

We recommend that you do not change the operand setting unless special tuning is necessary.

Note that if the value of this operand is very much larger or smaller than the default value of the *watch_time* operand in the system common definition, difficulties that can cause OpenTP1 to fail might occur.

command format

Described on the following pages.

putenv format

- *environment-variable-name environment-variable-value~<character string>*

Set values for the environment variables specified with the processes of these service groups.

OpenTP1 activates a COBOL operating environment, hence this operand is used for setting the COBOL environment. An unique environment variable can be allocated for each UAP execution form program. See the standard C library `putenv` for details.

When `PATH` is set here, the specification of the `prcsvpath` operand in the process service definition and the specification of the operation command `prcpath` become invalid for this service group and the value of `PATH` is used. When setting `PATH`, include the directory where the load module of the service group is placed.

For OpenTP1, do not use environment variable names beginning with `dc`.
- `DCFPL_CONNECT_RETRY_COUNT`
number-of-retries-to-establish-a-connection~<unsigned integer>((8-2147483647))

Specify the number of retries to establish a connection if an `ECONNREFUSED` error occurs during connection establishment of the communication control part when using the remote API facility.

Specify a value equal to or greater than 8 in this operand. If an `ECONNREFUSED` error occurs during connection establishment of the communication control part, the system waits for the time period specified in the `DCFPL_CONNECT_RETRY_INTERVAL` operand and retries to establish a connection.

When this operand is omitted or a value smaller than 8 is specified, 8 is assumed.
- `DCFPL_CONNECT_RETRY_INTERVAL`
interval-between-retries-to-establish-a-connection~<unsigned integer>((10-999))(Unit: milliseconds)

Specify the interval in milliseconds between retries to establish a connection if an `ECONNREFUSED` error occurs during connection establishment of the communication control part when using the remote API facility.

When this operand is omitted or a value out of the range from 10 to 999 is specified, 100 is assumed.
- `XAT_CONNECT_RESP_TIME`=*maximum-response-wait-time-for-association-establishment-of-SPP-for-processing-communication-events~<unsigned integer>((0-65535))(units: seconds)*

Specify the maximum response wait time for an association establishment request (`dc_xat_connect` function) in the SPP for processing communication events during the communication that uses OSI TP as the protocol. When you specify 0, the system waits for a response indefinitely.

You can specify the same setting in the `xat_connect_resp_time` operand of the `set` format. For the relationship between this operand and the `xat_connect_resp_time` operand in `set` format, see Table 3-14.

dcputenv format

- *environment-variable-name environment-variable-value~<character string>*

Set values for the environment variables specified in the processes of these service groups. When an environment variable name is specified as the environment variable value, the value of the environment variable name is also acquired.

For OpenTP1, do not use any environment variable name beginning with `dc`.

trnrmid (Specify resource manager extension)

Format

```
[trnrmid -n resource-manager-name
-i resource-manager-extension [, resource-manager-
extension] ...]
```

Function

The `trnrmid` command defines the extension of a resource manager to be accessed by user servers when more than one resource manager extension is assigned to the resource manager so that it can be accessed as more than one control unit (that is, when the `-i` option is specified in the `trnstring` command for the resource manager of the transaction service definition).

If the `-i` option is specified, the OpenTP1 system modifies the resource manager name to a *resource manager name + resource manager extension* to control the manager. This means that a user server cannot access the resource manager by its name alone. It is necessary to define the `trnrmid` command.

The OpenTP1 transaction service executes a transaction in collaboration with the resource manager through the X/Open XA interface. The XA interface must report the `xa_open` function character string and `xa_close` function character string that are defined by the resource manager.

If the user server accesses the resource manager provided by a system other than OpenTP1 within a transaction under OpenTP1 (that is, if the `trnmkobj` command is executed to specify a resource manager provided by a system other than OpenTP1, and this resource manager creates a transaction control object file and links with the user server), specify the `xa_open` function character string and `xa_close` function character string for that resource manager. The `xa_open` and `xa_close` functions are issued by the transaction service with the specified characters strings used as arguments at startup and termination of the user server, and at transaction recovery processing.

The resource manager extension specified in the `-i` option must be the same as specified in the transaction service definition.

This command need not be defined if it is unnecessary to assign more than one resource manager extension to one resource manager and to access it as more than one control unit (that is, when the `-i` option is omitted in the `trnstring` command for the resource manager in the transaction service definition).

If more than one `trnstring` command for the same resource manager extension is specified under the same resource manager name within one definition file, only the

last definition specified is valid.

When OpenTP1 provides the resource, specify this definition for OpenTP1_MCF only.

Options

- `-n resource-manager-name~<1-31 character identifier>`

Specify the name of the resource manager (resource manager name that is specified using the `trnstring` command in the transaction service definition) the current user server accesses. When OpenTP1 provides the resource, you can omit this specification except for OpenTP1_MCF. However, you can omit the specification of OpenTP1_MCF for the following case:

- When the `id` operand is omitted in the `mcfmenv` command of the MCF manager environment definition or when `A` is specified in the operand

- `-i resource-manager-extension~<1-2 character identifier>`

Specify the extension of the resource manager (the resource manager extension specified by the `trnstring` command of the transaction service definition).

If more than one extension is specified, a comma (,) must be placed between extensions.

In order to control an MCF relating to transactions, the resource manager extensions for that MCF must be specified. The extension specified in the `-i` option must be the same as that for MCF specified in the MCF transaction service definition.

Note

Care must be exercised when specifying the `-i` option in the `trnrmid` definition command in both the user service definition and the user service default definition. For example, the specifications in both the user service definition and the user service default definition take effect when the following are specified:

- Specification in the user service definition: `trnrmid -n RM-name -i s1`
- Specification in the user service default definition: `trnrmid -n RM-name -i s2`

scdbufgrp (Specify schedule buffer group)

Format

```
scdbufgrp -g schedule-buffer-group-name
```

Function

A schedule buffer group is a collection of user servers that share a single message-storing buffer pool.

In the user service definition, specify the schedule buffer group where the user server belongs to.

For the user server that receives requests from the socket, this command is ignored even if it is specified. For the user server that receives requests from the queue, the `message_store_buflen` operand and `message_cell_size` operand of the user service definition are ignored even if they are specified.

Option

- `-g schedule-buffer-group-name~<1-8 character identifier>`

Specify the name of the schedule buffer group the user server belongs to.

As the schedule buffer group name, specify the name specified by the `scdbufgrp` command in the schedule service definition.

scdmulti (Specify multi-scheduler facility)

Format

```
scdmulti [-g multi-scheduler-group-name]
```

Function

Specifies information about the multi-scheduler that the user server uses in the OpenTP1 system using the multi-scheduler facility.

To use the multi-scheduler facility, the following definition command and operand must be specified with this definition command:

RPC receiving side: `scdmulti` definition command of multi-scheduler service definition

RPC sending side: `multi_schedule` operand of user service definition

Option

- `-g multi-scheduler-group-name~<1-8 character identifier> <<scdmulti>>`

This option specifies the name of the multi-scheduler group that the user server uses.

You must specify the same name as the multi-scheduler group name specified in the `-g` option of the `scdmulti` definition command in the scheduler service definition. If you specify a name other than the multi-scheduler group name specified in the `-g` option of the `scdmulti` definition command in the scheduler service definition, the system cancels starting the user server.

If the `-g` option of the `scdmulti` definition command is not specified in both of the user service definition and the user service default definition, `scdmulti` is used as the multi-scheduler group name. Therefore, do not use `scdmulti` as a multi-scheduler group name.

Note

For requesting a service using the multi-scheduler facility from TP1/Client, see the manual *OpenTP1 TP1/Client User's Guide TP1/Client/W, TP1/Client/P*.

You can use this definition command when TP1/Extension 1 is already installed. If TP1/Extension 1 is not installed, the operation of this definition command cannot be assured.

scdsvcddef (Specify the schedule service operation on a service basis)

Format

```
[scdsvcddef [-c service-name]
            [-p number-of-services-that-can-be-executed-concurrently]
            [-n number-of-service-requests-that-can-be-queued]
            [-l length-of-the-buffer-pool-storing-messages-that-can-be-queued]]
```

Function

The operation performed when an SPP places a service request in the schedule queue or removes a service request from the schedule queue can be specified on a service basis.

This specification is unnecessary for SUPs, MHPs, and socket receiving servers that are an SPP, and is ignored if specified for such programs.

Options

- **-c** *service-name* ~<1-to-31-character identifier>

Specify the name of a specific service for which you want to specify the operation.

You can specify only a service name specified in the `service` operand of the user service definition. If you specify a service name that has not been specified in the `service` operand, OpenTP1 does not perform schedule control on a service basis.

If this option is omitted, the specified operation applies to all services. If this option is specified when a service name has also been specified in a definition operand, the definition operand takes precedence. If multiple instances of this operand have been specified, the last one specified takes precedence.

- **-p** *number-of-services-that-can-be-executed-concurrently* ~<unsigned integer>
<<1-1024>>

Specify the maximum number of service instances that can be executed concurrently for a service request for the service specified in the `-c` option.

This option takes effect when the specified value is smaller than the maximum number of SPP processes (specified by the `parallel_count` operand in the user service definition or by the `scdchprc` definition command). If this option is omitted, the number of services that can be executed concurrently is not checked.

- **-n** *number-of-service-requests-that-can-be-queued* ~<unsigned integer>
<<1-65535>>

Specify the maximum number of service requests that can be placed in the schedule

queue for the requests for the service specified in the `-c` option.

This option takes effect when the specified value is smaller than the number of service requests that can be queued in the message storage buffer pool for SPPs. If this option is omitted, the number of service requests that can be queued is not checked.

- `-l` *length-of-the-buffer-pool-storing-messages-that-can-be-queued* ~<unsigned integer> ((512-31457280)) (units: bytes)

Specify the length of the buffer pool for storing messages that can be placed in the schedule queue for requesting the service specified in the `-c` option.

This option takes effect when the specified value is smaller than the length of the message storage buffer pool for SPPs (specified by the `message_store_buflen` operand in the user service definition or by the `scdbufgrp` definition command). If this option is omitted, the length of the buffer pool storing messages that can be queued is not checked.

Note

Depending on the value specified in the `-n` or `-l` option, an attempt to place a service request in the schedule queue might fail. If the attempt fails, OpenTP1 outputs the KFCA00831-W error message, and attempts to re-assign the service request to another TP1 node. If there are no TP1 nodes to which the service request can be re-assigned, DCRPCER_NO_BUFS(-304) is returned to the RPC caller.

Specification of operands in user service definition for UAPs

Specification of the user service definition for an SPP, SUP and MHP are summarized in Table 3-16.

Table 3-16: Specification of user service definitions for SPP, SUP, and MHP

Specified value	SPP	SUP	MHP
service_group	C	U	C
module	C	C	C
service	C	U	C
nice	C	C	C
parallel_count	C#1	U	C
hold	C#1	U	U
hold_recovery	C#1	U	U
deadlock_priority	C	C	C
schedule_priority	C#1	U	C
message_buflen	C#1	U	C
message_store_buflen	C#1	U	C
trn_expiration_time	C	C	C
trn_expiration_time_suspend	C	C	C
watch_next_chain_time	C	C	C
atomic_update	C	C	Y
receive_from	queue#2	none	queue
uap_trace_max	C	C	C
uap_trace_file_put	C	C	C
term_watch_time	C#3	C#4	C
mcf_jnl_buff_size	C#5	U	C
type	other	U	MHP

Specified value	SPP	SUP	MHP
balance_count	C#1	U	C
uid	C	C	C
auto_restart	U#6	C	U
critical	C	C	C
lck_wait_priority	C	C	C
mcf_psv_id	C#7	U	U
trn_cpu_time	C	C	C
service_hold	C#1	U	U
service_priority_control	C#1	U	U
message_cell_size	C#1	U	U
max_socket_msg	U#6	U	U
max_socket_msglen	U#6	U	U
trf_put	C	C	C
mcf_mgrid	C#7	U	U
mcf_service_max_count	C#5	U	C
trn_statistics_trpe	C	C	C
node_down_restart	C	C	C
rpc_response_statistics	C	C	C
server_type	C	U	U
trn_rm_open_close_scope	C	C	C
trn_optimum_item	C	C	C
purge_msgget	C#8	U	C#8
cancel_normal_terminate	C	C	C
prc_abort_signal	C	C	C
rpc_service_retry_count	C	U	U

Specification of operands in user service definition for UAPs

Specified value	SPP	SUP	MHP
rpc_extend_function	C	C	C
max_socket_descriptors	C	C	C
max_open_fds	C	C	C
service_term_watch_time	C#1	U	U
termed_after_service	C#1	U	C
xat_trn_expiration_time	C	C	U
xat_osi_usr	C	C	U
rpc_trace	C	C	C
rpc_trace_name	C	C	C
rpc_trace_size	C	C	C
trn_rollback_information_put	C	C	C
schedule_method	C#1	U	C
service_wait_time	C#1	U	C
mcf_spp_oj	C	U	U
adm_message_option	C	C	C
trn_watch_time	C	C	C
trn_limit_time	C	C	C
trn_rollback_response_receive	C	C	C
trn_partial_recovery_type	C	C	C
rpc_destination_mode	C	C	C
rpc_rap_auto_connect	C	C	C
rpc_rap_inquire_time	C	C	C
rpc_request_cancel_for_timedout	C	C	C
status_change_when_termining	C	C	C
service_expiration_time	C	U	U
multi_schedule	C	C	U

Specified value	SPP	SUP	MHP
make_queue_on_starting	C#8	U	C#8
loadcheck_interval	C#1	U	U
levelup_queue_count	C#1	U	U
leveldown_queue_count	C#1	U	U
ipc_sockctl_highwater	C	C	C
ipc_sockctl_watchtime	C	C	C
ipc_conn_interval	C	C	C
ipc_send_interval	C	C	C
ipc_send_count	C	C	C
ipc_header_rcv_time	C	C	C
rpc_send_retry_count	C	C	C
rpc_send_retry_interval	C	C	C
ipc_rcvbuf_size	C	C	C
ipc_sndbuf_size	C	C	C
ipc_listen_sockbufset	C	C	C
polling_control_data	C	C	C
thread_yield_interval	C	C	C
groups	C	C	C
loadlevel_message	C#1	U	U
ipc_backlog_count	C	C	C
rpc_buffer_pool_max	C	C	C
schedule_delay_limit	C	U	U
schedule_delay_abort	C	U	U
rap_autoconnect_con_error_msg	C	C	U
core_shm_suppress	C	C	C
xat_connect_resp_time	C#9	U	U

Specification of operands in user service definition for UAPs

Specified value	SPP	SUP	MHP
scd_poolfull_check_interval	C#1	U	U
scd_poolfull_check_count	C#1	U	U
scd_pool_warning_use_rate	C#1	U	U
scd_pool_warning_interval	C#1	U	U
ipc_tcpnodelay	C	C	C
stay_watch_queue_count	C#1	U	U
stay_watch_check_rate	C#1	U	U
stay_watch_abort	C#1	U	U
stay_watch_start_interval	C#1	U	U
stay_watch_check_interval	C#1	U	U
trn_completion_limit_time	C	C	C
rap_message_id_change_level	C	C	U
log_audit_out_suppress	C	C	C
log_audit_message	C	C	C
mcf_prf_trace	C#5	U	C
watch_time	C	C	C
putenv	C	C	C
putenv DCFPL_CONNECT_RETRY_COUNT	C	C	U
putenv DCFPL_CONNECT_RETRY_INTERVAL	C	C	U
XAT_CONNECT_RESP_TIME	C#9	U	U
dcputenv	C	C	C
trnrmid	C	C	C
scdbufgrp	C	U	C
scdmulti	C	U	U
scdsvcdef	C#1	U	U

Legend:

C: Can be specified.

U: Unnecessary

Y: Specify Y.

queue: Specify queue.

none: Specify none.

other: Specify other.

MHP: Specify MHP.

#1: Does not need to be specified for SPP servers that receive requests from sockets.

#2: Specify `socket` for SPP servers that receive requests from sockets.

#3: Valid if N is specified in the `hold` operand. This is valid for SPP servers that receive requests from sockets only when Y is specified in the `auto_restart` operand regardless of the specification of the `hold` operand.

#4: Valid if Y is specified in the `auto_restart` operand.

#5: Valid for SPPs that use the MCF facilities.

#6: Can be specified for SPP servers that receive requests from sockets.

#7: Valid for SPPs that use the application startup facility.

#8: Valid when zero is specified in the `parallel_count` operand as the number of resident processes.

#9: Valid for SPPs that processes communication events.

Chapter

4. Overview of the Network Communication Definitions

This chapter explains the network communication definitions.

This chapter contains the following sections:

- 4.1 Overview
- 4.2 Types of definitions
- 4.3 Creation of definition object file

4.1 Overview

4.1.1 Network communication definitions and file names

To set the network communication definitions, use a text editor to create the definition source files and create the definition object files from the definition source files. Register these definition object files in the OpenTP1 system.

To specify the name of a definition object file, use the appropriate format shown in Tables 4-1 and 4-2. Use the definition commands shown in Tables 4-1 and 4-2 to register the file names beforehand.

For details about the definition source files, see *5. Network Communication Definitions*.

For the method of creating the definition object files, see *4.3 Creation of definition object file*.

Table 4-1: Names of files where network communication definitions are registered (1)

Definition name	Number of definition source files	Definition object file name ^{#1}	Definition command name to be specified (definition name)
MCF manager definition	1 for each definition	\$DCCONFPATH/_mu..... ^{#2}	dcsvstart -m (system service configuration definition)
MCF communication configuration definition	2 for each definition	\$DCCONFPATH/_mu..... ^{#2}	mcfmcname -s (MCF manager definition)
MCF application definition	1 for each definition	\$DCCONFPATH/any	mcftenv -a (MCF communication configuration definition)

#1: Specify a unique name in the node.

#2: Specify a file name beginning with _mu.

Table 4-2: Names of files where network communication definitions are registered (2)

Definition name	Definition file name (full path name)	Definition command name to be specified (definition name)
System service information definition	\$DCDIR/lib/sysconf/ <i>definition-file-name</i> ^{#1}	mcfmcname -s (MCF manager definition)

Definition name	Definition file name (full path name)	Definition command name to be specified (definition name)
System service common information definition	\$DCDIR/lib/sysconf/ mcf# ²	There is no definition command to be specified.
MCF performance verification trace definition	\$DCCONFPATH/_mc	There is no definition command to be specified.

#1: For the definition file name, specify the name of the executable program (definition file name beginning with mcf) that is specified in the module operand in the system service information definition.

#2: There is an existing file with the defaults. Change the defaults when necessary.

4.1.2 Relationship of MCF services to definitions

OpenTP1 considers all MCF services as one service. However, each MCF service is structured from several processes as follows:

MCF manager process (one)

Initializes the shared memory, and manages and operates all MCF communication processes and application startup processes generated within one online system.

MCF communication processes (zero or more[#])

Controls messages that are protocol-dependent. Starts process(es) in accordance with the protocol.

Application startup process (zero or more[#])

Controls messages that are not protocol-dependent. Processes are started in the following cases:

- application startup function is being used,
- error event processing MHP is started, or
- a roll back request of the retry instruction is issued.

MCF online command process (one or none)

Processes online commands that are input from a 560 or XP terminal. The process is started up when using online commands.

#: An MCF service can consist of either only MCF processes or application startup processes.

Each definition is to be prepared in number as follows:

MCF manager definition

one for the MCF manager process

MCF communication configuration process

one for each MCF communication process, and one for each application startup process

MCF application definition

one for each or for several MCF communication process(es). Alternatively, one for each or for several application startup processes.

To start up the MCF communication process or application startup process, the applicable MCF communication configuration definition must be created.

Table 4-3 lists the network communication definitions and their output object file names.

Table 4-3: Network communication definitions and their output object file names

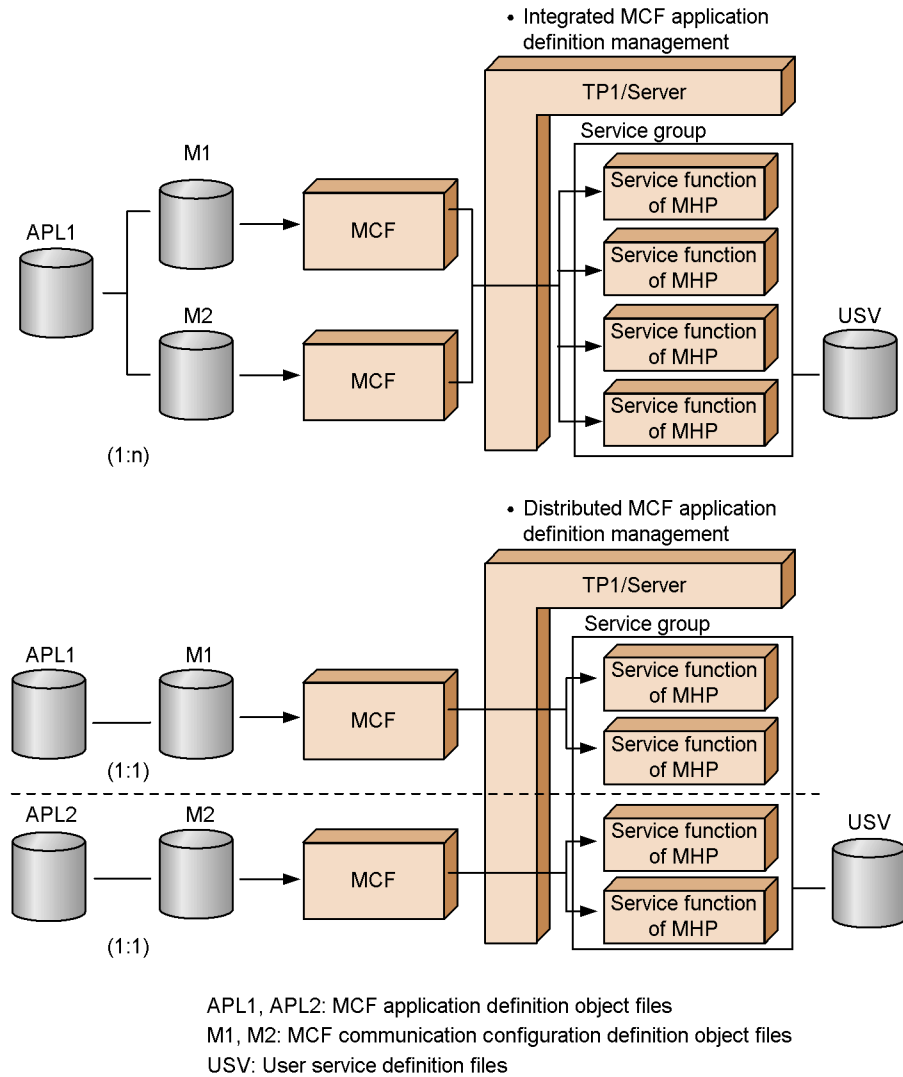
Definition name	Output object file name
MCF manager definition	MCF service name
MCF communication configuration definition	MCF communication service name Application startup process name

4.1.3 Relation between MCF operation mode and definitions

To ensure smooth operation, the MCF application definition is created in a separate file for each MCF communication configuration definition. In the MCF operation mode, there is one MCF application definition for n (n is an integer greater than or equal to 1) MCF communication configuration definitions.

The relationship between the MCF operation mode and the definition object files is shown in Figure 4-1. For a mode as shown in the upper diagram, manage the MCF application definition files as one file. For a mode as shown in the lower diagram, manage the MCF application definition files separately for each MCF.

Figure 4-1: Relationship between MCF operation mode and definition object files



4.1.4 Relationship between network communication definitions and system service definitions

(1) System environment definition

Calculate the size of the shared memory used for all the MCF processes and specify the size in the system environment definition in advance.

(2) Message queue service definition

The queue group IDs of the message queue service definition are specified as the queue group IDs in the MCF I/O queue definition command.

(3) User service definition

The service group names and service names of the user service definition are specified as the service group names and service names in the MCF application attribute definition command.

(4) System service configuration definition

The MCF service name is the MCF identifier that OpenTP1 manages. This is the name of the output object file name of the MCF manager definition as created with the MCF definition object creation utility ('mcfmng' command). This name is specified as the MCF service name in the system service configuration definition.

(5) Name service definition

Consider the number of logical terminals, number of UAPs, and other parameters registerable as the number of services in the name service. Prespecify this service count in the name service definition.

4.1.5 Relationship between application names and service names

MCF converts the application names contained in the input messages to the service group names and service names specified with the MCF application definition.

An application name is a code which identifies the work. A service group name is the collection of work units (service) in the same system; a service name is a UAP entry point name.

All application names must be unique within the same node. Multiple service names cannot be specified for one application name; but multiple application names can be specified for one service name.

4.1.6 Network communication definition commands

Table 4-4 shows the network communication definition commands and the command specification count.

Table 4-4: Network communication definition commands and the number of instances that can be specified (specification count)

Definition name		Command name	Specification count
MCF manager definition		mcfmenv (MCF manager environment definition)	1
		mcfmcomn (MCF manager common definition)	1
		mcfmname (communication service definition)	1-239
		mcfmuap (UAP common definition)	1
		mcfmqgid (input/output queue definition)	0-4096
		mcfmexp (extended reservation definition)	1 or 0 ^{#1}
		mcfmsts (status inherit definition)	0-1
		mcfmsmsg (suppressing the output of log message definition)	0-1
		mcfmsvg (service group attribute definition)	0-4096
MCF communication configuration definition	Common definition	mcfteenv (MCF environment definition)	1
		mcftecomn (MCF communication configuration common definition)	1
		mcftefred (maximum processing multiplicity definition)	0-1
		mcfteftim (timer definition)	0-1
		mcfettrc (trace environment definition)	1
		mcfetsts (status inherit definition)	0-1
		mcfetbuf (buffer group definition)	1-512 or 0 ^{#2}
	Protocol specific definition	Omitted ^{#3}	Omitted ^{#3}
	Application startup definition	mcftepsvr (start of application startup environment definition)	1
		mcfetalcle (definition of a logical terminal for starting applications)	0-2048
		mcfteped (end of application startup environment definition)	1

4. Overview of the Network Communication Definitions

Definition name	Command name	Specification count
MCF application definition	mcf <code>env</code> (application environment definition)	1
	mcf <code>aalcap</code> (application attribute definition)	1-4096

#1

1 when `mcfmggid` command is defined; 0 when not defined.

#2

1 - 512 for the MCF communication process; 0 for the application startup process.

#3

For the protocol native definition, see the applicable *OpenTPI Protocol* manual.

4.2 Types of definitions

(1) MCF manager definitions

Table 4-5 shows the MCF manager definitions.

Table 4-5: MCF manager definitions

Type	Command	Option	Operand	Definition	Specification	
Command	mcfmenv	-m	id	MCF manager process identifier	<alphabetical character> ((A-Z, a-z)) <<A>>	
			name	MCF manager name	<1-to-8-character identifier>	
	mcfmconn	-n			Number of logical terminals using sequence numbers	<unsigned integer> ((0-2048)) <<0>>
					MCF work area size	<unsigned integer> ((100-2000000)) (units: Kbytes)
					Journal buffer size for MCF manager processes	<unsigned integer> ((multiple of 4 within the 4096 to 4000000 range)) <<4096>> (units: bytes)
			-o	cmdsname	MCF online command service name	<1-8 alphanumeric characters>
			-r		Number of simultaneous transaction processes of other nodes	<unsigned integer> ((0-1310720))
			-c		Maximum number of concurrent synchronous sending processes	<unsigned integer> ((1-10000)) <<255>>
			-w	stats	Whether to acquire the MCF statistics	yes <<no>>
	mcfmname	-s	mcfsvname	MCF communication service name	<1-8 alphanumeric characters>	
			syssvname	System service information definition file name	<1-to-8-character identifier>	
	mcfmuap	-d			Maximum number of communication functions issued	<unsigned integer> ((0-65535)) <<0>> (units: times)

4. Overview of the Network Communication Definitions

Type	Command	Option	Operand	Definition	Specification
		-t	sndtim	Synchronous sending monitoring time	<unsigned integer> ((0-65535)) <<0>> (units: seconds)
			sndrcvtim	Synchronous transmission monitoring time	<unsigned integer> ((0-65535)) <<0>> (units: seconds)
			rcvtim	Synchronous receiving monitoring time	<unsigned integer> ((0-65535)) <<0>> (units: seconds)
		-j		Journal buffer size for user servers	<unsigned integer> ((multiple of 4 within the 4096 to 4000000 range)) <<32768>> (units: bytes)
		-e	segsize	Maximum segment size to start MHP for processing an error event, or to use the application startup facility	<unsigned integer> ((512-2147483647)) <<512>> (units: bytes)
		-l	initseq	Initial sequence number	<unsigned integer> ((0-2147483647)) <<1>>
			maxseq	Maximum sequence number for wrap	<unsigned integer> ((0-2147483647)) <<65535>>
			minseq	Starting sequence number after wrap	<unsigned integer> ((0-1)) <<1>>
		-u	ntmetim	Nontransaction MHP expiration time	<unsigned integer> ((0-65535)) <<0>> (units: seconds)
		-a	delaytim	Delaying time allowance of application startup	<unsigned integer> ((0-360)) <<0>>
		-c	order	Selecting the order for sending and resending messages and for starting applications	<<function>> commit
	mcfmqgid	-q	quekind	Specifies the type of the queue.	itq otq
			quegrpID	Queue group ID	<1-to-8-character identifier>

Type	Command	Option	Operand	Definition	Specification
	mcfmexp	-g		Service group registration count	<unsigned integer> ((total number of service groups up to 2147483647))
		-l		Logical-terminal registration count	<unsigned integer> ((total number of logical terminal up to 2147483647))
		-I		Specifies whether to perform fall-back operation if the input disk queue is unavailable.	dg <<ndg>>
		-o		Specifies whether to perform fall-back operation if the output disk queue is unavailable.	dg <<ndg>>
	mcfmsts	-g		Maximum service group count	<unsigned integer> ((1-1044480))
		-v		Maximum service count	<unsigned integer> ((1-1044480))
	mcfmsmsg	-m		ID of the message you do not want to output to the log file	<unsigned integer> ((10000-19999 and 28000-29999))
	mcfmsvg	-g	servgrp	Service group name	<1-to-31-character identifier>
		-w	watchcnt	Number of messages remaining in the input queue being monitored	<unsigned integer> ((0-65535)) <<0>>
			watchint	Interval at which the input queue is checked for remaining messages	<unsigned integer> ((5-3600)) <<10>> (units: seconds)
			expectcnt	Number of service requests that an MHP is expected to process	<unsigned integer> ((1-65535))
			abort	Whether the OpenTP1 system fails if the processing capacity of an MHP is insufficient	yes <<no>>

(2) MCF communication configuration definitions

Table 4-6 shows the MCF communication configuration definitions.

Table 4-6: MCF communication configuration definitions

Type	Command	Option	Operand	Definition	Specification
Command	mcftenv	-s		MCF communication process identifier or application startup process identifier	<numeric character (0-9), a-f> ((01-ef))
		-m		MCF manager identifier	<alphabetic character> ((A-Z, a-z)) <<A>>
		-a		MCF application definition object file name	<1-to-8-character identifier>
		-q	diskitq	Whether to use a disk queue as the input queue	<<yes>> no
	mcftcomn	-j		Journal buffer size for MCF communication process or application startup process	<unsigned integer> ((multiple of 4 within the 4096 to 4000000 range)) <<32768>> (units: bytes)
	mcfttred	-m		Maximum processing multiplicity	<unsigned integer> ((1-1000)) <<10>>
	mcfttim	-t	btim	Time check interval	<unsigned integer> ((1-60)) <<1>> (units: seconds)
			mtim	Unprocessed send message remaining time	<unsigned integer> ((60-65535)) <<180>> (units: seconds)
			rmtim	Unprocessed receive message remaining time	<unsigned integer> ((0-65535)) <<0>> (units: seconds)
		-p	usertime	Whether to use the facility for user timer monitoring	yes <<no>>
			timereqno	Maximum number of time-monitored requests	<unsigned integer> ((1-10000)) <<16>>
			msgsize	Maximum message length	<unsigned integer> ((0-256)) <<0>> (units: bytes)
			msgout	Whether to output messages	yes <<no>>

Type	Command	Option	Operand	Definition	Specification
	mcfttrc	-t	size	MCF trace buffer size	<unsigned integer> (multiple of 4 within the 4096 to 15728640 range) <<204800>> (units: bytes)
			disk	Specifies whether to use the MCF trace disk output facility.	<<yes>> no
			bufcnt	MCF trace buffer count	<unsigned integer> ((10-2147483647)) <<100>>
			trccnt	MCF trace file count	<unsigned integer> ((3-99)) <<3>>
			msgsize	Maximum size of a message that can be acquired as trace data	<unsigned integer> ((0-1073741824)) <<128>>(units: bytes)
	mcfttrc	-m		Specifies the action if the MCF trace file count is exceeded.	<> off
	mcftsts	-a		Maximum application count	<unsigned integer> ((1-65535))
			-l	Maximum logical terminal count	<unsigned integer> ((1-65535))
	mcftbuf	-g	groupno	Group number of buffers for message transmission or for message editing	<unsigned integer> ((1-512))
			length	Length of buffers for message transmission or for message editing	<unsigned integer> ((512-1073741824)) (units: bytes)
			count	Number of buffers for message transmission or for message editing	<unsigned integer> ((1-65535))
			extend	Number of buffers to be extended	<unsigned integer> ((0-65535)) <<0>>
	mcftpsvr	-c		Internal communication path name	<1-to-8-character identifier>

Type	Command	Option	Operand	Definition	Specification
		-o	reruntm	Specifies whether to inherit the timer start at rerun.	yes <<no>>
	mcfatalcle	-l		Logical terminal name	<1-to-8-character identifier>
		-t		Specifies the terminal type of this logical terminal.	send request
		-m	mmsgcnt	Maximum number of output messages that can be stored on memory	<unsigned integer> ((0-65535)) <<0>>
			dmsgcnt	Maximum number of output messages that can be stored on disk	<unsigned integer> ((0-65535)) <<0>>
		-k	quekind	Specifies the type of medium for the output queue.	<<memory>> disk
			quegrpid	Queue group ID	<1-to-8-character identifier>
	mcftped			End of application startup environment definition	None

(3) MCF application definitions

Table 4-7 shows the MCF application definitions.

Table 4-7: MCF application definitions

Type	Command	Option	Operand	Definition	Specification
Command	mcfenv	-a		MCF application definition identifier	<1-to-8-character identifier>
		-p		Application startup process identifier	<numeric character (0-9), a-f> ((01-ef))
	mcfalcap	-n	name	Application name or MCF event name	<1-to-8-character identifier>
			kind	Specifies the kind of the application.	<<user>> mcf
			type	Specifies the type of the application.	ans <<noans>> cont

Type	Command	Option	Operand	Definition	Specification
			aplihold	Specifies the application's action to be taken if the application abnormally terminates.	<<m>> a s
			msgcnt	Maximum number of storable input messages	<unsigned integer> ((0-65535)) <<0>>
			lname	Logical terminal name	<1-to-8-character identifier>
			cname	Internal communication path name	<1-to-8-character identifier>
			tempsize	Continuous inquiry-response temporary data storage area size	<unsigned integer> ((1-32000)) <<4096>> (units: bytes)
			trnmode	Specifies the transaction attribute of the application.	<<trn>> nontrn
			errevt	Whether error events should be reported	yes <<no>>
		-N	modelname	Specifies an application name or MCF event name	Model application name model MCF event name
		-g	servgrp	Service group name of this application	<1-to-31-character identifier>
			quegrp	Queue group ID	<1-to-8-character identifier>
			quekind	Specifies the type of the medium for the input queue.	<<memory>> disk
			type	Specifies the type of UAP.	<<MHP>> SPP
			srvghold	group's action to be taken if the application terminates abnormally.	<<m>> s
			recvmsg	Specifies how to handle the receive message of the UAP that terminated abnormally.	<<e>> r
		-v	servname	Service name for the additional application name	<1-to-31-character identifier>

Type	Command	Option	Operand	Definition	Specification
			servhold	Specifies how to handle the service if the application terminates abnormally.	<<m>> a s
			ntmetim	Nontransaction MHP expiration time	<unsigned integer> ((0-65535)) (units: seconds)
		-d	holdlimit	Maximum application abnormal termination count	<unsigned integer> ((0-65535)) <<1>> (units: times)
			holdlmtyp	Specifies how to count the application abnormal termination count.	sum <<cont>>
		-j	ij	Specifies whether to collect the historical data when a message received from another system is recorded in the input queue.	yes <<no>>
			oj	Specifies whether to collect the historical data when a message send request is issued from UAP.	yes <<no>>
			gj	Specifies whether to collect the historical data when a message receive request is issued from UAP.	yes <<no>>
		-e	evtlogout	Specifies whether to output log messages when starting ERREVT1 to ERREVT4.	yes <<no>>

(4) MCF performance verification trace definitions

Table 4-8 shows the MCF performance verification trace definitions.

Table 4-8: MCF performance verification trace definitions

Type	Operand	Definition	Specification
set	prf_file_size	MCF performance verification trace information file size	<unsigned integer> ((1024-1048576)) <<1024>> (units: kilobytes)

Type	Operand	Definition	Specification
	prf_file_count	Number of generations for the MCF performance verification trace information file	<unsigned integer> ((3-256)) <<3>>

(5) System service information definition

Table 4-9 shows the system service information definition.

Table 4-9: System service information definition

Type	Operand	Definition	Specification
set	module	Name of the MCF executable program that starts the MCF communication service	<1-to-8-character identifier>
	mcf_prf_trace	Specifies whether to acquire MCF performance verification trace information for each MCF communication service.	<<Y>> N

(6) System service common information definition

Table 4-10 shows the system service common information definition.

Table 4-10: System service common information definition

Type	Operand	Definition	Specification
set	max_socket_descriptors	Maximum number of file descriptors for sockets	<unsigned integer> ((64-2047))
	max_open_fds	Maximum number of files to be accessed by the MCF communication process	<unsigned integer> ((100-2016)) <<500>>
	thdlock_sleep_time	Thread's waiting time if a lock conflict occurs among threads	<unsigned integer> ((1-32767)) <<15>> (unit: milliseconds)
	mcf_prf_trace_level	MCF performance verification trace information acquisition level	((00000000-00000001)) <<00000000>>

4.3 Creation of definition object file

This section explains procedures to create a definition object file from each source file for a network communication definition.

Two utilities are used to create the object file:

- MCF definition object creation utility

This utility is used to create the object file from the source file. The command to start the MCF definition object creation utility varies with the type of definition.

- MCF definition linkage utility

This utility is used to link two object files. It is used only for an MCF communication configuration definition.

For newer versions of MCF, the format of the definition object could differ. Should versions of a definition object differ, startup processing cannot continue. In this case, the definition object should be recreated with an utility of the same version as the MCF.

Commands to start the utilities are shown in Table 4-11.

Table 4-11: Utilities startup commands for definition object file creation

Definition source file		Utility startup command		Definition object file name		
MCF manager definition		mcfmgr		\$DCCONFPATH/ _mu.....		
MCF communication configuration definition	Common definition		mcfcomn	mcflink	\$DCCONFPATH/ _mu.....	
	Data communication definition	Protocol specific definition 1	mcfxxxx ^{#1}			Select one ^{#2}
		Protocol specific definition 2 :	mcfxxxx ^{#1} :			
	Application startup definition	mcfpsvr				
MCF application definition		mcfapli		\$DCCONFPATH/ arbitrary		

#1: Utility startup commands as a function of protocol type are available. See the applicable *OpenTPI Protocol* manual.

#2: The utility startup command to be used is determined by the communication method of the MCF communication service.

Create the object file for each definition as follows:

- MCF manager definition

Use the MCF definition object creation utility ('mcfmngr' command).

- MCF communication configuration definition

Use the MCF definition object creation utility and the MCF definition linkage utility, in the following sequence.

1. Use the MCF definition object creation utility to create a common definition object file and a data communication definition object file. For utility startup commands, see Table 4-11 and the applicable *OpenTPI Protocol* manual.
2. Use the MCF definition linkage utility ('mcflink' command) to link the two definition objects created in 1., and output the MCF communication configuration definition.

- MCF application definition

Use the MCF definition object creation utility ('mcfapli' command).

4.3.1 mcfxxxx (MCF definition object creation utility startup commands)

(1) Format

```
mcfxxxx -i [path-name] input-file-name
        -o [path-name] output-file-name
```

Definition	Startup command
MCF manager definition	mcfmngr
Common definition	mcfcomn
Protocol native definition	mcfxxxx [#]
Application startup definition	mcfpsvr
MCF application definition	mcfapli

Note

An exclusive startup command ('mcfxxxx' command) exists for each definition. Use the appropriate command from the table.

#: See the applicable *OpenTPI Protocol* manual.

(2) Function

These commands input the definition source file, check the statements, then create a definition object file. The object file should not be changed between a start and a restart. If changed, the restart operation is not guaranteed.

(3) Options

- `-i [path-name] input-file-name~<path name> <1-8 character identifier>`
Specify the name of the definition source file.
- `-o [path-name] output-file-name~<path name> <1-8 alphanumeric character>`
Specify the name of the definition object file. For an MCF manager definition, specify a file name starting with the three characters `_mu`.

If you do not want the MCF application definitions to be checked by the `dcddefchk` command (which checks the values specified in system definition files), specify a file name that begins with an underscore (`_`).

4.3.2 mcflink (MCF definition linkage utility startup command)**(1) Format**

```
mcflink -i [path-name] input-file-name [path-name] input-file-name
        -o [path-name] output-file-name
```

(2) Function

This command inputs the object files of the common definition and the data communication definition, checks the relation between the definition commands, then links the two object files into one object file.

(3) Options

- `-i [path-name] input-file-name [path-name] input-file-name~ <path name><1-8 character identifier><path name><1-8 alphanumeric character>`
Specify the name of the input object file of the common definition and of the data communication definition, in any order.
- `-o [path-name] output-file-name~<path name> <1-8 alphanumeric character>`
Specify the name of the output object file, starting with the three characters `_mu`.

4.3.3 mcfxxxx (MCF definition object analysis commands)**(1) Format**

```
mcfxxxx -i [path-name] name-of-object-file-to-be-analyzed
```

Definition object name	Analysis command
MCF manager definition object	mcfmngrr
MCF application definition object	mcfaplir
MCF communication common definition (or an object that connects this definition and the protocol-specific definition)	mcfcomnr
MCF application startup definition object (or an object that connects this definition and the common definition)	mcfpsvrr
MCF communication common definition for TP1/NET/TCP/IP (or an object that connects this definition and the common definition)	mcfpcpr
MCF communication common definition for TP1/NET/XMAP3 (or an object that connects this definition and the common definition)	mcfxpr

Note

There is a specific analysis command (mcfxxxx) for each definition object. Use the analysis commands in the above table.

(2) Function

These commands analyze the definition objects of the MCF manager definition object file, the MCF application definition object file, the MCF communication common definition object file, and the MCF application startup definition object file, which are the definition object files of the MCF, then the commands output the analysis result to the standard output using the formats of the definition sources.

(3) Options

- `-i [path-name] name-of-object-file-to-be-analyzed~<1-8 alphanumeric characters>`

Specify the name of the file storing the definition object.

(4) Output format

An output example of the analyzed definition object is as follows:

```

#####
                        MCF manager definition
#####
OBJECT FILE NAME : xxxxxxxx
VV-RR           : vv-rr
DATE            : yyyy-mm-dd hh:mm:ss
#####

mcfmenv
  -m id          = A
  -m name        = mng01
mcfmcomn
  -n             = 10
  -p             = 300
  -j             = 4096
  *-t delayed   = no
  -c             = 255
  -w stats      = no
  -i             = inc
  *-d mcfdump   = yes
  *-d pdebug    = 00000000
  *-l           = 0

mcfmcname
  -s mcfsvname  = _muua01
  -s syssvname  = mcfu01

mcfmcname
  -s mcfsvname  = _mups01
  -s syssvname  = mcfu02
.
.
.
##### End of File #####

```

Legend:*xxxxxxx*

Name of the definition object file to be analyzed

vv-rr

Version and revision numbers of the definition object to be analyzed

yyyy-mm-dd hh:mm:ss

Date when the file of the definition object to be analyzed is created

(5) Analysis result

The definition object analysis commands output the result of analysis using the formats of the definition sources. However, the description format of the analysis result does not match the description format of the original definition source. The

differences between the definition source and the definition object analysis result are as follows:

Item	Definition source	Definition object analysis result
Comment statement	You can write comments.	Comments are not output.
Handling of defaults	Omissible	Defaults are output including the parts for limited disclosure.
Indication of the parts for limited disclosure	No special indication that is different from the parts for public disclosure	An asterisk (*) is placed at the beginning of the line of each limited-disclosure OpenTPI Version 7 function.
Description methods of definition command names and options	A command name and its options can be written in one line. Example mcfmcomn -n 10	A new line is inserted after the name of the definition command. In addition, = is attached to an option. Example mcfmcomn -n = 10
If a single definition command exceeds one line	A continuation symbol (\) is added. Example mcfmcomn -n 10 \ -p 300	Continuation symbols are not output. Example mcfmcomn -n = 10 -p = 300
If a single definition option contains multiple operands	Enclose all the operands between two double quotation marks. Example mcfmenv -m "id=A name=mng01"	Write the option for each operand. Example mcfmenv -m id=A -m name = mng01
Other items	None	<ul style="list-style-type: none"> • Titles containing file names are output. • Since corrections are made when the definition object is created, the output may differ from the actual values specified. • The analysis result may or may not be supported due to the difference between the definition source and the version of the relevant command.

(6) Note

The operation is not guaranteed if the target of analysis is invalid.

Chapter

5. Network Communication Definitions

This chapter explains the network communication definitions in detail.

- MCF manager definition
- MCF communication configuration definition
- MCF application definition
- MCF performance verification trace definition
- System service information definition
- System service common information definition

MCF manager definition

The MCF manager definition establishes the execution environment for MCF manager processes. Prepare one definition source file for this definition.

Parameters native to the communication service must be set, depending on the type being used by the MCF services. Define all communication services, including services other than those described in this manual. For options of those definition commands, see the applicable *OpenTPI Protocol* manual.

The specification sequence for the MCF manager definition commands is shown in Figure 5-1.

Figure 5-1: Specification sequence for MCF manager definition commands

mcfmenv		(MCF manager environment definition)
mcfmcomn		(MCF manager common definition)
{{ mcfmname }}	<i>repeatable</i>	(Communication service definition)
mcfmuap		(UAP common definition)
{{ mcfmqgid }}	<i>repeatable</i>	(I/O queue definition)
mcfmexp		(Extended reservation definition)
[mcfmsts]		(Status inherit definition)
[mcfmmsg]		(Log-message output suppression definition)
[mcfmsvg]		(Service group attribute definition)

mcfmenv (MCF manager environment definition)

Format

```
mcfmenv -m "[id=MCF-manager-process-identifier]
             name=MCF-manager-name"
```

Function

This command defines the environment related to the MCF manager.

Option

- -m

(Operands)

id=*MCF-manager-process-identifier*~<alphanumeric characters> ((A-Z, a-z)) <<A>>

Specify the MCF manager identifier.

A 3-character string is created by combining an MCF manager process identifier and MCF communication process identifier of the MCF communication configuration definition. This string provides the key to identifying the MCF communication process in a message log that is output by the operation command or MCF.

The MCF manager process-identifier specified by this option must be specified in the -i option (resource manager extension) of the following commands:

- *trnstring* command of the transaction service definition
- *trnrmid* command of the user service default definition
- *trnrmid* command of the user service definition

name=*MCF-manager-name*~<1-8 character identifier>

Specify the MCF manager name.

The MCF manager name is used to identify the MCF manager definition in messages that are displayed at MCF startup.

mcfmcomn (MCF manager common definition)

Format

```
mcfmcomn [-n sequence-number-appended-logical-terminal-count]
          -p MCF-work-area-size
          [-i inc | msg]
          [-j journal-buffer-size]
          [-o "[cmdsvname=MCF-online-command-service-name]"]
          [-r number-of-simultaneous-transaction-processes-of-other-node]
          [-c maximum-number-of-concurrent-synchronous-sending-processes]
          [-w "[stats=yes|no]"]
```

Function

This command defines the environment shared to MCF managers.

Options

- **-n** *sequence-number-appended-logical-terminal-count*~<unsigned integer> ((0-2048)) <<0>>

Specify the maximum number of logical terminals that are to use message sequence numbers with one MCF system. Specify 0 if message serial numbers are not to be used.
- **-p** *MCF-work-area-size*~<unsigned integer> ((100-2000000)) (Unit: kilobytes)

Specify the size of the shared memory to be used by MCF processes. For this, compute the size of the shared memory to be secured statically for the tables and buffer pools.

Add the MCF work area size that you set here to `static_shmpool_size` in the system environment definition (`$DCDIR/conf/env`). If the MCF work area size is too small, memory might become insufficient even if the value of `static_shmpool_size` is sufficient.

If the MCF static shared memory becomes insufficient, one half the size specified by this option is automatically allocated from the unused area of the static shared memory (the value specified by the `static_shmpool_size` operand of the system environment definition). Memory is automatically allocated up to a maximum of 254 times. If the memory is still insufficient, log message KFCA10230-E is output along with error information.

If a static shared memory shortage is detected even though 254 or fewer automatic memory allocations have occurred, log message KFCA10240-E is output along with error information. Use the `-i` option to specify whether to output log message KFCA10242-I. To detect a static shared memory shortage, specify `msg` in the `-i` option so that a message is output.

■ `-i inc |msg`

`~<<inc>>`

Specify whether to output log message KFCA10242-I when a static shared memory shortage occurs in the MCF work area size specified in the `-p` option and additional memory is automatically allocated.

`inc`

No log message is output when additional memory is allocated to the static shared memory.

`msg`

Log message KFCA10242-I is output when additional memory is allocated to the static shared memory.

■ `-j journal-buffer-size~<unsigned integer> ((multiple of 4 between 4096-4000000)) <<4096>> (Unit: bytes)`

Specify the size of the area for storage of the journal data used for process recovery. An MCF manager process uses this area to store data for a journal service until the following requests are issued:

- output requests to the journal file,
- storage requests to the journal service buffer

Compute the size as:

$[260 + (24 \times m)]$,

where *m* is the number of retained messages (the value specified with the `-m` option of the message queue service definition). MCF will check and revise the specified value as follows:

1. if the specified value is smaller than the minimum value determined by MCF, it is revised upward to the said minimum value.
2. if the specified value is larger than the maximum value determined by MCF, it is revised downward to the said maximum value.
3. if the specified value is not a multiple of 4, it is rounded up to the nearest multiple of 4.

■ `-o cmdsvname=MCF-online-command-service-name~<1-8 alphanumeric characters>`

Specify the MCF online command service name.

For the values specified here, specify the alphanumerics with eight characters or less beginning with the `_mcs` header.

- `-r` *number-of-simultaneous-transaction-processes-of-other-node* ~<unsigned integer> ((0-1310720))

Specify the number of transactions of other node that are to be processed simultaneously by the MCF that provides remote MCF service.

- `-c` *maximum-number-of-concurrent-synchronous-sending-processes* ~<unsigned integer> ((1-10000)) <<255>>

Specify the maximum number of SPP processes that can concurrently perform synchronous sending to logical terminals. The actual number of SPP processes that can perform synchronous sending cannot exceed the number specified by the `prc_process_count` operand in the process service definition. Therefore, when specifying this option, specify a value smaller than the value specified by the `prc_process_count` operand, considering the number of processes that perform synchronous sending concurrently. If the specified value is larger than the value specified by the `prc_process_count` operand, the value specified by the `prc_process_count` operand is assumed.

This option is valid for the resident and non-resident processes.

The concurrent synchronous sending process is a process placed in the wait state until receiving the response after performing synchronous sending to a logical terminal.

- `-w` *stat=yes|no* ~<<no>>

Specify whether to acquire MCF statistics.

`yes`

Acquires MCF statistics and stores them in static shared memory.

You can use the `mcfstats` and `mcfreport` commands to reference the stored MCF statistics.

`no`

Does not acquire MCF statistics.

mcfmcname (Communication service definition)

Format

```
{ {mcfmcname -s "mcfsvname=MCF-communication-service-name
                syssvname=system-service-information-definition-file-
                name" } }
```

Function

This command defines the environment related to communication services.

Option

■ -s

(Operands)

mcfsvname=*MCF-communication-service-name*~<1-8 digit alphanumeric>

Specify the name of the MCF communication service with an alphanumeric string with the first three characters being `_mu`.

This name is the object file name specified with the MCF communication configuration definition. Note that an MCF communication service name must be unique among all the MCF communication service names specified in the `mcfmcname` commands within the same communication process.

syssvname=*system-service-information-definition-file-name*~<1-8 character identifier>

Specify the name of the system service information definition file, with the first four characters being `mcfu`.

This file is the file specified by the execution form program for starting an MCF communication service.

mcfmuap (UAP common definition)

Format

```
mcfmuap [-d maximum-communication-function-issue-count]
         [-t "[sndtim=synchronous-sending-monitoring-time]
             [sndrcvtim=synchronous-transmission-monitoring-time]
             [recvtim=synchronous-receiving-monitoring-time]" ]
         [-j user-server-journal-buffer-size]
         [-e "maximum-segment-length"]
         [-l "[initseq=initial-sequence-number]
             [maxseq=maximum-sequence-number-for-wrap]
             [minseq=starting-sequence-number-after-wrap]" ]
         [-u "[ntmetim=nontransaction-MHP-expiration-time]" ]
         [-a "delaytim=delaying-time-allowance-of-application-startup" ]
         [-c "order=function|commit" ]
```

Function

This command defines the environment common among UAPs.

Options

- `-d maximum-communication-function-issue-count~<unsigned integer> ((0-65535)) <<0>>`

Specify the maximum number of communication functions to be issued during processing of a transaction by an MHP.

This number is used to monitor an MHP. OpenTP1 will abnormally terminate an MHP upon the next issue of a communication function in excess of this number. If 0 is specified in this operand with no specification of the maximum number of issued MCF communication functions (of the user service default definition and the user service definition for the applicable service), the system does not monitor the number of issued communication functions.

- `-t`

(Operands)

`sndtim=synchronous-sending-monitoring-time~<unsigned integer> ((0-65535)) <<0>> (Unit: seconds)`

Specify the maximum monitoring time between start and end of synchronous message transmission. With this operand specified, the system monitors the time until the remote system reports the end of processing. If 0 is specified in the operand, no time monitoring is performed.

`sndrcvtim=synchronous-transmission-monitoring-time~<unsigned integer>`

((0-65535)) <<0>> (Unit: seconds)

Specify the maximum monitoring time between start and end of synchronous message transmission/reception. With this operand specified, the system monitors the time until a response is returned from the remote system. If 0 is specified in the operand, no time monitoring is performed.

recvtim=synchronous-receiving-monitoring-time~<unsigned integer> ((0-65535)) <<0>> (Unit: seconds)

Specify the maximum monitoring time between start and end of synchronous message reception. With this operand specified, the system monitors the time until the remote system reports the end of processing. If 0 is specified in the operand, no time monitoring is performed.

- -j *user-server-journal-buffer-size*~<unsigned integer> ((multiple of 4 between 4096-4000000)) <<32768>> (Unit: bytes)

Specify the size of the area for storage of the journal data. An MCF manager process uses this area to store data for a journal service until the following requests are issued:

- output request to the journal file,
- storage request to the journal service buffer

For the size of the journal buffer, calculate the data length of GJ, the data length of OJ, and the data length of CJ, and specify the largest of them.

1. Data length of GJ:

$$\uparrow(204 + \text{seg})/4 \uparrow \times 4$$

2. Data length of OJ:

$$\uparrow(204 + \text{seg})/4 \uparrow \times 4$$

3. Data length of CJ (serial number):

This journal is acquired when you send a message by specifying the serial number. When you send a message to outside of the transaction, specify 128. When you send a message inside the transaction, specify 160.

4. Data length of CJ (message queue server):

This journal is acquired when you use a disk queue as ITQ or OTQ.

$$\uparrow \{260 + \sum \{(24 \times (\uparrow \text{msg}/q1 \uparrow + \uparrow 960/q1 \uparrow))\} + \sum \text{msg}^\#\}/4 \uparrow \times 4$$

Where,

$\uparrow \uparrow$: The value enclosed in these symbols is rounded up to the nearest whole number.

seg: Segment length

aps: Number of applications started by the function `dc_mcf_execap()`

les: Number of logical terminals used for sending messages

ap: 32 when a disk is used as the input queue. 0 when memory is used as the input queue.

msg: Length of messages to be sent or received using a disk queue

ql: Physical record length of the queue file

Σ : Sum of the estimates for the messages received or sent in the relevant transaction

#

Add this if the value of `que_io_maxrecsize` in the message queue service definition is larger than the message size.

MCF will check and revise the specified value as follows:

1. if the specified value is smaller than the minimum value determined by MCF, it is revised upward to the said minimum value.
2. if the specified value is larger than the maximum value determined by MCF, it is revised downward to the said maximum value.
3. if the specified value is not a multiple of 4, it is rounded up to the nearest multiple of 4.

This operand can also be specified in the `mcf_jnl_buff_size` operands in the user service definition and user service default definition.

Priorities of the specified values are (1.>2.>3.):

1. User service definition
2. User service default definition
3. MCF manager definition

If the journal data size exceeds 131,072 bytes, specify the data size in the MCF manager definition and omit the `mcf_jnl_buff_size` operand from the user service definition and the user service default definition.

- `-e segsize=maximum-segment-length~<unsigned integer> ((512-2147483647)) <<512>>` (Unit: bytes)

Specify the maximum segment length if transmitting messages in the following cases:

- when an MHP for processing error events is started (maximum segment length of the messages sent to or received by the MHP for processing error events),

- when the application startup feature is used (maximum segment length of the messages to be sent to the application started by the `dc_mcf_execap` function),
- when the message resending function is used, or
- when the `mcf_tdumpqu` command is used to copy the contents of the I/O queue (maximum segment length of the messages inside the queue whose contents are to be copied).

Specify the larger of the two values required for these cases.

■ -1

(Operands)

`initseq=initial-sequence-number~<unsigned integer> ((0-2147483647)) <<1>>`

Specify an initial value for the message sequence numbers.

`maxseq=maximum-sequence-number-for-wrap~<unsigned integer> ((0-2147483647)) <<65535>>`

Specify the maximum sequence number before a wraparound occurs; the next sequence number becomes the starting value after the wraparound.

If the specified value is too small, after a wraparound the same sequence number could exist within the same queue file, and unique sequence numbers for the messages cannot be guaranteed. Thus, specify a value that satisfies the following equation:

Maximum sequence number $> Q \times (1 + R)$, where

Q is the maximum number of messages stored in the disk, and

R is the roll back ratio, considering the worst case scenario.

`minseq=initial-sequence-number-after-wrap~<unsigned integer> ((0-1)) <<1>>`

Specify the initial value for the sequence number after a wraparound.

This value will differ as a function of the online control program of the other connections.

■ -u `ntmetim=nontransaction-MHP-expiration-time~<unsigned integer> ((0-65535)) <<0>>` (Unit: seconds)

Specify the default value of the `ntmetim` operand that is to be specified in the `-v` option of the `mcf_aalcap` command of the MCF application definition.

To monitor a nontransaction MHP process for looping and hanging-up, the `-u ntmetim` operand specifies the maximum expiration time for the process.

If 0 is specified, no time monitoring is performed.

If the nontransaction MHP process does not terminate within the specified expiration

time, it is terminated abnormally.

- `-a delaytim=delaying-time-allowance-of-application-startup~<unsigned integer>`
(0-360) <<0>> (Unit: minutes)

Specify the delaying time allowance of application startup where the specified startup time is before the current time.

If the specified time is before the current time and is within the delaying time allowance, the MCF starts up the application immediately. If the specified time is out of the allowance, the MCF will start up the application at the specified time of the next day.

- `-c`

(Operands)

`order=function|commit ~<<function>>`

Specify the order for processing performed by multiple UAPs for each of the following:

- Sending or resending messages that use the same logical terminal (`mcfalcle -l`)
- Starting UAPs that use the same logical terminal (`mcfaalcap -n lname`) or internal communication path (`mcfaalcap -n cname`)

`function`

Processing is performed in the order in which functions[#] are called by UAPs.

`commit`

Processing is performed in the order in which transactions are committed by UAPs.

If OpenTP1 is restarted when messages remain in the output queue (disk queue) of the logical terminal, processing is performed in the order in which transactions are committed.

#

Functions here indicates the message send function, message resend function, and application startup function.

mcfmqgid (I/O queue definition)

Format

```
[{{mcfmqgid -q "quekind=itq|otq quegrpID=queue-group-ID"}}]
```

Function

This command defines the environment related to the input/output queue. It must be specified for a disk queue, but need not be for a memory queue. Several input queues and output queues can be created for each MCF.

Or, queues can be created for shared use by other MCFs in the same OpenTP1 system. In this case however, the input queues and the output queues cannot be allocated to the same physical file. Input queues correspond to service groups; output queues correspond to logical terminals.

Option

- -q

(Operands)

quekind=itq|otq

Specify the kind of queue (disk).

itq

Input queue

otq

Output queue

quegrpID=*queue-group-ID*~<1-8 character identifier>

Specify the ID of the queue group using the disk queue specified with the quekind operand. Use the queue group ID specified with the message queue service definition.

Specify the IDs of all queue groups used in MCFs defined with this MCF manager definition. This queue group ID must be unique among all the queue group IDs specified in the mcfmqgid commands within the same communication process.

mcfmexp (Extended reservation definition)

Format

```
[mcfmexp -g service-group-registration-count
      -l logical-terminal-registration-count
      [-i dg|ndg]
      [-o dg|ndg]]
```

Function

This command defines the environment related to the expansion function. It must be defined in conjunction with a `mcfmqgid` command; it cannot be defined if the `mcfmqgid` command is omitted.

Options

- `-g service-group-registration-count~<unsigned integer>` ((total service groups-2147483647))

Specify the maximum number of reservations for registration of service groups, including the total number of service groups in the MCF application definition, for use by MCFs under the control of this MCF manager.

The value you specify in this option is the total number of the types of MHP service groups used in the MCFs controlled by this MCF manager. The value of this option is not dependent on the `quekind` operand in the `-g` option of `mcfaalcap` in the MCF application definition.

- `-l logical-terminal-registration-count~<unsigned integer>` ((total logical terminals-2147483647))

Specify the maximum number of reservations for registration of logical terminals for use by MCFs under the control of this MCF manager.

The value you specify in this option is the total number of the logical terminals used in the MCFs under the control of this MCF manager. The value of this option is used regardless of the specification of the `quekind` operand of the `-k` option in the `mcfacle` logical terminal definition.

- `-i dg|ndg~<<ndg>>`

Specify whether fall back operation should proceed with memory queues if input disk queues cannot be used during system startup.

`dg`

Fall back operation is to proceed.

`ndg`

Fall back operation does not proceed.

■ -o dg | ndg~<<ndg>>

Specify whether fall back operation should proceed with memory queues if output disk queues cannot be used during system startup.

dg

Fall back operation is to proceed.

ndg

Fall back operation does not proceed.

mcfmsts (Status inherit definition)

Format

```
mcfmsts [-g maximum-service-group-count]
        [-v maximum-service-count]
```

Function

This command defines parameters for a inherit of the last status during a restart. Specify the maximum number of resources, used with this MCF service, for which the last status is to continue.

Options

- `-g maximum-service-group-count~<unsigned integer> ((1-1044480))`

Specify the number of service groups for which the last status is to be inherited during a re-start. The statuses that can be inherited are the status of a shutdown performed by the `mcfstdctsg` command and the status of a hold performed by the `mcfthldig` command. The status of a shutdown caused by abnormal termination of an application is not inherited. Specify a value equal to or greater than the total number of service groups to be used by this MCF service.

Omit this operand if the status of the service groups are not to be inherited.

- `-v maximum-service-count~<unsigned integer> ((1-1044480))`

Specify the number of services for which the last status is to be inherited. The status that can be inherited is the status of a shutdown performed by the `mcfstdctsv` command. The status of a shutdown caused by abnormal termination of an application is not inherited. Specify a value equal to or greater than the total number of services to be used by this MCF service.

Omit this operand if the status of the service is not to be inherited.

mcfmsmsg (Suppressing the output of log messages definition)

Format

```
mcfmsmsg [-m "[ID-of-message-not-to-output [ID-of-message-not-to-output] . . . ]"]
```

Function

Define this command when you want to suppress outputting log messages.

This command suppresses outputting the specified log messages (which are to be output to the standard output, the standard error output and the message log file). To specify the messages not to output, specify the message IDs in the `-m` option.

If a request to output a log message frequently occurs, the log service is heavily loaded and the processing may be delayed. Use the `-m` option to reduce the load on the log service.

Option

- `-m "[ID-of-message-not-to-output [ID-of-message-not-to-output] . . .]"`
~<unsigned integer> ((10000-19999 and 28000-29999))

Specify the IDs of the messages you do not want to output to the log file. You can use only message serial numbers (five-digit integer) to specify the messages. You can specify up to 50 IDs.

You cannot suppress outputting the following messages even if you specify them:

- Messages that are not output by MCF
- Messages output by the remote MCF manager (When the remote MCF service is used, the suppression of message output follows the definition in the message destination)
- MCF startup message
- Messages that are not output to the log file
- Messages output by definition commands and operation commands

mcfmsvg (Service group attribute definition)

Format

```
[ { { mcfmsvg  -g "servgrp=service-group-name"
      [-w  "[watchcnt=threshold-number-of-messages-in-the-input-queue]
           [watchint=interval-at-which-the-input-queue-is-checked-for-remaining-messages]
           [expectcnt=number-of-service-requests-that-an-MHP-is-expected-to-process]
           [abort=yes|no]" ] } } ]
```

Function

This command defines the attributes of a service group.

Options

■ -g

(Operands)

servgrp=*service-group-name* ~<1-to-31-character identifier>

Specify the name of a service group for which the input queue is checked for remaining messages.

You can specify the name of a service group that has been specified in the user service definition.

■ -w

(Operands)

watchcnt=*threshold-number-of-messages-in-the-input-queue* ~<unsigned integer>
((0-65535)) <<0>>

Specify the number of messages in the input queue used as the threshold between the zone in which the number of remaining messages is monitored and the zone in which the processing capacity is checked.

If the number of messages remaining in the input queue is equal to or larger than the value of this operand, OpenTP1 starts checking the processing capacity at the interval specified in the *watchint* operand.

If you omit this operand or specify 0 for this operand, OpenTP1 does not monitor messages remaining in the input queue.

watchint=*interval-at-which-the-input-queue-is-checked-for-remaining-messages*
~<unsigned integer> ((5-3600)) <<10>> (units: seconds)

Specify the interval at which OpenTP1 checks the number of messages remaining in the input queue and the MHP processing capacity.

Specification of this operand has no effect if you specify 0 for this operand or if the `watchcnt` operand has been omitted.

`expectcnt=number-of-service-requests-that-an-MHP-is-expected-to-process`
 ~<unsigned integer> ((1-65535))

Specify the number of service requests that are expected to be processed before the next time the processing capacity of an MHP is checked.

If you omit this operand when the value of the `watchcnt` operand is 1 or larger, a definition error occurs. Specification of this operand has no effect when the `watchcnt` operand has been omitted or set to 0.

The value to be specified in this operand can be estimated from the following formula:

Number of service requests that an MHP is expected to process
 = (*interval-at-which-the-input-queue-is-checked-for-remaining-messages*) /
 (*time-required-for-an-MHP-to-process-one-service-request*) x *usage-rate*

`abort=yes|no` ~<<no>>

Specify whether you want the OpenTP1 system to go down if insufficient MHP processing capacity is detected.

Specification of this operand has no effect if the `watchcnt` operand has been omitted or set to 0.

yes

If insufficient MHP processing capacity is detected, OpenTP1 outputs the KFC A11821-E message, and forcibly stops the MHP and the MCF manager process.

no

If insufficient MHP processing capacity is detected, OpenTP1 outputs the KFC A11820-W message, and continues processing.

MCF communication configuration definition

The MCF communication configuration definition sets the execution environment for an MCF communication service. Creation of the definition declares the startup of this MCF service. Prepare an equal number of these definitions if using several communication services.

The MCF communication configuration definition is comprised of two definitions: the common definition and the data communication definition. These two definitions are created in separate files, then linked at the end to create one definition object file. For creation of the object file, see *4.3 Creation of definition object file*.

Common definition

The common definition defines essential environment information common to each MCF communication service. Common definition commands are used, but specified values of identifiers and other parameters must be unique. Create a separate common definition resource file for each communication service. Each type of communication service has specific options. For details, see the applicable *OpenTPI Protocol* manual.

Data communication definition

The data communication definition defines the environment information native to each MCF communication service. Definition commands native to the communication service are used. There are two types of definitions depending on the nature of the communication service: protocol native definition and application startup definition.

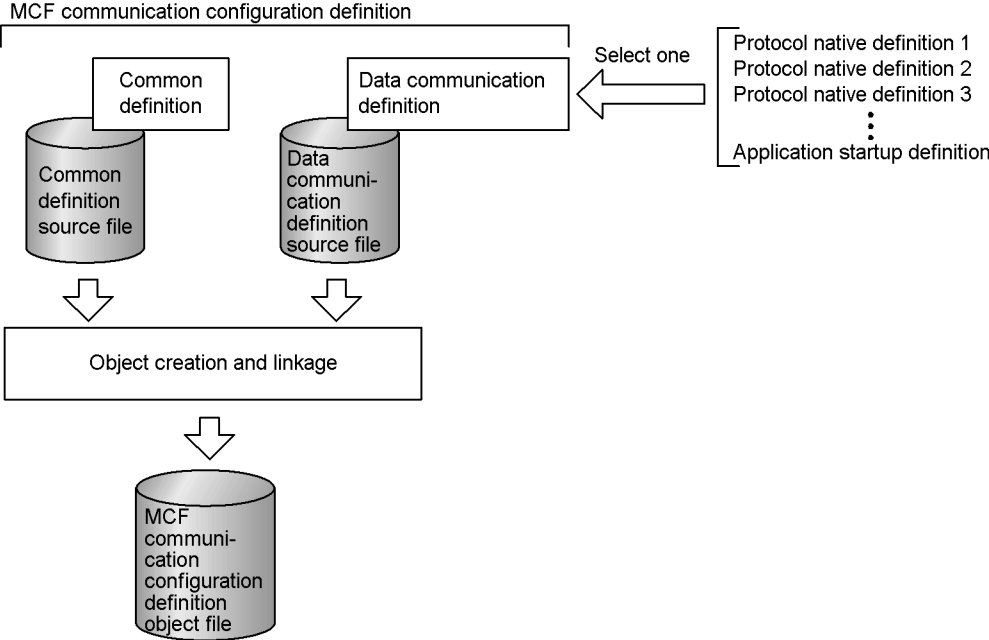
Use the protocol native definition to prepare an MCF communication configuration definition for an external communication service (MCF communication process). For details on the commands, see the applicable *OpenTPI Protocol* manual.

Use the application startup definition to prepare an MCF communication configuration definition for communication within a node (application startup process).

Some definition commands are common to both types of definitions, but there are slight differences in the options. For details, see the definition command for the appropriate communication service.

The file structure of this definition is shown in Figure 5-2.

Figure 5-2: MCF communication configuration definition file structure



Specification sequence of the common definition commands

The specification sequence of the common definition commands is shown in Figure 5-3.

Figure 5-3: Common definition commands specification sequence

```

mcftevn      (MCF environment definition)
mcfcomn     (MCF communication configuration common definition)
[mcftrred]  (Maximum processing multiplicity definition)
[mcftrtim]  (Timer definition)
mcftrtrc    (Trace environment definition)
[mcftrsts]  (Status inherit definition)
[{{mcftrbuf}}...] (Buffer group definition)1

```

#: An application startup process does not use the buffers defined by this `mcftrbuf` command. Do not specify this command in the corresponding MCF communication configuration definition.

Specification sequence for the application startup definition commands

The specification sequence for the application startup definition commands is shown in Figure 5-4.

Figure 5-4: Specification sequence of application startup definition command

```
mcftpsvr                (Start application startup definition)
{{mcftalcle}}Repeatable (Logical terminal definition)
mcftped                 (End application startup environment definition)
```

mcfteenv (MCF environment definition)

Format

```
mcfteenv -s MCF-communication-process-identifier |
           application-startup-process-identifier
           [-m MCF-manager-process-identifier]
           -a MCF-application-definition-object-file-name
           -q [diskitq=yes|no]
```

Function

This command defines the environment common to the MCF.

Options

- -s *MCF-communication-process-identifier* | *application-startup-process-identifier* ~<numeric character (0-9) and a-f> ((01-ef))

This option specifies the identifier for either an MCF communication process or application startup process identifier. The value must be unique from identifiers specified with other `mcfteenv` commands.

MCF-communication-process-identifier

Specify the identifier for the MCF communication process, if the MCF communication configuration definition corresponds to this process. This identifier is used in special processes such as a message log output by MCF, or the entry of input commands.

application-startup-process-identifier

Specify the identifier for the application startup process, if the MCF communication configuration definition corresponds to this process. This identifier is specified in the `-p` option of the `mcfaeenv` command of the corresponding MCF application definition.

- -m *MCF-manager-process-identifier* ~<alphanumeric characters> ((A-Z, a-z)) <<A>>
- Specify the identifier of an MCF manager process that manages the MCF communication process. The MCF manager process identifier must be the value specified by the `mcfmenv` command in the MCF manager definition.
- -a *MCF-application-definition-object-file-name* ~<1-to-8 alphanumeric characters>
- Specify the identifier for the MCF application definition object file corresponding to this MCF communication configuration definition. Use the name of the MCF application definition output object file created with the MCF definition object

creation utility (mcfapli command).

- `-q diskitq=yes|no~<<yes>>`

Specify whether or not the applications activated from the MCF communication server should use a disk queue as an input queue.

Specify `diskitq=no` (do not use a disk queue as an input queue) speeds up starting MCF.

`yes`

Some or all of applications use a disk queue as an input queue. Whether at least some applications use a disk queue as an input queue depends on the value specified in the `quekind` operand of the `-g` option in the `mcfaalcap` MCF application definition.

`no`

No applications use a disk queue as an input queue.

However, if the MCF communication server which specifies `diskitq=no` starts an application for which `quekind=disk` is specified in the `-g` option of the `mcfaalcap` command in the MCF application definition, `diskitq=no` is ignored and a memory queue is used as an input queue.

mcftcomn (MCF communication configuration common definition)

Format

```
mcftcomn [-j MCF-communication-process-or-application-startup-
process-journal-buffer-size]
```

Function

This command defines the size of the journal buffer for an MCF communication process or application startup process.

Option

- -j *MCF-communication-process-or-application-startup-process-journal-buffer-size* ~<unsigned integer> ((multiple of 4 between 4096-4000000)) <<32768>> (Unit: bytes)

Specify the size of the area for storage of the journal data for use in process recovery. An MCF communication process or application startup process uses this area to store data for a journal service until the following requests are issued:

- output request to the journal file,
- storage request to the journal service buffer.

For the size of the journal buffer, calculate the data length of AJ, the data length of IJ, the data length of MJ, and the data length of CJ, and specify the largest of them.

1. Data length of AJ:
176
2. Data length of IJ:
 $\uparrow(172 + \text{seg})/4 \uparrow \times 4$
3. Data length of MJ:
 $\uparrow(180 + \text{seg})/4 \uparrow \times 4$
4. Data length of CJ (last serial number):
144. This journal is acquired when you send a message by specifying the serial number.
5. Data length of CJ (message queue server):
This journal is acquired when you use a disk queue as ITQ or OTQ.
 $\uparrow\{88 + (24 \times (\uparrow \text{msg}/q1 \uparrow + \uparrow 960/q1 \uparrow)) + \text{msg}^\#\}/4 \uparrow \times 4$

Where,

↑ ↑: The value enclosed in these symbols is rounded up to the nearest whole number.

seg: Segment length

msg: Length of messages to be sent or received using a disk queue

ql: Physical record length of the queue file

#

Add this if the value of `que_io_maxrecsize` in the message queue service definition is larger than the message size.

MCF will check and revise the specified value as follows:

1. if the specified value is smaller than the minimum value determined by MCF, it is revised upward to the said minimum value.
2. if the specified value is larger than the maximum value determined by MCF, it is revised downward to the said maximum value.
3. if the specified value is not a multiple of 4, it is rounded up to the nearest multiple of 4.

mcfttred (Maximum processing multiplicity definition)

Format

```
[mcfttred [-m maximum-processing-multiplicity]
```

Function

This command defines the maximum processing multiplicity for an MCF communication process. For an application startup process, omit this definition command.

Option

- -m *maximum-processing-multiplicity*~<unsigned integer> ((1-1000)) <<10>>

Specify the maximum number of connections for receiving and sending messages in parallel in an MCF communication process.

The MCF communication process can simultaneously handle the messages it receives from multiple connections at the same time and the messages that a user application program requests to send to multiple connections at the same time. Specify the limit of multiplicity, which allows parallel processing, in this option. However, even if a high traffic level is enabled, parallel processing may not be executed up to the value specified in the definition depending on the system environment. In this case, local memory is used inefficiently, negatively influencing the performance. As you increase the value specified in the maximum processing multiplicity definition by 1, the MCF communication process uses an additional 32 kilobytes (about 64 kilobytes for AIX 5L) of local memory.

To tune this option, check the current status of multiplicity processing by executing the display command for the message multiplicity processing status (mcftlstrd) or by obtaining the MCF activity statistics.

If the value specified in the connection definition is less than the value specified in the maximum processing multiplicity definition, the maximum processing multiplicity assumes the value specified in the connection definition.

mcfttim (Timer definition)

Format

```
[mcfttim [-t "[btim=time-check-interval]"
           [mtim=unprocessed-send-message-remaining-time]
           [rmtim=unprocessed-receive-message-remaining-time]" ]
[-p "[usertime=yes|no]
     [timereqno=maximum-number-of-time-monitored-requests]
     [msgsize=maximum-message-length]
     [msgout=yes|no]" ]]
```

Function

This command defines the environment related to an MCF time check.

Option

- -t

(Operands)

*btim=**time-check-interval*~<unsigned integer> ((1-60)) <<1>> (Unit: seconds)

Specify the interval for a time check of an MCF communication service.

MCF checks at this interval whether a specified time limit has elapsed. An error in the time check value specified with other operands is affected by the length of this interval and will be magnified.

*mtim=**unprocessed-send-message-remaining-time*~<unsigned integer> ((60-65535)) <<180>> (Unit: seconds)

Specify the resident time for unsent messages.

When MCF is terminating, the resident time of unsent messages remaining in the output queue is checked. This prevents an unduly long termination process; the time check however is valid only for a normal termination.

Messages remaining in the queue after the specified time elapses are deemed to have been transmitted, and termination processing will continue. In this case, the unprocessed send message is discarded and an MCF event that reports the discarding of an unprocessed message (ERREVT_A) is issued.

Note that monitoring is suspended on a timer start request message by the `dc_mcf_execap` function for the resident time of unsent messages remaining in the output queue. If a timer start request message remains when the command to normally terminate OpenTP1 is executed, the timer start request message is discarded immediately and ERREVT_A is reported.

`rmtim=unprocessed-receive-message-remaining-time~<unsigned integer>`
 ((60-65535)) <<0>> (Unit: seconds)

Specify the resident time for unprocessed received messages.

When MCF is terminating, the resident time in which unprocessed received messages remaining in the input queue is checked. This prevents an unduly long termination process; the time check however is valid only for a normal termination or planned termination A.

MCF will terminate abnormally if messages are remaining in the queue after the specified time elapses. Specify 0 for no time monitoring; in this case, MCF waits until all received messages in the queue are processed.

■ -p

(Operands)

`usertime=yes|no~<<no>>`

Specify whether to use the facility for user timer monitoring.

yes

Uses the facility for user timer monitoring.

no

Does not use the facility for user timer monitoring.

`timereqno=maximum-number-of-time-monitored-requests~<unsigned integer>`
 ((1-10000)) <<16>>

Specify the maximum number of requests to be monitored for a timeout.

`msgsize=maximum-message-length~<unsigned integer> ((0-256)) <<0>>` (units: bytes)

Specify the maximum segment length of the message to be passed to the MHP to be started if a timeout occurs.

`msgout=yes|no~<<no>>`

This operand specifies:

- Whether to output message KFCA16518-I if the function for canceling the user timer monitoring returns an error of DCMCFER_PARAM_TIM_ID (for C) or an error of 70910 (for COBOL)
- Whether to output message KFCA16519-I if a timeout occurs

yes

Outputs these messages.

mcfttim (Timer definition)

no

Does not output these messages.

mcftrc (Trace environment definition)

Format

```
mcftrc [-t "[size=trace-buffer-size]
         [disk=yes|no]
         [bufcnt=trace-buffer-count]
         [trcCnt=trace-file-count]
         [msgsize=maximum-size-of-a-message-that-can-be-acquired-
         as-trace-data]" ]
        [-m del|off]
```

Function

This command defines the environment related to an MCF trace. An MCF trace collects information related to MCF, and uses it for troubleshooting.

Options

■ -t

(Operands)

size=trace-buffer-size~<unsigned integer> ((multiple of 4 between 4096-15728640))
<<204800>> (Unit: bytes)

Specify the size of the buffer for storage of an MCF trace. Normally, use the default value. MCF will check and revise the specified value as follows:

1. if the specified value is smaller than the minimum value determined by MCF, it is revised upward to the said minimum value.
2. if the specified value is larger than the maximum value determined by MCF, it is revised downward to the said maximum value.
3. if the specified value is not a multiple of 4, it is rounded up to the nearest multiple of 4.

disk=yes|no~<<yes>>

Specify whether the MCF trace disk output function is to be used.

yes

Disk output function is used. The contents of the buffer are output (swapped) to disk when the memory buffer becomes full of trace information.

An MCF trace file is output under the \$DCDIR/spool/ directory, with the file name *mcf_tXXXnn* (XXX: MCF identifier, nn: serial number).

When an MCF communication process and application startup process

terminated abnormally, the latest trace information may be output to the file `mcftXXX0` which is not included in the number of trace files specified with the `trccnt` operand.

`no`

Disk output function is not used. The trace is output to memory only.

If this `disk` operand is not specified, an MCF trace file is not created; two buffers in memory are used interchangeably. As well, specifications of the following `bufcnt` operand, `trccnt` operand, and `-m` option are invalid.

`bufcnt=trace-buffer-count~<unsigned integer> ((10-2147483647)) <<100>>`

Specify the number of trace buffers to be stored in the MCF trace file. To compute, divide the trace file size by the trace buffer size.

`trccnt=trace-file-count~<unsigned integer> ((3-99)) <<3>>`

Specify the number of MCF trace files. Specify the sum of the swapped trace files (trace files for which swapping terminated the number of times specified in the `bufcnt` operand) and the swap files.

- `msgsize=maximum-size-of-a-message-that-can-be-acquired-as-trace-data~<unsigned integer> ((0-1073741824)) <<128>>` (Units: bytes)

The MCF acquires part or all of a sent or received message as trace data. Use this operand to specify the maximum number of bytes that can be acquired as trace data from the beginning of a sent or received message.

When you specify 0, messages are not acquired as trace data. If the size of a message is smaller than the specified value, the entire message is acquired as trace data.

This operand is valid for the MCF communication services using TP1/NET/TCP/IP.

- `-m del|off~<>`

Specify the relationship between the number of swapped trace files and the value specified with the `trccnt` operand.

`del`

When the number of swapped trace files reaches the value specified with the `trccnt` operand, the oldest swapped trace file is deleted and a swap trace file is created with the name of the deleted file.

`off`

The value specified with the `trccnt` operand is ignored. When the number of swapped trace files reaches 99, the oldest swapped trace file is deleted and a swap trace file is created with the name of the deleted file.

It is the operator's responsibility to delete the swapped trace files, which are taxing

the disk free space.

mcfststs (Status inherit definition)

Format

```
[mcfststs [-a maximum-application-count]
          [-l maximum-value-of-logical-terminals]
```

Function

This command defines resources to be continued with the same status during a restart. It specifies the maximum number of resources related to this MCF communication service.

Option

- `-a maximum-application-count~<unsigned integer> ((1-65535))`

Specify the number of applications for which the last status is to continue upon a restart. The status that can be inherited is the status of a shutdown performed by the `mcfadctap` command. The status of a shutdown caused by abnormal termination of an application is not inherited. Specify a value equal to or in excess of the total number of applications used with this MCF communication service.

This operand can be omitted if the status of the applications are not to be continued.

- `-l maximum-number-of-logical-terminals~<unsigned integer> ((1-65535))`

Specify the number of logical terminals whose status is inherited. The status includes the input of output queue and the holding/unholding of outputs. The specified value must be greater than the total number of logical terminals used under the MCF communication service.

If the option is not specified, the status of a logical terminal is not inherited.

mcftbuf (Buffer group definition)

Format

```
{ {mcftbuf -g "groupno=buffer-group-number
      length=buffer-length
      count=buffer-count
      [extend=extended-buffer-count] " }
```

Function

This command defines the environment related to the buffers for message transmission, or message editing.

It is omitted for an MCF communication configuration definition created for an application startup process.

Option

- -g

(Operands)

`groupno=buffer-group-number~<unsigned integer> ((1-512))`

Specify the group number of the buffers for use in message transmission or message editing. Note that a buffer group number must be unique among all the buffer group numbers specified in the `groupno` operands of the `mcftbuf` commands within the same communication process.

`length=buffer-length~<unsigned integer> ((512-1073741824)) (Unit: bytes)`

Specify the length of the buffers for message transmission or message editing.

For details, see the applicable *OpenTPI Protocol* manual.

`count=buffer-count~<unsigned integer> ((1-65535))`

Specify the number of buffers for message transmission or message editing.

For details, see the applicable *OpenTPI Protocol* manual.

`extend=extended-buffer-count~<unsigned integer> ((0-65535)) <<0>>`

Specify the number of buffers for expansion if all buffers specified with the `count` operand become full.

mcftpsvr (Start application startup environment definition)

Format

```
mcftpsvr -c internal-communication-path-name
          [-o "reruntm=yes|no"]
```

Function

This command defines the environment related to the startup of an application program.

Option

- `-c internal-communication-path-name`~<1-8 character identifier>

Specify the name of the internal communication path for use by the application startup process. This is a virtual communication path for exchange of messages between applications in the same node.

Do not specify the name of an internal communication path that has already been used by another application startup process. If you specify such an internal communication path name, the process of this command terminates abnormally.

- `-o reruntm=yes|no`~<<no>>

Specify whether timer start is inherited at rerun.

If OpenTP1 starts to rerun while there is still a timer start request made before the timeout (before the specified time is exceeded), use this option to specify whether to inherit the timer start request.

This option is not valid for the timer start requests made after a timeout has occurred. Timer start requests after a timeout are inherited regardless of the value specified in this option.

yes

Timer start is inherited at rerun. If the timer start inherit decision UOC (user exit routine) is installed by the main function of the application startup service, specify yes.

This specification is only effective for a logical terminal which specifies `disk` for the logical terminal definition (`mcftalcle -k quekind=`) of the application startup definition. For details of the logical terminal definition, see the applicable *OpenTP1 Protocol* manual.

no

Timer start is not inherited at rerun. All timer start is discarded.

If the timer start inherit decision UOC is installed by the main function of the application startup service, but if no is specified, the UOC is not called.

mcfталcle (Definition of a logical terminal for starting applications)

Format

```
{ {mcfталcle -l logical-terminal-name
  -t send|request
  [-m "[mmsgcnt=maximum-memory-storable-output-message-
count]
      [dmsgcnt=maximum-disk-storable-output-message-
count]" ]
  [-k "[quekind=memory|disk]
      [quegrpid=queue-group-ID]" ] }
```

Function

This command defines the environment of the logical terminals for starting applications.

Logical terminals for an MHP (an error event processing) or for requests of a roll back of retry instructions, are generated automatically by MCF and need not be defined here. One or more logical terminals must be defined if using the application startup function.

Options

- -l *logical-terminal-name*~<1-8 character identifier>

Specify the name of the logical terminal.

Make sure that the logical terminal name you specify is unique within the OpenTP1 system.

- -t *send|request*

Specify the type of the logical terminal.

send

Send-type logical terminal. Use this terminal type to start an application for which *noans* is specified in the -n *type* operand of the *mcfталcap* command.

request

Inquire-type logical terminal. Use this terminal type to start an application for which *ans* is specified in the -n *type* operand of the *mcfталcap* command.

- -m

(Operands)

mmsgcnt=*maximum-memory-storable-output-message-count*~<unsigned integer>

((0-65535)) <<0>>

Specify the maximum number of output messages which can be stored in memory. An error will be returned for any SEND requests from an UAP in excess of this number. If 0 is specified or if specification of this operand is omitted, the number of output messages to wait in memory will be the maximum value (65535).

dmsgcnt=*maximum-disk-storable-output-message-count*~<unsigned integer>
((0-65535)) <<0>>

Specify the maximum number of output messages which can be stored on disk. An error will be returned for any SEND requests from an UAP in excess of this number. If 0 is specified or if specification of this operand is omitted, the number of output messages to wait on disk will be the maximum value (65535).

■ -k

(Operands)

quekind=*memory*|*disk*~<<memory>>

Specify the allocation destination (memory queue or disk queue) for the output messages.

memory

Messages are allocated to the memory queue only.

disk

Messages are allocated to the disk queue and memory queue.

The *quegrp**id* operand must be specified also if specifying *disk*.

*quegrp**id*=*queue-group-ID*~<1-8 character identifier>

Specify the ID of the queue group used for the output messages stored on disk. Specify one of the queue group IDs (queue group type is *otq*) specified with the *mcfmqgid* command of the MCF manager definition.

This operand is valid only if *disk* is specified with the *quekind* operand.

mcfpped (End application startup environment definition)

Format

mcfpped

Function

This command indicates the end of the application startup environment definition.

Options

None

MCF application definition

The MCF application definition defines the applications and sets their execution environment. Create one source file for each MCF application definition. An application is a work task. The same service can be defined as individual applications by using different communication services.

The specification sequence for the MCF application definition commands is shown in Figure 5-5.

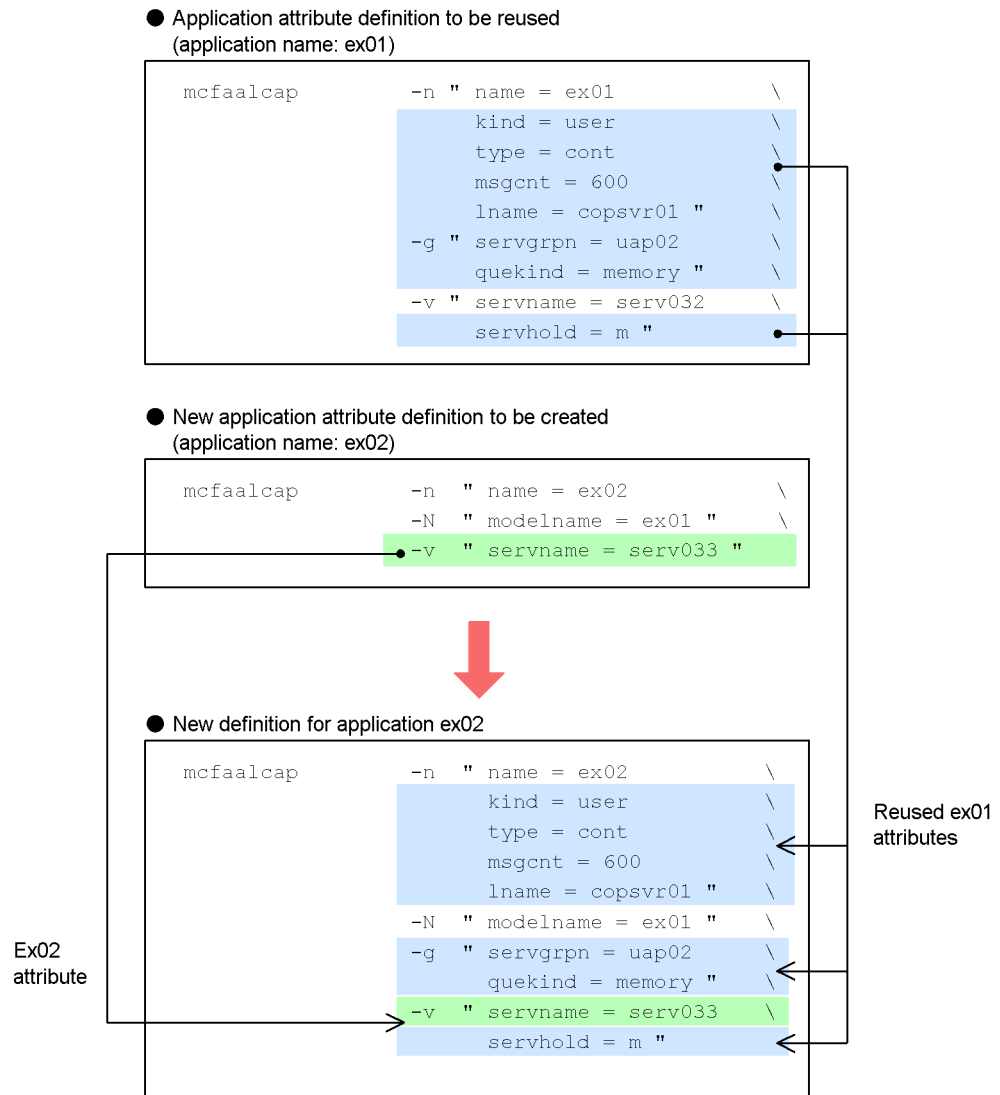
Figure 5-5: Specification sequence of MCF application definition commands

```
mcfenv (Application environment definition)
{{mfaalcap}}Repeatable (Application attribute definition)
```

When you create an application attribute definition, you can reuse the contents of an existing definition as a model by specifying the `modelName` operand in the `-N` option of the `mfaalcap` definition command.

You can also reuse just part of a model application attribute definition to create a new definition. The following figure shows an example of reusing part of the attribute definition for application `ex01` to create the attribute definition for application `ex02`.

Figure 5-6: Example of reusing an existing application attribute definition



mcfenv (Application environment definition)

Format

```
mcfenv -a MCF-application-definition-identifier
        [-p application-startup-process-identifier]
```

Function

This command defines the environment related to applications.

Options

- **-a** *MCF-application-definition-identifier*~<1-8 character identifier>

Specify the identifier for this MCF application definition. This identifier will be displayed at startup of an MCF.

- **-p** *application-startup-process-identifier* ~<numeric character (0-9), a-f> ((01-ef))

Specify the identifier for the application startup process corresponding to this MCF application definition, for the following cases only:

- application startup function is used,
- an error event is generated,
- a roll back of a retry instruction is requested.

Use the value specified with the **-s** option of the `mcfenv` command of the MCF communication configuration definition.

Note:

Do not specify an MCF communication process identifier in this option. If you do so, an error occurs.

mcfaalcap (Application attribute definition)

Format

```
mcfaalcap -n "name=application-name | MCF-event-name
             [kind=user | mcf]
             [type=ans | noans | cont]
             [aplihold=m | a | s]
             [msgcnt=maximum-storable-input-message-count]
             [lname=logical-terminal-name]
             [cname=internal-communication-path-name]
             [tempsize=continuous-inquiry-response-temporary-data-
                         storage-area-size]
             [trnmode=trn | nontrn]
             [errevt=yes | no] "
[-N "modelname=model-application-name | model-MCF-event-name " ]
-g "servgrpname=service-group-name
   [quegrpID=queue-group-ID]
   [quekind=memory | disk]
   [type=MHP | SPP]
   [srvghold=m | s]
   [recvmsg=e | r] "
-v "servname=service-name
   [servhold=m | a | s]
   [ntmetim=nontransaction-MHP-expiration-time] "
[-d "[holdlimit=maximum-application-abnormal-termination-
      count]
     [holdlmtyp=sum | cont] " ]
[-j "[ij=yes | no]
     [oj=yes | no]
     [gj=yes | no] " ]
[-e "evtlogout=yes | no] "
```

Function

This command defines the attributes of an application.

Options

- -n

(Operands)

name=*application-name* | *MCF-event-name* ~<1-8 character identifier>

Specify the name of the application or MCF event. Each name specified with each name operand of all mcfaalcap commands within each kind of application as specified with the following kind operand, must be unique.

To start up the MHP directly with the mcfuevt command, specify UCMDEV T.

To throw some ERREVT2 events and all ERREVT3 events, an application startup

process is required. To accomplish this, create an MCF communication configuration definition for the application startup process.

`kind=user | mcf~<<user>>`

Specify the kind of application. It cannot be specified if `SPP` is specified in the `type` operand of the `-g` option:

`user`

User application

`mcf`

MCF event

To start up the MHP directly with the `mcfuevt` command, specify `user` or omit specification. If this operand is incorrectly specified, the MCF definition object generation utility startup command (`mcfapli` command) displays the KFCA11513-E message and terminates the system abnormally.

`type=ans | noans | cont~<<noans>>`

Specify the type of application. It cannot be specified if `SPP` is specified in the `type` operand of the `-g` option.

`ans`

Response type.

`noans`

No-response type.

`cont`

Continuous inquiry-response type.

This operand need not be specified if MCF event name is specified with the above name operand.

MCF automatically sets the format as follows:

1. For `ERREVT1` (MCF event that reports detection of an invalid application-name), MCF sets the format to correspond to the terminal type of the logical terminal making the request, that is, to `ans` for reply type logical terminals and to `noans` for non-reply type logical terminals.
2. For `ERREVT2` (MCF event that reports the discarding of a message), `ERREVT3` (MCF event that reports UAP abnormal termination), or `ERREVT4` (MCF event that reports the discarding of a timer-start message), continues the type of the application causing the event,
3. For all other MCF events, sets the type as `noans`.

Should an abnormality occur, the MCF event corresponding to the started communication process will be activated. An event will also be activated for the first process of multiple MCF application definitions started using the application startup function.

Should an application be started from SPP, but there is no started communication process, an MCF event corresponding to the application startup process will be activated.

To start up the MHP directly with the `mcfuevt` command, specify `noans` or omit specification. If this operand is incorrectly specified, the MCF definition object generation utility startup command (`mcfapli` command) displays the KFCA11513-E message and terminates the system abnormally.

`aplihold=m|a|s~<<m>>`

Specify action of the application should it terminate abnormally.

It cannot be specified if `SPP` is specified in the `type` operand of the `-g` option.

`m`

Application is not shut down.

`a`

Application is shut down. Further input and scheduling is prohibited.

`s`

Application is shut down. Further scheduling is prohibited.

`msgcnt=maximum-storable-input-message-count~<unsigned integer> ((0-65535))`
`<<0>>`

Specify the maximum storable number of input messages. It cannot be specified if `SPP` is specified in the `type` operand of the `-g` option. Specify 0 for an indefinite number of messages to be stored in memory or on disk.

`lname=logical-terminal-name~<1-8 character identifier>`

Specify the name of the logical terminal on the internal communication path, if using the application startup function. This operand can be specified only in the following cases:

- `noans` is specified for the `type` operand with the `-n` option
- `SPP` is specified for the `type` operand with the `-g` option

Use the name registered with the `mcfatalcle` command of the MCF communication configuration definition corresponding to the application startup process. Specify only a send type logical terminal.

The logical terminal specified here is used to exchange messages when starting

one application from another application.

For the definition method when the application start function is used, see the description of the `cname` operand.

`cname=internal-communication-path-name~<1-8 character identifier>`

Specify the name of the internal communication path, if using the application startup function, but only if `ans` or `cont` was specified for the `type` operand. It cannot be specified if `SPP` is specified in the `type` operand of the `-g` option.

Use the name registered with the `mcf tpsvr` command of the MCF communication configuration definition.

Messages will be exchanged using an appropriate inquiry-type logical terminal on this path, if starting this application from another application. Accordingly, one or more inquiry-type logical terminals must be defined with the logical terminal definition.

Table 5-1 shows the definition method when the application start function is used.

Table 5-1: Definition method when the application start function is used

Start-source application program	Start-destination application program			
	noans type MHP	ans type MHP	cont type MHP	SPP
noans type MHP	LNAME	N	N	LNAME
ans type MHP	LNAME	CNAME	N	LNAME
cont type MHP	LNAME	N	CNAME	LNAME
SPP	LNAME	N	N	LNAME

Legend:

LNAME: Specify the send type logical terminal name on the internal communication path for the `lname` operand of the `mcfaalcap` definition command at the start destination.

CNAME: Specify an internal communication path name for which at least one request type logical terminal is defined, for the `cname` operand of the `mcfaalcap` definition command at the start destination.

N: Cannot be specified because the application start function cannot be used.

`tempsize=continuous-inquiry-response-temporary-data-storage-area-size~<unsigned integer> ((1-32000)) <<4096>>` (Unit: bytes)

Specify the size of the area for temporary data storage used with continuous inquiry-response operation.

This operand is valid only if `cont` is specified with the `type` operand. It cannot be specified if `SPP` is specified in the `type` operand of the `-g` option.

`trnmode=trn | nontrn ~<<trn>>`

Specify the transaction attribute of an application. This cannot be specified if `SPP` is specified in the `type` operand of the `-g` option.

`trn`

The MHP process is managed as a transaction.

When you specify `trn`, specify `Y` in the `atomic_update` operand of the user service definition of the MHP.

`nontrn`

The MHP process is not managed as a transaction.

The memory queue is used for reception and transmission.

`errevt=yes | no ~<<no>>`

If you discard a communication event is received or if the MHP for handling communication events is abnormally terminated, you can be notified of an error event (by using the facility for reporting a communication error event).

`yes`

Notifies you of an error event.

`no`

Does not notify you of an error event.

This operand takes effect when you specify a communication event in the `name` operand. If you specify an error event (`ERREVT1`, `ERREVT2`, `ERREVT3`, `ERREVT4` or `ERREVT5`) in the `name` operand, this operand is ignored. You cannot specify this operand if you specify `SPP` in the `type` operand of the `-g` option, if you do not specify the `kind` operand in the `-n` option, or if you specify `user` in the `kind` operand of the `-n` option.

■ `-N`

(Operands)

`modelName=model-application-name | model-MCF-event-name ~<1-to-8-character identifier>`

Specify the name of the application or MCF event whose application attribute definition contains the attributes to be reused to create the new application attribute definition. Note that the application attribute definition for the specified application or MCF event must have been specified before the new application attribute definition is specified.

When you specify the `modelname` operand, you can omit options and operands other than the name operand in the `-n` option.

When you omit options and operands, the corresponding options and operands in the application attribute definition for the application or MCF event specified in the `modelname` operand are reused.

The options and operands that you do not omit use the values you specify.

Note that you can specify this operand only once. Also note that the specified model application or MCF event might conflict with the entries that are not omitted. If there are conflicts, the correlation check reports errors. To ensure that the application attribute definition you are creating has no conflicts, do not specify the following operands with values different from the values of the corresponding operands in the model definition:

- The `type` operand in the `-n` option
- The `type` operand in the `-g` option
- The `quekind` operand in the `-g` option

■ `-g`

(Operands)

`servgrpname=service-group-name~<1-31 character identifier>`

Specify the name of the service group corresponding to the application name. Use the name specified with the user service definition.

For application attribute definitions that have different UAP types (indicated by the value specified for the `type` operand with the `-g` option) under one MCF application definition, specify service group names that are unique.

Definition examples follow:

[Valid definition example]

```
mcfaalcap -g "servgrpname =sg01          \  
              type       =MHP"          \  
              -v "servname  =sv01 "
```

```
mcfaalcap -g "servgrpname =sg01          \  
              type       =MHP"          \  
              -v "servname  =sv02 "
```

In this example, identical service group names can be specified because all UAPs are of the same type.

[Invalid definition example]

```
mcfaalcap -g "servgrpname =sg01          \  
              type       =MHP"          \  
              -v "servname  =sv01 "
```

mcfaalcap (Application attribute definition)

```
          -v "servname    =sv01 "  
mcfaalcap -g "servgrp   =sg01      \  
           type         =SPP"      \  
          -v "servname    =sv02 "
```

This is an example of invalid specification because identical service group names are used even though application attribute definitions have different UAP types.

`quegrpid=queue-group-ID~<1-8 character identifier>`

Specify the ID of the queue group for received messages. Use one of the IDs (queue kind is `itq`) specified with the `mcfmqgid` command of the MCF manager definition. It cannot be specified if `SPP` is specified in the `type` operand of the `-g` option.

This operand can only be specified if `disk` is specified with the `quekind` operand.

Note:

You cannot define different queue groups for one service group. If you do so, the KFCA11008-W message is output. If you attempt to do so, the service group is redefined as the queue group that was already defined at MCF startup.

`quekind=memory|disk~<<memory>>`

Specify the allocation destination (memory queue or disk queue) for the received messages. It cannot be specified if `SPP` is specified in the `type` operand of the `-g` option.

`memory`

Messages are allocated to the memory queue.

`disk`

Messages are allocated to the disk queue. For this, the `quegrpid` operand must be specified.

If `disk` is specified to start up the MHP directly with the `mcfuevt` command, UCMDEV T may be re-scheduled after rerun. If `nontrn` is specified in the `trnmode` operand of the `-n` option, `disk` cannot be specified.

`type=MHP|SPP~<<MHP>>`

Specify the type of the UAP that corresponds to the specified service group.

Specify the same type that is specified in the user service definition or the user service default definition.

MHP

The UAP type is MHP.

SPP

The UAP type is SPP.

If *SPP* is specified, some of the operands of the application definition cannot be specified. Table 5-2 shows the operands of the application definition that can or cannot be specified at *SPP* startup.

Table 5-2: Operands of application definition that can be or cannot be specified at *SPP* startup

Option	Operand	Specification
-n	name	Y
	kind	--
	type	--
	aplihold	--
	msgcnt	--
	lname	Y
	cname	--
	tempsize	--
	trnmode	--
	errevt	--
-g	servgrp	Y
	quegrpid	--
	quekind	--
	type	Y
	srvghold	--
	recvmsg	--
-v	servname	Y
	servhold	--
	ntmetim	--

Option	Operand	Specification
-d	holdlimit	--
	holdlmtyp	--
-j	ij	--
	oj	--
	gj	--
-e	evtlogout	--

Legend:

Y: Item that can be specified with *SPP* specified in the *type* operand of the *-g* option.

--: Item that cannot be specified with *SPP* specified in the *type* operand of the *-g* option.

`srvghold=m | s~<<m>>`

Specify the disposal of the service group if the application terminates abnormally. This operand cannot be specified if *SPP* is specified in the *type* operand of the *-g* option.

If the user service ends abnormally before the applicable application starts, the service group may be shut down according to the value specified in the `term_watch_time` operand in the user service definition or the user service default definition.

m

Service group is not shut down.

s

Service group is shut down. Further scheduling is prohibited.

`recvmsg=e | r~<<e>>`

Specify how to handle the receive message of the abnormally terminated UAP.

This operand cannot be specified if *SPP* is specified in the *type* operand of the *-g* option. This operand is valid when the service group, for which *s* is specified in the `srvghold` operand, is shut down.

e

The messages output during processing are replaced with error events.

r

At automatic shutdown, the message being processed is re-registered in the beginning of the schedule queue and waits to be scheduled. However, this operand is valid only when `disk` is specified in the `quekind` operand of the `-g` option. When `memory` is specified, the message is scheduled as `ERREVT2`, which occurs at shutdown.

This operand does not guarantee the correct sequence of the schedule.

■ `-v`

(Operands)

`servname=service-name~<1-31 character identifier>`

Specify the name of the service corresponding to the application name. Use the service name specified in the user service definition.

For application attribute definitions that have different UAP types (indicated by the value specified for the `type` operand with the `-g` option) under one MCF application definition, specify service names that are unique regardless of what service group names are specified.

Definition examples follow:

[Valid definition example]

```
mcfaalcap -g "servgrpn  =sg01      \
             type      =MHP"      \
-v "servname  =sv01 "
```

```
mcfaalcap -g "servgrpn  =sg02      \
             type      =MHP"      \
-v "servname  =sv01 "
```

In this example, identical service group names can be specified because all UAPs are of the same type.

[Invalid definition example]

```
mcfaalcap -g "servgrpn  =sg01      \
             type      =MHP"      \
-v "servname  =sv01 "
```

```
mcfaalcap -g "servgrpn  =sg02      \
             type      =SPP"      \
-v "servname  =sv01 "
```

This is an example of invalid specification because same service names are used when application attribute definitions have different UAP types.

`servhold=m|a|s~<<m>>`

Specify the action of the service should the application terminate abnormally. It

cannot be specified if *SPP* is specified in the *type* operand of the *-g* option.

m

Service is not shut down.

a

Service is shut down. Further input and scheduling is prohibited.

s

Service is shut down. Further scheduling is prohibited.

ntmetim=nontransaction-MHP-expiration-time~<unsigned integer> ((0-65535))
(Unit: seconds)

To monitor a nontransaction MHP process for looping and hanging-up, the *ntmetim* operand specifies the maximum expiration time for the process.

If 0 is specified, no time monitoring is performed.

If the nontransaction MHP process does not terminate within the specified expiration time, it is terminated abnormally.

If this operand is omitted, the value of the *ntmetim* operand of the *mcfmuap* command of MCF manager definition is assumed.

The operand is valid with *nontrn* specified in the *trnmode* operand of *-n* option. It cannot be specified if *SPP* is specified in the *type* operand of the *-g* option.

■ *-d*

(Operands)

holdlimit=maximum-application-abnormal-termination-count~<unsigned integer> ((1-65535)) <<1>> (Unit: times)

Specify the maximum number of abnormal terminations of an application. If the number of abnormal terminations reaches the value specified by this operand, the application, service, or service group is shut down. This operand is valid only when the *aplihold* operand of the *-n* option or the *servhold* operand of the *-v* option specifies *a* or *s*, or when the *srvghold* operand of the *-g* option specifies *s*. This operand cannot be specified if *SPP* is specified in the *type* operand of the *-g* option.

holdlmtyp=sum|cont~<<cont>>

Specify the method for counting the number of abnormal terminations of an application as specified in the *holdlimit* operand. It cannot be specified if *SPP* is specified in the *type* operand of the *-g* option.

sum

The cumulative number of abnormal terminations of an application is counted.

The counter is reset at the following times. #

- When the `mcfactap` command is executed
- When the `mfaclcap` command is executed
- When OpenTP1 is terminated or started

cont

The number of consecutive abnormal terminations of an application is counted.

The counter is reset at the following times. #

- When the `mcfactap` command is executed
- When a shutdown is caused by the `mfaalcap` definition
- When the `mfaclcap` command is executed
- When the MHP service function has terminated normally
- When OpenTP1 is terminated or started

#

The counter is not reset by the `dcsvstop` command, the `dcsvstart` command, or a shutdown release command.

■ -j

(Operands)

`ij=yes|no~<<no>>`

Specify whether historical data (IJ) should be collected if messages received from another system are registered in the input queue. It cannot be specified if `SPP` is specified in the `type` operand of the `-g` option. This operand is invalid if `mcf` is specified with the `kind` operand of the `-n` option.

The messages received by the synchronous transmission function (`dc_mcf_sendrecv` function) not via the input queue are not collected as historical data.

yes

Historical data is collected.

no

Historical data is not collected.

`oj=yes | no~<<no>>`

Specify whether historical data (OJ) should be collected if a SEND request is received from an UAP. It cannot be specified if SPP is specified in the `type` operand of the `-g` option. This operand is invalid if `mcf` is specified with the `kind` operand of the `-n` option.

yes

Historical data is collected.

no

Historical data is not collected.

`gj=yes | no~<<no>>`

Specify whether historical data (GJ) should be collected if a RECEIVE request is received from an UAP. It cannot be specified if SPP is specified in the `type` operand of the `-g` option. This operand is invalid if `mcf` is specified with the `kind` operand of the `-n` option.

The messages sent by the synchronous transmission function (`dc_mcf_sendrecv` function) not via the output queue are not collected as historical data.

yes

Historical data is collected.

no

Historical data is not collected.

■ `-e`

`evtlogout=yes | no~<<no>>`

Specify whether to output a log message when generating ERREVT1 to ERREVT4.

You cannot specify this operand when SPP is specified in the `type` operand of the `-g` option.

This operand takes effect only when `mcf` is specified in the `kind` operand of the `-n` option and ERREVT1 to ERREVT4 is specified in the `name` operand of the `-n` option.

yes

Outputs a log message.

The following items are output in the log message as well as the KFCA11194-I message:

- MCF identifier

- Error event name
- Reason code
- Name of the application that caused the generation of the error event

For details about the KFCA11194-I message, see the manual *OpenTPI Messages*.

If you specify `trn` in the `trnmode` operand, Hitachi recommends that you use the `trn_rollback_information_put` operand in the user service definition to specify that rollback reason log information is to be acquired. This information may be necessary to determine why `ERREVT3` has occurred.

`no`

Does not output a log message.

MCF performance verification trace definition

Format

- set format

```
[set prf_file_size=MCF-performance-verification-trace-information-file-size]
[set prf_file_count=number-of-generations-for-MCF-performance-verification-trace-information-files]
```

Function

The MCF performance verification trace definition defines the execution environment for acquiring MCF performance verification trace information.

Explanation

set format operands

- *prf_file_size=MCF-performance-verification-trace-information-file-size*
~<unsigned integer> ((1024-1048576))<<1024>> (units: kilobytes)

Specify the size of a MCF performance verification trace information file.

Normally, trace information is output to regular files in OpenTP1. The number of generations of this file is specified by the *prf_file_count* operand in the MCF performance verification trace definition. When all generations have been used, the oldest file is overwritten with new trace information. Accordingly, old trace information is lost as time passes. You can increase the interval at which the oldest file is overwritten by increasing the value of this operand.

You can use the following formula to calculate the size of one trace file (units: bytes):

$$\text{Size of one file} = 128 + (\text{trace-data-size}^{\#} - \text{necessary-for-one-transaction} \times \text{number-of-transactions-to-execute})$$

#

To calculate the trace data size necessary for one transaction, see the manual *OpenTP1 Operation*.

- *prf_file_count=number-of-generations-for-MCF-performance-verification-trace-information-files*
~<unsigned integer>((3-256)) <<3>>

Specify the number of generations for the MCF performance verification trace information file.

When a small value is specified, the system controls the trace files only within the new generations, and as a result, trace files outside this range may remain unused. In such a case, delete the files outside the range as needed.

Note

Use this definition only when TP1/Extension 1 is installed. If TP1/Extension 1 is not installed, the definition might not work correctly.

System service information definition

An MCF service is a system service created by the user, and is of the same hierarchical level as an OpenTP1 system service.

The system service information definition defines an environment for starting an MCF communication service or an application startup service. The user must define this when creating the MCF service.

Format

```
set module="MCF-executable-program-name"
[set mcf_prf_trace=Y|N]
```

Function

The system service information definition defines the environment for the MCF communication service started by a process service. One definition can be created for each MCF communication service. Or, one definition can be shared by multiple MCF communication services.

Explanation

Options

- `module="MCF-executable-program-name"~<1-8 character alphanumeric>`

Specify the name, starting with the four characters `mcfu`, of the executable program to start the MCF communication service. This program contains parameters for the MCF communication process and the application startup process. Each process thus shares the program jointly.

- `mcf_prf_trace=Y|N`

~<<Y>>

Specify whether to acquire MCF performance verification trace information for each MCF communication service. To enable the value specified in this operand, specify 00000001 in the `mcf_prf_trace_level` operand of the system service common information definition.

Y

MCF performance verification trace information is acquired.

N

MCF performance verification trace information is not acquired.

If the operand specification or the value specified in it is invalid, OpenTP1 abnormally

terminates during startup.

The table below shows the relationship between the value specified in the `mcf_prf_trace_level` operand (whether MCF performance verification trace information is acquired) in the MCF communication service and the value specified in the `mcf_prf_trace` operand.

Table 5-3: Relationship between the value specified in the `mcf_prf_trace_level` operand (whether the MCF performance verification trace information is acquired) in the MCF communication service and the value specified in the `mcf_prf_trace` operand

System service common information definition <code>mcf_prf_trace_level</code> operand specification value	System service information definition <code>mcf_prf_trace</code> operand specification value	
	Y	N
00000000	Not acquired	Not acquired
00000001	Acquired	Not acquired

Use this operand only when TP1/Extension 1 is installed. If TP1/Extension 1 is not installed, the operation is not guaranteed.

Note

When the function is used to acquire an MCF performance verification trace, if an invalid value is specified in the system service information definition, a definition error will result. Therefore, make sure that the content of the system service information definition is valid.

System service common information definition

Some system configurations require the system service common information definition. The system service common information definition defines the information common to MCF communication services. The OpenTP1 product provides a file that contains the items of this definition set to defaults. Use a text editor to modify the defined values as required.

Format

```
set max_socket_descriptors=maximum-number-of-file-descriptors-for-socket
set max_open_fds=maximum-number-of-files-accessed-by-MCF-communication-process
set thdlock_sleep_time=thread's-waiting-time-if-a-lock-conflict-occurs-among-threads
[set mcf_prf_trace_level=acquisition-level-for-MCF-performance-verification-trace-information]
```

Function

The system service common information definition defines the information common to MCF communication services. The OpenTP1 product provides a file that contains the values of this definition set to defaults. For the following operands, use a text editor to modify the values as required. For other operands, do not modify the values.

Explanation

Operands

- `max_socket_descriptors=maximum-number-of-file-descriptors-for-socket`
~<unsigned integer>((64-2047))

Specify the maximum number of file descriptors that each MCF communication process uses for the socket. The processes controlled by OpenTP1 exchange information to each other via the TCP/IP communication using the socket between the system server and the user server. Therefore, you need to change the maximum number of file descriptors for the socket, according to the number of the UAP processes that run concurrently.

The following shows the formula to calculate the maximum number of file descriptors for the socket that an MCF communication process uses. Calculate the maximum number of file descriptors for each MCF communication process. If the largest result is larger than 64, specify the largest result. If the largest result is 64 or smaller, specify 64.

Maximum number of file descriptors for the socket = $\uparrow (A + B + C) / 0.8 \uparrow$

Where,

A: Number of UAP processes that request the MCF communication process to send a message^{#1}

B: Number of system service processes^{#2}

C: Number of operation commands that concurrently send a request to the MCF communication process

↑ ↑: The value enclosed in these symbols is rounded up to the nearest whole number.

#1: This number includes the number of UAP processes that request application startup servers to start applications.

#2: The number of system service processes in the local OpenTP1 system.

- `max_open_fds=maximum-number-of-files-accessed-by-MCF-communication-process~<unsigned integer> ((100-2016))<<500>>`

Specify the maximum number of files that each MCF communication process accesses.

MCF communication processes also use file descriptors to send or receive messages. If file descriptors are insufficient, the connection may not be established. Therefore, you need to specify the number of enough file descriptors.

The following shows the formula for calculating the maximum number of file descriptors that an MCF communication process uses. Calculate the number of file descriptors for each MCF communication process. If the largest result is larger than 500, specify the largest result. If the largest result is 500 or smaller, specify 500.

If the number of files to be accessed exceeds the value specified in this operand, the excess files are treated as files for which the file descriptors for sockets are used. Note that, in this case, the actual maximum number of file descriptors for sockets is the value of the `max_socket_descriptors` operand minus the excess value for the `max_open_fds` operand.

Maximum number of file descriptors = (Number of file descriptors used for the protocol controller^{#1}) + 30^{#2}

#1

This value differs depending on the protocol controller in use:

Protocol controller	Number of file descriptors used
TP1/NET/HDLC	Number of connections
TP1/NET/HNA-NIF	Number of subconnections

Protocol controller	Number of file descriptors used
TP1/NET/HNA-560/20	Number of PLUs in the local system
Other protocol controllers	Number of connections x 2

#2

Maximum number of definition files and other files that the MCF communication process handles

Note that one process can use up to 2048 file descriptors. Therefore, you must set this operand to a value that satisfies the following condition:

(Value of this operand + Value of the `max_socket_descriptors` operand in the same definition) \leq 2048

If you specify a value that does not satisfy this condition, this operand is forcibly set to the following value:

2048 - Value of the `max_socket_descriptors` operand in the same definition

- `thdlock_sleep_time=thread's-waiting-time-if-a-lock-conflict-occurs-among-threads ~<unsigned integer> ((1-32767)) <<15>> (units: milliseconds)`

Specify the thread's waiting time in milliseconds when the lock control function that the process under OpenTP1 internally uses cannot acquire a lock because a lock conflict occurs among threads.

If you specify a value smaller than the default (15), the `select` system call is issued more frequently, causing CPU utilization to increase.

Note:

If more than one thread attempts to lock a resource at the same time, the threads other than the one that has locked the resource wait until the resource is unlocked. When the threads wait, they issue the OS `select` system call according to the value specified in this operand. Note that the actual wait time might be longer than the value specified in this operand because the wait time precision for the `select` system call differs depending on the OS or machine environment.

The following table shows sample results of wait time measurement for this operand in different OSs.

Note that the values in the table might be different in some machine environments due to factors such as the OS version and whether patches have been applied. For details about the wait time precision for the `select` system call, consult the OS specifications.

OS name	Version	thdlock_sleep_time operand value	Wait time
AIX	5L V5.3	Specified value	Specified value
Linux	5 (x86) 5 (IPF64)	Specified value	Specified value + about one millisecond
HP-UX	11i V2 (IPF) 11i V3 (PA-RISC)	1-9	About 10 milliseconds
		10-19	About 20 milliseconds
Solaris	8	1-9	About 10 milliseconds
		10-19	About 20 milliseconds
Windows	Windows Server 2003	1-15	About 16 milliseconds
		16-31	About 31 milliseconds

If this definition value is omitted, the value in the system common definition is assumed.

- `mcf_prf_trace_level=acquisition-level-for-MCF-performance-verification-trace-information`

~((00000000-00000001)) <<00000000>>

Specify the acquisition level for the MCF performance verification trace information. To acquire the MCF performance verification trace, specify Y in the `prf_trace` operand of the system common definition or omit the specification.

00000000

MCF performance verification trace information is not acquired.

00000001

MCF performance verification trace information (event IDs `0xa000-0xa0ff`) is acquired. For details about event IDs, see the manual *OpenTP1 Operation*.

If the operand specification is invalid, OpenTP1 abnormally terminates during startup.

Use this operand only when TP1/Extension 1 is installed. If TP1/Extension 1 is not installed, the operation is not guaranteed.

Chapter

6. Definitions of Multi-OpenTP1 System

This chapter explains the definitions of the multi-OpenTP1 system.

This chapter contains the following section:

6.1 Definition processing

6.1 Definition processing

A multi-OpenTP1 system is defined as several OpenTP1 systems operating independently on one machine.

1. Different partitions or different files for each different OpenTP1 system are allocated for use as an OpenTP1 file system.
2. A different definition file storage directory is created for each OpenTP1 system.
3. A definition file for each OpenTP1 system is created under the respective directory.

However, definition parameters, as summarized in Table 6-1, must be different for each OpenTP1 system. For details on the directory and other parameters, see the manual *OpenTP1 Operation*.

Table 6-1: Definition parameters which must be different for each OpenTP1 system

No.	Definition file name	Definition	Contents
1	System common definition	name_port	Well-known port number of the name service
		system_id	OpenTP1 identifier
		all_node	All node names and the well-known port numbers ¹ of all the name services in the OpenTP1 system
		prc_port	Port number used by multinode linkage control function
2	Status service definition	sts_file_name	Path name of physical file of status file
3	Journal function definition <ul style="list-style-type: none"> • System journal service definition • Checkpoint dump service definition 	jnladdpf	Path name for physical file of journal function file
4	DAM service definition	damfile	Path name for physical file of DAM file
5	TAM service definition	tamtable	Path name for physical file of TAM table
6	Message queue service definition	quegrp	Path name for physical file of queue file

¹ When you specify the host name (or IP address) of the local host as the node name, make sure you do not use the same port number twice.

To perform a remote procedure call among the OpenTP1 systems in the multi-OpenTP1 system environment, define the host names of the OpenTP1 nodes other than the local node in the `all_node` operand of the system common definition of each OpenTP1 node. Then specify `Y` in the `rpc_multi_tpl_in_same_host` operand.

Chapter

7. Changing OpenTP1 System Definitions

This chapter explains how to change the OpenTP1 system definitions.

This chapter contains the following sections:

- 7.1 Procedures
- 7.2 Definitions changeable at restart
- 7.3 Definitions affected by OpenTP1 system reconfiguration

7.1 Procedures

Before changing the contents of any definition, make sure to terminate the OpenTP1 system normally. Once the definition change has been reflected, begin with normal startup of OpenTP1.

Note that you can change the contents of the user service definition by stopping the user server without normally terminating the OpenTP1 system. To change the contents of the user service default definition, normally terminate the OpenTP1 system first.

Care must be exercised when changes are made to the system common definition.

To change the definition contents:

1. Terminate OpenTP1 normally.
2. Add necessary changes to the definition.
3. Use one of the following steps to reflect the changes in the system common definition:
 - Enter the `dcreset` command.
 - Enter the `dcsetup -d` command, and then enter the `dcsetup` command again (to register OpenTP1 into the operating system).
 - Reboot the machine.

#

The Windows version of OpenTP1 does not support the `dcreset` command or the `dcsetup` command. Therefore, to reflect the changes in the system common definition, reboot the system.

For details on how to use each command, see the manual *OpenTP1 Operation*.

4. Perform a normal initiation to start the OpenTP1 system.

Note the following when changing the definition contents:

- When `AUTO` is specified for the `mode_conf` operand of the system environment definition, executing the `dcreset` command automatically starts OpenTP1.
- Even when the OpenTP1 system is restarted, some system service definitions can undergo changes. For those definitions that can be changed during system restart, see *7.2 Definitions changeable at restart*.
- Before making changes in the contents of definitions, you should give careful consideration to their possible effect on the OpenTP1 system.
- When changing the contents of a network communication definition, it is also

necessary to regenerate a definition object file using the utility. For how to generate such definition object files, see *4.3 Creation of definition object file*.

7.2 Definitions changeable at restart

System service definitions listed in Table 7-1 can be changed while restarting. The specified values of all other definitions not listed cannot be changed.

Table 7-1: System service definitions changeable upon restart

No.	Definition	Specified value	Allowable changes
1	System environment definition	mode_conf	C
		static_shmpool_size	C ^{#1}
		dynamic_shmpool_size	C ^{#1}
		shmpool_attribute	C
		user_command	C
		dcstart_wakeup_retry_count	C (when dcstart has not been executed)
		dcstart_wakeup_retry_interval	C (when dcstart has not been executed)
		putenv DCCONFPATH	C
		putenv DCUAPCONFPATH	C
		dcputenv DC CONFPATH	C
		dcputenv DCUAPCONFPATH	C
2	System common definition	all_node	C ₁
		nam_prf_trace_level	C
		fil_prf_trace_option	C
		fil_prf_trace_delay_time	C
		jnl_prf_event_trace_level	C
3	Lock service definition	lck_prf_trace_level	C
4	Name service definition	name_total_size	C ₂

No.	Definition	Specified value	Allowable changes
		name_cache_size	C
		name_nodeid_check_message	C
		name_cache_validity_time	C
5	Process service definition	prc_process_count	C
		prc_recovery_resident	C
		prcsvpath	C
6	Schedule service definition	scd_hold_recovery_count	C (Only for change from or to 0)
		scd_hold_recovery	C
7	Status service definition	sts_initial_error_switch	C
		sts_single_operation_switch	C
		sts_last_active_file	C
		sts_last_active_side	C
8	Journal service definition	jnl_watch_time	C
9	System journal service definition	jnl_cdinterval	C
		jnl_rerun_swap	C
		jnl_arc_terminate_check	C
		jnl_auto_unload	C
		jnl_auto_unload_path	C
		jnladdfg	A
		jnladdpf	A
10	Log service definition	log_filesize	C
		log_msg_console	C
		log_msg_allno	C
		log_msg_prcid	C
		log_msg_prcno	C

7. Changing OpenTP1 System Definitions

No.	Definition	Specified value	Allowable changes
		log_msg_sysid	C
		log_msg_date	C
		log_msg_time	C
		log_msg_hostname	C
		log_msg_pgmid	C
		log_netm_out	C
		log_netm_allno	C
		log_netm_prcid	C
		log_netm_prcno	C
		log_netm_sysid	C
		log_netm_date	C
		log_netm_time	C
		log_netm_hostname	C
		log_netm_pgmid	C
		log_audit_out	C
		log_audit_path	C
		log_audit_size	C
		log_audit_count	C
		log_audit_message	C
		putenv TZ	C
11	Transaction service definition	trn_rm_open_close_scope	C
		trn_optimum_item	C
		trn_processing_in_rm_error	C
		trn_recovery_list_remove	C
		trn_recovery_list_remove_level	C
		trn_watch_time	C

No.	Definition	Specified value	Allowable changes
		trn_rollback_information_put	C
		trn_limit_time	C
		trn_rollback_response_receive	C
		trn_partial_recovery_type	C
		max_socket_descriptors	C
		trn_recovery_failmsg_interval	C
		trn_wait_rm_open	C
		trn_retry_interval_rm_open	C
		trn_retry_count_rm_open	C
		thread_stack_size	C
		polling_control_data	C
		groups	C
		trn_xa_commit_error	C
		trn_prf_event_trace_level	C
		trn_prf_event_trace_condition	C
		watch_time	C
		thread_yield_interval	C
		trn_start_recovery_mode	C
		trn_start_recovery_watch_time	C
		trn_start_recovery_interval	C
		trn_extend_function	C
		trnstring -m	C
		trnstring -r	C
		putenv	C#2
		dcputenv	C#2
12	XA resource service definition	xar_eventtrace_level	C

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No.	Definition	Specified value	Allowable changes
		xar_eventtrace_record	C
		xar_session_time	C
		xar_prf_trace_level	C
		xarfile	C
13	Global archive journal service definition	jnl_watch_time	C
14	Archive journal service definition	jnl_rerun_swap	C
		jnladdfg	A
		jnladdpf	A
15	User service network definition	dcsvgnf	C
16	RAP-processing listener service definition	rap_listen_port	C
		rap_parallel_server	C
		rap_watch_time	C
		rap_inquire_time	C
		nice	C
		uap_trace_max	C
		uid	C
		rpc_response_statistics	C
		rpc_trace	C
		rpc_trace_name	C
		rpc_trace_size	C
		trn_expiration_time	C
		trn_expiration_time_suspend	C
		trn_cpu_time	C
		trf_put	C
trn_statistics_item	C		

No.	Definition	Specified value	Allowable changes
		trn_optimum_item	C
		trn_watch_time	C
		trn_rollback_information_put	C
		trn_limit_time	C
		trn_rollback_response_receive	C
		trn_partial_recovery_type	C
		rap_inquire_timeout_message	C
		rap_connection_assign_type	C
		rap_max_client	C
		rap_notify	C
		rap_client_manager_node	C
		rap_max_buff_size	C
		rap_io_retry_interval	C
		rap_sock_count	C
		rap_sock_interval	C
		rap_connect_retry_count	C
		rap_connect_retry_interval	C
		rap_listen_backlog	C
		rap_msg_output_interval	C
		rap_recovery_server	C
		rap_connect_interval	C
		rpc_extend_function	C
		max_socket_descriptors	C
		trn_completion_limit_time	C
		rap_message_id_change_level	C
		rap_term_disconnect_time	C
		rap_stay_watch_time	C

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No.	Definition	Specified value	Allowable changes
		rap_stay_warning_interval	C
		log_audit_out_suppress	C
		log_audit_message	C
		ipc_socketctl_highwater	C
		ipc_socketctl_watchtime	C
		watch_time	C
17	RAP-processing client manager service definition	rap_client_manager_port	C
		rap_listen_inf	C
		uid	C
		log_audit_out_suppress	C
		log_audit_message	C
		rap_watch_time	C
18	Performance verification trace definition	prf_file_size	C
		prf_information_level	C
		prf_file_count	C#3
		prf_trace_backup	C
19	XAR performance verification trace definition	prf_file_size	C
		prf_information_level	C
		prf_file_count	C#3
20	JNL performance verification trace definition	prf_file_size	C
		prf_file_count	C#3
		prf_trace_backup	C
21	LCK performance verification trace definition	prf_file_size	C

No.	Definition	Specified value	Allowable changes
		prf_information_level	C
		prf_file_count	C#3
22	Real-time statistics service definition	rts_trcput_interval	C
		rts_service_max	C#4
		rts_item_max	C#4
		rts_log_file	C
		rts_log_file_name	C
		rts_log_file_size	C
		rts_log_file_count	C
		rts_log_file_backup	C
		rts_swap_message	C
		rtsput	C
23	User service default definition	watch_next_chain_time	C
		max_socket_msg	C
		max_socket_msglen	C
		rpc_response_statistics	C
		rpc_service_retry_count	C
		rpc_extend_function	C
		max_socket_descriptors	C
		max_open_fds	C
		watch_time	C
		rpc_destination_mode	C
		rpc_rap_auto_connect	C
		rpc_rap_inquire_time	C
		rpc_request_cancel_for_timeout	C

7. Changing OpenTP1 System Definitions

No.	Definition	Specified value	Allowable changes
		service_expiration_time	C
		ipc_sockctl_highwater	C
		ipc_sockctl_watchtime	C
		ipc_conn_interval	C
		ipc_send_interval	C
		ipc_send_count	C
		ipc_header_recv_time	C
		rpc_send_retry_count	C
		rpc_send_retry_interval	C
		ipc_recvbuf_size	C
		ipc_sendbuf_size	C
		thread_yield_interval	C
		ipc_backlog_count	C
		rpc_buffer_pool_max	C
		message_bufllen	C
		message_store_bufllen	C
		trn_expiration_time	C
		trn_limit_time	C
		trn_cpu_time	C
		trn_completion_limit_time	C
		rap_autoconnect_con_error_msg	C
		rap_message_id_change_level	C
		log_audit_out_suppress	C
		log_audit_message	C
		mcf_prf_trace	C
		scdsvcdef	C
24	User service definition	watch_next_chain_time	C

No.	Definition	Specified value	Allowable changes
		uid	C
		max_socket_msg	C
		max_socket_msglen	C
		rpc_response_statistics	C
		rpc_service_retry_count	C
		rpc_extend_function	C
		max_socket_descriptors	C
		max_open_fds	C
		watch_time	C
		rpc_destination_mode	C
		rpc_rap_auto_connect	C
		rpc_rap_inquire_time	C
		rpc_request_cancel_for_timeout	C
		service_expiration_time	C
		ipc_sockctl_highwater	C
		ipc_sockctl_watchtime	C
		ipc_conn_interval	C
		ipc_send_interval	C
		ipc_send_count	C
		ipc_header_rcv_time	C
		rpc_send_retry_count	C
		rpc_send_retry_interval	C
		ipc_rcvbuf_size	C
		ipc_sndbuf_size	C
		thread_yield_interval	C
		ipc_backlog_count	C
		rpc_buffer_pool_max	C

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No.	Definition	Specified value	Allowable changes
		message_buflen	C
		message_store_buflen	C
		trn_expiration_time	C
		trn_limit_time	C
		trn_cpu_time	C
		trn_completion_limit_time	C
		rap_autoconnect_con_error_msg	C
		rap_message_id_change_level	C
		log_audit_out_suppress	C
		log_audit_message	C
		mcf_prf_trace	C
		scdsvcdef	C
		putenv	C
		dputenv	C
25	MCF performance verification trace definition	prf_file_size	C
		prf_file_count	C
26	System service information definition	mcf_prf_trace	C
27	System service common information definition	mcf_prf_trace_level	C

Legend:

C: Changeable

C₁: Changeable, but a valid value must be specified at restart.

C₂: Changeable, but the value to be specified must be calculated based on the number of service items to be registered in the system service and user server.

A: Additions only; deletions or updates are not allowed.

#1

Making the memory smaller could make a restart impossible.

#2

For the environment variable names and values that can be changed, see the resource manager specifications.

#3

When a small value is specified, the system controls trace files for only the latest generations, and as a result, trace files outside this range may remain unused. In this case, delete the files outside the range as needed.

#4

Increasing this value may prevent the real-time statistics service from starting.

7.3 Definitions affected by OpenTP1 system reconfiguration

This section describes the definitions and OpenTP1 files that must be reviewed when an OpenTP1 system is reconfigured.

7.3.1 When a user server is added

When you add a user server, you must add a new user service definition.

The following table lists the definitions that must be reviewed when a user server is added, and indicates the conditions under which a review is required.

Table 7-2: Definitions that must be reviewed when a user server is added

Definition file name	Definition	Condition under which a review is required
<ul style="list-style-type: none"> • betranrc • jnl • nam • prc • scd • trn 	max_socket_descriptors	The definition must be reviewed unconditionally.
cltsrv	cup_parallel_count	The definition must be reviewed when an RPC is received via a permanent connection from TP1/Client/P or TP1/Client/W.
	parallel_count	The definition must be reviewed when a transactional RPC is received from TP1/Client/P or TP1/Client/W.
dam	dam_cache_size	The definition must be reviewed when a DAM file is accessed.
	dam_cache_size_fix	The definition must be reviewed when a DAM file is accessed.
	dam_tran_process_count	The definition must be reviewed when a DAM file is accessed.
env	dynamic_shmpool_size	<p>The definition must be reviewed in the following cases:</p> <ul style="list-style-type: none"> • When a DAM file, TP1/Message Queue, or an MCF queue file is accessed • When the number of UAPs that send or receive messages in the MCF communication process increases

Definition file name	Definition	Condition under which a review is required
	server_count	The definition must be reviewed unconditionally.
	static_shmpool_size	The definition must be reviewed unconditionally.
lck	lck_limit_fordam	The definition must be reviewed when a DAM file is accessed.
	lck_limit_formqa	The definition must be reviewed when a TP1/Message Queue file is accessed.
	lck_limit_fortam	The definition must be reviewed when a TAM file is accessed.
	lck_limit_foruser	The definition must be reviewed when the dc_lck_get function is used.
nam	name_cache_size	The definition must be reviewed in the following cases: <ul style="list-style-type: none"> • When a user server whose parallel_count operand value is changed is an SPP • When other nodes are set for the all_node operand. In this case, the name_cache_size operand values for the other nodes must be reviewed.
	name_total_size	The definition must be reviewed when a user server whose parallel_count operand value is changed is an SPP.
prc	prc_process_count	The definition must be reviewed unconditionally.
scd	scd_server_count	The definition must be reviewed when the user server is an SPP or MHP.
	scd_hold_recovery_count	The definition must be reviewed when the shutdown state of the added user server is inherited.
	scdbufgrp	The definition must be reviewed when a schedule buffer group is used.
	scdmulti	The definition must be reviewed when an RPC call is received via the multi-scheduler.
tam	tam_max_trnnum	The definition must be reviewed when a TAM file is accessed.

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Definition file name	Definition	Condition under which a review is required
tim	tim_watch_count	The definition must be reviewed in the following cases: <ul style="list-style-type: none"> • When the service_expiration_time operand is applied to the user server • When the trn_completion_limit_time operand is applied to the user server • When the non-transaction MHP expiration time is applied to the user server • When the trn_expiration_time operand is applied to the user server
trn	trn_max_subordinate_count	The definition must be reviewed when transaction processing is performed.
	trn_tran_process_count	The definition must be reviewed when transaction processing is performed.
<ul style="list-style-type: none"> • usrrc • User service definition 	message_store_buflen	When the added user server sends an RPC call to another user server, the message_store_buflen operand on the other user server must be reviewed.
User service definition	max_socket_descriptors	When the added user server sends an RPC call to another user server, the max_socket_descriptors operand on the other user server must be reviewed.
\$DCDIR/lib/sysconf/mcf	max_socket_descriptors	The definition must be reviewed when the number of UAPs that request message transmission from the MCF communication process and the number of operation commands that issue processing requests concurrently increase.
MCF manager common definition	mcfmcomn -c	The definition must be reviewed when an SPP that performs synchronous transmission is added.
	mcfmcomn -p	The definition must be reviewed when an MHP is added. If the value must be increased, the amount of the increase is added to the value of the static_shmpool_size operand in the system environment definition (env).

Definition file name	Definition	Condition under which a review is required
Extended reservation definition	mcfmexp -g	The definition must be reviewed when an extended reservation definition has been defined and a new MHP service group is added.
Status inheritance definition	mcfmsts -g	The definition must be reviewed when the number of service groups whose status is inherited increases.
	mcfmsts -v	The definition must be reviewed when the number of services whose status is inherited increases.
	mcfmsts -a	The definition must be reviewed when an MHP that inherits the status is added.
Definition of a logical terminal that starts applications	mcfmstcle -m	The definition must be reviewed when a user server that starts applications is added.

The following table lists the OpenTP1 files that must be reviewed when a server is added and indicates under what conditions a review is required.

Table 7-3: OpenTP1 files that must be reviewed when a user server is added

OpenTP1 file	Condition under which a review is required
Status file	The file must be reviewed unconditionally.
System journal file	The file must be reviewed in the following cases: <ul style="list-style-type: none"> • When transaction processing is performed • When statistics are acquired
Checkpoint dump file	The file must be reviewed when transaction processing is performed.
XAR file	The file must be reviewed when transaction processing is performed and the XA resource service facility is used.

7.3.2 When the degree of parallelism for user servers is changed

When the degree of parallelism for user servers is changed, the specification of the `parallel_count` operand of the user service definition must also be changed.

The following table lists the definitions that must be reviewed when the degree of parallelism for user servers is changed and indicates under what conditions a review is required.

Table 7-4: Definitions that must be reviewed when the degree of parallelism for user servers is changed

Definition file name	Definition	Condition under which a review is required
<ul style="list-style-type: none"> • betranrc • jnl • nam • prc • scd • trn 	max_socket_descriptors	The definition must be reviewed unconditionally.
cltsrv	cup_parallel_count	The definition must be reviewed when an RPC is received via a permanent connection from TP1/Client/P or TP1/Client/W.
	parallel_count	The definition must be reviewed when a transactional RPC is received from TP1/Client/P or TP1/Client/W.
dam	dam_cache_size	The definition must be reviewed when a DAM file is accessed.
	dam_cache_size_fix	The definition must be reviewed when a DAM file is accessed.
	dam_tran_process_count	The definition must be reviewed when a DAM file is accessed.
env	dynamic_shmpool_size	<p>The definition must be reviewed in the following cases:</p> <ul style="list-style-type: none"> • When a DAM file, TP1/Message Queue, or an MCF queue file is accessed • When the number of UAPs that send or receive messages in the MCF communication process increases
	static_shmpool_size	The definition must be reviewed unconditionally.
lck	lck_limit_fordam	The definition must be reviewed when a DAM file is accessed.
	lck_limit_formqa	The definition must be reviewed when a TP1/Message Queue file is accessed.
	lck_limit_fortam	The definition must be reviewed when a TAM file is accessed.

Definition file name	Definition	Condition under which a review is required
	<code>lck_limit_foruser</code>	The definition must be reviewed when the <code>dc_lck_get</code> function is used.
<code>prc</code>	<code>prc_process_count</code>	The definition must be reviewed unconditionally.
<code>scd</code>	<code>scd_hold_recovery_count</code>	The definition must be reviewed when it is necessary to inherit the shutdown state of the user servers whose degree of parallelism is changed.
	<code>scdbufgrp</code>	The definition must be reviewed when a schedule buffer group is used.
	<code>scdmulti</code>	The definition must be reviewed when an RPC call is received via the multi-scheduler.
	<code>scdsvcdef -p</code>	The definition must be reviewed when the <code>-p</code> option is specified in the <code>scdsvcdef</code> definition command.
<code>tam</code>	<code>tam_max_trnnum</code>	The definition must be reviewed when a TAM file is accessed.
<code>tim</code>	<code>tim_watch_count</code>	The definition must be reviewed in the following cases: <ul style="list-style-type: none"> • When the <code>service_expiration_time</code> operand is applied to the user server • When the <code>trn_completion_limit_time</code> operand is applied to the user server • When the non-transaction MHP expiration time is applied to the user server • When the <code>trn_expiration_time</code> operand is applied to the user server
<code>trn</code>	<code>trn_max_subordinate_count</code>	The definition must be reviewed when transaction processing is performed.

7. Changing OpenTP1 System Definitions

Definition file name	Definition	Condition under which a review is required
	trn_tran_process_count	The definition must be reviewed when transaction processing is performed.
<ul style="list-style-type: none"> • usrrc • User service definition 	message_store_buflen	When the added user server sends an RPC call to another user server, the message_store_buflen operand on the other user server must be reviewed.
User service definition	max_socket_descriptors	When the added user server sends an RPC call to another user server, the max_socket_descriptors operand on the other user server must be reviewed.
\$DCDIR/lib/sysconf/mcf	max_socket_descriptors	The definition must be reviewed when the number of UAPs that request message transmission from the MCF communication process and the number of operation commands that issue processing requests increase concurrently.
MCF manager common definition	mcfmcomn -p	The definition must be reviewed when an MHP is added. If the value must be increased, the amount of increase is added to the value of the static_shmpool_size operand in the system environment definition (env).

The following table lists the OpenTP1 files that must be reviewed when the degree of parallelism for user servers is changed and indicates under what conditions a review is required.

Table 7-5: OpenTP1 files that must be reviewed when the degree of parallelism for user servers is changed

OpenTP1 file	Condition under which a review is required
System journal file	The file must be reviewed in the following cases: <ul style="list-style-type: none"> • When transaction processing is performed • When statistics are acquired
Checkpoint dump file	The file must be reviewed when transaction processing is performed.

OpenTP1 file	Condition under which a review is required
XAR file	The file must be reviewed when transaction processing is performed and the XA resource service facility is used.

7.3.3 When a node is added

When a node is added, the following tasks are required:

- Modify the value of the `all_node` operand in the system common definition
- Modify the domain definition file

The following table lists the definitions that must be reviewed when a node is added and indicates under what conditions a review is required.

Table 7-6: Definitions that must be reviewed when a node is added

Definition file name	Definition	Condition under which a review is required
<code>betranrc</code>	<code>all_node_extend_number</code>	The definition must be reviewed unconditionally.
<code>env</code>	<code>static_shmpool_size</code>	The definition must be reviewed unconditionally.
<code>ist</code>	<code>ist_node</code>	The definition must be reviewed when the IST table is accessed.
<code>jnl</code>	<code>max_socket_descriptors</code>	The definition must be reviewed when the global archive journal facility is used.
<ul style="list-style-type: none"> • <code>nam</code> • <code>scd</code> • <code>trn</code> • User service definition 	<code>max_socket_descriptors</code>	The definition must be reviewed unconditionally.
<code>nam</code>	<code>name_cache_size</code>	The definition must be reviewed unconditionally.
	<code>name_total_size</code>	The definition must be reviewed unconditionally.

7.3.4 When a journal file group is added

When a journal file group is added, the following tasks are required:

- Modify the specification of the `jnladdfg` definition command in the system journal service definition file
- Modify the specification of the `jnladdpf` definition command in the system

journal service definition file

The following table lists the definitions that must be reviewed when a journal file group is added and indicates under what conditions a review is required.

Table 7-7: Definitions that must be reviewed when a journal file group is added

Definition file name	Definition	Condition under which a review is required
env	static_shmpool_size	The definition must be reviewed unconditionally.

The following table lists the OpenTP1 files that must be reviewed when a journal file group is added and indicates under what conditions a review is required.

Table 7-8: OpenTP1 files that must be reviewed when a journal file group is added

OpenTP1 file	Condition under which a review is required
Status file	The file must be reviewed unconditionally.

7.3.5 When a host name or IP address is changed

This subsection indicates which definitions must be reviewed when a host name or IP address is changed, and explains how to make the change.

(1) Definitions that must be reviewed when a host name or IP address is changed

Note:

The review must cover all sections in which the old host name or IP address is specified on the local and other nodes.

Table 7-9: Definitions that must be reviewed when a host name or IP address is changed

Definition file name	Definition	Condition under which a review is required
betranrc	all_node	The definition must be reviewed unconditionally.
	all_node_ex	The definition must be reviewed unconditionally.
	dcbindht -h	The definition must be reviewed unconditionally.

Definition file name	Definition	Condition under which a review is required
	my_host	The definition must be reviewed unconditionally.
nodeaddr	dcprcport -h	The definition must be reviewed when TP1/Multi is used.
usrnet	dcsvgdef -h	The definition must be reviewed unconditionally.
RAP-processing client manager service definition	rap_listen_inf	The definition must be reviewed unconditionally.
RAP-processing listener service definition	rap_client_manager_node	The definition must be reviewed unconditionally.
Domain definition file	--	The definition must be reviewed when Y is set for the name_domain_file_use operand.

Legend:

--: Not applicable

When TP1/Message Queue is used, check the definitions that must be reviewed in the manual *TP1/Message Queue User's Guide*. When MCF is used, check the definitions that must be reviewed in the applicable *OpenTP1 Protocol* manual.

(2) Procedure for changing a host name or IP address

To change a host name or IP address:

1. Normally stop OpenTP1.
2. Search for existing host names or IP addresses in `$DCDIR/conf` and `$DCCONFPATH`.

For the search, use the `grep` command when the OS is UNIX, or the `findstr` command when the OS is Windows.

3. Change any existing host names or IP addresses that are found in the search results.
4. If you have changed the system common definition file (`$DCCONFPATH/betranrc`), execute the `dcreset` command.

Chapter

8. Definition Examples

This chapter provides examples of creating OpenTP1 system definitions.

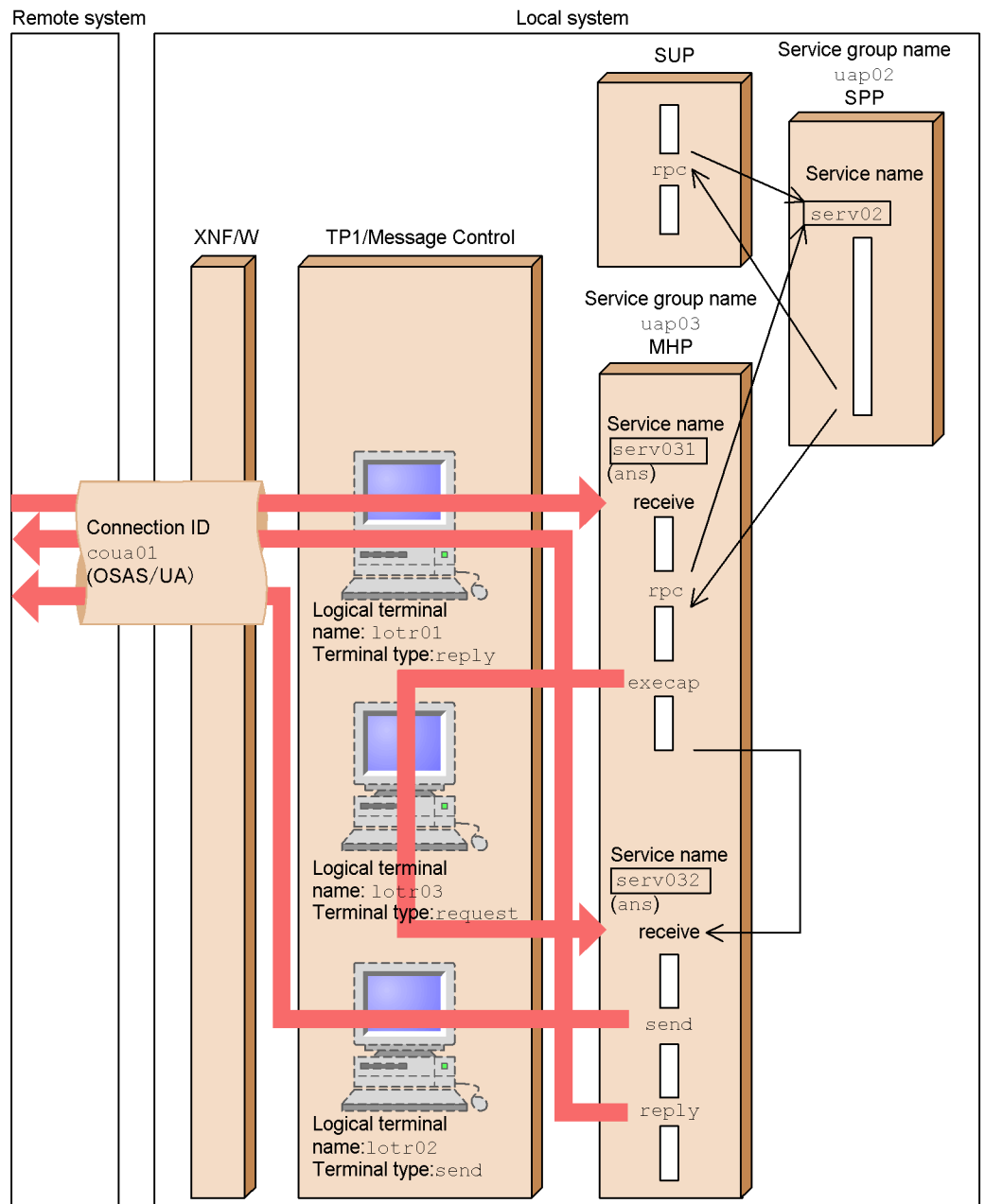
8.1 Examples of defining an OpenTP1 system configuration

8.2 Examples of defining the real-time statistics items that are to be acquired

8.1 Examples of defining an OpenTP1 system configuration

The following figure illustrates the communication environment and UAP configuration for the definition examples in this section.

Figure 8-1: Communication environment and UAP configuration of definition examples



Coding examples for definitions follow:

8. Definition Examples

```
#####
# System environment definition
# File name: env
#
#####

set mode_conf          = AUTO      # System start method
set static_shmpool_size = 6000     # Total amount of static
                                   # shared memory
set dynamic_shmpool_size = 500     # Total amount of dynamic
                                   # shared memory during
                                   # maximum usage
set shmpool_attribute  = free      # Whether memory in the
                                   # shared memory pool should
                                   # be fixed
putenv DCCONFPATH /qa3d/qa4g10/makai3g # Definition file
                                   # storage directory
putenv SHELL /bin/sh                # Shell during user
                                   # environment setup
                                   # command startup

### End of system environment definition #####

#####
# System service configuration definition
# File name: sysconf
#
#####

set uap_conf = Y                # Whether to execute user server
set dam_conf = Y                # Whether to use DAM service
set que_conf = Y                # Whether to use message queue
                                   # service
set tam_conf = Y                # Whether to use TAM service

#-----System service start-----#
dcsvstart -m _mutest1          # Name of MCF service to start

### End of system service configuration #####

#####
# User service configuration definition
# File name: usrconf
#
#####

#-----User server start-----#
dcsvstart -u exuap02           # Name of system service to start
```

```

dcsvstart -u exuap03          # Name of system service to start

### End of user service configuration definition#####

#####
# System common definition
# File name: betranrc
#
#####

set watch_time = 240          # Maximum time to wait for
                              # RPC response
set name_port   = 10004      # Name service port number
set system_id   = 01         # OpenTP1 identifier
set all_node    = ft6101,ft6102 # All node names where name
                              # service exists
set node_id     = n d01      # Node identifier
putenv LANG ja_JP.SJIS      # LANG setting

### End of system common definition #####

#####
# Lock service definition
# File name: lck
#
#####

set lck_limit_foruser = 64    # Maximum number of user
                              # server concurrent lock
                              # requests
set lck_limit_fordam  = 64    # Maximum number of DAM
                              # service concurrent lock
                              # requests
set lck_limit_fortam  = 64    # Maximum number of TAM
                              # service concurrent
                              # lock requests
set lck_wait_timeout  = 30    # Lock waiting timeout time
set lck_deadlock_info = Y     # Whether to output
                              # deadlock information

### End of lock service definition #####

#####
# Timer service definition
# File name: tim
#

```

8. Definition Examples

```
#####  
set tim_watch_count = 128          # Maximum time check  
                                   # service count  
  
### End of timer service definition #####  
  
#####  
# Name service definition  
# File name: nam  
#  
#####  
set name_total_size = 64          # Service information area  
                                   # size  
set name_cache_size = 16         # Service information  
                                   # cache area size  
  
### End of name service definition #####  
  
#####  
# Process service definition  
# File name: prc  
#  
#####  
set prc_process_count = 100       # Maximum number of  
                                   # concurrently active  
                                   # server processes  
  
#-----User server path specification-----#  
prcsvpath /BeTRAN/aplib          # User server and command  
                                   # path name  
  
### End of process service definition #####  
  
#####  
# Schedule service definition  
# File name: scd  
#  
#####  
set scd_server_count = 32         # Maximum number of user  
                                   # servers  
  
### End of schedule service definition #####
```

```

#####
# Transaction service definition
# File name: trn
#
#####

set trn_tran_process_count = 20 # Number of concurrently
                                # active transaction branches
set trn_recovery_process_count = 2
                                # Parallel recovery process
                                # count
set trn_expiration_time      = 60 # Transaction branch expiry
                                # time
set trn_tran_statistics      = N  # Whether to collect
                                # statistical information

### End of transaction service definition ###

#####
# Status service definition
# File name: sts
#
#####

set sts_file_name_1 = "stsfil01", "/dev/rdisk/rhd111/stsfil01", \
                    # Logical file name, system A status file name,
                    # system B status file name
set sts_file_name_2 = "stsfil02", "/dev/rdisk/rhd111/stsfil03", \
                    # Logical file name, system A status file name,
                    # system B status file name
set sts_initial_error_switch = stop # Action to be taken
                                    # when error occurs in
                                    # status service

### End of status service definition #####

#####
# Journal service definition
# File name: jnl
#
#####

#-----Journal-related file specification-----#
jnldfsv -r sjs -c cdtjl,cdmcf
                                # -r system journal service definition

```

8. Definition Examples

```

# file name
# -c check point dump service definition
# file name

### End of journal service definition #####

#####
# System journal service definition
# File name: sjs
#
#####

set jnl_max_datasize    = 32000          # Maximum record data
# length
set jnl_cdinterval      = 1000          # Journal block count
set jnl_rerun_swap      = N
# Whether to swap journals at system
# restart
set jnl_dual            = Y            # Whether to dualize journal
# file
set jnl_singleoperation = N            # Whether to swap system when
# one system cannot be used
set jnl_rerun_reserved_file_open = N
# Whether to open reserved file during
# full recovery

#-Journal-related file group specification (1)--#
jnladdfg -g jnlgrp01 ONL
# Name of file group comprising system
# journal

#---Journal-related physical file specification (1)---#
jnladdpf -g jnlgrp01 \
-a /dev/rdisk/rhd111/jnlf011 \
-b /dev/rdisk/rhd112/jnlf012
# -g Corresponding file group name
# -a Physical file name
# -b Physical file name

#-Journal-related file group specification (2)-#
jnladdfg -g jnlgrp02 ONL

#--Journal-related physical file specification (2)---#
jnladdpf -g jnlgrp02 \
-a /dev/rdisk/rhd111/jnlf021 \
-b /dev/rdisk/rhd112/jnlf022

#-Journal-related file group specification (3)-#

```

```

jnladdfg -g jnlgrp03 ONL

#--Journal-related physical file specification (3)----#
jnladdpf -g jnlgrp03 \
-a /dev/rdisk/rhd111/jnlf031 \
-b /dev/rdisk/rhd112/jnlf032

#-Journal-related file group specification (4)-#
jnladdfg -g jnlgrp04 ONL

#--Journal-related physical file specification (4)----#
jnladdpf -g jnlgrp04 \
-a /dev/rdisk/rhd111/jnlf041 \
-b /dev/rdisk/rhd112/jnlf042

### End of system journal service definition ##

#####
# Checkpoint dump service definition
# File name: cdtjl
#
#####

set jnl_objservername = "_tjl" # Target system service name
set jnl_max_datasize = 32768 # Checkpoint dump buffer
# length
set assurance_count = 2 # Guaranteed generation count
# is set to 2

#-Journal-related file group specification (1)-#
jnladdfg -g cpdgrp01 ONL
# Name of file group comprising checkpoint
# dump
#--Journal-related physical file specification (1)----#
jnladdpf -g cpdgrp01 \
-a /dev/rdisk/rhd111/cpdf01
# -g corresponding file group name
# -a physical file name

#-Journal-related file group specification (2)-#
jnladdfg -g cpdgrp02 ONL

#--Journal-related physical file specification (2)----#
jnladdpf -g cpdgrp02 \
-a /dev/rdisk/rhd111/cpdf02

#-Journal-related file group specification (3)-#
jnladdfg -g cpdgrp03 ONL

```

8. Definition Examples

```
##--Journal-related physical file specification (3)----#
jnladdpf -g cpdgrp03          \
        -a /dev/rdisk/rhd111/cpdf03

## End of checkpoint dump service definition

#####
# checkpoint dump service definition
# File name: cdmcf
#
#####

set jnl_objservername = "_mutest1"      # Target system service
                                         # name
set jnl_max_datasize  = 32768          # Buffer size for acquiring
                                         # checkpoint dump
set assurance_count   = 2              # Guaranteed generation
                                         # count is set to 2

##--Journal-related file group specification (1)--#
jnladdfg -g cpdgrp04 ONL
        # Name of file group comprising checkpoint
        # dump

##--Journal-related physical file specification (1)----#
jnladdpf -g cpdgrp04          \
        -a /dev/rdisk/rhd111/cpdf04
                                         # -g Corresponding file group name
                                         # -a Physical file name

##--Journal-related file group specification (2)--#
jnladdfg -g cpdgrp05 ONL

##--Journal-related physical file specification (2)----#
jnladdpf -g cpdgrp05          \
        -a /dev/rdisk/rhd111/cpdf05

##--Journal-related file group specification (3)-#
jnladdfg -g cpdgrp06 ONL

##--Journal-related physical file specification (3)----#
jnladdpf -g cpdgrp06          \
        -a /dev/rdisk/rhd111/cpdf06

## End of checkpoint dump service definition

#####
```



```

# Log service definition
# File name: log
#
#####

set log_filesize      = 100    # Maximum message log file
                           # capacity
set log_msg_console   = Y      # Whether to use real time
                           # output facility
set log_msg_allno     = N      # Whether to add system-
                           # specific sequence numbers
set log_msg_prcid     = N      # Whether to add process ID of
                           # requesting process
set log_msg_prcno     = N      # Whether to add process-
                           # specific sequence numbers
set log_msg_sysid     = Y      # Whether to add OpenTP1
                           # identifier
set log_msg_date      = Y      # Whether to add output
                           # request date
set log_msg_time      = Y      # Whether to add output
                           # request time
set log_msg_hostname  = Y      # Whether to add name of
                           # requesting host
set log_msg_pgmid     = Y      # Whether to add ID of
                           # requesting program
set log_netm_out      = N      # Whether to output message
                           # log to NETM
set log_netm_allno    = N      # Whether to add system-
                           # specific sequence numbers
set log_netm_prcid    = N      # Whether to add process ID of
                           # requesting process
set log_netm_prcno    = N      # Whether to add process-
                           # specific sequence numbers
set log_netm_sysid    = Y      # Whether to add OpenTP1
                           # identifier
set log_netm_date     = Y      # Whether to add output
                           # request date
set log_netm_time     = Y      # Whether to add output
                           # request time
set log_netm_hostname = Y      # Whether to add name of
                           # requesting host
set log_netm_pgmid    = Y      # Whether to add ID of
                           # requesting program
putenv TZ JST-9        # Time zone specification

### End of log service definition #####

#####

```

8. Definition Examples

```
# Multi-node configuration definition
# File name: nodeconf
#
#####

#--Multi-node area specification-----#
dcmarea -m areal -w nd01,nd02 # Specification of nodes
                                # belonging to multi-node area
dcmarea -m areal -w nd03,nd04

#--Multi-node subarea specification-----#
dcmarea -g subl -w nd01,nd02
                                # Specification of nodes belonging
                                # to multi-node subarea

### End of multi-node configuration definition #####

#####
# Multi-node physical definition
# File name: nodeaddr
#
#####

dcprcport -w nd01 -h ft6101 -p 20000 # For each OpenTP1
                                         # node, specify the
dcprcport -w nd02 -h ft6102 -p 20000 # host name of OpenTP1
                                         # node and port number
dcprcport -w nd03 -h ft6103 -p 20000 # used by multi-node
                                         # linkage control
dcprcport -w nd04 -h ft6104 -p 20000 # facility

### End of multi-node physical definition #####

#####
# DAMservice definition
# File name: dam
#
#####

set dam_update_block = 32      # Maximum number of blocks to
                                # be updated
set dam_added_file = 8        # Maximum logical file count
                                # added online

#-----Logical file specification-----#
damfile DAMFILE /dev/rdisk/rhd112/damfile0
                                # Logical file names and physical file names
                                # accessed during online session
```

```

### End of DAM service definition #####

#####
# TAM service definition
# Table name: tam
#
#####

set tam_max_tblnum = 100      # Maximum number of tables to
                             # be used during online session
set tam_max_filesize = 50000 # Maximum table size to be used
                             # during online session
set tam_max_recsz = 200      # Maximum TAM table record
                             # length
set tam_jnl_err_flag = STOP  # Processing to take place
                             # when journal error occurs
set tam_pool_attri = fixed   # Whether shared memory pool is
                             # to be fixed

#-----TAM file attribute specification-----#

tamtable  TAMTABLE /dev/rdsk/rhd112/tamfile0
          # TAM table name and physical
          # file name

### End of TAM service definition #####

#####
# IST service definition
# File name: ist
#
#####

set ist_node =node1,node2,node3  # Node names at which
                                  # table operation takes
                                  # place

istdef isttbl1 32 100  # Table name to be accessed, record
                      # length, and record count
istdef isttbl2 128 10  # Table name to be accessed, record
                      # length, and record count
istdef isttbl3 1024 10 # Table name to be accessed, record
                      # length, and record count

### End of IST service definition #####

```

8. Definition Examples

```
#####
# Message queue service definition
# File name: que
#
#####

set que_xidnum = 100      # Maximum number of concurrently
                          # executed transactions

#-----Message queue file specification-----#
quegrp -g otqgrp01 -f /dev/rdisk/rhd112/quef01 -n 128 -m 10 -w 80
# -g Queue group ID assigned to
# physical file
# -f Physical file name
# -n Number of input-output buffers
# for buffer cache
# -m Number of messages retained
# in queue buffer
# -w Physical file usage capacity
# warning ratio

quegrp -g itqgrp01 -f /dev/rdisk/rhd112/quef02 -n 128 -m 10 -w 80

### End of message queue service definition ###

#####
# User service default definition
# File name: usrrc
#
#####

set nice                = 10    # Process execution priority
set parallel_count      = 1     # Resident process count
set hold                = Y     # Whether to shut down when
                              # UAP abnormally terminates
set hold_recovery       = N     # Whether to inherit shutdown
                              # state during full recovery
set deadlock_priority   = 64    # UAP deadlock priority
set schedule_priority   = 8     # Schedule priority
set message_buflen     = 4096  # Message length
set message_store_buflen = 12288 # Message storage buffer pool
                              # length
set atomic_update       = Y     # Whether to generate
                              # transactions
set receive_from        = queue # Whether to use schedule
                              # queue
set uap_trace_max       = 32    # Maximum number of UAP trace
```

```

# to be stored
set term_watch_time      = 30      # Abnormal termination check
                                # expiration time
set type                  = other   # Service group type
set balance_count        = 3       # Number of service requests
                                # remaining
set auto_restart         = N       # Action to be taken by
                                # service group when UAP
                                # abnormally terminates
set critical              = N       # Action to be taken by
                                # system when UAP abnormally
                                # terminates
set lck_wait_priority    = 0       # Lock waiting priority

### End of user service default definition #####

#####
# User service definition 1
# File name: exuap01
# Client UAP (SUP) definition
#
#####

set module                = "upout1"  # Executable program
                                # name
set receive_from          = none
                                # Whether to use schedule queue for
                                # exchanging messages
### End of user service definition #####

#####
# User service definition 2
# File name: exuap02
# Server UAP (SPP) definition
#
#####

set service_group        = "uap02"    # Service group name
set module               = "upout2"   # Executable file name
set parallel_count       = 2 , 4      # Resident process count
                                # and non-resident
                                # process count
set service              = "serv02=serv02" # service name = entry
                                # point name

### End of user service definition #####

```

8. Definition Examples

```
#####
# User service definition 3
# File name: exuap03
# Message-processing program (MHP) definition
#
#####

set service_group = "uap03"          # Service group name
set module        = "upout3"        # Executable file name
set parallel_count = 1 , 2          # Resident process count
                                          # and non-resident process
                                          # count
set hold          = N                # Whether to shut down
                                          # service group
set service       = "serv031=serv031", \
                  "serv032=serv032" # service name = entry
                                          # point name
set type         = MHP              # Service group type

### End of user service definition #####

#####
# MCF manager definition
# File name: abc_mngr
# Object file name: _mutest1
# Corresponding MCF communication configuration definition
# object file name: _muua01,_mups01
#
#####

#-----MCF manager environment definition-----#
mcfmenv  -m "name = mng01"          # MCF manager name

#-----MCF manager common definition-----#
mcfmcomn -n 10                      # Number of logical terminals using
                                          # sequential numbers # \
          -p 300                    # MCF work area size # \
          -j 4096                   # MCF manager process journal buffer
                                          # size

#-----Communication service definition-----#
mcfmcname -s "mcfsvname = _muua01  # MCF communication
                                          # service name # \
          sysvsvname = mcfu01"      # System service
                                          # information definition
                                          # file name
```

```

mcfmcname -s "mcfsvname = _mups01      # MCF communication
           # service name # \
           syssvname = mcfu02"        # System service
                                       # information definition
                                       # file name

#-----UAP common definition-----#
mcfmuap   -d 65535                    # Upper limit for the
                                       # number of times
                                       # communication function
                                       # can be issued # \
           -j 32768                    # User server journal
                                       # buffer size # \
           -l "initseq = 1            # Initial value of
           maxseq = 9999              # sequential number # \
           minseq = 1"                # Maximum sequential
                                       # number when wrapping
                                       # occurs # \
                                       # Starting sequential
                                       # number following
                                       # wrapping

#-----Input-output queue definition-----#
mcfmqgid  -q "quekind = otq           # Queue type # \
           quegrp01"                 # Queue group ID

mcfmqgid  -q "quekind = itq           # Queue type # \
           quegrp01"                 # Queue group ID

#-----Extended reservation -----#
#-----definition -----#
mcfmexp   -g 100                      # Service group
                                       # registration count # \
           -l 30                      # Logical terminal
                                       # registration count # \
           -i dg                      # Whether to carry out fall-back operation
           # when input queue cannot be used # \
           -o dg                      # Whether to carry out fall-back operation
           # when output queue cannot be used

#-----Status inheritance definition-----#
mcfmsts   -g 20                       # Service group count
                                       # upper limit # \
           -v 100                     # Service count upper limit

#####End of MCF manager definition#####

#####

```

8. Definition Examples

```

# MCF communication configuration definition (ua)
# common definition
# File name: abc_ua_c
# Object file name: obj_ua_c
# Corresponding data communication definition object
# file name: obj_ua_d
# MCF communication configuration definition object
# file name: _muua01
# Corresponding MCF application definition object
# file name: aplipt01
#
#
#####

#-----MCF communication environment-----#
#-----definition-----#
mcftenv   -s 01                # MCF communication process
                        # identifier # \
          -a aplipt01         # MCF application definition
                        # file name

#-----MCF communication configuration-----#
#-----common definition-----#
mcftcomm  -j 32768            # MCF communication process journal
                        # buffer size # \
          -x "termrls = no"   # (UA protocol-specific)

#-----Maximum processing multiplier-----#
#-----definition-----#
mcfttred  -m 5                # Maximum processing
                        # multiplier

#-----Timer definition-----#
mcfttim   -t "btim   = 5      # Time monitoring interval # \
           mtim   = 180      # Remaining time for
           rmtim  = 180"    # unprocessed send messages
                        # Remaining time for
                        # unprocessed receive messages

#-----Trace environment definition-----#
mcfttrc   -t "size   = 20480  # Trace buffer size # \
           disk    = yes     # Whether to use disk output
           bufcnt  = 50      # facility # \
           trcnt   = 3"     # Trace buffer count # \
           -m del          # Trace file count # \
                        # Action to be taken when
                        # trace file count is exceeded

```



```

#-----Status inheritance definition-----#
mcfststs  -a 10                # Application count upper
                                # limit

#-----Buffer group definition-----#
###(for sending)
mcfstbuf  -g "groupno = 1      # Buffer group number # \
          length = 4096      # Buffer length # \
          count  = 256       # Buffer count # \
          extend = 256"      # Extended buffer count

###(for receiving)
mcfstbuf  -g "groupno = 2      # Buffer group number # \
          length = 4096      # Buffer length # \
          count  = 256       # Buffer count # \
          extend = 256"      # Extended buffer count

###(for editing)
mcfstbuf  -g "groupno = 3      # Buffer group number # \
          length = 4096      # Buffer length # \
          count  = 256       # Buffer count # \
          extend = 256"      # Extended buffer count

### End of MCF communication configuration definition ###
### (common definition)                                     ###

#####
# MCF communication configuration definition (ua)
# Data communication definition (protocol-specific
# definition)
# File name: abc_ua_d
# Object file name: obj_ua_d
# Corresponding common definition object file name: obj_ua_c
# MCF communication configuration definition object file name:
# _muua01
# Corresponding MCF application definition object file name:
# aplipt01
#
# Since this is OSAS/UA protocol-specific definition,
# see protocol TP1/NET/User Agent section for details.
#
#####

#====Connection definition=====#
#-----Connection definition start-----#
mcfstalccn -c coua01          # Connection ID # \
          -p ua                # Protocol type # \
          -n x'0a81008202001283020012' \
                                # Local system's PSAP address # \

```

8. Definition Examples

```

-g "sndbuf = 1      # Buffer group number for
                    # sending messages # \
    rcvbuf = 2"    # Buffer group number for
                    # receiving messages # \
-e "msgbuf = 3     # Buffer group number for
                    # editing messages # \
    count = 5"    # Buffer count for editing
                    # messages # \
-m "mode = xnfw"  # Communication management
                    # connection mode # \
-i auto          # Whether to automatically establish
                    # connection during restart # \
-o old           # OSAS/UA protocol type # \
-u ht           # Remote system type # \
-y e'T1000'     # Controlling UA terminal
                    # identifier # \
-q x'15810082008302ffff840b49000142010300005ffe01' \
                    # Remote system's PSAP
                    # address # \
-z "slot = 1"    # Slot number used by local
                    # system

#-----Logical terminal definition/UA-----#
#-----definition (1)-----#
mcftalcle -l lotr01                # Logical terminal
                                    # name # \
    -t reply                        # Terminal type # \
    -m "mmsgcnt = 20                # Maximum number of memory-
                                    # output messages to be
                                    # stored # \
        dmsgcnt = 10"              # Maximum number of disk-
                                    # output messages to be
                                    # stored # \
    -k "quekind = disk              # Output queue
                                    # medium type # \
        quegrpID = otqgrp01"       # Queue group ID
mcftalcua -u 1                      # UA number # \
    -y e'T1001'                    # UA terminal
                                    # identifier

#-----Logical terminal definition/UA -----#
#-----definition (2)-----#
mcftalcle -l lotr02                # Logical terminal
                                    # name # \
    -t send                          # Terminal type # \
    -m "mmsgcnt = 20                # Maximum number of memory-
                                    # output messages to be
                                    # stored # \

```

```

                dmsgcnt = 10"          # Maximum number of disk-
                # output messages to be
                # stored # \
        -k "quekind = disk          # Output queue
                # medium type # \
                quegrp = otqgrp02"  # Queue group ID
mcftalcua -u 2                    # UA number # \
        -y e'T1002'                # UA terminal
                # identifier

#-----End of connection definition-----#
mcftalced                          # No argument

## End of MCF communication configuration definition ##
## (data communication definition) ##

#####
# MCF communication configuration definition
# (psvr) common definition
# File name: psvr_cmn
# Object file name: psvr_c_o
# Corresponding data communication definition object
# file name: psvr_d_o
# MCF communication configuration definition object file name:
# _mups01
# Corresponding MCF application definition object file name:
# aplit01
#
#
#####

#-----MCF communication environment-----#
#-----definition-----#
mcftenv -s 02                    # Application start process
                # identifier # \
        -a aplit01              # MCF application definition object
                # file name

#-----MCF communication configuration common-----#
#-----definition-----#
mcftcomn -j 32768                # Size of application start process journal buffer

#-----Maximum processing multiplier-----#
#-----definition-----#
mcfttred -m 1                    # Maximum processing multiplier

#-----Timer definition-----#

```

8. Definition Examples

```

mcfttim  -t "btim  = 5          # Time monitoring interval # \
          mtim   = 180         # Remaining time for
          rmtim  = 180"       # unprocessed send messages
          # Remaining time for
          # unprocessed receive messages

#-----Trace environment definition-----#
mcfttrc  -t "size  = 20480     # Trace buffer size # \
          disk   = yes        # Whether to use disk output
          # facility # \
          bufcnt = 50         # Trace buffer count # \
          trcnt  = 3"        # Trace file count # \
          -m del             # Action to be taken when
          # trace file count is exceeded

#-----Status inheritance definition-----#
mcftsts  -a 10                # Application count upper
          # limit

##### End of MCF communication configuration definition #####
##### (common definition) #####

#####
# MCF communication configuration definition (psvr)
# Data communication definition (application start
# definition)
# File name: psvr_dta
# Object file name: psvr_d_o
# Corresponding common definition object file name: psvr_c_o
# MCF communication configuration definition object file name:
# _mups01
# Corresponding MCF application definition object file name:
# aplipt01
#
#
#####

#----Start of application start environment definition----#
mcftpsvr -c copsvr01          # Internal communication
          # path name

#-----Logical terminal definition-----#
mcftalcle -l lotr03          # Logical terminal name # \
          -t request          # Terminal type # \
          -m "mmsgcnt = 20    # Maximum number of memory-
          # output messages to be
          # stored # \
          dmsgcnt = 10"      # Maximum number of disk-

```

```

# output messages to be
# stored # \
-k "quekind = disk # Output queue
# medium type # \
quegrpId = otqgrp01" # Queue group ID

#----End of application start environment definition----#
mcftped # No argument
## End of MCF communication configuration definition ##
## (data communication definition) ##

#####
# MCF application definition
# File name: abc_apli
# Object file name: aplipt01
#
#####
#-----MCF application environment definition-----#
mcfaenv -a apli01 # MCF application
# definition identifier # \
-p 02 # Application start
# process identifier

#-----MCF application attribute definition (1)-----#
mcfaalcap -n "name = WORK1 # Application name # \
kind = user # Application kind # \
type = ans # Application type # \
aplihold = a # Whether to shut down
# application # \
msgcnt = 600" # Maximum number of input
# messages that can be
# stored # \
-g "servgrpN = uap03 # Service group name # \
quegrpId = itqgrp01 # Queue group ID # \
quekind = disk" # Input queue medium
# type # \
-v "servname = serv031 # Corresponding service
# name # \
servhold = m" # Action to be taken by
# service during abnormal
# termination # \
-d "holdlimit = 1 # Application abnormal
# termination limit count # \
holdlmtyp = cont" # Method of counting
# abnormal terminations # \
-j "ij = yes # Whether to acquire
# history information # \
# (During input message

```

8. Definition Examples

```

oj          = yes          # registration) # \
                                # Whether to acquire
                                # history information # \
                                # (During message send
                                # request) # \
gj          = yes"        # Whether to acquire
                                # history information
                                # (During message
                                # receive request)

#-----MCF application attribute definition (2)-----#
mcfaalcap -n "name          = WORK2          # Application name # \
              kind          = user           # Application kind # \
              type          = ans            # Application type # \
              aplihold      = a              # Whether to shut down
              application # \
              msgcnt        = 600"          # Maximum number of input
              messages that can be
              stored # \
              cname         = copsvr01"     # Internal communication
              # path name # \
-g "servgrp  = uap03          # Service group name # \
   quegrp    = itqgrp01      # Queue group ID # \
   quekind   = disk"        # Input queue medium
   # type # \
-v "servname = serv032      # Corresponding service
   # name # \
   servhold  = m"          # Action to be taken by
   # service during abnormal
   # termination # \
-d "holdlimit = 1          # Application abnormal
   # termination limit count # \
   holdlmtyp = cont"      # Method of counting
   # abnormal terminations # \
-j "ij       = yes         # Whether to acquire
   # history information # \
   # (During input message
   # registration) # \
   oj        = yes         # Whether to acquire
   # history information # \
   # (During message send
   # request) # \
   gj        = yes"        # Whether to acquire
   # history information
   # (During message
   # receive request)

##### End of MCF application definition #####

```

```
#####
# System service information definition (ua)
# File name: mcfu01
#
#####

set module = "mcfu01"
# Name of executable program of MCF main function created by
# user (= definition file name)
set receive_from = socket           # Receive type
set fixpriority = 52                # Fixed process execution
                                     # priority

### End of system service information definition #####

#####
# System service information definition (psvr)
# File name: mcfu02
#
#####

set module = "mcfu02"
# Name of executable program of MCF main function created by
# user (= definition file name)
set fixpriority = 52                # Fixed process execution
                                     # priority

### End of system service information definition #####
```

8.2 Examples of defining the real-time statistics items that are to be acquired

The objects for which statistics are to be acquired by the real-time statistics service and which statistical items are to be acquired can be changed by specifying the `rtspat` definition command.

This section shows an example of the real-time statistics service definition and the information acquired by using that definition. The section also shows how the acquired information varies depending on the specification of the `rts_service_max` operand (maximum number of acquisition targets) and the `rts_item_max` operand (maximum number of statistical items that can be acquired).

(1) Example of the real-time statistics service definition

```
#####
# Real-time statistics service definition
# File name: rts
#
#####

set rts_service_max = 7
set rts_item_max    = 6

rtspat -u sys -f File1                               #1
rtspat -u srv -s supA -e item-4,item-5 -f File1      #2
rtspat -u srv -s sppA -f File1                       #3
rtspat -u svc -s sppA -v update -e item-4,item-5,item-6 #4
rtspat -u svc -s sppB -v refer -e item-4,item-5      #5
rtspat -u obj -o port-number -b IP-address -e item-6 #6

### End of Real-time statistics service definition
#####

#####
# Real-time acquisition item definition
# File name: File1
#
#####

set item-1 = Y
set item-2 = Y
set item-3 = Y

### End of real-time acquisition item definition
#####
```



```
#####
# User service definition 1
# File name: supA
#
#####

set module = "supA"
set receive_from = none

### End of user service definition 1#####

#####
# User service definition 2
# File name: sppA
#
#####

set service_group = "sppA_svg"
set module = "sppA"
set service = "refer=refer","update=update"

### End of user service definition 2#####

#####
# User service definition 3
# File name: sppB
#
#####

set service_group = "sppB_svg"
set module = "sppB"
set service = "refer=refer","update=update"

### End of user service definition 3#####
```

As shown above, when you specify the `rtspat` definition command, the value of the `rts_service_max` operand must be 7 or more and the value of the `rts_item_max` operand must be 6 or more.

The following table shows the targets for which statistics are to be acquired and the statistical items acquired when the real-time statistics service is started for the above definition example.

Table 8-1: Items that can be acquired in the definition example

No.	Acquisition target		Items acquired					
1	<code>_SYSTEM</code>	<code>ΔΔΔΔ</code>	<i>item-1</i>	<i>item-2</i>	<i>item-3</i>	--	--	--

No.	Acquisition target		Items acquired					
			<i>item-1</i>	<i>item-2</i>	<i>item-3</i>	<i>item-4</i>	<i>item-5</i>	--
2	supA	△△△△	<i>item-1</i>	<i>item-2</i>	<i>item-3</i>	<i>item-4</i>	<i>item-5</i>	--
3	sppA	△△△△	<i>item-1</i>	<i>item-2</i>	<i>item-3</i>	--	--	--
4	sppA	****	<i>item-1</i>	<i>item-2</i>	<i>item-3</i>	--	--	--
5	sppA	refer	<i>item-1</i>	<i>item-2</i>	<i>item-3</i>	--	--	--
6	sppA	update	<i>item-1</i>	<i>item-2</i>	<i>item-3</i>	<i>item-4</i>	<i>item-5</i>	<i>item-6</i>
7	sppB	refer	<i>item-4</i>	<i>item-5</i>	--	--	--	--
8	Port number	IP address	<i>item-6</i>	--	--	--	--	--

Legend:

△△△△: Real-time statistics acquired on a server basis

****: Real-time statistics acquired on a basis other than service

--: Not applicable

#1:

Regardless of the value specified in the `rts_service_max` operand, as shown in No. 1 in Table 8-1, overall system statistics are registered as acquisition targets.

#2:

When `srv` is specified in the `-u` option and the `service` operand is not specified in the user service definition, as shown in No. 2 in Table 8-1, overall system statistics are registered as acquisition targets.

#3:

When `srv` is specified in the `-u` option and the `service` operand is specified in the user service definition, statistics are registered as acquisition targets as shown in Nos. 3 to 6 in Table 8-1. That is, the statistics on a server basis and the statistics on any basis other than service are registered as acquisition targets. In addition, the service specified in the `service` operand is registered as a target for statistics acquisition.

#4:

If the `rtspout` definition command is used to define items that have already been registered as acquisition targets, duplication of defined items is eliminated, as shown in No. 6 in Table 8-1.

#5:

The combination of the server name specified in the `-s` option and the service

name specified in the `-v` option is registered as a single acquisition target, as shown in No. 7 in Table 8-1.

#6:

The combination of the values specified as arguments of the `-o` and `-b` options is registered as a single acquisition item, as shown in No. 8 in Table 8-1.

(2) How the acquired information varies depending on operand values

At most, the real-time statistics service can acquire statistics from one more target than the value of the `rts_service_max` operand (maximum number of services for which statistics can be acquired). For each target, a maximum of the number of items specified in the `rts_item_max` operand (maximum number of items that can be acquired) can be acquired.

If the number of targets or items specified by using the `rtspout` definition command exceeds the value of the `rts_service_max` or `rts_item_max` operand, the real-time statistics service registers as many targets or items as possible, and acquires statistics for them.

The following shows an example of the definition when more acquisition targets and items than the values specified in the `rts_service_max` and `rts_item_max` operands are specified in the `rtspout` definition command.

```
#####
# Real-time statistics service definition
# File name: rts
#
#####

set rts_service_max = 6
set rts_item_max    = 5

rtspout -u sys -f File1                               #1
rtspout -u srv -s supA -e item-4,item-5 -f File1      #2
rtspout -u srv -s sppA -f File1                       #3
rtspout -u svc -s sppA -v update -e item-4,item-5,item-6 #4
rtspout -u svc -s sppB -v refer -e item-4,item-5      #5
rtspout -u obj -o port-number -b IP-address -e item-6 #6

### End of Real-time statistics service definition
#####

#####
# Real-time acquisition item definition
# File name: File1
#
#####
```

```

set item-1 = Y
set item-2 = Y
set item-3 = Y

### End of real-time acquisition item definition #####

#####
# User service definition 1
# File name: supA
#
#####

set module = "supA"
set receive_from = none

### End of user service definition
1#####

#####
# User service definition 2
# File name: sppA
#
#####

set service_group = "sppA_svg"
set module = "sppA"
set service = "refer=refer", "update=update"

### End of user service definition 2#####

#####
# User service definition 3
# File name: sppB
#
#####

set service_group = "sppB_svg"
set module = "sppB"
set service = "refer=refer", "update=update"

### End of user service definition 3#####

```

Although `rts_service_max` was 7 and `rts_item_max` was 6 in the definition example shown in (1), `rts_service_max` is 6 and `rts_item_max` is 5 in the above definition example. As a result of the change in specified values, the acquisition targets and items change from those in (1) as shown in the following table.

Table 8-2: Acquisition targets and items that are valid when more targets and items than the maximum are specified

No.	Acquisition target		Items acquired				
1	_SYSTEM	^AAA	<i>item-1</i>	<i>item-2</i>	<i>item-3</i>	--	--
2	supA	^AAA	<i>item-1</i>	<i>item-2</i>	<i>item-3</i>	<i>item-4</i>	<i>item-5</i>
3	sppA	^AAA	<i>item-1</i>	<i>item-2</i>	<i>item-3</i>	--	--
4	sppA	****	<i>item-1</i>	<i>item-2</i>	<i>item-3</i>	--	--
5	sppA	refer	<i>item-1</i>	<i>item-2</i>	<i>item-3</i>	--	--
6	sppA	update	<i>item-1</i>	<i>item-2</i>	<i>item-3</i>	<i>item-4</i>	<i>item-5</i>
7	sppB	refer	<i>item-5</i>	<i>item-6</i>	--	--	--

Legend:

^AAA: Real-time statistics acquired on a server basis

****: Real-time statistics acquired on a basis other than service

--: Not applicable

#1:

Regardless of the value specified in the `rts_service_max` operand, as shown in No. 1 in Table 8-2, overall system statistics are registered as acquisition targets.

#2:

When `srv` is specified in the `-u` option and the `service` operand is not specified in the user service definition, as shown in No. 2 in Table 8-2, overall system statistics are registered as acquisition targets.

#3:

When `srv` is specified in the `-u` option and the `service` operand is specified in the user service definition, statistics are registered as acquisition targets as shown in Nos. 3 to 6 in Table 8-2. That is, the statistics on a server basis and the statistics on any basis other than service are registered as acquisition targets. In addition, the service specified in the `service` operand is registered as a target for statistics acquisition.

#4:

When two of the three acquisition items specified in the `-e` option are registered, the total number of registered acquisition items reaches the maximum. Accordingly, *item-6* is not registered, as shown in No. 6 in Table 8-2.

8. Definition Examples

#5:

The combination of the server name specified in the `-s` option and the service name specified in the `-v` option is registered as a single acquisition target, as shown in No. 7 in Table 8-2.

#6:

Registration is not performed because the number of registered acquisition items other than those in No. 1 in Table 8-2 has already reached the value of the `rts_service_max` operand.

Appendixes

- A. Relationship between UAPs and OpenTP1 System Environment
- B. Estimating Shared Memory Requirements
- C. Definition for Acquiring Audit Events
- D. Details of Definition Checking
- E. Notes on Migrating from Earlier Products

A. Relationship between UAPs and OpenTP1 System Environment

This appendix explains the relationship between UAPs and system environment settings. The system environment setup method varies with the basic facility of the OpenTP1 as follows:

- TP1/Server Base

Create the necessary system definition files using a text editor.

- TP1/LiNK

If the OS is UNIX, set up an execution environment using interactive commands.
If the OS is Windows, set up an execution environment on GUI screens.

If the TP1/Server Base is in use, system definition is necessary. For the necessary system definition, see the OpenTP1 System Definition manual.

This appendix contains the following sections:

A.1 OpenTP1 definitions related to UAPs

A.2 Time monitoring for transactions

A.3 Time to wait for a service response

A.4 Applicable range of the maximum time interval in a permanent connection

A.5 Application program shutdown

A.1 OpenTP1 definitions related to UAPs

This section explains UAP-related OpenTP1 system definitions. System definitions are necessary only when the basic facility of the OpenTP1 is the TP1/Server Base. The explanation that follows is true when the TP1/Server Base is in use.

(1) Definitions required for UAPs

The system definitions required for UAPs are outlined below.

(a) System common definition

This definition determines the execution environment common to the OpenTP1 system. For example, the maximum response wait time of RPC is specified.

(b) User service configuration definition

This definition determines the UAPs that are concurrently started when the OpenTP1 system is activated.

(c) User service definition

This definition determines the execution environment for UAP started as an online job.

It is created for each UAP.

(d) User service default definition

This definition specifies the defaults for the user service definition items that are omitted.

(e) MCF application definition

This definition determines the application name of UAP when the message exchange mode is used. The application name is defined so that MCF can recognize the UAP defined in the user service definition.

Table A-1 summarizes the OpenTP1 system definitions related to UAPs.

Table A-1: OpenTP1 system definitions related to UAPs

Classification	System definition				
	System common definition	User service configuration definition	User service definition	User service default definition	MCF application definition
Unit for definition	Node		Service group	Node	One or more MCF communication processes
Time of use	When SUP, SPP, or MHP is activated	When the system is normally activated	When SUP, SPP, or MHP is activated		When MHP is started
Method for definition change (for <i>set</i> format [#])	Change the definition, terminate OpenTP1 for the node of the old definition, then start OpenTP1 for the node with the new definition.		Change the definition, terminate the process of the old definition, then restart the UAP with the new definition.		

#

Definition items in command format can be changed during online processing.

(2) File names of OpenTP1 system definitions related to UAPs

The files of OpenTP1 system definitions are created under \$DCCONFPATH. Table A-2 lists the file names of OpenTP1 system definitions related to UAPs.

Table A-2: File names of OpenTP1 system definitions related to UAPs

System definition related to UAPs	Definition file name (complete path name)
System common definition	\$DCCONFPATH/betranrc
User service configuration definition	\$DCCONFPATH/usrconf

System definition related to UAPs	Definition file name (complete path name)
User service definition	\$DCCONFPATH/user server name specified in the user service configuration definition, or user server name specified by the server start command (dcsvstart)
User service default definition	\$DCCONFPATH/usrrc
MCF application definition	\$DCCONFPATH/optional name that is unique in the node

(3) Service name and application name (set service, mcfaalcap)

The service of MHP is scheduled based on the application name (first eight characters of the first segment of the message received with MCF). In the system definitions, the service group name and service name of MHP specified in the user service definition need to be specified in the MCF application definition, so that the two definitions are correlated with each other. For the service group name and service name of application attribute definition in the MCF application definition, specify the names defined in the user service definition.

A.2 Time monitoring for transactions

The processing time of transaction branch (processing time of synchronous-response-type RPC) executed by other process may or may not be included in the limit elapsed time between transaction start and synchronization point acquisition. The method of monitoring the limit elapsed time of transactions is specified with `trn_expiration_time_suspend` in the user service definition, user service default definition, and transaction service definition.

The following explains the relationship between specification of the `trn_expiration_time_suspend` operand and the value of each timer as it relates to operation of the facility for timer monitoring.

(1) Relationship between the `trn_expiration_time_suspend` operand and each timer monitoring value

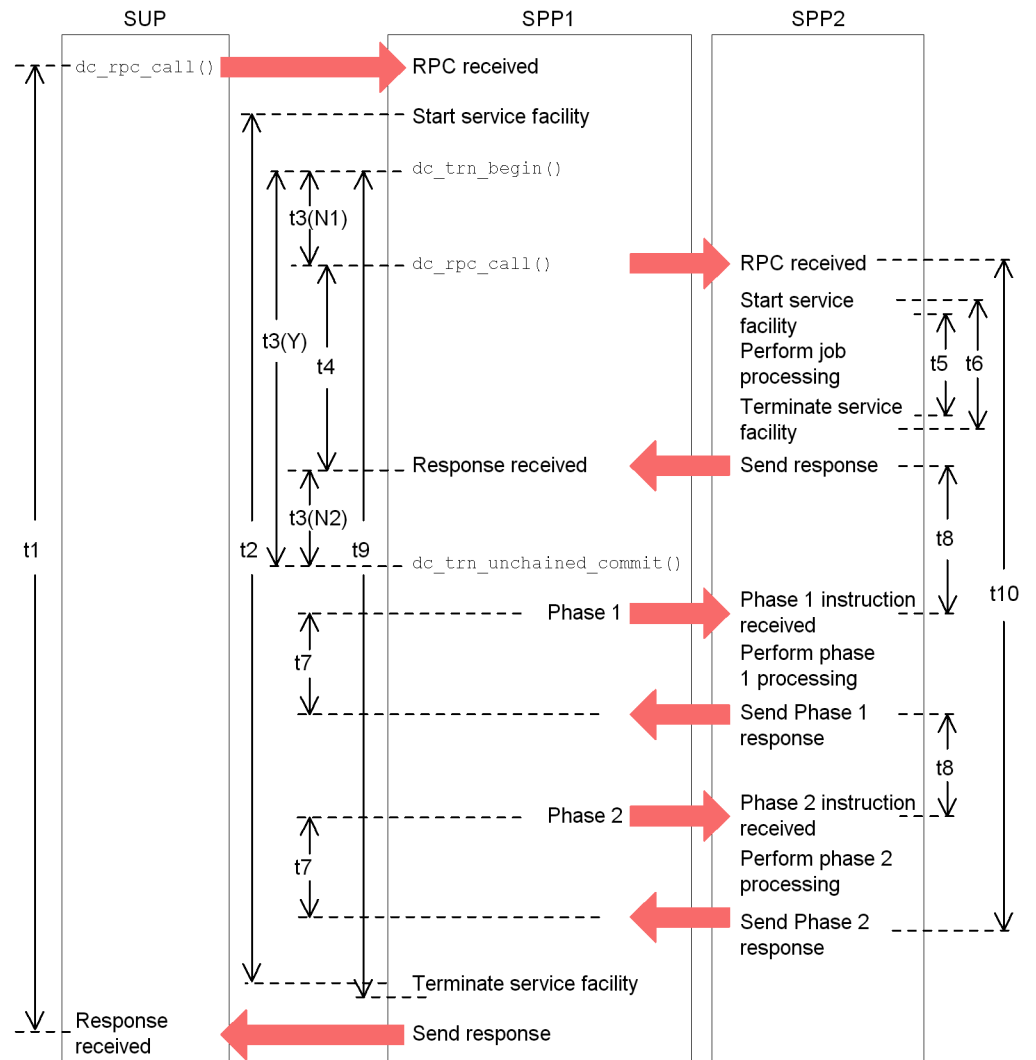
Figure A-1 shows the relationship between the value specified in the `trn_expiration_time_suspend` operand and each timer monitoring value.

Specify the `trn_expiration_time_suspend` operand on SPP1 shown in Figure A-1. You can specify this operand in the user service definition, user service default definition, or transaction service definition. The priority of the specified values is: (1>2>3).

1. User service definition
2. User service default definition
3. Transaction service definition

Whether you specify **Y** for this operand or specify **N** or **F** for this operand determines whether the processing time of the RPC is included in the expiry time in the transaction branch (the monitored period indicated by t_3 in Figure A-1).

Figure A-1: Relationship between the trn_expiration_time_suspend operand and each timer value



The following explains t_1 to t_{10} that appear in Figure A-1.

t_1 : `watch_time` (maximum time to wait for a response)

The system monitors the time from issuance of the RPC to the return of a

response.

If a timeout occurs, the function `dc_rpc_call()` returns with the error `DCRPCER_TIMED_OUT (-307)`.

One of the following values becomes the maximum monitoring time:

- Value specified in the `watch_time` operand of the user service definition of a SUP
- Value specified in the `watch_time` operand of the user service default definition when the `watch_time` operand was omitted from the user service definition of a SUP
- Value specified in the `watch_time` operand of the system common definition when the `watch_time` operand was omitted from the user service definition and user service default definition of a SUP
- 180 seconds when the `watch_time` operand was omitted from all definitions

t2: `service_expiration_time` (execution monitoring time from start of a service function to its termination)

The system monitors the time from receipt of a RPC and start of a service function to termination of the service function.

If a timeout occurs, the `KFCA00502-I` message is output with type code = 3 and SPP1 shuts down.

One of the following values becomes the maximum monitoring time:

- Value specified in the `service_expiration_time` operand of the user service definition of SPP1
- Value specified in the `service_expiration_time` operand of the user service default definition when the `service_expiration_time` operand was omitted from the user service definition of SPP1
- 0 when the `service_expiration_time` operand was omitted from all definitions (no time monitoring is performed)

t3: `trn_expiration_time` (expiry time in transaction branch)

The system monitors the time from start of the transaction to the start of synchronization point processing.

The period to be monitored depends on the value specified in the `trn_expiration_time_suspend` operand of SPP1. The monitored period is as follows:

When `Y` is specified for the `trn_expiration_time_suspend` operand:

Period indicated by $t_3(Y)$

When **N** or **F** is specified for the `trn_expiration_time_suspend` operand:

Total of the periods indicated by $t_3(N1)$ and $t_3(N2)$

If a timeout occurs, the KFC A00502-I message is output with type code = 1 and SPP1 shuts down.

One of the following values becomes the maximum monitoring time:

- Value specified in the `trn_expiration_time` operand of the user service definition of SPP1
- Value specified in the `trn_expiration_time` operand of the user service default definition when the `trn_expiration_time` operand was omitted from the user service definition of SPP1
- Value specified in the `trn_expiration_time` operand of the transaction service definition when the `trn_expiration_time` operand was omitted from the user service definition and user service default definition of SPP1
- 0 when the `trn_expiration_time` operand was omitted from all definitions (no time monitoring is performed)

t_4 : `watch_time` (maximum time to wait for a response)

The system monitors the time from issuance of the RPC to the return of a response.

If a timeout occurs, the function `dc_rpc_call()` returns with the error `DCRPCER_TIMED_OUT (-307)`.

One of the following values becomes the maximum monitoring time:

- Value specified in the `watch_time` operand of the user service definition of SPP1
- Value specified in the `watch_time` operand of the user service default definition when the `watch_time` operand was omitted from the user service definition of SPP1
- Value specified in the `watch_time` operand of the system common definition when the `watch_time` operand was omitted from the user service definition and user service default definition of SPP1
- 180 seconds when the `watch_time` operand was omitted from all definitions

t_5 : `service_expiration_time` (execution monitoring time from start of a service function to its termination)

The system monitors the time from receipt of a RPC and start of a service function

to termination of the service function.

If a timeout occurs, the KFCA00502-I message is output with type code = 3 and SPP2 shuts down.

One of the following values becomes the maximum monitoring time:

- Value specified in the `service_expiration_time` operand of the user service definition of SPP2
- Value specified in the `service_expiration_time` operand of the user service default definition when the `service_expiration_time` operand was omitted from the user service definition of SPP2
- 0 when the `service_expiration_time` operand was omitted from all definitions (no time monitoring is performed)

t6: `trn_expiration_time` (expiry time in transaction branch)

The system monitors the time from start of the transaction to the start of synchronization point processing.

If a timeout occurs, the KFCA00502-I message is output with type code = 1 and SPP2 shuts down.

One of the following values becomes the maximum monitoring time:

- Value specified in the `trn_expiration_time` operand of the user service definition of SPP2
- Value specified in the `trn_expiration_time` operand of the user service default definition when the `trn_expiration_time` operand was omitted from the user service definition of SPP2
- Value specified in the transaction service definition when the `trn_expiration_time` operand was omitted from the user service definition and user service default definition of SPP2
- 0 when the `trn_expiration_time` operand was omitted from all definitions (no time monitoring is performed)

t7: `trn_watch_time` (maximum time to wait for communication at synchronization point processing of a transaction)

This is the time that the system is to wait to receive communication (prepare, commit, rollback instruction, or response) between transaction branches during synchronization point processing of a transaction.

One of the following values becomes the maximum wait time:

- Value specified in the `trn_watch_time` operand of the user service definition of SPP1

- Value specified in the `trn_watch_time` operand of the user service default definition when the `trn_watch_time` operand was omitted from the user service definition of SPP1
- Value specified in the `trn_watch_time` operand of the transaction service definition when the `trn_watch_time` operand was omitted from the user service definition and user service default definition of SPP1
- Value specified in the `watch_time` operand of SPP1 when the `trn_watch_time` operand was omitted from all definitions of SPP1

t8: `trn_watch_time` (maximum time to wait for communication at synchronization point processing of a transaction)

This is the time that the system is to wait to receive communication (prepare, commit, rollback instruction, or response) between transaction branches during synchronization point processing of a transaction.

One of the following values becomes the maximum wait time:

- Value specified in the `trn_watch_time` operand of the user service definition of SPP2
- Value specified in the `trn_watch_time` operand of the user service default definition when the `trn_watch_time` operand was omitted from the user service definition of SPP2
- Value specified in the `trn_watch_time` operand of the transaction service definition when the `trn_watch_time` operand was omitted from the user service definition and user service default definition of SPP2
- Value specified in the `watch_time` operand of SPP2 when the `trn_watch_time` operand was omitted from all definitions of SPP2

t9: `trn_completion_limit_time` (time limit for completing a transaction)

The system monitors the time from the start to the end of the transaction.

When the specified time expires before the transaction ends, the KFCA00502-I message with `type=4` indicated is output, and SPP1 fails.

The expiration time for this monitoring is determined as follows:

- If the `trn_completion_limit_time` operand is specified in the user service definition for SPP1, the value of the operand is used.
- If the `trn_completion_limit_time` operand is not specified in the user service definition for SPP1, the value of the `trn_completion_limit_time` operand in the user service default definition for SPP1 is used.
- If the `trn_completion_limit_time` operand is not specified in either the

user service definition or the user service default definition, the value of the `trn_completion_limit_time` operand in the transaction service definition for SPP1 is used.

- If the `trn_completion_limit_time` operand is not specified in any definitions for SPP1, 0 is assumed (the system does not monitor the time).

t10: `trn_completion_limit_time` (time limit for completing a transaction)

The system monitors the time from the start to the end of the transaction.

When the specified time expires before the transaction ends, the KFCA00502-I message with `type=4` indicated is output, and SPP2 fails.

The expiration time for this monitoring is determined as follows:

- If the `trn_completion_limit_time` operand is specified in the user service definition for SPP2, the value of the operand is used.
- If the `trn_completion_limit_time` operand is not specified in the user service definition for SPP2, the value of the `trn_completion_limit_time` operand in the user service default definition for SPP2 is used.
- If the `trn_completion_limit_time` operand is not specified in either the user service definition or the user service default definition, the value of the `trn_completion_limit_time` operand in the transaction service definition for SPP2 is used.
- If the `trn_completion_limit_time` operand is not specified in any definitions for SPP2, 0 is assumed (the system does not monitor the time).

(2) Relationship between the `trn_expiration_time_suspend` operand and each timer monitoring value (when using chained RPC)

Figure A-2 shows the relationship between the value specified in the `trn_expiration_time_suspend` operand and each timer monitoring value when you use chained RPC.

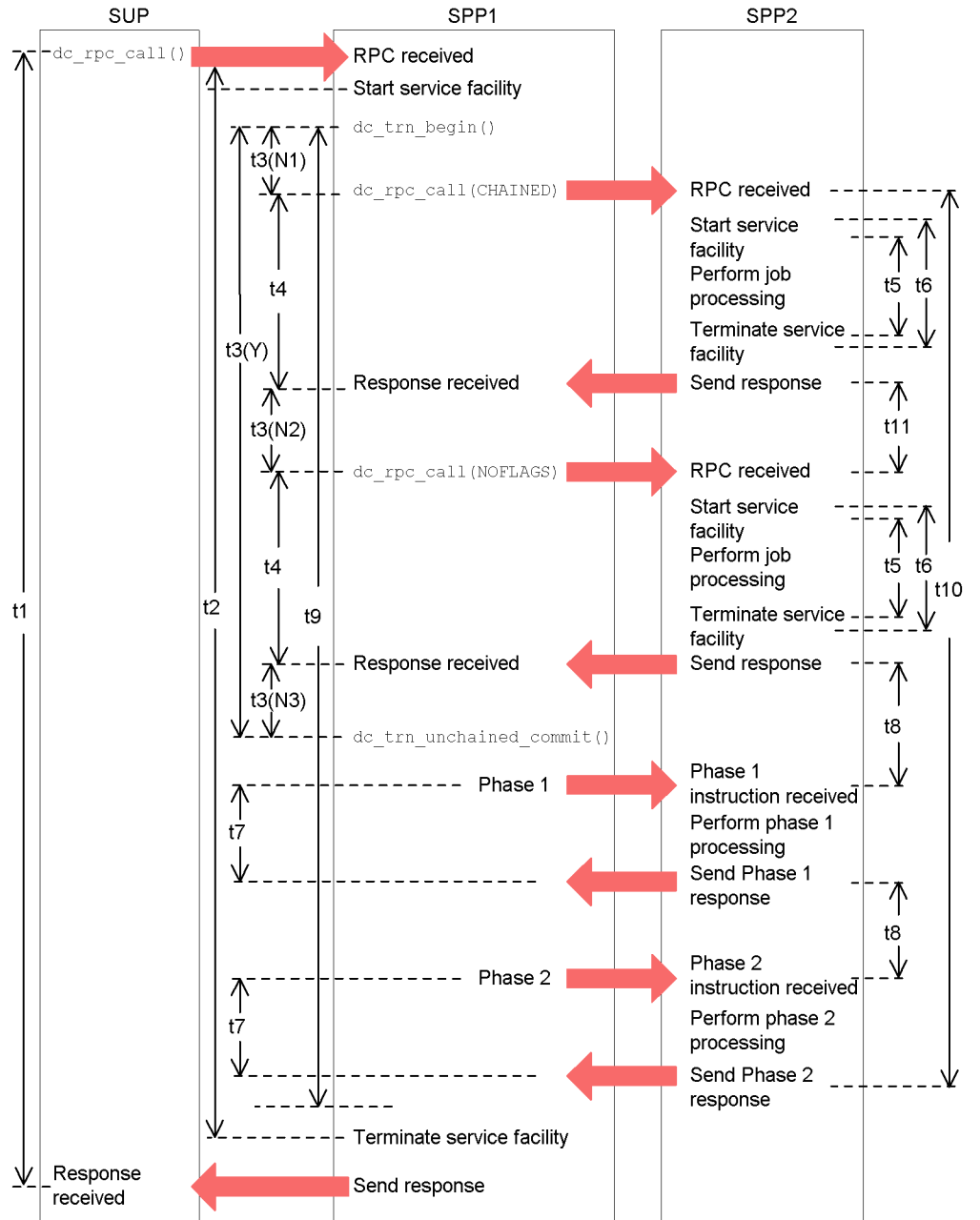
Specify the `trn_expiration_time_suspend` operand on SPP1 shown in Figure A-2. You can specify this operand in the user service definition, user service default definition, or transaction service definition. The priority of specified values is: (1>2>3).

1. User service definition
2. User service default definition
3. Transaction service definition

Whether you specify Y for this operand or specify N or F for this operand determines whether the processing time of the RPC is included in the expiry time in transaction

branch (the monitored period indicated by t_3 in Figure A-2).

Figure A-2: Relationship between the timer values when chained RPC is used (when chained RPC is used)



For details on t_1 , t_2 , and t_4 to t_{10} given in Figure A-2, see the descriptions provided for Figure A-1. Descriptions of t_3 and t_{11} are given below.

t_3 : `trn_expiration_time` (expiry time in transaction branch)

The system monitors the time from start of the transaction to commit.

The period to be monitored depends on the value specified in the `trn_expiration_time_suspend` operand of SPP1. The monitored period is as follows:

When `Y` is specified for the `trn_expiration_time_suspend` operand:

Period indicated by $t_3(Y)$

When `N` or `F` is specified for the `trn_expiration_time_suspend` operand:

Total of the periods indicated by $t_3(N_1)$, $t_3(N_2)$, and $t_3(N_3)$

If a timeout occurs, the KFCA00502-I message is output with type code = 1 and SPP1 shuts down.

One of the following values becomes the maximum monitoring time:

- Value specified in the `trn_expiration_time` operand of the user service definition of SPP1
- Value specified in the `trn_expiration_time` operand of the user service default definition when the `trn_expiration_time` operand was omitted from the user service definition of SPP1
- Value specified in the `trn_expiration_time` operand of the transaction service definition when the `trn_expiration_time` operand was omitted from the user service definition and user service default definition of SPP1
- 0 when the `trn_expiration_time` operand was omitted from all definitions (no time monitoring is performed)

t_{11} : `watch_next_chain_time` (monitoring time for chained RPC intervals)

The system monitors the time from return of a chained RPC response to arrival of the next request.

If a timeout occurs, the KFCA00315-E message is output and SPP2 shuts down.

One of the following values becomes the maximum monitoring time:

- Value specified in the `watch_next_chain_time` operand of the user service default definition of SPP2
- Value specified in the `watch_next_chain_time` operand of the user service default definition when the `watch_next_chain_time` operand was omitted from the user service default definition of SPP2

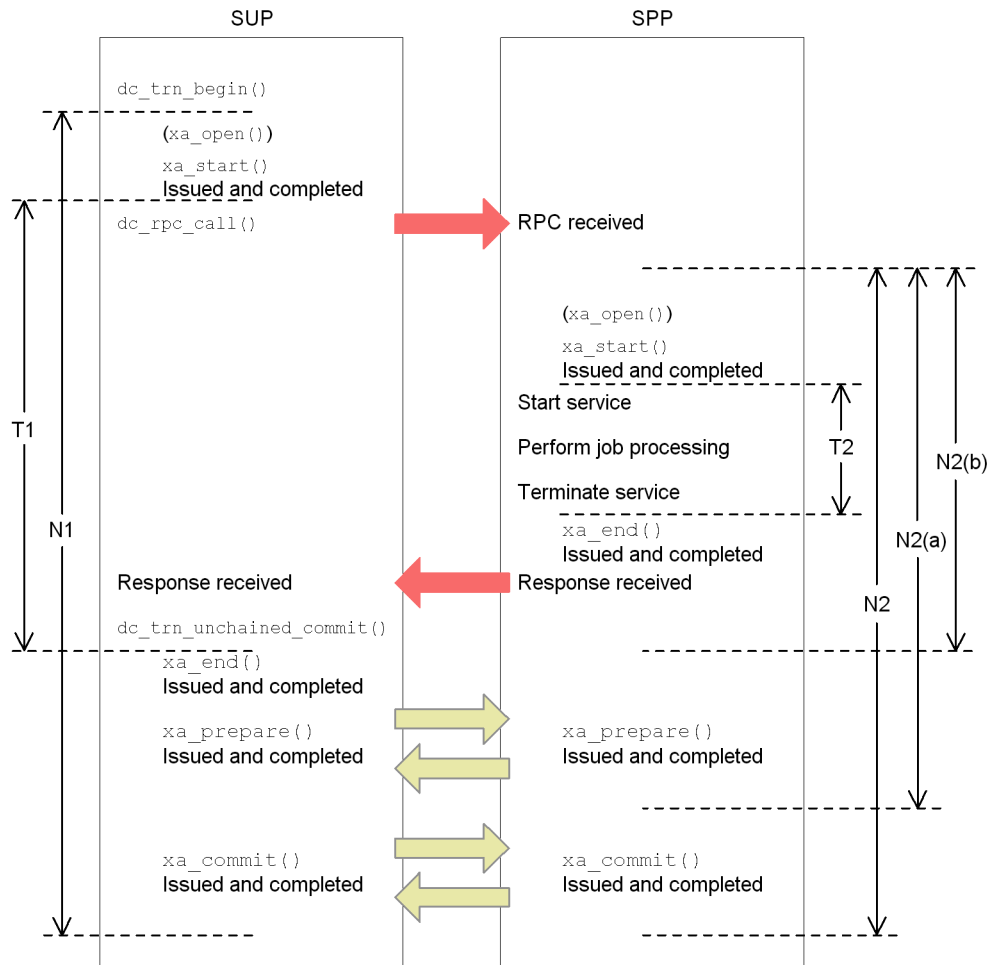
- 180 seconds when the `watch_next_chain_time` operand was omitted from all definitions

(3) Section monitored using the `trn_completion_limit_time` operand



The section monitored using the `trn_completion_limit_time` operand includes the XA interface processing, the server UAP call processing, and all user processing. However, if the transaction is optimized (commit or prepare optimization), monitoring stops when the transaction being executed in the SPP process terminates. For details about optimization of transactions, see the *OpenTP1 Programming Guide*.

The following figure shows the difference between the sections monitored using the `trn_expiration_time` and `trn_completion_limit_time` operands.

Figure A-3: Difference between the sections monitored using the `trn_expiration_time` and `trn_completion_limit_time` operands



Legend:

-  : Flow of messages sent or received by RPC
-  : Flow of synchronization point messages

T_n and N_n are described below.

T1: Section monitored using the `trn_expiration_time` operand for the SUP (transaction branch expiration time)

T2: Section monitored using the `trn_expiration_time` operand for the SPP

(transaction branch expiration time)

N1: Section monitored using the `trn_completion_limit_time` operand for the SUP (time limit for completing the transaction)

N2: Section monitored using the `trn_completion_limit_time` operand for the SPP (time limit for completing the transaction)

Monitoring starts when a service function of the SPP process starts and ends when the commit completion message is sent.

N2(a): Section monitored using the `trn_completion_limit_time` operand when commit optimization is performed (time limit for completing the transaction)

Monitoring starts when a service function of the SPP process starts and ends when the prepare completion message is sent.

N2(b): Section monitored using the `trn_completion_limit_time` operand when prepare optimization is performed (time limit for completing the transaction)

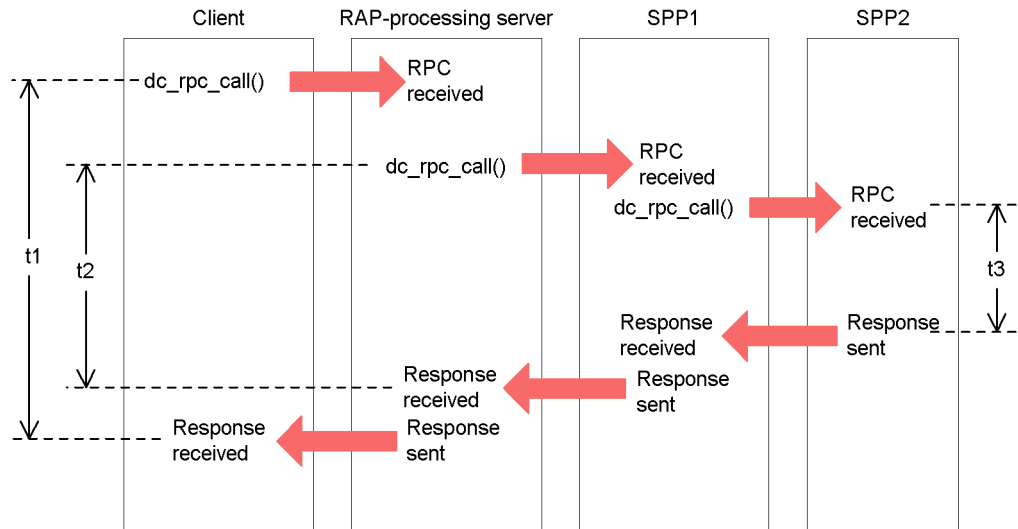
Monitoring starts when a service function of the SPP process starts and ends when completion of the service function is replied.

A.3 Time to wait for a service response

Figure A-4 shows the time that the system waits after a client sends a service request until a response from the service is returned.

The maximum time that the RAP-processing server waits from the time it sends `dc_rpc_call()` until it receives a service response depends on the value of the `DCWATCHTIMINHERIT` operand in the client environment definition.

Figure A-4: Time to wait for a service response



t1 to t3 are described below.

t1

This is the time that the system waits after a client issues `dc_rpc_call()` to request a service until a service response is returned to the client. The value specified in the `dcwatchtim` operand of the client environment definition becomes the maximum wait time.

t2

This is the time that the system waits after a RAP-processing server issues `dc_rpc_call()` to request a service until a service response is returned to the RAP-processing server. The maximum value depends on the value of the `DCWATCHTIMINHERIT` operand in the client environment definition.

When `DCWATCHTIMINHERIT = Y`

The value obtained by subtracting the value specified in the `dccltdelay` operand of the client environment definition from the value specified in the `dcwatchtim` operand of the client environment definition becomes the maximum wait time.

When `DCWATCHTIMINHERIT = N`

The value specified in the `watch_time` operand of the RAP-processing listener service definition becomes the maximum wait time. If the `watch_time` operand was omitted from the RAP-processing listener service definition, the value specified in the `watch_time` operand of the user

service default definition becomes the maximum wait time.

t3

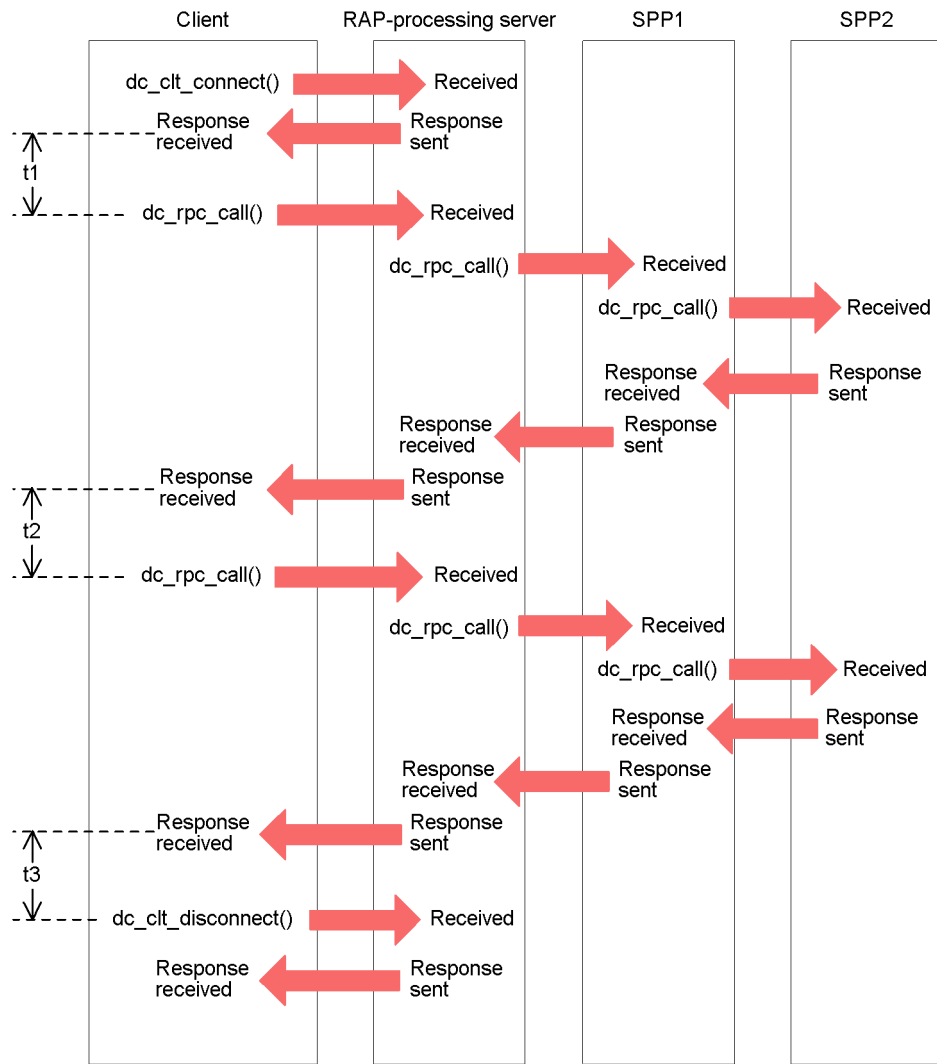
This is the time that the system waits after a SPP1 issues `dc_rpc_call()` to request a service until a service response is returned to the SPP1. The value specified in the `watch_time` operand of the user service definition of SPP1 becomes the maximum wait time. If the `watch_time` operand was omitted from the user service definition, the value specified in the `watch_time` operand of the user service default definition becomes the maximum wait time.

A.4 Applicable range of the maximum time interval in a permanent connection

Specify the maximum time interval in a permanent connection in the `dccltinquiretime` operand of the client environment definition. If the `dccltinquiretime` operand is omitted from the client environment definition, the value specified in the `rap_inquire_time` operand of the RAP-processing listener service definition becomes the maximum time interval in a permanent connection.

The maximum time interval in a permanent connection is the maximum interval between the time that a CUP issues an inquiry to a RAP-processing server and the time it makes its next inquiry. The CUP executing process or the RAP-processing server monitors the maximum time interval in a permanent connection.

Figure A-5: Applicable range of the maximum time interval in a permanent connection



In the above figure, t_1 to t_3 indicate the monitoring times for the RAP-processing server within the applicable range of the maximum time interval in a permanent connection.

A.5 Application program shutdown

When a UAP terminates abnormally, the OpenTP1 automatically restarts the process of the UAP. However, the OpenTP1 shuts down a UAP if it has ended abnormally a

number of times greater than a specified value so that system processing can avoid entering a loop of repeating a cycle of abnormal termination and restart. The shutdown of a UAP which has ended abnormally causes the client to return an error to the service requester intentionally, so that unnecessary reruns can be avoided.

UAPs that may be shut down in this way are SPPs (limited to SPPs of queue-receiving servers). SUPs, UAPs that handle offline work, and SPPs of server that receive request from socket will not be shut down.

The following explanation applies to SPPs, not to MHPs.

(1) Relationship between shutdown and monitoring time

When to shut down a UAP which has ended abnormally is determined by the monitoring time and the abnormal termination count.

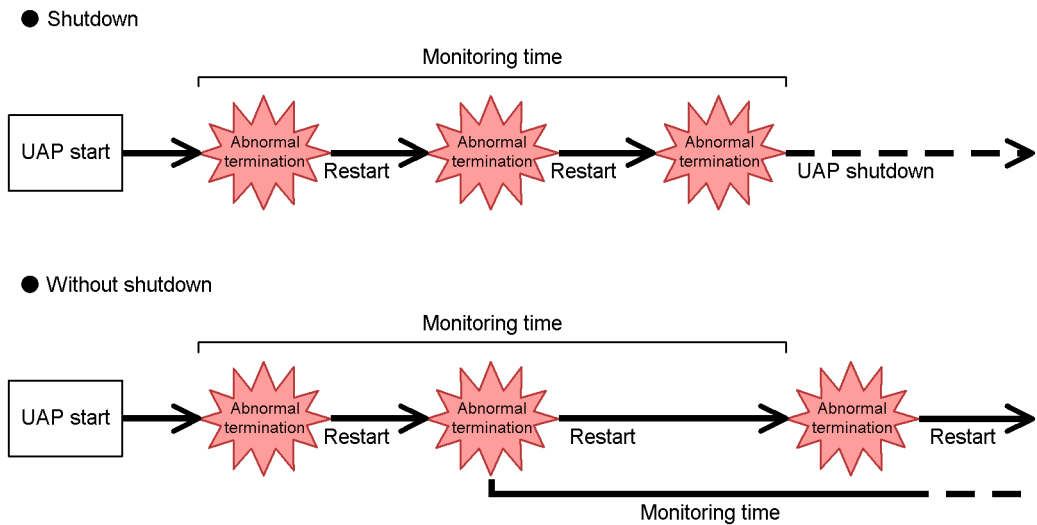
If the TP1/Server Base is in use, the OpenTP1 shuts down a UAP when the UAP has ended abnormally three times during a period of time equal to or shorter than the monitoring time specified in the system definition. If the TP1/LINK is in use, the OpenTP1 shuts down a UAP when it terminates abnormally for the first time. Time monitoring for shutdown is not used.

If a UAP has terminated abnormally twice or less during the monitoring time, the OpenTP1 restarts the process of the OpenTP1.

Time monitoring begins when the first abnormal termination occurs. Even if the number of abnormal terminations is two or less, abnormal termination counting restarts when the second abnormal termination occurs.

The following figure shows the relationship between the monitoring time and abnormal termination count.

Figure A-6: Relationship between monitoring time and abnormal termination count



(2) Shutdown in each service group or each service

UAPs may be shut down at a time for one service group or one service. If shutdown for each service is specified and even when a UAP terminates abnormally three times during the monitoring time, only UAPs for the pertinent service are shut down. This means that other services belonging to the same service group can continue.

Shutdown for each service can be specified only for queue-receiving SPPs. Shutdown for each service group can be specified only when the basic facility of the OpenTP1 is the TP1/Server Base. For TP1/LiNK SPPs, only shutdown for each service can be specified.

(3) User service definitions related to application program shutdown

The following user service definitions relate to UAP shutdown. These user service definitions can be specified only when the basic facility of the OpenTP1 is the TP1/Server Base. When a UAP terminates abnormally, SPPs under the TP1/LiNK are immediately shut down if they have been working for the service involved in the shutdown.

- `hold` operand (valid for SPPs, and MHPs)
Specifies whether to effect shutdown immediately or after time monitoring when a UAP ends abnormally. Assign `Y` if you want immediate shutdown or `N` if you want shutdown with time monitoring.
- `service_hold` operand (valid for SPPs)

Specifies whether to shut down UAPs for each service group or each service. Assign `N` if you want shutdown for each service group or `Y` if you want shutdown for each service.

- `term_watch_time` operand (valid for SPPs, and MHPs)

Specifies a shutdown monitoring time for each service group if shutdown with time monitoring is in effect. The value assigned to the `term_watch_time` operand is ignored if the `service_term_watch_time` operand is specified.

- `service_term_watch_time` operand (valid for SPPs)

Specifies a shutdown monitoring time for each service if shutdown with time monitoring is in effect. If this operand is specified, the value assigned to the `term_watch_time` operand is ignored.

Combinations of values assigned to the operands related to shutdown determine whether a UAP which has ended abnormally will be restarted or shut down. For details about the relationship between operand value combinations and the execution of shutdown, see the descriptions of the operands.

B. Estimating Shared Memory Requirements

This appendix explains formulas for estimating the shared memory requirements for TP1/Server Base and the MCF service.

This appendix contains the following sections:

B.1 Estimating the shared memory requirements for TP1/Server Base

B.2 Estimating the shared memory requirements for the MCF service

B.1 Estimating the shared memory requirements for TP1/Server Base

This appendix explains how to estimate the shared memory requirements for TP1/Server Base. The results of all formulas explained in this appendix are in bytes.

(1) Estimating the static shared memory requirements (for nodes other than archive journal nodes)

This subsection explains how to estimate the size of the static shared memory to be specified in the `static_shmpool_size` operand of the system environment definition. Use the appropriate formula to estimate the size of the static shared memory.

(a) System manager

■ 32-bit version

$128 \times (\text{maximum number of servers specified in the system environment definition} + 3) + 6024 + \text{maximum number of user servers for which statistics are output to journal files by using the } dcstats \text{ command} \times 1024$

■ 64-bit version

$128 \times (\text{maximum number of servers specified in the system environment definition} + 3) + 8000 + \text{maximum number of user servers for which statistics are output to journal files by using the } dcstats \text{ command} \times 1280$

(b) Process server

$944 \times \text{prc_process_count} + 60624$

(c) Timer server

$32 \times \text{tim_watch_count} + 1440$

(d) Scheduler

$$\begin{aligned}
& 48160 + ((\text{scd_server_count} + 3) \times 1152) \\
& + (\text{scd_hold_recovery_count} \times 160) \\
& + \sum_{i=1}^i (\text{size of the shared message storage buffer pool for schedule buffer group } i + 320) \\
& + \sum_{j=1}^j (\text{value of message_store_buflen for service group } j + 128) \\
& + \sum_{k=1}^k (\text{number of services in service group } k \times 64 + 192) + (\text{service group } L \times 128) \\
& + (\text{multi-scheduler group } M \times 128) + (\text{multi-scheduler daemon } N \times 128) \\
& + \sum_{o=1}^o (\text{number of services in service group } o \times 128 + 64)
\end{aligned}$$

Legend:

i: Number of defined schedule buffer groups

j: Number of defined service groups for which the `scdbufgrp` definition command is not specified

k: Number of defined service groups for which `Y` is specified in the `service_hold` operand of the user service definition

L: Number of defined service groups for which `namedpipe` is specified in the `schedule_method` operand of the user service definition

M: Number of multi-scheduler groups

N: Number of multi-scheduler daemons

o: Number of defined service groups for which the `scdsvcddef` definition command is specified in the user service definition (this value applies to queue-receiving server SPPs)

(e) Lock server

■ **32-bit version**

$$(\text{lck_limit_foruser} + \text{lck_limit_fordam} + \text{lck_limit_fortam} + \text{lck_limit_formqa}) \times 544 + 62016 + 128$$

■ **64-bit version**

$$(\text{lck_limit_foruser} + \text{lck_limit_fordam} + \text{lck_limit_fortam} + \text{lck_limit_formqa}) \times 544 + 62432 + 128$$

(f) Transaction manager

■ **32-bit version**

$2048 + 1280 \times (\text{number of } RM\text{-name} + RM\text{-extension entries}) + (816 + 128 \times \text{number of } RM\text{-name-and-}RM\text{-extension instances})$

$+ 128 \times \text{trn_max_subordinate_count value}$

$+ \downarrow (63 + 4 \times (\text{number of } RM\text{-name} + RM\text{-extension entries}) / 32 \downarrow \times 32) \times \text{trn_tran_process_count} + (C \times (\text{trn_max_crm_subordinate_count} + 1) \times \text{trn_tran_process_count} \times 1216) + 128$

Legend:

$\downarrow \downarrow$: A fraction part in the calculation result between these symbols is truncated.

C: When Y is specified in the `trn_crm_use` operand, C is 1. When N is specified in the `trn_crm_use` operand, C is 0.

■ **64-bit version**

$2048 + 1280 \times (\text{number of } RM\text{-name} + RM\text{-extension entries}) + (816 + 128 \times (\text{number of } RM\text{-name} + RM\text{-extension entries})) + 128 \times \text{trn_max_subordinate_count} + \downarrow$

$(63 + 4 \times (\text{number of } RM\text{-name} . RM\text{-extension entries}) / 32 \downarrow \times 32) \times \text{trn_tran_process_count} + (C \times (\text{trn_max_crm_subordinate_count} + 1) \times \text{trn_tran_process_count value} \times 1248) + 128$

Legend:

$\downarrow \downarrow$: A fraction part in the calculation result between these symbols is truncated.

C: When Y is specified in the `trn_crm_use` operand, C is 1. When N is specified in the `trn_crm_use` operand, C is 0.

(g) Journal server

■ **Node for which journal data is not archived to the archive journal node**

$4864 + 256 \times \text{number of defined jnladdfg definition commands}$

$+ 480 \times m \times \text{number of defined jnladdfg definition commands}$

$+ 64 \times m$

$+ 128 \times (m \times 2 + 1)$

$+ 4096 \times m \times i$

$+ \uparrow (128 \times (34 + 2 \times \text{number of defined jnladdfg definition commands} \times 2 \times m) / 8064) \uparrow \times 8192$

$+ \uparrow (\text{jnl_max_datasize} + 336) / 4096 \uparrow \times 4096 \times (m \times 2 + 1)$

$$\begin{aligned}
& + \uparrow(\text{jnl_max_datasize} + 336) / 4096 \uparrow \times 4096 \times 16 \times m \\
& + \uparrow(388 + 192 \times m) / 4096 \uparrow \times 4096 \\
& + n
\end{aligned}$$

Legend:

$\uparrow \uparrow$: The calculation result between these symbols is rounded up to the nearest whole number.

i : When Y is specified for the `jnl_dual` operand in the system journal service definition, i is 2. When N is specified, i is 1.

m : Value of the `jnl_max_file_dispersion` operand in the system journal service definition

n : When Y is specified for the `jnl_auto_unload` operand in the system journal service definition, n is 128. When N is specified, n is 0.

■ Node for which journal data is archived to the archive journal node

$$\begin{aligned}
& 4864 + 256 \times \text{number of defined jnladdfg definition commands} \\
& + 480 \times m \times \text{number of defined jnladdfg definition commands} \\
& + 64 \times m \\
& + 128 \times (m \times 2 + 1) \\
& + 4096 \times m \times i \\
& + \uparrow(128 \times (34 + 2 \times \text{number of defined jnladdfg definition commands} \times 2 \times m) / 8064) \uparrow \times 8192 \\
& + \uparrow(\text{jnl_max_datasize} + 336) / 4096 \uparrow \times 4096 \times (m \times 2 + 1) \\
& + \uparrow(\text{jnl_max_datasize} + 336) / 4096 \uparrow \times 4096 \times 16 \times m \\
& + \uparrow(388 + 192 \times m) / 4096 \uparrow \times 4096 \\
& + n \\
& + 512 \\
& + 128 \times \downarrow(j \times 1024 \times 1024 / (k \times 1024)) \downarrow \\
& + k \times 1024 \times \downarrow(j \times 1024 \times 1024 / (k \times 1024)) \downarrow
\end{aligned}$$

Legend:

$\uparrow \uparrow$: The calculation result between these symbols is rounded up to the nearest whole number.

↓ ↓: The calculation result between these symbols is rounded down to the nearest whole number.

i: When Y is specified for the `jnl_dual` operand in the system journal service definition, *i* is 2. When N is specified, *i* is 1.

m: Value of the `jnl_max_file_dispersion` operand in the system journal service definition

n: When Y is specified for the `jnl_auto_unload` operand in the system journal service definition, *n* is 128. When N is specified, *n* is 1.

j: Value of the `jnl_arc_buff_size` operand

k: Value of the `jnl_arc_max_datasize` operand

■ **Node that uses journal fileless mode**

The required amount of shared memory is 10,496 bytes.

(h) Checkpoint dump

■ **32-bit version**

$17872 + \text{number of definitions in the checkpoint dump service definition} \times 688 + (\text{number of } \text{`jnladdfg` operands defined in the checkpoint dump service definition}) \times 400$

■ **64-bit version**

$18640 + \text{number of definitions in the checkpoint dump service definition} \times 784 + (\text{number of } \text{`jnladdfg` operands defined in the checkpoint dump service definition}) \times 400$

■ **Node that uses journal fileless mode**

No shared memory is required.

(i) Server recovery journal

■ **32-bit version**

$1376 + 6272 \times n + (\uparrow(a + 336) / 4096 \uparrow + 1) \times 4096 \times n$

Legend:

↑ ↑: The calculation result between these symbols is rounded up to the nearest whole number.

n: When TP1/Message Queue is not used, *n* is the number of RMs provided by OpenTP1 + 2. When TP1/Message Queue is used, *n* is the number of internal RMs + 3.

a: Maximum record data length specified in the system journal service definition.

■ 64-bit version

$$4448 \times 6856 \times n + (\uparrow(a + 336) / 4096 \uparrow + 1) \times 4096 \times n$$

Legend:

$\uparrow \uparrow$: The calculation result between these symbols is rounded up to the nearest whole number.

n : When TP1/Message Queue is not used, n is the number of RMs provided by OpenTP1 + 2. When TP1/Message Queue is used, n is the number of internal RMs + 3.

a : Maximum record data length specified in the system journal service definition.

(j) Transaction journal

■ Node that does not use journal fileless mode

$$13472 + 1200 \times \text{trn_tran_process_count} + 64 \times (\text{trn_tran_process_count} \times \text{trn_max_subordinate_count}) + (\uparrow(J + 336) / 4096 \uparrow) \times 4096 + DAM + TAM + MCF + MQ$$

Legend:

$\uparrow \uparrow$: The calculation result between these symbols is rounded up to the nearest whole number.

J : Value of the `jnl_max_datasize` operand specified in the system journal service definition.

DAM : When TP1/FS/Direct Access is not used, DAM is 0. When TP1/FS/Direct Access is used, DAM is the value obtained from the following expression:

$$128 + 128 \times \text{trn_tran_process_count} + (4160 + (\uparrow(J + 336) / 4096 \uparrow \times 4096)) \times (\text{trn_recovery_process_count}) + 56 \times (\text{trn_tran_process_count} \times 2 + 2)$$

TAM : When TP1/FS/Table Access is not used, TAM is 0. When TP1/FS/Table Access is used, TAM is the value obtained from the following expression:

$$4288 + 240 \times \text{trn_tran_process_count} + (\uparrow(J + 336) / 4096 \uparrow) \times 4096$$

MCF : When TP1/Message Control is not used, MCF is 0. When TP1/Message Control is used, MCF is the value obtained from the following expression:

$$128 + 240 \times \text{trn_tran_process_count} + (4160 + (\uparrow(J + 336) / 4096 \uparrow \times 4096)) \times (\text{trn_recovery_process_count})$$

MQ : When TP1/Message Queue is not used, MQ is 0. When TP1/Message Queue is used, MQ is the value obtained from the following expression:

$$4288 + 240 \times \text{trn_tran_process_count} + (\uparrow (J + 336) / 4096 \uparrow) \times 4096$$

■ **Node that uses journal fileless mode**

No shared memory is required.

(k) **Status server**

The required shared memory is 64 bytes.

(l) **Name server**

$$(\text{name_total_size} + \text{name_cache_size}) \times 1024$$

The values of `name_total_size` and `name_cache_size` are calculated as follows:

`name_total_size`

$$= \uparrow (7176 + (\text{number of nodes specified in all_node} \times 284 + \text{number of nodes specified in all_node_ex} \times 284 + \text{all_node_extend_number} \times 284 + \text{all_node_ex_extend_number} \times 284) + ((\text{number of SPPs}^{\#1} + \text{number of RAP-processing servers}^{\#2} + \text{number of XATMIs}^{\#3}) \times 264) + MCF^{\#4} + DAM^{\#5} + TAM^{\#6} + CLT^{\#7}) / 1024 \uparrow$$

$$\text{name_cache_size} = \uparrow (\text{total number of SPPs}^{\#1} \text{ started on nodes}^{\#8} \text{ specified in the all_node and all_node_ex operands} \times 224) / 1024 \uparrow$$

Legend:

↑ ↑: The calculation result between these symbols is rounded up to the nearest whole number.

#1

This value is the number of service groups.

#2

When the RAP-processing server is started, specify the number of RAP-processing services.

#3

When the XATMI-API is used, this value is the total number of services defined in XATMI SPPs.

#4

When the MCF facility is used, this is the value obtained from the following expression:

$$(1 + \text{number of MCF communication servers} + \text{number of MHPs}) \times 264$$

#5

When the DAM facility is used, this value is 936.

#6

When the TAM facility is used, this value is 1424.

#7

When the client extended service facility is used, this value is 936.

#8

Either the nodes specified for the `all_node` and `all_node_ex` operands in the system common definition or the nodes specified in the domain definition file

(m) Queue server

When a disk queue is used, use the following formula to estimate the shared memory requirements (no estimation is necessary when only a memory queue is used).

■ 32-bit version

$$\begin{aligned}
 & 384 + \uparrow (169 \times (\text{value of the } -g \text{ option in the mcfmexp definition command} \\
 & + \text{value of the } -l \text{ option in the mcfmexp definition command} \times 2 + \text{number of defined mcfmname definition} \\
 & \text{commands} \times 5)) / 16 \uparrow \times 16 \\
 & + (272 \times \text{value of the que_xidnum operand}) \\
 & + \uparrow (185 \times \text{number of defined quegrp definition commands}) / 8 \uparrow \times 8 \\
 & + \uparrow (161 \times (\text{value of the } -g \text{ option in the mcfmexp definition command} \\
 & \quad + \text{value of the } -l \text{ option in the mcfmexp definition command})) / 16 \uparrow \times 16 \\
 & + (32 \times \text{number of records in all physical files}^{\#1}) \\
 & + \sum_{i=1}^n (\uparrow (704 + 20 \times \text{number of records in a physical file}^{\#2} \\
 & \quad + 4 \times (2 \times \text{value of the } -n \text{ option in the quegrp definition command} + 1) \\
 & \quad + (\text{record length of physical files}^{\#3} + 16) \\
 & \quad \times \text{value of the } -n \text{ option in the quegrp definition command}) / 32 \uparrow \times 32) \\
 & + 96 + 4192
 \end{aligned}$$

Legend:

$\uparrow \uparrow$: The calculation result between these symbols is rounded up to the nearest whole number.

n : Number of defined `quegrp` definition commands in the message queue service definition

#1:

The total number of records in the physical files defined by using `quegrp` definition commands. The number of records in a physical file is specified in the `-n` option of the `queinit` command.

#2:

The number of records specified in the `-n` option of the `queinit` command

#3:

The record length specified in the `-s` option of the `queinit` command

■ **64-bit version**

$$\begin{aligned}
 & 384 + \uparrow (185 \times (\text{value of the } -g \text{ option in the } mcfmexp \text{ definition command} \\
 & + \text{value of the } -l \text{ option in the } mcfmexp \text{ definition command} \times 2 \\
 & + \text{number of defined } mcfmname \text{ definition commands} \times 5)) / 16 \uparrow \times 16 \\
 & + (288 \times \text{value of the } que_xidnum \text{ operand}) \\
 & + \uparrow (217 \times \text{number of defined } quegrp \text{ definition commands}) / 8 \uparrow \times 8 \\
 & + \uparrow (161 \times (\text{value of the } -g \text{ option in the } mcfmexp \text{ definition command} \\
 & \quad + \text{value of the } -l \text{ option in the } mcfmexp \text{ definition command})) / 16 \uparrow \times 16 \\
 & + (32 \times \text{number of records in all physical files}^{\#1}) \\
 & \quad n \\
 & + \sum_{i=1}^n (\uparrow (704 + 20 \times \text{number of records in a physical file}^{\#2} \\
 & \quad + 4 \times (2 \times \text{value of the } -n \text{ option in the } quegrp \text{ definition command} + 1) \\
 & \quad + (\text{record length of physical files}^{\#3} + 16) \\
 & \quad \times \text{value of the } -n \text{ option in the } quegrp \text{ definition command}) / 32 \uparrow \times 32) \\
 & + 96 + 4192
 \end{aligned}$$

Legend:

↑ ↑: The calculation result between these symbols is rounded up to the nearest whole number.

n: Number of defined `quegrp` definition commands in the message queue service definition

#1:

The total number of records in the physical files defined by using `quegrp` definition commands. The number of records in a physical file is specified in the `-n` option of the `queinit` command.

#2:

The number of records specified in the `-n` option of the `queinit` command

#3:

The record length specified in the `-s` option of the `queinit` command

(n) Performance trace acquisition service

■ **When N is specified for the `prf_trace` operand**

The required shared memory is 1,024 bytes.

■ **When Y is specified for the `prf_trace` operand**

The required shared memory is 1,551,360 bytes.

(o) **RAP-processing listener and RAP-processing server**

$$1024 + 148 \times A + \lceil A / 8 \rceil + 260 \times B$$

Legend:

$\lceil \ \rceil$: The calculation result between these symbols is rounded up to the nearest whole number.

A: The value specified in the `rap_parallel_server` operand.

B: The value specified in the `rap_max_client` operand.

(p) **XA resource service**

$$672 + A \times \text{value of the } \text{trn_tran_process_count} \text{ operand}$$

Legend:

A: When the `xar_msdtc_use` operand is set to N or omitted, A is 288. When the `xar_msdtc_use` operand is set to Y, A is the record length of XAR files specified in the `xarfile` definition command.

(q) **DAM**

■ **32-bit version**

$$288 \times (\text{number of defined } \text{damfile} \text{ definition commands} + \text{dam_added_file}) + 256 + 512$$

■ **64-bit version**

$$288 \times (\text{number of defined } \text{damfile} \text{ definition commands} + \text{dam_added_file}) + 288 + 512$$

(r) **IST**

$$2336 + (48 \times \text{number of tables defined in the IST service definition}) + 512$$

(s) **Message queue (Windows)**

$$16 + (72 + 12 \times n1) \times n2$$

Legend:

n1: The largest of the results of calculating the following expression for each of the user service definitions:

$$\lceil \text{message_store_buflen} / \text{message_cell_size} \rceil$$

For the RAP-processing listener service definition, when the value of the `rap_parallel_server` operand is 3 or smaller, *n1* is 8.

When the value of the `rap_parallel_server` operand is 4 or greater, $n1$ is the value obtained from the following expression:

$$\uparrow \text{rap_parallel_server} \times 2.1 \uparrow$$

$n2$: The value of the `scd_server_count` operand in the schedule service definition + 5

$\uparrow \uparrow$: The calculation result between these symbols is rounded up to the nearest whole number.

(t) Real-time statistics service

The required shared memory is 64 bytes.

(u) Client extended service

$$M \times N$$

Legend:

M : The value specified in the `message_store_buflen` operand of the client service definition

N : When both the transactional RPC executing process and CUP executing process are used, N is 2. When either process is used, N is 1.

(2) Estimating the static shared memory requirements (for an archive journal node)

This subsection explains how to estimate the size of the static shared memory to be specified in the `static_shmpool_size` operand of the system environment definition. Use the appropriate formula to estimate the size of the static shared memory.

(a) System manager

$$128 \times (\text{maximum number of servers specified in the system environment definition} + 3) + 5487 + \text{maximum number of user servers for which statistics are output to journal files by using the } \text{dcstats} \text{ command} \times 1024$$

(b) Process server

The required shared memory is 251,648 bytes.

(c) Timer server

$$32 \times \text{tim_watch_count} + 1440$$

(d) Journal server

$$\begin{aligned}
 & 2304 + \sum_{i=1}^r (10880 \\
 & \quad + (256 + 480 \times m) \times \text{number of jnladdfg definition commands specified for resource } i \\
 & \quad + (64 + 4096 \times d) \times m + (4177920 \times m) \\
 & \quad + 1044608 \times \text{number of servers to be connected to resource } i) \\
 & \quad + (r + \sum_{i=1}^r (\uparrow (128 \times ((1 + 2 \times m) \times \text{number of jnladdfg definition commands specified for resource } i \\
 & \quad + 5) / 8064)) \uparrow) \times 8192
 \end{aligned}$$

Legend:

$\uparrow \uparrow$: A fraction part in the calculation result between these symbols is truncated.

r: Number of resource groups specified using `jnldfs -a` in the global archive journal service definition.

d: Coefficient of whether resource group *i* is duplicated.

- When the value of the `jnl_dual` operand is N, *d* is 1.
- When the value of the `jnl_dual` operand is Y, *d* is 2.

m: The value of the `jnl_max_file_dispersion` operand specified for resource *i*.

(e) Name server

$$(\text{name_total_size} + \text{name_cache_size}) \times 1024$$

The values of `name_total_size` and `name_cache_size` are calculated as follows:

`name_total_size`

$$= \uparrow (7176 + (\text{number of nodes specified in all_node} \times 284 + \text{number of nodes specified in all_node_ex} \times 284 + \text{all_node_extend_number} \times 284 + \text{all_node_ex_extend_number} \times 284) / 1024 \uparrow$$

`name_cache_size`

$$= \uparrow (\text{number of archive-journal source nodes connected to the archive journal node} \times 224) / 1024 \uparrow$$

Legend:

$\uparrow \uparrow$: The calculation result between these symbols is rounded up to the nearest whole number.

(f) Performance trace acquisition service

■ **When N is specified for the `prf_trace` operand**

The required shared memory is 99,328 bytes.

■ **When Y is specified for the `prf_trace` operand**

The required shared memory is 1,551,360 bytes.

(3) Estimating the dynamic shared memory requirements

This subsection explains how to estimate the size of the dynamic shared memory to be specified in the `dynamic_shmpool_size` operand of the system environment definition. Use the appropriate formula to estimate the size of the dynamic shared memory.

Note that the formulas in this subsection are for a node that is not an archive journal node. For an archive journal node, specify 0 for the dynamic shared memory requirement.

(a) Transaction journal

■ **Node that does not use journal fileless mode**

$$\left(\left(1 + \left(\uparrow (\text{jnl_max_datasize in the system journal service definition} + 512) / 4096 \uparrow \right) \right) \times 4096 + 32 \right) \times \text{trn_tran_process_count}$$

Legend:

↑ ↑: The calculation result between these symbols is rounded up to the nearest whole number.

■ **Node that uses journal fileless mode**

No shared memory is required.

(b) Queue server

When a disk queue is used, use the following formula to estimate the shared memory requirements (no estimation is necessary when only a memory queue is used).

$$\uparrow (\text{number of request messages concurrently issued by multiple transactions before synchronization point processing} \times 48 + 32) / 8192 \uparrow \times (8192 + 512)$$

Legend:

↑ ↑: The calculation result between these symbols is rounded up to the nearest whole number.

(c) DAM**■ 32-bit version**

When the transaction access type is *branch access*:

$$(364 \times \lceil \text{number of files opened per transaction branch} / 10 \rceil + 72 \times \text{dam_update_block} + 304) \times \text{number of concurrently running transaction branches}$$

When the transaction access type is *global access*:

$$(364 \times \lceil \text{number of files opened per transaction branch} / 10 \rceil + 72 \times \text{dam_update_block} + 304) \times \text{number of concurrently running transaction branches} + (128 + 48 \times \lceil \text{number of transaction branches occurring per global transaction} / 10 \rceil) \times \text{number of concurrently running global transactions}$$

Legend:

$\lceil \rceil$: The calculation result between these symbols is rounded up to the nearest whole number.

■ 64-bit version

When the transaction access type is *branch access*:

$$(488 \times \lceil \text{number of files opened per transaction branch} / 10 \rceil + 72 \times \text{dam_update_block} + 304) \times \text{number of concurrently running transaction branches}$$

When the transaction access type is *global access*:

$$(488 \times \lceil \text{number of files opened per transaction branch} / 10 \rceil + 72 \times \text{dam_update_block} + 304) \times \text{number of concurrently running transaction branches} + (128 + 52 \times \lceil \text{number of transaction branches occurring per global transaction} / 10 \rceil) \times \text{number of concurrently running global transactions}$$

Legend:

$\lceil \rceil$: The calculation result between these symbols is rounded up to the nearest whole number.

(d) TAM

$$128 + 32 \times \text{tam_max_tblnum}$$

(4) Estimating the shared memory requirements for the DAM service

This subsection explains how to estimate the size of the shared memory used as the buffer area for backing up DAM blocks. This size is the value obtained by adding 1024 to *D1* or *D2*, whichever is greater:

D1: Buffer area size specified in the `dam_cache_size` operand of the DAM service definition

D2: $A + B$

Legend:

A: $(Mb / 64 + 1) \times 128 \times n \times Tr$

B: $\{ \downarrow (A/576) \downarrow \} \times 32 + 64$

$\downarrow \downarrow$: A fraction part in the calculation result between these symbols is truncated.

Mb: Block size of the logical file among those defined in the DAM service definition that has the largest block size + 8 (a multiple of the sector size)

n: Maximum number of update blocks specified in the `dam_update_block` operand of the DAM service definition

Tr: Number of transaction branches specified in the `dam_tran_process_count` operand of the DAM service definition

When the buffer area size allocated as the shared memory for the DAM service is specified in the `dam_cache_size` or `dam_cache_size_fix` operand of the DAM service definition, the value specified in kilobytes is automatically converted into bytes. The `dam_kb_size` operand specifies whether 1 KB is handled as 1000 bytes or 1024 bytes. For details, see the description of the `dam_kb_size` operand of the DAM service definition.

(5) Estimating the shared memory requirements for the TAM service

The shared memory required for the TAM table is obtained from the following formula:

$$2000 + Fd \times Fe + Fg + Fc \times 320 + 2 \\ \times \left(\sum_{i=1}^n (Fs + 32) + ((Fc - n) \times (Fm + 32)) \right)$$

Legend:

n: Number of `tamtable` definition commands specified in the TAM service definition

Fa: Maximum number of intra-transaction access tables specified in the TAM service definition

Fb: Maximum number of concurrently running transaction branches specified in the TAM service definition

Fc: Maximum number of TAM files used during online processing and specified in the TAM service definition

$$Fd: \uparrow(320 + 256 \times Fb) / Fe \uparrow \times 2 + Fb \times 2$$

Fe: Results of rounding up $(72 + 128 \times Fa)$ to a multiple of 32

Fg: Results of rounding up $(210 + Fd \times 4)$ to a multiple of 16

Fm: Results of rounding up the following value to a multiple of 16:

Maximum size of TAM files used during online processing and specified in the TAM service definition

Fs: Size of the TAM file for the `tamtable` definition command specified in the TAM service definition (The size of the TAM file is obtained by using the method used to estimate the TAM file size.)

(6) Estimating the shared memory requirements for the IST service

The shared memory required for the IST table is obtained from the following formula:

$$(S + 8280) \times 2 + 176$$

Legend:

$$S: \left(\sum_{1}^n ((L + 16) \times N) + 88 \right) / 64 \times 64$$

n: Number of tables specified in the IST service definition

L: Record length of each table

N: Number of records in each table

(7) Estimating the shared memory requirements for the real-time statistics service

The shared memory required for the real-time statistics service is obtained from the following formula:

$$304 + (\uparrow(4 \times rts_service_max) / 8 \uparrow \times 8) + (104 \times (rts_service_max + 1)) + (144 \times rts_item_max \times (rts_service_max + 1))$$

(8) Estimating the shared memory pool size

The shared memory pool size is obtained from the following formula:

shared-memory-for-controlling-OpenTPI (approximately 10,240 kilobytes)

+ *value-specified-in-static_shmpool_size operand-of-system-environment-definition*

+ *value-specified-in-dynamic_shmpool_size operand-of-system-environment-definition*

B.2 Estimating the shared memory requirements for the MCF service

This appendix explains how to estimate the shared memory requirements for the MCF service. The results of all formulas explained in this appendix are in bytes.

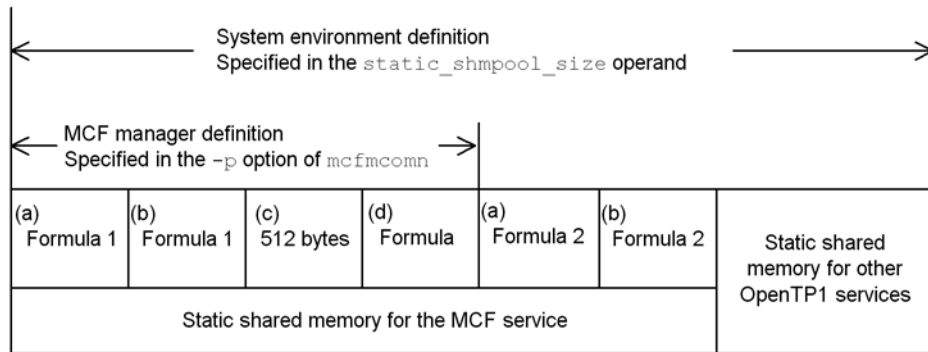
(1) Estimating the static shared memory requirements

The static shared memory required for the MCF service is the total size of the calculation results explained in this subsection.

Add the size of the static shared memory for the MCF service to the size of the static shared memory for other OpenTP1 services, and specify the result of the addition in the `static_shmpool_size` operand of the system environment definition. In addition, in the `-p` option of the `mcfmcomn` definition command in the MCF manager definition, specify the total of the results of the formulas except the second formula in *B.2(1)(a) MCF manager process* and the second formula in *B.2(1)(b) MCF communication processes and application start processes*.

The following figure shows the relationship between the formula for estimating the static shared memory size for the MCF service and the value specified for the definition.

Figure B-1: Relationship between the formula for estimating the static shared memory size for the MCF service and the value specified for the definition



Explanations of items (a) through (d) in the figure follow.

(a) MCF manager process

The size of the shared memory used by the MCF manager process is the total of the results of the following two formulas. The MCF manager process uses one process in one OpenTP1 system.

Formula 1:

$$25000 + 19000 \times A + 600 \times B + 50 \times C + 800 \times D + 400 \times E + 700 \times F + 1000 \times$$

$$G + 96000 \times H$$

Legend:

A: Number of MCF communication processes and application start processes (number of specified `mcfmcname` definition commands)

B: Total number of logical terminals (number of all `mcfatalcle` definition commands that are specified)

C: Total number of applications (number of all `mcfaalcap` definition commands that are specified)

D: Number of MHP service groups

E: Total number of MHP services (total number of services in each service group)

F: Number of queue groups (number of specified `mcfmqgid` definition commands)

G: Number of mapping service identifiers (number of mapping service identifiers specified in the mapping service definition)

H: The value becomes 0 if 00000000 is specified in the `mcf_prf_trace_level` operand of the system service information definition, or if specification of this operand is omitted. If a value other than 00000000 is specified, the value of *H* becomes 1.

Formula 2:

$$7000 + 70 \times A$$

Legend:

A: Number of logical terminals that use message sequence numbers (value specified in the `-n` option of the `mcfmcomn` definition command)

(b) MCF communication processes and application start processes

The size of the shared memory used by the MCF communication processes and application start processes is the total of the results of the following two formulas. The number of processes used by these processes is the number of `mcfmcname` definition commands in the OpenTP1 system.

Formula 1:

$$2000 + 50 \times A + 2000 \times B + 800 \times C + 800 \times D + 500 \times E + 3500 \times F + (100 + G) \times H$$

Legend:

A: Number of connections (number of specified `mcfatalccn` definition commands)

For the application start process, *A* is 1.

B: Number of logical terminals (number of specified `mcfatalcle` definition commands)

C: Maximum instantaneous number of logical messages queued in all OTQs (both disk and memory queues) for the process

D: Number of applications to be started (number of specified `mcfaalcap` definition commands)

E: TP1/NET/OSAS-NIF: Number of relevant connections

Other protocol products: 0

F: TP1/NET/OSAS-NIF: Number of relevant logical terminals

Other protocol products: 0

G: Maximum message length in the facility for user timer monitoring (value specified in the `msgsize` operand of the `mcfetim` definition command)

H: Maximum number of timer monitoring requests (value specified in the `timereqno` operand of the `mcfetim` definition command)

Formula 2:

$$4500 + 2 \times A$$

Legend:

A: MCF trace buffer size (the value of the `size` operand in the `mcftrc` definition command)

(c) MCF online command process

The size of the shared memory used by the MCF online command process is 512 bytes. The MCF online command process uses one process when TP1/NET/XMAP3 is used. No process occurs when TP1/NET/XMAP3 is not used.

(d) MCF mapping process

The size of the shared memory used by the MCF mapping process is obtained from the following formula. The MCF online command process uses one process when TP1/NET/XMAP3 is used. No process occurs when TP1/NET/XMAP3 is not used.

$$700 + \Sigma (2600 + 32 \times (A + B) + 80 \times (C + D)) + E + F + G + H + I \times J + K \times L$$

Legend:

$\Sigma ()$: Total of the results of the expression enclosed in parentheses for each mapping attribute definition

A: Number of physical maps that are subject to residence management (number of `MAPNAME` entries specified in the mapping service attribute definition)

B: Number of PAGEC maps that are subject to residence management (number of PGNAME entries specified in the mapping service attribute definition)

C: Number of physical maps that are subject to LRU management (number of MAPCNT entries specified in the mapping service attribute definition)

D: Number of PAGEC maps that are subject to LRU management (number of PGCCNT entries specified in the mapping service attribute definition)

E: Total size of physical maps to be made fully resident

F: Total size of PAGEC maps to be made fully resident

G: Total size of all non-resident physical maps that are subject to LRU management and are not larger than 64 KB

H: Total size of all non-resident PAGEC maps that are subject to LRU management and are not larger than 64 KB

I: Size of the largest non-resident physical map that is subject to LRU management and is larger than 64 KB

J: Number of non-resident physical maps that are subject to LRU management and are larger than 64 KB

K: Size of the largest non-resident PAGEC map that is subject to LRU management and is larger than 64 KB

L: Number of non-resident PAGEC maps that are subject to LRU management and are larger than 64 KB

(2) Estimating the dynamic shared memory requirements

The dynamic shared memory requirements for the MCF service are the total size of the calculation results explained in this subsection. Add the size of the dynamic shared memory for the MCF service to the size of the dynamic shared memory for other OpenTP1 services, and specify the result of the addition in the `dynamic_shmpool_size` operand of the system environment definition.

(a) MCF manager process

The size of the shared memory used by the MCF manager process is the total of the results of the following two formulas. The MCF manager process uses one process in one OpenTP1 system.

$$((600 + A) \times B + 1600) \times C + 2000 \times D + 1600 \times E + (600 + F) \times G \times H + 2 \times (1600 \times I) + 1600 \times J$$

Legend:

A: Maximum receive message length

B: Maximum number of receive segments

C: Maximum instantaneous number of logical messages queued in all ITQs (memory queues) for the process (for disk queues, *C* is 0.)

D: Number of UAP processes that send or receive messages

E: Maximum instantaneous number of logical messages queued in all ITQs (both disk and memory queues) for the process

F: Maximum send message length

G: Maximum number of send segments

H: Maximum instantaneous number of logical messages queued in all OTQs (memory queues) for the process (for disk queues, *C* is 0.)

I: Maximum instantaneous number of logical messages queued in all OTQs (memory queues) for the process (for disk queues, *C* is 0.)

J: Maximum instantaneous number of logical messages queued in all OTQs (both disk and memory queues) for the process

(b) MCF online command process

The size of the shared memory used by the MCF online command process is 14,000 bytes. The MCF online command process uses one process when TP1/NET/XMAP3 is used. No process occurs when TP1/NET/XMAP3 is not used.

C. Definition for Acquiring Audit Events

The following table shows the message IDs that correspond to audit events, and the definitions that can be used to output messages.

Table C-1: Audit log message IDs and definitions that can be used for message output

Audit event	Definitions in which the log_audit_message operand can be specified				Message ID
	Log service definition	User service definition	RAP-process ing listener service definition	RAP-proce ssing client manager service definition	
OpenTP1 startup	Yes	--	--	--	KFCA33400-I
OpenTP1 standby	Yes	--	--	--	KFCA33401-I
OpenTP1 normal termination	Yes	--	--	--	KFCA33402-I
OpenTP1 abnormal termination	Yes	--	--	--	KFCA33403-E
Critical error in the process service	Yes	--	--	--	KFCA33404-E
User server startup	Yes	--	--	--	KFCA33405-I
User server normal termination	Yes	--	--	--	KFCA33406-I
User server abnormal termination	Yes	--	--	--	KFCA33407-E
User server shutdown	Yes	--	--	--	KFCA33408-I
User server service shutdown	Yes	--	--	--	KFCA33409-I
Client user authentication success	Yes	--	--	--	KFCA33410-I
Client user authentication failure	Yes	--	--	--	KFCA33411-W
Start of service function execution	Yes	Yes	Yes	--	KFCA33412-I

C. Definition for Acquiring Audit Events

Audit event	Definitions in which the log_audit_message operand can be specified				Message ID
	Log service definition	User service definition	RAP-processing listener service definition	RAP-processing client manager service definition	
Completion of service function execution	Yes	Yes	Yes	--	KFCA33413-I
Discarding of invalid message	Yes	Yes	Yes	--	KFCA33414-W
Completion of RPC call	Yes	Yes	Yes	--	KFCA33415-I
Reception of RPC response (when the dc_rpc_poll_any_replies function is used)	Yes	Yes	--	--	KFCA33416-I
Discarding of RAP-processing invalid message	Yes	--	Yes	Yes	KFCA33417-W
OpenTP1 file system access error	Yes	Yes	Yes	--	KFCA33418-W
Execution of command	Yes	--	--	--	KFCA33419-I
Start of OpenTP1 service	Yes	--	--	--	KFCA33420-I ^{#1}
Termination of OpenTP1 service	Yes	--	--	--	KFCA33421-I ^{#1}
Acquisition of audit log data user can arbitrarily acquire from UAPs	Yes	Yes	--	--	KFCA34000-x to KFCA34999-x ^{#2}

Legend:

Yes: The message is output when an audit event is generated by specifying a message ID in the log_audit_message operand.

--: Specification of a message ID in the log_audit_message operand has no effect (the message is not output).

#1

This message ID is output only in the Windows version.

#2

KFCA34000-*x* to KFCA34999-*x* are message IDs assigned to audit log data when arbitrary audit log data is acquired with UAPs. The *x* is the type of message specified by the `dc_log_audit_print` function (E, W, or I).

D. Details of Definition Checking

Table D-1 shows messages and problem identification codes output during definition checking, and related information such as the file names of the definitions checked, operand names, and definition command names.

The following explains the table headings:

- Code: Problem identification code
- ID: ID of output message
- Type: Message type

One of the three following message types:

c: Check (The message is output to tell the user to check the validity of the operand value.)

E: Error (The message is output when a condition preventing OpenTP1 from being started or stopped or a problem that causes OpenTP1 to operate incorrectly is detected.)

w: Warning (The message is output when a value that is not recommended is specified.)

- File name: Name of the definition file that is checked (or the name of a definition when an arbitrary definition file name can be specified)
- Definition: Information such as the name of the operand or definition command that is checked
- Related file name: Name of the definition file used for comparison during checking
- Related definition: Information such as the name of an operand or definition command used for comparison during checking
- Conditional expression or judgment basis: The conditional expression for checking or the basis for the judgment leading to the check result

Table D-1: Details of definition checking

No.	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
1	ADM-0001	KFCA00268-W	E	env	user_command	--	--	The file does not exist.	<ul style="list-style-type: none"> • ADM#1 • ADM#2
2	ADM-0002	KFCA00268-W	E	env	user_command	--	--	The file cannot be accessed.	<ul style="list-style-type: none"> • ADM#1 • ADM#2
3	ADM-0003	KFCA00268-W	E	env	user_command	--	--	The file path is too long.	<ul style="list-style-type: none"> • ADM#1 • ADM#2
4	ADM-0004	KFCA00268-W	E	env	user_command	--	--	The file is not executable.	<ul style="list-style-type: none"> • ADM#1 • ADM#2 • ADM#3
5	ADM-0005	KFCA00268-W	E	env	user_command	--	--	A file was not specified.	<ul style="list-style-type: none"> • ADM#1 • ADM#2
6	ADM-0006	KFCA00268-W	E	env	user_command_on_line	--	--	The file does not exist.	<ul style="list-style-type: none"> • ADM#1 • ADM#2
7	ADM-0007	KFCA00268-W	E	env	user_command_on_line	--	--	The file cannot be accessed.	<ul style="list-style-type: none"> • ADM#1 • ADM#2
8	ADM-0008	KFCA00268-W	E	env	user_command_on_line	--	--	The file path is too long.	<ul style="list-style-type: none"> • ADM#1 • ADM#2
9	ADM-0009	KFCA00268-W	E	env	user_command_on_line	--	--	The file is not executable.	<ul style="list-style-type: none"> • ADM#1 • ADM#2 • ADM#3
10	ADM-0010	KFCA00268-W	E	env	user_command_on_line	--	--	A file was not specified.	<ul style="list-style-type: none"> • ADM#1 • ADM#2

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
11	ADM-0011	KFCA 00270-W	C	env	user_command_online_tplmgr_id	env	user_command_online	(user_command_online_tplmgr_id is specified) && (user_command_online is not specified)	The definition is not checked when the OS is Windows.
12	ADM-0012	KFCA 00276-W	C	env	user_server_ha	sysconf	ha_conf	(user_server_ha == Y) && (ha_conf != Y)	--
13	ADM-0013	KFCA 00269-W	C	betranrc	dcstart_wakeup_retry_interval	betranrc	dcstart_wakeup_retry_count	(dcstart_wakeup_retry_interval is specified) && (dcstart_wakeup_retry_count == 0)	--
14	ADM-0014	KFCA 00270-W	C	betranrc	dcstart_wakeup_retry_interval	betranrc	dcstart_wakeup_retry_count	(dcstart_wakeup_retry_interval is specified) && (dcstart_wakeup_retry_count is not specified)	--
15	ADM-0015	KFCA 00286-W	E	betranrc	node_id	--	--	The betranrc definition file does not exist.	--
16	ADM-0016	KFCA 00285-W	E	betranrc	node_id	--	--	node_id is not specified.	--
17	ADM-0017	KFCA 01880-W	W	betranrc	dcbindht	sysconf	ha_conf	(ha_conf == Y) && (dcbindht is not specified)	--
18	ADM-0018	KFCA 00266-W	C	betranrc	prc_port	--	--	prc_port is specified.	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
19	ADM-0019	KFCA 00282-W	C	betranrc	multi_node_option	--	--	multi_node_option specified	Definition checking is not supported when the OS is Windows or Linux.
20	ADM-0020	KFCA 33301-E	E	sysconf	<ul style="list-style-type: none"> • dam_conf • tam_conf • mrs_conf • mqa_conf • jar_conf • dcsvstart -m 	betranrc	jnl_fileless_option	(jnl_fileless_option=Y && dam_conf==Y) (jnl_fileless_option=Y && tam_conf==Y) (jnl_fileless_option=Y && mrs_conf==Y) (jnl_fileless_option=Y && mqa_conf==Y) (jnl_fileless_option=Y && jar_conf==Y) (jnl_fileless_option=Y && dcsvstart -m is specified)	--
21	--	KFCA 01868-E	--	sysconf	dcsvstart	--	--	The prefix is not _mu.	--
22	--	KFCA 01866-E	--	sysconf	dcsvstart	--	--	The server name is not unique.	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
23	--	KFCA 01868-E	--	usrconf	dcsvs tart	--	--	The prefix is an underscore (_).	--
24	--	KFCA 01866-E	--	usrconf	dcsvs tart	--	--	The same server name already exists.	--
25	CLT-0001	KFCA 25160-W	C	cltsrv	<ul style="list-style-type: none"> • clt_trn_cof • clt_cup_cof 	--	--	(clt_trn_cof == N && clt_cup_cof == N) (clt_trn_cof == N && clt_cup_cof is not specified)	Logic checking is not performed for the client service definition (except clt_port).
26	CLT-0002	KFCA 00278-W	C	cltsrv	parallel_cof	cltsrv	clt_trn_cof	(parallel_cof is specified) && (clt_trn_cof == N)	--
27	CLT-0003	KFCA 25161-W	E	cltsrv	parallel_cof	--	--	(clt_trn_cof == Y) && (number of resident processes for parallel_cof > maximum number of processes for parallel_cof)	--
28	CLT-0004	KFCA 00262-W	E	cltsrv	parallel_cof	prc	prc_processes_count	(clt_trn_cof == Y) && (number of resident processes for parallel_cof >= prc_processes_count value)	--

No .	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
29	CLT-0005	KFCA 00262-W	W	cltsrv	parallel_count	trn	trn_tran_process_count	(clt_trn_conf == Y) && (maximum number of processes for parallel_count > trn_tran_process_count value)	--
30	CLT-0006	KFCA 00278-W	C	cltsrv	balance_count	cltsrv	clt_trn_conf	((balance_count is specified) && (clt_trn_conf == N))	--
31	CLT-0007	KFCA 25162-W	C	cltsrv	balance_count	cltsrv	parallel_count	(clt_trn_conf == Y) && (number of resident processes for parallel_count == maximum number of processes for parallel_count) && (balance_count is specified)	--
32	CLT-0008	KFCA 00262-W	C	cltsrv	trn_expiration_time	cltsrv	trn_completion_limit_time	(trn_expiration_time > 0) && (trn_completion_limit_time > 0) && (trn_expiration_time > trn_completion_limit_time)	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
33	CLT-0009	KFCA00282-W	C	cltsrv	trn_statistics_item	--	--	cputime is specified for trn_statistics_item.	Definition checking is not supported when the OS is Windows.
34	CLT-0010	KFCA00278-W	C	cltsrv	trn_expiration_time_suspend	cltsrv	trn_expiration_time	(trn_expiration_time == 0) && (trn_expiration_time_suspend is specified)	trn_expiration_time (default: 0)
35	CLT-0011	KFCA00282-W	C	cltsrv	trn_cpu_time	--	--	trn_cpu_time is specified (only when 0 is specified).	Definition checking is not supported when the OS is Windows.
36	CLT-0012	KFCA00264-W	C	cltsrv	clt_inquire_time	cltsrv	trn_expiration_time	(clt_cup_conf == Y) && (trn_expiration_time > 0) && (clt_inquire_time > trn_expiration_time)	--
37	CLT-0013	KFCA00264-W	C	cltsrv	clt_inquire_time	cltsrv	trn_limit_time	(clt_cup_conf == Y) && (trn_limit_time > 0) && (clt_inquire_time > trn_limit_time)	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
38	CLT-0014	KFCA00264-W	C	cltsrv	clt_inquire_time	cltsrv	trn_completion_limit_time	(clt_cup_conf == Y) && (trn_completion_limit_time > 0) && (clt_inquire_time > trn_completion_limit_time)	--
39	CLT-0015	KFCA00266-W	C	cltsrv	clt_port	--	--	clt_port is specified.	When clt_port is specified, logic checking is performed regardless of whether clt_trn_conf or clt_cup_conf is specified.
40	CLT-0016	KFCA00278-W	C	cltsrv	cup_parallel_count	cltsrv	clt_cup_conf	(cup_parallel_count is specified) && (clt_cup_conf == N)	--
41	CLT-0017	KFCA00279-W	C	cltsrv	cup_parallel_count	cltsrv	clt_cup_conf	(cup_parallel_count is specified) && (clt_cup_conf is not specified)	--
42	CLT-0018	KFCA00262-W	E	cltsrv	cup_parallel_count	prc	prc_processes_count	(clt_cup_conf == Y) && (number of resident processes for cup_parallel_count >= prc_processes_count value)	--

D. Details of Definition Checking

No .	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
43	CLT-0019	KFCA 00278-W	C	cltsrv	cup_balance_count	cltsrv	clt_cup_conf	(cup_balance_count is specified) && (clt_cup_conf == N)	--
44	CLT-0020	KFCA 00279-W	C	cltsrv	cup_balance_count	cltsrv	clt_cup_conf	(cup_balance_count is specified) && (clt_cup_conf is not specified)	--
45	CLT-0021	KFCA 25162-W	C	cltsrv	cup_balance_count	cltsrv	cup_parallel_count	(clt_cup_conf == Y) && (cup_balance_count is specified) && (number of resident processes for cup_parallel_count == maximum number of processes for cup_parallel_count)	--
46	CLT-0022	KFCA 00278-W	C	cltsrv	clttrn_port	cltsrv	clt_trn_conf	(clttrn_port is specified) && (clt_trn_conf == N)	--
47	CLT-0023	KFCA 00266-W	C	cltsrv	clttrn_port	--	--	(clt_trn_conf == Y) && (clttrn_port is specified)	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
48	CLT-0024	KFCA25163-W	C	cltsrv	clttrn_port	cltsrv	parallel_count	(clt_trn_conf == Y) && (clttrn_port + maximum number of processes for parallel_count - 1) > 65535	--
49	CLT-0025	KFCA00278-W	C	cltsrv	cltcon_port	cltsrv	clt_cup_conf	(cltcon_port is specified) && (clt_cup_conf == N)	--
50	CLT-0026	KFCA00279-W	C	cltsrv	cltcon_port	cltsrv	clt_cup_conf	(cltcon_port is specified) && (clt_cup_conf is not specified)	--
51	CLT-0027	KFCA00266-W	C	cltsrv	cltcon_port	--	--	(clt_cup_conf == Y) && (cltcon_port is specified)	--
52	CLT-0028	KFCA25163-W	C	cltsrv	cltcon_port	cltsrv	cup_parallel_count	(clt_cup_conf == Y) && (cltcon_port + maximum number of processes for cup_parallel_count - 1) > 65535	--
53	CLT-0029	KFCA00272-W	C	cltsrv	trn_optimum_item	--	--	trn_optimum_item != base	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
54	CLT-0030	KFCA00262-W	C	cltsrv	trn_watch_time	cltsrv	trn_limit_time	(trn_limit_time > 0) && (trn_watch_time > trn_limit_time)	--
55	CLT-0031	KFCA00262-W	C	cltsrv	trn_watch_time	cltsrv	trn_completion_limit_time	(trn_completion_limit_time > 0) && (trn_watch_time > trn_completion_limit_time)	--
56	CLT-0032	KFCA00272-W	C	cltsrv	trn_rollback_information_put	--	--	trn_rollback_information_put != all	--
57	CLT-0033	KFCA00265-W	C	cltsrv	message_store_buflen	--	--	message_store_buflen is specified	--
58	CLT-0034	KFCA00262-W	C	cltsrv	parallel_count	prc	prc_processes_count	(clt_trn_conf == Y) && (number of resident processes for parallel_count < prc_processes_count value) && (maximum number of processes for parallel_count >= prc_processes_count value)	--

No .	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
59	CLT-0035	KFCA 00262-W	C	cltsrv	cup_parallel_count	prc	prc_processes_count	(clt_cup_conf == Y) && (number of resident processes for cup_parallel_count < prc_processes_count value) && (maximum number of processes for cup_parallel_count >= prc_processes_count value)	--
60	CLT-0036	KFCA 25161-W	E	cltsrv	cup_parallel_count	--	--	(clt_cup_conf == Y) && (number of resident processes for cup_parallel_count > maximum number of processes for cup_parallel_count)	--
61	CLT-0037	KFCA 00261-W	C	cltsrv	trn_expiration_time	cltsrv	trn_cpu_time	(trn_expiration_time > 0) && (trn_cpu_time > 0) && (trn_expiration_time < trn_cpu_time)	The definition is not checked when the OS is Windows.

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
62	CLT-0038	KFCA00262-W	C	cltsrv	trn_cpu_time	cltsrv	trn_completion_limit_time	(trn_cpu_time > 0) && (trn_completion_limit_time > 0) && (trn_cpu_time > trn_completion_limit_time)	The definition is not checked when the OS is Windows.
63	CPD-0001	KFCA00286-W	E	Checkpoint dump service definition	All	jnl	jnldfs	The checkpoint dump service definition file specified in the -c option of jnldfs does not exist.	<ul style="list-style-type: none"> JNL#1 CPD#1
64	CPD-0002	KFCA00285-W	E	Checkpoint dump service definition	jnl_objservername	--	--	jnl_objservername is not specified.	<ul style="list-style-type: none"> JNL#1 CPD#1
65	CPD-0003	KFCA26030-W	E	Checkpoint dump service definition	jnl_objservername	--	--	The server name is either _tjlor_mqa. Alternatively, the file name does not begin with _mu.	<ul style="list-style-type: none"> JNL#1 CPD#1
66	CPD-0004	KFCA00272-W	C	Checkpoint dump service definition	jnl_reduce_mode	--	--	jnl_reduce_mode != 0	<ul style="list-style-type: none"> JNL#1 CPD#1
67	CPD-0005	KFCA26031-I	C	Checkpoint dump service definition	jnl_reserved_file_to_open	Checkpoint dump service definition	jnladfg	(jnl_reserved_file_to_open == Y) && (ONL is specified in all jnladfg definitions)	<ul style="list-style-type: none"> JNL#1 CPD#1

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
68	CPD-0006	KFCA00278-W	C	Checkpoint dump service definition	jnl_single operation	Checkpoint dump service definition	jnl_dual	(jnl_single operation == Y) && (jnl_dual == N)	<ul style="list-style-type: none"> JNL#1 CPD#1
69	CPD-0007	KFCA00279-W	C	Checkpoint dump service definition	jnl_single operation	Checkpoint dump service definition	jnl_dual	(jnl_single operation == Y) && (jnl_dual is not specified)	<ul style="list-style-type: none"> JNL#1 CPD#1
70	CPD-0008	KFCA26032-W	E	Checkpoint dump service definition	jnladdfg	--	--	More than one instance of jnladdfg -jsrf has been specified.	<ul style="list-style-type: none"> JNL#1 CPD#1
71	CPD-0009	KFCA26033-W	E	Checkpoint dump service definition	jnladdpf	--	--	The specified file system is not a character-type special file. Alternatively, the device corresponding to this file system does not exist.	<ul style="list-style-type: none"> JNL#1 CPD#1
72	CPD-0010	KFCA26034-W	E	Checkpoint dump service definition	jnladdpf	--	--	The specified file has not been initialized for an OpenTP1 file system by using the filmkfs command.	<ul style="list-style-type: none"> JNL#1 CPD#1
73	CPD-0011	KFCA26035-W	E	Checkpoint dump service definition	jnladdpf	--	--	No checkpoint dump file exists.	<ul style="list-style-type: none"> JNL#1 CPD#1

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
74	CPD-0012	KFCA 26036-W	E	Checkpoint dump service definition	jnladdpf	--	--	OpenTP1 file system versions do not match.	<ul style="list-style-type: none"> JNL#1 CPD#1
75	CPD-0013	KFCA 26037-W	E	Checkpoint dump service definition	jnladdpf	--	--	An attempt was made to open more checkpoint dump files than the maximum.	<ul style="list-style-type: none"> JNL#1 CPD#1
76	CPD-0014	KFCA 26038-W	E	Checkpoint dump service definition	jnladdpf	--	--	Access permission for the relevant special file has not been granted.	<ul style="list-style-type: none"> JNL#1 CPD#1
77	CPD-0015	KFCA 26039-W	E	Checkpoint dump service definition	jnladdpf	--	--	Access permission for the relevant checkpoint dump file has not been granted.	<ul style="list-style-type: none"> JNL#1 CPD#1
78	CPD-0016	KFCA 26040-W	E	Checkpoint dump service definition	jnladdpf	--	--	An I/O error occurred for a checkpoint dump file.	<ul style="list-style-type: none"> JNL#1 CPD#1
79	CPD-0017	KFCA 26041-W	E	Checkpoint dump service definition	jnladdpf	--	--	Memory was insufficient when a checkpoint dump file was opened.	<ul style="list-style-type: none"> JNL#1 CPD#1
80	CPD-0018	KFCA 26042-W	E	Checkpoint dump service definition	jnladdpf	--	--	The specified file cannot be used as a checkpoint dump file.	<ul style="list-style-type: none"> JNL#1 CPD#1

No .	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
81	CPD-0019	KFCA 26043-W	E	Checkpoint dump service definition	jnladdpf	--	--	An error occurred while a checkpoint dump file was being loaded.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
82	CPD-0020	KFCA 26032-W	E	Checkpoint dump service definition	jnladdpf	--	--	More than one instance of jnladdfg -j srf has been specified.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
83	--	KFCA 02175-E	--	Checkpoint dump service definition	jnl_objservername	Another checkpoint dump service definition	jnl_objservername	The specified server name is the same as jnl_objservername specified in another checkpoint dump service definition.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
84	--	KFCA 02135-E	--	Checkpoint dump service definition	jnladdfg	--	--	The file group name is also specified for jnladdfg in another checkpoint dump service definition.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
85	--	KFCA 02149-E	--	Checkpoint dump service definition	jnladdfg	--	--	The number of specified jnladdfg definitions (ONL is specified && -j srf is not specified) is smaller than (assurance_count value + 1).	<ul style="list-style-type: none"> • JNL#1 • CPD#1

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
86	--	KFCA 02153-E	--	Checkpoint dump service definition	jnladdfg	--	--	The jnladdfg value exceeds the maximum of 60.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
87	--	KFCA 02156-E	--	Checkpoint dump service definition	jnladdpf	--	--	jnladdpf for the file group specified in the -g option does not exist.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
88	--	KFCA 02190-E	--	Checkpoint dump service definition	jnladdfg	--	--	The number of specified jnladdfg definitions (ONL is specified && -j srf is not specified) exceeds the maximum of 30.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
89	--	KFCA 02141-E	--	Checkpoint dump service definition	jnladdfg	--	--	The file group name is also specified for another jnladdfg definition.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
90	--	KFCA 02137-E	--	Checkpoint dump service definition	jnladdpf	--	--	The physical file name is also specified for jnladdpf in another checkpoint dump service definition.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
91	--	KFCA 02148-E	--	Checkpoint dump service definition	jnladdpf	Checkpoint dump service definition	jnladdfg	The jnladdfg definition for the file group specified in the -g option does not exist.	<ul style="list-style-type: none"> • JNL#1 • CPD#1

No .	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
92	--	KFCA 02154-E	--	Checkpoint dump service definition	jnladdpf	--	--	The file group name is also specified for another jnladdpf definition.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
93	--	KFCA 02155-E	--	Checkpoint dump service definition	jnladdpf	--	--	The number of specified jnladdpf definitions exceeds the maximum of 60.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
94	--	KFCA 26004-E	--	Checkpoint dump service definition	jnladdpf	Checkpoint dump service definition	jnl_dual	(jnl_dual == Y is specified) && ((-a option of jnladdpf is not specified) (-b option of jnladdpf is not specified))	<ul style="list-style-type: none"> • JNL#1 • CPD#1
95	--	KFCA 26005-E	--	Checkpoint dump service definition	jnladdpf	Checkpoint dump service definition	jnl_dual	(-b option of jnladdpf is specified) && (jnl_dual == N)	<ul style="list-style-type: none"> • JNL#1 • CPD#1
96	--	KFCA 26005-E	--	Checkpoint dump service definition	jnladdpf	Checkpoint dump service definition	jnl_dual	(-b option of jnladdpf is specified) && (jnl_dual is not specified)	<ul style="list-style-type: none"> • JNL#1 • CPD#1
97	DAM-0001	KFCA 02751-W	W	dam	dam_update_block	--	--	dam_update_block > 5000	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
98	DAM-0002	KFCA 02752-W	C	dam	dam_message_level	--	--	(dam_message_level is not specified) (dam_message_level == 1)	--
99	DAM-0003	KFCA 00264-W	C	dam	dam_transaction_count	trn	trn_transaction_count	(dam_transaction_count is specified) && (dam_transaction_count > trn_transaction_count)	--
100	DAM-0004	KFCA 02753-W	C	dam	dam_cache_size	--	--	(dam_cache_size_fix is not specified) && (dam_cache_size < calculation expression used at DAM startup)	--
101	DAM-0005	KFCA 00277-W	C	dam	dam_cache_size	dam	dam_cache_size_fix	(dam_cache_size_fix is specified) && (dam_cache_size is specified)	--
102	DAM-0006	KFCA 02754-W	C	dam	dam_cache_size_fix	--	--	(dam_cache_size_fix is specified)	--
103	DAM-0007	KFCA 00282-W	C	dam	dam_cache_attribute	--	--	(OS == AIX OS == Linux) && (dam_cache_attribute == fixed)	The definition is checked only when the OS is AIX or Linux.

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
104	DAM-0008	KFCA 00272-W	C	dam	dam_cache_attribute	--	--	(OS == HP-UX OS == Solaris) && (dam_cache_attribute == fixed)	The definition is checked only when the OS is HP-UX or Solaris.
105	DAM-0009	KFCA 02755-W	W	dam	dam_io_error_occur	--	--	dam_io_error_occur == stop	--
106	DAM-0010	KFCA 00271-W	W	dam	dam_cache_reuse_from	--	--	dam_cache_reuse_from == first	--
107	DAM-0011	KFCA 02756-W	W	dam	damch_lmt command	--	--	(Number of DAM file blocks > 5000) && (damch_lmt is not specified)	--
108	DAM-0012	KFCA 02757-W	W	dam	damfile command	--	--	(Number of specified damfile commands + dam_added_file value) > 3600	--
109	--	KFCA 02566-E	--	dam	damcache command	--	--	A DAM file is not specified in damfile.	--
110	--	KFCA 02566-E	--	dam	damch_lmt command	--	--	A DAM file is not specified in damfile.	--
111	--	KFCA 01636-E	--	dam	damfile command	--	--	The DAM file path name is not specified correctly.	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
112	--	KFCA 01636-E	--	dam	damfile command	--	--	The machine that contains the OpenTP1 file system has not been initialized.	--
113	--	KFCA 01636-E	--	dam	damfile command	--	--	The DAM file is missing.	--
114	--	KFCA 01636-E	--	dam	damfile command	--	--	The number of opened files exceeds the system limit.	--
115	--	KFCA 01636-E	--	dam	damfile command	--	--	Access permission for the OpenTP1 file system has not been granted.	--
116	--	KFCA 01636-E	--	dam	damfile command	--	--	Access permission for the OpenTP1 file system has not been granted.	--
117	--	KFCA 01636-E	--	dam	damfile command	--	--	The DAM file version is incorrect.	--
118	--	KFCA 01646-E	--	dam	damfile command	--	--	An I/O error occurred in the DAM file.	--
119	--	KFCA 01627-E	--	dam	damfile command	--	--	Memory was insufficient.	--

No .	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
120	--	KFCA 01637-E	--	dam	damfile command	--	--	The specified DAM file is not a correct DAM file.	--
121	--	KFCA 01617-E	--	System journal service definition	jnl_max_data_size	--	--	(dam_update_block_overflow == flush) && (jnl_max_data_size < 152 + maximum block length x 2) (dam_update_block_overflow == error) && (jnl_max_data_size < 152 + maximum block length)	<ul style="list-style-type: none"> • JNL#1 • CPD#1
122	JNL-0001	KFCA 00262-W	W	jnl	jnl_arc_terminate_timeout	env	system_terminate_watch_time	!(OS == Windows OS == Linux) && system_terminate_watch_time <= jnl_arc_terminate_timeout	<ul style="list-style-type: none"> • JNL#1 • CPD#1
123	JNL-0005	KFCA 32800-W	E	jnl	jnldfs	--	--	-r option is not specified.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
124	JNL-0006	KFCA 32801-W	E	jnl	jnldfs	--	--	No -r option argument is specified.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
125	JNL-0007	KFCA 32802-W	W	jnl	jnldfs	--	--	Number of specified jnldfs definitions > 1	<ul style="list-style-type: none"> • JNL#1 • CPD#1

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
126	JNL-0010	KFCA00272-W	C	System journal service definition	jnl_cdinterval	--	--	jnl_cdinterval < 1000	<ul style="list-style-type: none"> JNL#1 CPD#1
127	JNL-0011	KFCA00272-W	C	System journal service definition	jnl_cdinterval	--	--	jnl_cdinterval > 1000	<ul style="list-style-type: none"> JNL#1 CPD#1
128	JNL-0014	KFCA00269-W	C	System journal service definition	jnl_single operation	--	jnl_dual	(jnl_dual == N) && (jnl_single operation = Y)	<ul style="list-style-type: none"> JNL#1 CPD#1
129	JNL-0015	KFCA00270-W	C	System journal service definition	jnl_arc_buffer_size	--	jnl_arc_name	!(OS == Windows OS == Linux) && jnl_arc_name is not specified && jnl_arc_buffer_size is specified	<ul style="list-style-type: none"> JNL#1 CPD#1
130	JNL-0016	KFCA00273-W	E	System journal service definition	jnl_arc_buffer_size	--	jnl_arc_max_data_size	!(OS == Windows OS == Linux) && (jnl_arc_buffer_size < \uparrow (jnl_arc_max_data_size x 1024) / 1048576 \uparrow x 3)	<ul style="list-style-type: none"> JNL#1 CPD#1

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
131	JNL-0017	KFCA-00270-W	C	System journal service definition	jnl_arc_max_data_size	--	jnl_arc_name	!(OS == Windows OS == Linux) && jnl_arc_name is not specified && jnl_arc_max_data_size is specified	<ul style="list-style-type: none"> • JNL#1 • CPD#1
132	JNL-0018	KFCA-00273-W	E	System journal service definition	jnl_arc_max_data_size	--	jnl_max_data_size	!(OS == Windows OS == Linux) && (jnl_arc_max_data_size < $\uparrow(\uparrow(jnl_max_data_size + 336) / 4096 \times 4096) / 1024 \uparrow$)	<ul style="list-style-type: none"> • JNL#1 • CPD#1
133	JNL-0019	KFCA-00274-W	E	System journal service definition	jnl_arc_max_data_size	betanrc	rpc_max_message_size	!(OS == Windows OS == Linux) && (rpc_max_message_size < $\uparrow(jnl_arc_max_data_size \times 1024 + 4096) / 1048576 \uparrow$)	<ul style="list-style-type: none"> • JNL#1 • CPD#1

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
134	JNL-0020	KFCA00270-W	C	System journal service definition	jnl_arc_terminate_check	--	jnl_arc_name	!(OS == Windows OS == Linux) && jnl_arc_name is not specified && jnl_arc_terminate_check is specified	<ul style="list-style-type: none"> • JNL#1 • CPD#1
135	JNL-0021	KFCA00270-W	C	System journal service definition	jnl_arc_rec_kind	--	jnl_arc_name	For the following condition, the jnl_arc_rec_kind value has no effect: !(OS == Windows OS == Linux) && jnl_arc_name is not specified	<ul style="list-style-type: none"> • JNL#1 • CPD#1
136	JNL-0022	KFCA00270-W	C	System journal service definition	jnl_arc_uj_code	--	jnl_arc_name	For the following condition, the jnl_arc_uj_code value has no effect: !(OS == Windows OS == Linux) && jnl_arc_name is not specified	<ul style="list-style-type: none"> • JNL#1 • CPD#1

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
137	JNL-0023	KFCA00270-W	C	System journal service definition	jnl_arc_check_level	--	jnl_arc_name	For the following condition, the jnl_arc_check_level value has no effect: !(OS == Windows OS == Linux) && jnl_arc_name is not specified	<ul style="list-style-type: none"> • JNL#1 • CPD#1
138	JNL-0024	KFCA00270-W	C	System journal service definition	jnl_arc_trn_stat	--	jnl_arc_name	For the following condition, the jnl_arc_trn_stat value has no effect: !(OS == Windows OS == Linux) && jnl_arc_name is not specified	<ul style="list-style-type: none"> • JNL#1 • CPD#1
139	JNL-0025	KFCA00269-W	C	System journal service definition	jnl_auto_unload	--	jnl_unload_check	When jnl_unload_check=N is specified, the jnl_auto_unload=Y specification has no effect.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
140	JNL-0026	KFCA00280-W	C	System journal service definition	jnl_auto_unload_path	--	jnl_auto_unload	When jnl_auto_unload=N is specified, the jnl_auto_unload_path specification has no effect.	<ul style="list-style-type: none"> • JNL#1 • CPD#1

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
141	JNL-0027	KFCA32804-W	W	System journal service definition	jnl_automount_path	--	--	Access permission for the directory has not been granted.	<ul style="list-style-type: none"> JNL#1 CPD#1
142	JNL-0028	KFCA32804-W	W	System journal service definition	jnl_automount_path	--	--	The directory does not exist.	<ul style="list-style-type: none"> JNL#1 CPD#1
143	JNL-0029	KFCA32804-W	W	System journal service definition	jnl_automount_path	--	--	The specified path is not a directory.	<ul style="list-style-type: none"> JNL#1 CPD#1
144	JNL-0030	KFCA32805-W	W	System journal service definition	jnl_automount_path	--	--	An unload journal file exists in the specified directory.	<ul style="list-style-type: none"> JNL#1 CPD#1
145	JNL-0031	KFCA00264-W	C	System journal service definition	jnl_max_file_dispersion	--	jnl_min_file_dispersion > jnl_max_file_dispersion		<ul style="list-style-type: none"> JNL#1 CPD#1
146	JNL-0050	KFCA32810-W	E	System journal service definition	jnladdfg	--	--	-g option is not specified.	<ul style="list-style-type: none"> JNL#1 CPD#1
147	JNL-0051	KFCA32811-W	E	System journal service definition	jnladdfg	--	--	Argument for the -g option is not specified	<ul style="list-style-type: none"> JNL#1 CPD#1
148	JNL-0052	KFCA32812-W	E	System journal service definition	jnladdfg	--	--	Number of specified jnladdfg definitions > 256	<ul style="list-style-type: none"> JNL#1 CPD#1

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
149	JNL-0053	KFCA32813-W	E	System journal service definition	jnladdfg	--	--	Number of specified jnladdfg definitions < 2	<ul style="list-style-type: none"> • JNL#1 • CPD#1
150	JNL-0054	KFCA32814-W	E	System journal service definition	jnladdfg	--	--	Number of jnladdfg definitions with ONL specified < 2	<ul style="list-style-type: none"> • JNL#1 • CPD#1
151	JNL-0055	KFCA32815-W	W	System journal service definition	jnladdfg	--	--	Number of specified jnladdfg definitions with the same file group name > 1	<ul style="list-style-type: none"> • JNL#1 • CPD#1
152	JNL-0056	KFCA32816-W	E	System journal service definition	jnladdfg	--	jnladdpf	A file group for which jnladdpf is not defined exists.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
153	JNL-0057	KFCA32820-W	E	System journal service definition	jnladdpf	--	--	-g option is not specified.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
154	JNL-0058	KFCA32821-W	E	System journal service definition	jnladdpf	--	--	Argument for the -g option is not specified.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
155	JNL-0059	KFCA32822-W	E	System journal service definition	jnladdpf	--	--	-a option is not specified.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
156	JNL-0060	KFCA32823-W	E	System journal service definition	jnladdpf	--	--	-a or -b option argument is not specified.	<ul style="list-style-type: none"> • JNL#1 • CPD#1

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
157	JNL-0061	KFCA32824-W	E	System journal service definition	jnladdpf	--	jnl_dual	(jnl_dual == Y) && (-b option of jnladdpf is not specified)	<ul style="list-style-type: none"> JNL#1 CPD#1
158	JNL-0062	KFCA32825-W	C	System journal service definition	jnladdpf	--	jnl_dual	(jnl_dual == N) && (-b option of jnladdpf is specified)	<ul style="list-style-type: none"> JNL#1 CPD#1
159	JNL-0063	KFCA32826-W	E	System journal service definition	jnladdpf	--	jnladdfg	A file group name not defined by jnladdfg is defined by jnladdpf.	<ul style="list-style-type: none"> JNL#1 CPD#1
160	JNL-0064	KFCA32827-W	W	System journal service definition	jnladdpf	--	jnl_max_file_dispersion	jnl_max_file_dispersion = 1 && number of specified jnladdpf definition commands with the same file group name > jnl_max_file_dispersion	<ul style="list-style-type: none"> JNL#1 CPD#1
161	JNL-0065	KFCA32828-W	E	System journal service definition	jnladdpf	--	--	Duplicated journal file name	<ul style="list-style-type: none"> JNL#1 CPD#1
162	JNL-0066	KFCA32829-W	E	System journal service definition	jnladdpf	--	--	The physical file is not a journal file.	<ul style="list-style-type: none"> JNL#1 CPD#1
163	JNL-0067	KFCA32830-W	W	System journal service definition	jnladdpf	--	--	The journal file is for another node.	<ul style="list-style-type: none"> JNL#1 CPD#1

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
164	JNL-0068	KFCA32831-W	E	System journal service definition	jnladdpf	--	--	Number of journal file records < $\uparrow((\text{jnl_max_datasize} + 336) / 4096 \uparrow + 12)$	<ul style="list-style-type: none"> • JNL#1 • CPD#1
165	JNL-0069	KFCA32832-W	E	System journal service definition	jnladdpf	--	--	One of the following conditions exists: <ul style="list-style-type: none"> • The specified file system is not a character-type special file. • The device corresponding to the specified file system does not exist. 	<ul style="list-style-type: none"> • JNL#1 • CPD#1
166	JNL-0070	KFCA32833-W	E	System journal service definition	jnladdpf	--	--	The machine with the OpenTP1 file system has not been initialized.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
167	JNL-0071	KFCA32834-W	E	System journal service definition	jnladdpf	--	--	OpenTP1 file system versions do not match.	<ul style="list-style-type: none"> • JNL#1 • CPD#1

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
168	JNL-0072	KFCA32835-W	E	System journal service definition	jnladdpf	--	--	Memory was insufficient.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
169	JNL-0073	KFCA32836-W	E	System journal service definition	jnladdpf	--	--	The number of open files exceeds the system limit.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
170	JNL-0074	KFCA32837-W	E	System journal service definition	jnladdpf	--	--	Access permission for the specified OpenTP1 file system or journal file has not been granted.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
171	JNL-0075	KFCA32838-W	E	System journal service definition	jnladdpf	--	--	The file does not exist.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
172	JNL-0076	KFCA32839-W	E	System journal service definition	jnladdpf	--	--	Lock segments became insufficient.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
173	JNL-0077	KFCA32840-W	E	System journal service definition	jnladdpf	--	--	The specified file cannot be used as a journal file.	<ul style="list-style-type: none"> • JNL#1 • CPD#1

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
174	JNL-0078	KFCA32841-W	E	System journal service definition	jnladdpf	--	--	One of the following conditions exists: <ul style="list-style-type: none"> • Management information for physical files could not be loaded. • Management information is damaged. 	<ul style="list-style-type: none"> • JNL#1 • CPD#1
175	JNL-0079	KFCA32842-W	W	System journal service definition	jnladdpf	--	--	When jnl_unload_check=Y, the file group has not been unloaded.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
176	JNL-0080	KFCA32843-W	C	System journal service definition	jnladdpf	--	--	The status for physical files is active.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
177	JNL-0081	KFCA32844-W	C	System journal service definition	jnladdpf	--	jnl_max_file_dispersion	Number of element files specified for the same file group > jnl_max_file_dispersion	<ul style="list-style-type: none"> • JNL#1 • CPD#1
178	JNL-0082	KFCA32845-W	C	System journal service definition	jnladdpf	--	jnl_min_file_dispersion	Number of element files specified for the same file group < jnl_min_file_dispersion	<ul style="list-style-type: none"> • JNL#1 • CPD#1

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
179	JNL-0083	KFCA32846-W	C	System journal service definition	jnladdpf	--	jnl_max_file_dispersion	jnl_max_file_dispersion > 1 && -e option of jnladdpf is not specified	<ul style="list-style-type: none"> JNL#1 CPD#1
180	JNL-0084	KFCA32847-W	W	System journal service definition	jnladdpf	--	--	Number of specified jnladdpf definition commands with the same element file name > 1	<ul style="list-style-type: none"> JNL#1 CPD#1
181	JNL-0086	KFCA32849-W	E	System journal service definition	jnladdpf	--	--	Argument for the -e option is not specified	<ul style="list-style-type: none"> JNL#1 CPD#1
182	JNL-0090	KFCA00282-W	C	jnl	jnl_arc_terminate_timeout	--	--	(OS == Windows OS == Linux) && jnl_arc_terminate_timeout is specified	<ul style="list-style-type: none"> JNL#1 CPD#1
183	JNL-0090	KFCA00282-W	C	jnl	jnl_arc_ipc_buffer_size	--	--	(OS == Windows OS == Linux) && jnl_arc_ipc_buffer_size is specified	<ul style="list-style-type: none"> JNL#1 CPD#1
184	JNL-0090	KFCA00282-W	C	System journal service definition	jnl_arc_name	--	--	(OS == Windows OS == Linux) && jnl_arc_name is specified	<ul style="list-style-type: none"> JNL#1 CPD#1

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
185	JNL-0090	KFCA00282-W	C	System journal service definition	jnl_arc_buffer_size	--	--	(OS == Windows OS == Linux) && jnl_arc_buffer_size is specified	<ul style="list-style-type: none"> • JNL#1 • CPD#1
186	JNL-0090	KFCA00282-W	C	System journal service definition	jnl_arc_max_data_size	--	--	(OS == Windows OS == Linux) && jnl_arc_max_data_size is specified	<ul style="list-style-type: none"> • JNL#1 • CPD#1
187	JNL-0090	KFCA00282-W	C	System journal service definition	jnl_arc_terminate_check	--	--	(OS == Windows OS == Linux) && jnl_arc_terminate_check is specified	<ul style="list-style-type: none"> • JNL#1 • CPD#1
188	JNL-0090	KFCA00282-W	C	System journal service definition	jnl_arc_rec_kind	--	--	The definition is specified when the OS is Windows or Linux.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
189	JNL-0090	KFCA00282-W	C	System journal service definition	jnl_arc_uj_code	--	--	The definition is specified when the OS is Windows or Linux.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
190	JNL-0090	KFCA00282-W	C	System journal service definition	jnl_arc_check_level	--	--	The definition is specified when the OS is Windows or Linux.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
191	JNL-0090	KFCA00282-W	C	System journal service definition	jnl_arc_trn_stat	--	--	The definition is specified when the OS is Windows or Linux.	<ul style="list-style-type: none"> • JNL#1 • CPD#1

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
192	JNL-0100	KFCA00285-W	E	jnl	jnldfs	--	--	jnldfs is not specified.	<ul style="list-style-type: none"> JNL#1 CPD#1
193	JNL-0101	KFCA00285-W	E	System journal service definition	jnladdfg	--	--	jnladdfg is not specified.	<ul style="list-style-type: none"> JNL#1 CPD#1
194	JNL-0102	KFCA00285-W	E	System journal service definition	jnladdpf	--	--	jnladdpf is not specified.	<ul style="list-style-type: none"> JNL#1 CPD#1
195	JNL-0103	KFCA00286-W	E	jnl	--	betranrc	jnl_fileless_option	jnl_fileless_option=N && no journal service definition file (jnl)	<ul style="list-style-type: none"> JNL#1 CPD#1
196	JNL-0104	KFCA00286-W	E	System journal service definition	--	betranrc	jnl_fileless_option	jnl_fileless_option=N && no system journal service definition file	<ul style="list-style-type: none"> JNL#1 CPD#1
197	JNL-0110	KFCA32850-W	E	System journal service definition	jnl_arc_name	--	--	!(OS == Windows OS == Linux) && (number of characters in the resource group name < 1 number of characters in the resource group name > 8) (number of characters in the node identifier != 4)	<ul style="list-style-type: none"> JNL#1 CPD#1

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
198	JNL-0111	KFCA32851-W	E	System journal service definition	jnl_arc_record	--	--	!(OS == Windows OS == Linux) && (!(a) !(c) !(f) !(g) !(i) !(m) !(o) !(s) !(u))	<ul style="list-style-type: none"> • JNL#1 • CPD#1
199	JNL-0112	KFCA32852-W	E	System journal service definition	jnl_arc_uj_code	--	--	!(OS == Windows OS == Linux) && (uj code < 0) (uj code > 255)	<ul style="list-style-type: none"> • JNL#1 • CPD#1
200	JNL-0120	KFCA32806-W	W	System journal service definition	jnl_autom_load_path	--	--	The specified directory path is not an absolute path.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
201	JNL-0121	KFCA32807-W	W	System journal service definition	jnl_autom_load_path	--	--	Specified directory path string > 80 bytes	<ul style="list-style-type: none"> • JNL#1 • CPD#1
202	JNL-0122	KFCA32808-W	W	System journal service definition	jnl_autom_load_path	--	--	None of the specified directories are available.	<ul style="list-style-type: none"> • JNL#1 • CPD#1
203	JNL-0123	KFCA00272-W	C	betranrc	jnl_prf_event_trace_level	--	--	(jnl_prf_event_trace_level & 00000001) != 00000001	<ul style="list-style-type: none"> • JNL#1
204	JNL-0124	KFCA26780-W	C	_j1	prf_file_size	--	--	prf_file_size == 1024	<ul style="list-style-type: none"> • JNL#1
205	JNL-0125	KFCA00272-W	C	_j1	prf_trace_backup	--	--	prf_trace_backup == N	<ul style="list-style-type: none"> • JNL#1

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
206	LCK-001	KFCA 00421-W	C	lck	All	lck	lck_limit_foruser or*	(lck_limit_foruser value + lck_limit_fordam value + lck_limit_fortam value + lck_limit_formqa value) == 0 However, if dam_conf==N, lck_limit_fordam=0, and if tam_conf==N, lck_limit_fortam=0.	Logic checking is not performed for the lock service definition.
207	LCK-002	KFCA 00265-W	C	lck	lck_limit_foruser	--	--	lck_limit_foruser is specified.	--
208	LCK-003	KFCA 00272-W	C	lck	lck_limit_fordam	sysconf	dam_conf	((dam_conf == N) (dam_conf is not specified)) && ((lck_limit_fordam > 0) (lck_limit_fordam is not specified))	--
209	LCK-004	KFCA 00265-W	C	lck	lck_limit_fordam	sysconf	dam_conf	(dam_conf == Y) && (lck_limit_fordam is specified)	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
210	LCK-0005	KFCA00272-W	C	lck	lck_limit_fortam	sysconf	tam_conf	((tam_conf == N) (tam_conf is not specified)) && ((lck_limit_fortam > 0) (lck_limit_fortam is not specified))	--
211	LCK-0006	KFCA00265-W	C	lck	lck_limit_fortam	sysconf	tam_conf	(tam_conf == Y) && (lck_limit_fortam is specified)	--
212	LCK-0007	KFCA00278-W	C	lck	lck_limit_formqa	sysconf	mqa_conf	((mqa_conf == N) (mqa_conf is not specified)) && (lck_limit_formqa > 0)	--
213	LCK-0008	KFCA00265-W	C	lck	lck_limit_formqa	sysconf	mqa_conf	mqa_conf == Y	--
214	LCK-0009	KFCA00265-W	C	lck	lck_wait_timeout	--	--	lck_wait_timeout is specified.	--
215	LCK-0010	KFCA00272-W	C	lck	lck_deadlock_info	--	--	(lck_deadlock_info == N) (lck_deadlock_info is not specified)	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
216	LCK-0011	KFCA00278-W	C	lck	lck_deadlock_info_remove	lck	lck_deadlock_info	(lck_deadlock_info_remove is specified) && (lck_deadlock_info == N)	--
217	LCK-0012	KFCA00279-W	C	lck	lck_deadlock_info_remove	lck	lck_deadlock_info	(lck_deadlock_info_remove is specified) && (lck_deadlock_info is not specified)	--
218	LCK-0013	KFCA00272-W	C	lck	lck_deadlock_info_remove	--	--	(lck_deadlock_info == Y) && ((lck_deadlock_info_remove == no) (lck_deadlock_info_remove is not specified))	--
219	LCK-0014	KFCA00278-W	C	lck	lck_deadlock_info_remove_level	lck	lck_deadlock_info	(lck_deadlock_info_remove_level is specified) && (lck_deadlock_info == N)	--
220	LCK-0015	KFCA00279-W	C	lck	lck_deadlock_info_remove_level	lck	lck_deadlock_info	(lck_deadlock_info_remove_level is specified) && (lck_deadlock_info is not specified)	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
221	LCK-0016	KFCA00278-W	C	lck	lck_deadlock_info_remove_level	lck	lck_deadlock_info_remove	(lck_deadlock_info_remove_level is specified) && (lck_deadlock_info_remove == no)	--
222	LCK-0017	KFCA00279-W	C	lck	lck_deadlock_info_remove_level	lck	lck_deadlock_info_remove	(lck_deadlock_info_remove_level is specified) && (lck_deadlock_info_remove is not specified)	--
223	LCK-0018	KFCA00272-W	W	lck	lck_release_detect	--	--	(lck_release_detect == interval)	--
224	LCK-0019	KFCA00278-W	C	lck	lck_release_detect_interval	lck	lck_release_detect	(lck_release_detect_interval is specified) && (lck_release_detect == pipe)	--
225	LCK-0020	KFCA00279-W	C	lck	lck_release_detect_interval	lck	lck_release_detect	(lck_release_detect_interval is specified) && (lck_release_detect is not specified)	--

D. Details of Definition Checking

No .	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
226	LCK-0021	KFCA00422-W	C	User service definition	deadlock_p riority	lck	<ul style="list-style-type: none"> • lck_limit_foruser + lck_limit_fordam value + lck_limit_fortam value • lck_limit_fordam + lck_limit_fordam value) == 0 • lck_limit_fordam + lck_limit_fordam value) == 0 • lck_limit_fordam + lck_limit_fordam value) == 0 	<p>(lck_limit_foruser value + lck_limit_fordam value + lck_limit_fortam value + lck_limit_fordam value) == 0</p> <p>However, if dam_conf==N, lck_limit_fordam=0, and if tam_conf==N, lck_limit_fortam=0.</p>	--

No .	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
227	LCK-0022	KFCA00422-W	C	User service definition	lck_wait_priority	lck	<ul style="list-style-type: none"> • lck_limit_foruser + lck_limit_fordam value + lck_limit_fortam value • lck_limit_fordam + lck_limit_fordamqa value) == 0 • lck_limit_fordam • lck_limit_fordam 	(lck_limit_foruser value + lck_limit_fordam value + lck_limit_fortam value + lck_limit_fordamqa value) == 0 However, if dam_conf==N, lck_limit_fordam=0, and if tam_conf==N, lck_limit_fortam=0.	--
228	LCK-0023	KFCA00272-W	C	lck	lck_prf_trace_level	--	--	(lck_prf_trace_level & 00000001) != 00000001	--
229	LCK-0024	KFCA00423-W	C	_lk	prf_file_size	--	--	prf_file_size < default value (5120)	--
230	LOG-0001	KFCA00272-W	C	log	log_msg_console	log	--	log_msg_console == N	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
231	LOG-0002	KFCA 00278-W	C	log	log_msg_allno	log	log_msg_console	(log_msg_console == N) && (log_msg_allno is specified) && (log_msg_allno == Y)	--
232	LOG-0002	KFCA 00278-W	C	log	log_msg_pr cid	log	log_msg_console	(log_msg_console == N) && (log_msg_pr cid is specified) && (log_msg_pr cid == Y)	--
233	LOG-0002	KFCA 00278-W	C	log	log_msg_pr cno	log	log_msg_console	(log_msg_console == N) && (log_msg_pr cno is specified) && (log_msg_pr cno == Y)	--
234	LOG-0002	KFCA 00278-W	C	log	log_msg_sy sid	log	log_msg_console	(log_msg_console == N) && (log_msg_sy sid is specified) && (log_msg_sy sid == Y)	--
235	LOG-0002	KFCA 00278-W	C	log	log_msg_date	log	log_msg_console	(log_msg_console == N) && (log_msg_date is specified) && (log_msg_date == Y)	--

No .	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
236	LOG-0002	KFCA 00278-W	C	log	log_msg_time	log	log_msg_console	(log_msg_console == N) && (log_msg_time is specified) && (log_msg_time == Y)	--
237	LOG-0002	KFCA 00278-W	C	log	log_msg_hostname	log	log_msg_console	(log_msg_console == N) && (log_msg_hostname) && (log_msg_hostname == Y)	--
238	LOG-0002	KFCA 00278-W	C	log	log_msg_pgmid	log	log_msg_console	(log_msg_console == N) && (log_msg_pgmid is specified) && (log_msg_pgmid == Y)	--
239	LOG-0003	KFCA 00272-W	C	log	log_msg_date	log	log_msg_console	(log_msg_console == Y) && (log_msg_date is specified) && (log_msg_date == N)	--
240	LOG-0003	KFCA 00272-W	C	log	log_msg_time	log	log_msg_console	(log_msg_console == Y) && (log_msg_time is specified) && (log_msg_time == N)	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
241	LOG-0004	KFCA 00282-W	C	log	log_netm_out	--	--	log_netm_out is specified.	The definition is checked only when the OS is Windows or Linux.
242	LOG-0004	KFCA 00282-W	C	log	log_netm_allno	--	--	log_netm_allno is specified.	The definition is checked only when the OS is Windows or Linux.
243	LOG-0004	KFCA 00282-W	C	log	log_netm_prcid	--	--	log_netm_prcid is specified.	The definition is checked only when the OS is Windows or Linux.
244	LOG-0004	KFCA 00282-W	C	log	log_netm_prcno	--	--	log_netm_prcno is specified.	The definition is checked only when the OS is Windows or Linux.
245	LOG-0004	KFCA 00282-W	C	log	log_netm_sysid	--	--	log_netm_sysid is specified.	The definition is checked only when the OS is Windows or Linux.
246	LOG-0004	KFCA 00282-W	C	log	log_netm_date	--	--	log_netm_date is specified.	The definition is checked only when the OS is Windows or Linux.
247	LOG-0004	KFCA 00282-W	C	log	log_netm_time	--	--	log_netm_time is specified.	The definition is checked only when the OS is Windows or Linux.

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
248	LOG-0004	KFCA 00282-W	C	log	log_netm_hostname	--	--	log_netm_hostname is specified.	The definition is checked only when the OS is Windows or Linux.
249	LOG-0004	KFCA 00282-W	C	log	log_netm_pgmid	--	--	log_netm_pgmid is specified.	The definition is checked only when the OS is Windows or Linux.
250	LOG-0005	KFCA 00280-W	C	log	log_netm_allno	log	log_netm_out	(log_netm_out == N) && (log_netm_allno is specified) && (log_netm_allno == Y)	The definition is not checked when the OS is Windows or Linux.
251	LOG-0005	KFCA 00280-W	C	log	log_netm_rcid	log	log_netm_out	(log_netm_out == N) && (log_netm_rcid is specified) && (log_netm_rcid == Y)	The definition is not checked when the OS is Windows or Linux.
252	LOG-0005	KFCA 00280-W	C	log	log_netm_rcno	log	log_netm_out	(log_netm_out == N) && (log_netm_rcno is specified) && (log_netm_rcno == Y)	The definition is not checked when the OS is Windows or Linux.
253	LOG-0005	KFCA 00280-W	C	log	log_netm_ysid	log	log_netm_out	(log_netm_out == N) && (log_netm_ysid is specified) && (log_netm_ysid == Y)	The definition is not checked when the OS is Windows or Linux.

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
254	LOG-0005	KFCA 00280-W	C	log	log_netm_date	log	log_netm_date	(log_netm_date == N) && (log_netm_date is specified) && (log_netm_date == Y)	The definition is not checked when the OS is Windows or Linux.
255	LOG-0005	KFCA 00280-W	C	log	log_netm_time	log	log_netm_time	(log_netm_time == N) && (log_netm_time is specified) && (log_netm_time == Y)	The definition is not checked when the OS is Windows or Linux.
256	LOG-0005	KFCA 00280-W	C	log	log_netm_hostname	log	log_netm_hostname	(log_netm_hostname == N) && (log_netm_hostname is specified) && (log_netm_hostname == Y)	The definition is not checked when the OS is Windows or Linux.
257	LOG-0005	KFCA 00280-W	C	log	log_netm_pgmid	log	log_netm_pgmid	(log_netm_pgmid == N) && (log_netm_pgmid is specified) && (log_netm_pgmid == Y)	The definition is not checked when the OS is Windows or Linux.
258	LOG-0006	KFCA 00282-W	C	log	log_jpl_al_lno	--	--	log_jpl_al_lno is specified.	The definition is checked only when the OS is Windows.
259	LOG-0006	KFCA 00282-W	C	log	log_jpl_pr_cid	--	--	log_jpl_pr_cid is specified.	The definition is checked only when the OS is Windows.

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
260	LOG-0006	KFCA-00282-W	C	log	log_jpl_prcno	--	--	log_jpl_prcno is specified.	The definition is checked only when the OS is Windows.
261	LOG-0006	KFCA-00282-W	C	log	log_jpl_sy_sid	--	--	log_jpl_sy_sid is specified.	The definition is checked only when the OS is Windows.
262	LOG-0006	KFCA-00282-W	C	log	log_jpl_date	--	--	log_jpl_date is specified.	The definition is checked only when the OS is Windows.
263	LOG-0006	KFCA-00282-W	C	log	log_jpl_time	--	--	log_jpl_time is specified.	The definition is checked only when the OS is Windows.
264	LOG-0006	KFCA-00282-W	C	log	log_jpl_hostname	--	--	log_jpl_hostname is specified.	The definition is checked only when the OS is Windows.
265	LOG-0006	KFCA-00282-W	C	log	log_jpl_pgmid	--	--	log_jpl_pgmid is specified.	The definition is checked only when the OS is Windows.
266	LOG-0006	KFCA-00282-W	C	log	log_jerr_rint	--	--	log_jerr_rint is specified.	The definition is checked only when the OS is Windows.

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
267	LOG-0007	KFCA 00280-W	C	log	log_jpl_al lno	betra nrc	jpl_u se	(jpl_use == N) && (log_jpl_al lno is specified) && (log_jpl_al lno == Y)	The definition is not checked when the OS is Windows.
268	LOG-0007	KFCA 00280-W	C	log	log_jpl_pr cid	betra nrc	jpl_u se	(jpl_use == N) && (log_jpl_pr cid is specified) && (log_jpl_pr cid == Y)	The definition is not checked when the OS is Windows.
269	LOG-0007	KFCA 00280-W	C	log	log_jpl_pr cno	betra nrc	jpl_u se	(jpl_use == N) && (log_jpl_pr cno) && (log_jpl_pr cno == Y)	The definition is not checked when the OS is Windows.
270	LOG-0007	KFCA 00280-W	C	log	log_jpl_sy sid	betra nrc	jpl_u se	(jpl_use == N) && (log_jpl_sy sid is specified) && (log_jpl_sy sid == Y)	The definition is not checked when the OS is Windows.
271	LOG-0007	KFCA 00280-W	C	log	log_jpl_da te	betra nrc	jpl_u se	(jpl_use == N) && (log_jpl_da te is specified) && (log_jpl_da te == Y)	The definition is not checked when the OS is Windows.
272	LOG-0007	KFCA 00280-W	C	log	log_jpl_ti me	betra nrc	jpl_u se	(jpl_use == N) && (log_jpl_ti me is specified) && (log_jpl_ti me == Y)	The definition is not checked when the OS is Windows.

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
273	LOG-0007	KFCA-00280-W	C	log	log_jpl_hostname	betranrc	jpl_use	(jpl_use == N) && (log_jpl_hostname is specified) && (log_jpl_hostname == Y)	The definition is not checked when the OS is Windows.
274	LOG-0007	KFCA-00280-W	C	log	log_jpl_pgmid	betranrc	jpl_use	(jpl_use == N) && (log_jpl_pgmid is specified) && (log_jpl_pgmid == Y)	The definition is not checked when the OS is Windows.
275	LOG-0007	KFCA-00280-W	C	log	log_jerr_int	betranrc	jpl_use	(jpl_use == N) && (log_jerr_int is specified) && (log_jerr_int >= 1)	The definition is not checked when the OS is Windows.
276	LOG-0008	KFCA-00280-W	C	log	log_notify_allno	log	log_notify_out	(log_notify_out == N) && (log_notify_allno is specified) && (log_notify_allno == Y)	The definition is not checked when the OS is Linux.
277	LOG-0008	KFCA-00280-W	C	log	log_notify_prclid	log	log_notify_out	(log_notify_out == N) && (log_notify_prclid is specified) && (log_notify_prclid == Y)	The definition is not checked when the OS is Linux.

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
278	LOG-0008	KFCA 00280-W	C	log	log_notify_prcno	log	log_notify_out	(log_notify_out == N) && (log_notify_prcno is specified) && (log_notify_prcno == Y)	The definition is not checked when the OS is Linux.
279	LOG-0008	KFCA 00280-W	C	log	log_notify_sysid	log	log_notify_out	(log_notify_out == N) && (log_notify_sysid is specified) && (log_notify_sysid == Y)	The definition is not checked when the OS is Linux.
280	LOG-0008	KFCA 00280-W	C	log	log_notify_date	log	log_notify_out	(log_notify_out == N) && (log_notify_date) && (log_notify_date == Y)	The definition is not checked when the OS is Linux.
281	LOG-0008	KFCA 00280-W	C	log	log_notify_time	log	log_notify_out	(log_notify_out == N) && (log_notify_time is specified) && (log_notify_time == Y)	The definition is not checked when the OS is Linux.
282	LOG-0008	KFCA 00280-W	C	log	log_notify_hostname	log	log_notify_out	(log_notify_out == N) && (log_notify_hostname is specified) && (log_notify_hostname == Y)	The definition is not checked when the OS is Linux.

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
283	LOG-0008	KFCA-00280-W	C	log	log_notify_pgmid	log	log_notify_out	(log_notify_out == N) && (log_notify_pgmid is specified) && (log_notify_pgmid == Y)	The definition is not checked when the OS is Linux.
284	LOG-0009	KFCA-00282-W	C	log	log_syslog_out	--	--	log_syslog_out is specified.	The definition is checked only when the OS is Windows.
285	LOG-0009	KFCA-00282-W	C	log	log_syslog_allno	--	--	log_syslog_allno is specified.	The definition is checked only when the OS is Windows.
286	LOG-0009	KFCA-00282-W	C	log	log_syslog_prclid	--	--	log_syslog_prclid is specified.	The definition is checked only when the OS is Windows.
287	LOG-0009	KFCA-00282-W	C	log	log_syslog_prcono	--	--	log_syslog_prcono is specified.	The definition is checked only when the OS is Windows.
288	LOG-0009	KFCA-00282-W	C	log	log_syslog_sysid	--	--	log_syslog_sysid is specified.	The definition is checked only when the OS is Windows.
289	LOG-0009	KFCA-00282-W	C	log	log_syslog_date	--	--	log_syslog_date is specified.	The definition is checked only when the OS is Windows.

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
290	LOG-0009	KFCA 00282-W	C	log	log_syslog_time	--	--	log_syslog_time is specified.	The definition is checked only when the OS is Windows.
291	LOG-0009	KFCA 00282-W	C	log	log_syslog_hostname	--	--	log_syslog_hostname is specified.	The definition is checked only when the OS is Windows.
292	LOG-0009	KFCA 00282-W	C	log	log_syslog_pid	--	--	log_syslog_pid is specified.	The definition is checked only when the OS is Windows.
293	LOG-0009	KFCA 00282-W	C	log	log_syslog_append_no_deid	--	--	log_syslog_append_no_deid is specified.	The definition is checked only when the OS is Windows.
294	LOG-0009	KFCA 00282-W	C	log	log_syslog_synchronous	--	--	log_syslog_synchronous is specified.	The definition is checked only when the OS is Windows.
295	LOG-0009	KFCA 00282-W	C	log	log_syslog_list	--	--	log_syslog_list is specified.	The definition is checked only when the OS is Windows.
296	LOG-0009	KFCA 00282-W	C	log	log_syslog_list_rint	--	--	log_syslog_list_rint is specified.	The definition is checked only when the OS is Windows.
297	LOG-0010	KFCA 00272-W	C	log	log_syslog_out	log	--	log_syslog_out == 0	The definition is not checked when the OS is Windows.

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
298	LOG-0011	KFCA-00280-W	C	log	log_syslog_out	log	DCSYSLOGOUT	(log_syslog_out >= 1) && (DCSYSLOGOUT == 1 is not specified)	The definition is not checked when the OS is Windows.
299	LOG-0011	KFCA-00278-W	C	log	log_syslog_allno	log	log_syslog_out	(log_syslog_out == 0) && (log_syslog_allno == Y)	The definition is not checked when the OS is Windows.
300	LOG-0011	KFCA-00278-W	C	log	log_syslog_prclid	log	log_syslog_out	(log_syslog_out == 0) && (log_syslog_prclid == Y)	The definition is not checked when the OS is Windows.
301	LOG-0011	KFCA-00278-W	C	log	log_syslog_prcno	log	log_syslog_out	(log_syslog_out == 0) && (log_syslog_prcno == Y)	The definition is not checked when the OS is Windows.
302	LOG-0011	KFCA-00278-W	C	log	log_syslog_sysid	log	log_syslog_out	(log_syslog_out == 0) && (log_syslog_sysid == Y)	The definition is not checked when the OS is Windows.
303	LOG-0011	KFCA-00278-W	C	log	log_syslog_date	log	log_syslog_out	(log_syslog_out == 0) && (log_syslog_date == Y)	The definition is not checked when the OS is Windows.
304	LOG-0011	KFCA-00278-W	C	log	log_syslog_time	log	log_syslog_out	(log_syslog_out == 0) && (log_syslog_time == Y)	The definition is not checked when the OS is Windows.
305	LOG-0011	KFCA-00278-W	C	log	log_syslog_hostname	log	log_syslog_out	(log_syslog_out == 0) && (log_syslog_hostname == Y)	The definition is not checked when the OS is Windows.
306	LOG-0011	KFCA-00278-W	C	log	log_syslog_pgmid	log	log_syslog_out	(log_syslog_out == 0) && (log_syslog_pgmid == Y)	The definition is not checked when the OS is Windows.

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
307	LOG-0011	KFCA 00278-W	C	log	log_syslog_append_no_deid	log	log_syslog_out	(log_syslog_out == 0) && (log_syslog_append_no_deid == Y)	The definition is not checked when the OS is Windows.
308	LOG-0011	KFCA 00278-W	C	log	log_syslog_sync_hro	log	log_syslog_out	(log_syslog_out == 0) && (log_syslog_sync_hro == Y)	The definition is not checked when the OS is Windows.
309	LOG-0011	KFCA 00278-W	C	log	log_syslog_elist	log	log_syslog_out	(log_syslog_out == 0) && (log_syslog_elist > 0)	The definition is checked only when the OS is AIX or Linux.
310	LOG-0011	KFCA 00278-W	C	log	log_syslog_elist	log	log_syslog_elist_rint	(log_syslog_elist_rint == 0) && (log_syslog_elist > 0)	The definition is checked only when the OS is AIX or Linux.
311	LOG-0011	KFCA 00278-W	C	log	log_syslog_elist_rint	log	log_syslog_out	(log_syslog_out == 0) && (log_syslog_elist_rint > 0)	The definition is checked only when the OS is AIX or Linux.
312	LOG-0011	KFCA 00278-W	C	log	log_syslog_elist_rint	log	log_syslog_elist	(log_syslog_elist == 0) && (log_syslog_elist_rint > 0)	The definition is checked only when the OS is AIX or Linux.
313	LOG-0011	KFCA 00278-W	C	log	DCSYSLOGCTYPE	log	log_syslog_out	(log_syslog_out == 0) && (DCSYSLOGCTYPE == sjis)	The definition is checked only when the OS is Linux.
314	LOG-0012	KFCA 00282-W	C	log	log_notify_out	--	--	log_notify_out is specified.	The definition is checked only when the OS is Linux.

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
315	LOG-0012	KFCA-00282-W	C	log	log_notify_allno	--	--	log_notify_allno is specified.	The definition is checked only when the OS is Linux.
316	LOG-0012	KFCA-00282-W	C	log	log_notify_prclid	--	--	log_notify_prclid is specified.	The definition is checked only when the OS is Linux.
317	LOG-0012	KFCA-00282-W	C	log	log_notify_prcono	--	--	log_notify_prcono is specified.	The definition is checked only when the OS is Linux.
318	LOG-0012	KFCA-00282-W	C	log	log_notify_sysid	--	--	log_notify_sysid is specified.	The definition is checked only when the OS is Linux.
319	LOG-0012	KFCA-00282-W	C	log	log_notify_date	--	--	log_notify_date is specified.	The definition is checked only when the OS is Linux.
320	LOG-0012	KFCA-00282-W	C	log	log_notify_time	--	--	log_notify_time is specified.	The definition is checked only when the OS is Linux.
321	LOG-0012	KFCA-00282-W	C	log	log_notify_hostname	--	--	log_notify_hostname is specified.	The definition is checked only when the OS is Linux.
322	LOG-0012	KFCA-00282-W	C	log	log_notify_pgmid	--	--	log_notify_pgmid is specified.	The definition is checked only when the OS is Linux.
323	LOG-0013	KFCA-00280-W	C	log	log_audit_path	log	log_audit_out	(log_audit_out == N) && (log_audit_path is specified)	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
324	LOG-0013	KFCA 00280-W	C	log	log_audit_size	log	log_audit_out	(log_audit_out == N) && (log_audit_size is specified)	--
325	LOG-0013	KFCA 00280-W	C	log	log_audit_count	log	log_audit_out	(log_audit_out == N) && (log_audit_count is specified)	--
326	LOG-0013	KFCA 00280-W	C	<ul style="list-style-type: none"> • log • usrrc • User service definition • RAP processing listener service definition • RAP processing client manager service definition 	log_audit_message	log	log_audit_out	(log_audit_out == N) && (log_audit_message is specified)	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
327	LOG-0014	KFCA-00267-W	W	log	log_audit_path	log	log_audit_out	(log_audit_out == Y) && (log_audit_path is specified) && (no directory is specified in log_audit_path)	--
328	LOG-0014	KFCA-00267-W	W	log	log_audit_path	log	log_audit_out	(log_audit_out == Y) && (log_audit_path is specified) && (path specified in log_audit_path is not a directory)	--
329	LOG-0014	KFCA-00267-W	W	log	log_audit_path	log	log_audit_out	(log_audit_out == Y) && (log_audit_path is specified) && (access permission set for the directory specified in log_audit_path is invalid)	The access permission here is different from the access permission attribute created by using the dcauditsetup command.
330	NAM-0001	KFCA-00266-W	C	betranrc	name_port	--	--	name_port is specified.	--
331	NAM-0002	KFCA-00692-W	C	betranrc	name_port	--	--	name_port is not specified.	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
332	NAM-0003	KFCA 00699-W	E	betranrc	all_node	--	--	(IP address == 127.x.x.x) (IP address converted from a host name == 127.x.x.x)	x: Numeric value from 0 to 255
333	NAM-0004	KFCA 00691-W	W	betranrc	all_node	--	--	((host name specified in all_node == local host name) (IP address specified in all_node == local IP address)) && (port number specified in all_node == name_port)	--
334	NAM-0005	KFCA 00690-W	E	betranrc	all_node	betranrc	rpc_multi_tpl_in_same_host	(OS != Windows) && ((rpc_multi_tpl_in_same_host != Y) && ((local host name) (local IP address)))	The definition is not checked when the OS is Windows.
335	NAM-0006	KFCA 00278-W	C	betranrc	all_node	betranrc	name_domain_file_use	((name_domain_file_use == Y) && all_node is specified.	--
336	NAM-0008	KFCA 00693-W	C	betranrc	name_notify	--	--	name_notify == Y	--

No .	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
337	NAM-0009	KFCA-00694-W	E	betranrc	name_notify	--	--	(name_notify == Y) && (same IP address is specified more than once in all_node and all_node_ex)	--
338	NAM-0010	KFCA-00699-W	E	betranrc	all_node_ex	--	--	(IP address == 127.x.x.x) (IP address converted from a host name == 127.x.x.x)	x: Numeric value from 0 to 255
339	NAM-0011	KFCA-00691-W	W	betranrc	all_node_ex	--	--	((host name specified in all_node_ex == local host name) (IP address specified in all_node_ex == local IP)) && (port number specified in all_node_ex == name_port)	--
340	NAM-0012	KFCA-00690-W	E	betranrc	all_node_ex	betranrc	rpc_multi_tpl_in_same_host	(OS != Windows) && ((rpc_multi_tpl_in_same_host != Y) && ((local host name) (local IP address)))	The definition is not checked when the OS is Windows.

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No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
341	NAM-0013	KFCA 00278-W	C	betranrc	all_node_exe	betranrc	name_domain_file_use	(name_domain_file_use == Y) && all_node_exe is specified.	--
342	NAM-0014	KFCA 00265-W	C	nam	name_total_size	--	--	name_total_size is specified.	--
343	NAM-0015	KFCA 00265-W	C	nam	name_cache_size	--	--	name_cache_size is specified.	--
344	NAM-0016	KFCA 00695-W	C	nam	name_global_lookup	--	--	name_global_lookup == Y	--
345	NAM-0017	KFCA 00696-W	W	nam	name_service_extend	betranrc	all_node	((name_service_extend is not specified) (name_service_extend == 0)) && (number of nodes specified in all_node > 128)	--
346	NAM-0018	KFCA 00694-W	E	nam	name_audit_conf	--	--	((name_audit_conf == 1) (name_audit_conf == 2)) && (same IP address is specified more than once in all_node and all_node_exe)	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
347	NAM-0019	KFCA-00261-W	W	nam	name_audit_interval	<ul style="list-style-type: none"> nam betranrc 	<ul style="list-style-type: none"> name_audit_watch_time ipc_conn_intime 	<pre>(name_audit_conf == 1) && (ipc_conn_interval > name_audit_interval) (name_audit_conf == 2) && (name_audit_watch_time > name_audit_interval)</pre>	--
348	NAM-0020	KFCA-00276-W	C	nam	name_audit_interval	nam	name_audit_conf	<pre>((name_audit_conf is not specified) (name_audit_conf == 0)) && name_audit_interval is specified</pre>	--
349	NAM-0021	KFCA-00276-W	C	nam	name_audit_watch_time	nam	name_audit_conf	<pre>(name_audit_conf != 2) && name_audit_watch_time is specified</pre>	--
350	NAM-0022	KFCA-00697-W	W	nam	name_rpc_control_list	nam	name_audit_conf	<pre>(name_rpc_control_list == N) && ((name_audit_conf == 0) (name_audit_conf is not specified))</pre>	--

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No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
351	NAM-0023	KFCA 00698-W	C	nam	name_rpc_control_list	nam	name_audit_interval	((name_rpc_control_list is not specified) (name_rpc_control_list != N)) && ((name_audit_conf != 0) && (name_audit_interval <= 180))	--
352	NAM-0024	KFCA 00689-W	E	Domain definition file	dcnamnd	--	--	(name_domain_file_use == Y) && (IP address == 127.x.x.x) (IP address converted from a host name == 127.x.x.x)	x: Numeric value from 0 to 255
353	NAM-0025	KFCA 00688-W	W	Domain definition file	dcnamnd	--	--	(name_domain_file_use == Y) && ((specified host name == local host name) (specified IP address == local IP address)) && (specified port number == name_port)	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
354	NAM-0026	KFCA-00687-W	E	Domain definition file	dcnamnd	betranrc	rpc_multi_tpl_in_same_host	(name_domain_file_use == Y) && ((OS != Windows) && ((rpc_multi_tpl_in_same_host != Y) && ((local host name) (local IP address))))	The definition is not checked when the OS is Windows.
355	NAM-0027	KFCA-00689-W	E	Domain definition file	dcnamndex	--	--	(name_domain_file_use == Y) && (IP address == 127.x.x.x) (IP address converted from a host name == 127.x.x.x)	x: Numeric value from 0 to 255
356	NAM-0028	KFCA-00688-W	W	Domain definition file	dcnamndex	--	--	(name_domain_file_use == Y) && ((specified host name == local host name) (specified IP address == local IP address)) && (specified port number == name_port)	--

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No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
357	NAM-0029	KFCA 00687-W	E	Domain definition file	dcnamndex	betranrc	rpc_multi_tpl_in_same_host	(name_domain_file_use == Y) && ((OS != Windows) && ((rpc_multi_tpl_in_same_host != Y) && ((local host name (local IP address))))	The definition is not checked when the OS is Windows.
358	NAM-0030	KFCA 00282-W	C	betranrc	domain_masters_addr	--	--	(OS == Windows) && (domain_masters_addr is specified)	Definition checking is not supported when the OS is Windows.
359	NAM-0031	KFCA 00282-W	C	betranrc	domain_masters_port	--	--	(OS == Windows) && (domain_masters_port is specified)	Definition checking is not supported when the OS is Windows.
360	NAM-0032	KFCA 00282-W	C	betranrc	domain_use_dns	--	--	(OS == Windows) && (domain_use_dns is specified)	Definition checking is not supported when the OS is Windows.
361	NAM-0033	KFCA 00272-W	W	nam	name_nodeid_check_message	--	--	name_nodeid_check_message == N	--
362	NAM-0034	KFCA 00272-W	C	betranrc	nam_perf_trace_level	--	--	((nam_perf_trace_level & 00000001) != 00000001) && ((nam_perf_trace_level & 00000002) != 00000002)	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
363	NAM-0035	KFCA 00686-W	W	Preferred node definition file	dcnampr	--	--	(name_domain_file_use==Y) && (node not specified in all_node is specified in the preferred node definition file)	--
364	NTS-0001	KFCA 00277-W	W	env	redirect_file	betranrc	<ul style="list-style-type: none"> • rpc_port_base • prc_port 	(redirect_file == Y) && (rpc_port_base is specified prc_port is specified)	Definition checking is supported only when the OS is Windows.
365	NTS-0002	KFCA 00280-W	C	env	redirect_file_size	env	redirect_file	(redirect_file != Y) && (redirect_file_size is specified)	Definition checking is supported only when the OS is Windows.
366	NTS-0003	KFCA 26531-W	C	env	redirect_file_size	--	--	redirect_file_size < 1024	Definition checking is supported only when the OS is Windows.
367	NTS-0004	KFCA 26532-W	C	env	redirect_file_size	--	--	redirect_file_size = 0	Definition checking is supported only when the OS is Windows.

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No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
368	NTS-0005	KFCA00280-W	C	env	redirect_file_name	env	redirect_file	(redirect_file != Y) && (redirect_file_name is specified)	Definition checking is supported only when the OS is Windows.
369	NTS-0006	KFCA26533-W	C	env	redirect_file_name	--	--	Invalid file name	Definition checking is supported only when the OS is Windows.
370	NTS-0007	KFCA00269-W	W	env	console_output	env	redirect_file	(redirect_file == Y) && (console_output == Y) && (rpc_port_base is not specified) && (prc_port is not specified)	Definition checking is supported only when the OS is Windows.
371	NTS-0008	KFCA26534-W	W	env	console_output	--	--	(console_output == Y) && (OpenTP1 service logon account is the user account) && (OS is Windows Server 2003 or earlier)	Definition checking is supported only when the OS is Windows. The message is not output when the condition for problem identification code NTS-0007 is satisfied.

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
372	NTS-0009	KFCA 26535-W	W	env	console_output	--	--	(console_output == Y) && (OS is Windows Vista or later)	Definition checking is supported only when the OS is Windows. The message is not output when the condition for problem identification code NTS-0007 is satisfied.
373	NTS-0010	KFCA 26536-W	W	env	console_output	--	--	(console_output == Y) && (Allow service to interact with desktop check box is not selected) && (OS is Windows Server 2003 or earlier)	Definition checking is supported only when the OS is Windows. The message is not output when the condition for problem identification code NTS-0007 is satisfied.
374	NTS-0020	KFCA 26537-W	W	User service definition	process_privilege_name	--	--	Invalid privilege name	Definition checking is supported only when the OS is Windows.
375	NTS-0021	KFCA 00280-E	C	User service definition	process_privilege_name	--	process_privilege_restrict	(process_privilege_restrict != Y) && (process_privilege_name is specified)	Definition checking is supported only when the OS is Windows.

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No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
376	OSL-0001	KFCA00265-W	C	env	static_shm_pool_size	env	--	No condition	--
377	OSL-0002	KFCA00265-W	C	env	dynamic_shmpool_size	env	--	No condition	--
378	OSL-0003	KFCA00272-W	W	env	shmpool_tribute	--	--	((OS == HP-UX) (OS == Solaris)) && (shmpool_tribute != free)	The definition is checked only when the OS is HP-UX or Solaris.
379	OSL-0004	KFCA00272-W	W	betranrc	thdlock_sleep_time	--	--	thdlock_sleep_time != 15	--
380	OSL-0005	KFCA00282-W	C	<ul style="list-style-type: none"> • usrrc • User service definition 	core_shm_suppress	--	--	((OS == WINDOWS) (OS == HP-UX)) && (core_shm_suppress is specified)	Definition checking is not supported when the OS is Windows or HP-UX.
381	OSL-0006	KFCA00272-W	C	<ul style="list-style-type: none"> • usrrc • User service definition 	core_shm_suppress	--	--	((OS != WINDOWS) && (OS != HP-UX)) && (core_shm_suppress != N)	The definition is not checked when the OS is Windows or HP-UX.
382	--	KFCA00122-E	--	env	dynamic_shmpool_size	env	static_shm_pool_size	(1992294400 -- (static_shm_pool_size x 1024)) < (dynamic_shmpool_size x 1024)	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
383	PRC-0001	KFCA00272-W	C	prc	prc_recovery_resident	--	--	prc_recovery_resident == N	--
384	PRC-0002	KFCA00269-W	C	prc	term_watch_time	prc	term_watch_count	(term_watch_time is specified) && (term_watch_count == 1 or 2)	--
385	PRC-0003	KFCA00278-W	C	prc	prc_prf_trace	betranrc	prf_trace	(prc_prf_trace==Y && prf_trace==N) (prc_prf_trace is not specified && prf_trace==N)	--
386	PRC-0004	KFCA00272-W	C	prc	prc_prf_trace	--	--	prc_prf_trace == N	--
387	PRC-0005	KFCA00267-W	W	prc	prc_coresave_path	--	--	The path does not begin with a slash (/).	PRC#1
388	PRC-0006	KFCA00267-W	W	prc	prc_coresave_path	--	--	A directory was not specified.	--
389	PRC-0007	KFCA00267-W	W	prc	prc_coresave_path	--	--	The directory does not exist.	--
390	PRC-0008	KFCA00267-W	W	prc	prc_coresave_path	--	--	Access is not possible.	--

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No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
391	PRC-0009	KFCA 00267-W	W	prc	prc_c oresa ve_pa th	--	--	The OpenTP1 administrator does not have write permission.	--
392	PRC-0010	KFCA 00771-W	W	prc	prcsvg path	--	--	prcsvgpath does not include \$DCDIR/bin and \$DCDIR/aplib.	PRC#3
393	PRC-0011	KFCA 00282-W	C	trn	group s	--	--	"groups" is specified.	Definition checking is not supported when the OS is Windows.
394	PRC-0012	KFCA 00267-W	W	betranrc	prc_c urren t_wor k_pat h	--	--	The path does not begin with a slash (/).	PRC#1
395	PRC-0013	KFCA 00267-W	W	betranrc	prc_c urren t_wor k_pat h	--	--	The directory does not exist.	--
396	PRC-0014	KFCA 00267-W	W	betranrc	prc_c urren t_wor k_pat h	--	--	A directory was not specified.	--
397	PRC-0015	KFCA 00267-W	W	betranrc	prc_c urren t_wor k_pat h	--	--	Access is not possible.	--
398	PRC-0016	KFCA 00267-W	W	betranrc	prc_c urren t_wor k_pat h	--	--	The OpenTP1 administrator does not have write permission.	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
399	PRC-0017	KFCA00267-W	W	betranrc	prc_current_work_path	--	--	prc_current_work_path==OpenTP1 directory in another OpenTP1 environment	--
400	PRC-0018	KFCA00267-W	W	betranrc	prc_current_work_path	--	--	prc_current_work_path==directory specified in prc_current_work_path in another OpenTP1 environment	--
401	PRC-0019	KFCA00285-W	E	User service definition	module	--	--	"module" is not specified.	--
402	PRC-0020	KFCA00268-W	W	User service definition	module	prc	prcsvpath	The paths specified in prcsvpath were searched for the file specified in module, but the file was not found.	PRC#4
403	PRC-0021	KFCA00268-W	W	User service definition	module	prc	prcsvpath	The paths specified in prcsvpath were searched for the file specified in module, but the file path was too long.	PRC#4

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No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
404	PRC-0022	KFCA00268-W	W	User service definition	module	prc	prcsvpath	The paths specified in prcsvpath were searched for the file specified in module, but the file was not an executable file.	PRC#4
405	PRC-0023	KFCA00272-W	C	User service definition	nice	--	--	nice != 0	--
406	PRC-0024	KFCA00282-W	C	User service definition	uid	--	--	uid is specified.	Definition checking is not supported when the OS is Windows.
407	PRC-0025	KFCA00282-W	C	User service definition	groups	--	--	groups is specified.	Definition checking is not supported when the OS is Windows.
408	PRC-0026	KFCA00267-W	W	prc	prc_current_work_path	--	--	The file path was too long.	--
409	PRC-0027	KFCA00267-W	W	betranrc	prc_current_work_path	--	--	The file path was too long.	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
410	--	<ul style="list-style-type: none"> • KFC A0 07 56 -E • KFC A0 07 08 -E 	--	prc	prcsv path	--	--	(path name < 1) (255 < path name)	--
411	--	<ul style="list-style-type: none"> • KFC A0 07 56 -E • KFC A0 07 08 -E 	--	prc	prcsv path	--	--	The specified path name neither begins nor ends with a colon (:).	PRC#2
412	--	<ul style="list-style-type: none"> • KFC A0 07 57 -E • KFC A0 07 08 -E 	--	prc	prcsv path	--	--	The directory does not exist.	--
413	--	<ul style="list-style-type: none"> • KFC A0 07 58 -E • KFC A0 07 08 -E 	--	prc	prcsv path	--	--	A directory was not specified.	--
414	PRF-001	KFCA 26780-W	C	prf	prf_file_size	--	--	prf_file_size == 1024	--

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No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
415	PRF-0002	KFCA 00272-W	W	betranrc	prf_trace	--	--	prf_trace == N	--
416	PRF-0004	KFCA 00272-W	C	prf	prf_trace_backup	--	--	prf_trace_backup == N	--
417	QUE-0001	KFCA 00286-W	C	que	--	sysconf	que_conf	(que_conf == Y) && (no files defined in que)	--
418	QUE-0002	KFCA 00264-W	C	que	que_xidnum	trn	trn_tran_processes_count	que_xidnum > trn_tran_processes_count	--
419	QUE-0003	KFCA 00264-W	C	que	quegrp	que	-w option of quegrp	Warning cancel percentage > usage warning percentage	--
420	--	KFCA 01303-E	--	que	quegrp	--	--	Duplicated queue group ID	--
421	--	KFCA 01304-E	--	que	quegrp	--	--	Duplicated physical file path name	--
422	--	KFCA 01300-E	--	que	quegrp	--	--	No valid quegrp or quegrp is not specified.	--

No .	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
423	--	KFCA 01301-E	--	que	quegr p	--	--	<p>One of the following conditions exists:</p> <ul style="list-style-type: none"> • There is no physical file. • The file is not a queue physical file. • Access permission for the queue physical file has not been granted. • The queue physical file and OpenTP1 versions do not match. 	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
424	RPC-0001	KFCA00370-W	C	<ul style="list-style-type: none"> • betranrc • jnl • scd • trn • nam • prc • usrrc • User service definition 	max_socket_descriptors	--	--	One message is output unconditionally for the system server and user server logic checks.	<ul style="list-style-type: none"> • JNL#1 • CPD#1 • One of the following character strings is output as <i>defined-file-name</i> in the output message: betranrc: Output when a system server logic check is performed usrrc: Output when a user server logic check is performed
425	RPC-0002	KFCA00265-W	C	<ul style="list-style-type: none"> • betranrc • jnl • scd • trn • nam • prc • usrrc • User service definition 	max_socket_descriptors	--	--	max_socket_descriptors is specified.	<ul style="list-style-type: none"> • JNL#1 • CPD#1

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
426	RPC-0003	KFCA00262-W	C	<ul style="list-style-type: none"> betranrc usrsrc User service definition 	ipc_socket_l_highwater	--	--	When <code>ipc_socket_l_highwater=a</code> , <code>b</code> is specified, <code>b > a</code> .	--
427	RPC-0004	KFCA00377-W	E	betranrc	my_host	--	--	<ul style="list-style-type: none"> The host name cannot be acquired by using the <code>hostname</code> command, ***** might be output as <i>specified-host-name</i> in the output message. Mapping between host names and IP addresses cannot be performed by using the <code>hosts</code> file or DNS. 	If the host name cannot be acquired by using the <code>hostname</code> command, ***** might be output as <i>specified-host-name</i> in the output message.
428	RPC-0005	KFCA00372-W	E	betranrc	my_host	--	--	IP address converted from a host name == <code>127.x.x.x</code>	<i>x</i> : Numeric value from 0 to 255
429	RPC-0007	KFCA00373-W	E	betranrc	rpc_netmask	--	--	The specified value cannot be converted to network address format.	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
430	RPC-0008	KFCA00374-W	C	betranrc	rpc_netmask	betranrc	dcbindht	(dcbindht is specified) && (rpc_netmask is not specified)	--
431	RPC-0009	KFCA00371-W	C	betranrc	rpc_port_base	prc	prc_processes_count	(rpc_port_base + prc_processes_count > 65535)	--
432	RPC-0010	KFCA00266-W	C	betranrc	rpc_port_base	prc	prc_processes_count	(rpc_port_base + prc_processes_count <= 65535)	--
433	RPC-0011	KFCA00280-W	C	betranrc	rpc_retry_count	betranrc	rpc_retry	(rpc_retry == N) && (rpc_retry_count is specified)	--
434	RPC-0012	KFCA00280-W	C	betranrc	rpc_retry_interval	betranrc	rpc_retry	(rpc_retry == N) && (rpc_retry_interval is specified)	--
435	RPC-0013	KFCA00376-W	C	betranrc	rpc_router_retry_interval	--	--	(0 < rpc_router_retry_interval) && (rpc_router_retry_interval < 10)	--
436	RPC-0014	KFCA00278-W	C	betranrc	rpc_router_retry_interval	betranrc	rpc_router_retry_count	(rpc_router_retry_count == 0) && (rpc_router_retry_interval is specified)	--

No.	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
437	RPC-0015	KFCA00376-W	C	<ul style="list-style-type: none"> • betranrc • usrrc • User service definition 	rpc_send_retry_interval	--	--	(0 < rpc_send_retry_interval) && (rpc_send_retry_interval < 20)	--
438	RPC-0016	KFCA00278-W	C	<ul style="list-style-type: none"> • betranrc • usrrc • User service definition 	rpc_send_retry_interval	<ul style="list-style-type: none"> • betranrc • usrrc • User service definition 	rpc_send_retry_count	(rpc_send_retry_count == 0) && (rpc_send_retry_interval is specified)	RPC#1
439	RPC-0017	KFCA00370-W	C	<ul style="list-style-type: none"> • usrrc • User service definition 	max_open_fds	--	--	One message is output unconditionally for the user server logic check.	When a logic check is performed for the user server, usrrc is output as <i>defined-file-name</i> in the output message.
440	RPC-0018	KFCA00265-W	C	<ul style="list-style-type: none"> • usrrc • User service definition 	max_open_fds	--	--	max_open_fds is specified.	--

D. Details of Definition Checking

No.	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
441	RPC-0019	KFCA00371-W	E	<ul style="list-style-type: none"> usrsrc User service definition 	max_open_fds	<ul style="list-style-type: none"> betrandrc usrsrc User service definition 	max_socket_descs	((OS != Solaris) && (OS != Linux)) && ((max_socket_descs + max_open_fds) > 2048) ((OS == Solaris) (OS == Linux)) && ((max_socket_descs + max_open_fds) > 1024)	RPC#1
442	RPC-0020	KFCA00375-W	E	User service definition	service	<ul style="list-style-type: none"> usrsrc User service definition 	receive_from	((receive_from == queue) (receive_from == socket)) && (service is not specified)	RPC#1
443	RPC-0021	KFCA00278-W	C	User service definition	service	<ul style="list-style-type: none"> usrsrc User service definition 	receive_from	(receive_from == none) && (service is specified)	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
444	RPC-0022	KFCA00275-W	E	User service definition	service	--	--	One of the following conditions exists: <ul style="list-style-type: none"> The UAP shared library name contains white space. The UAP shared library name contains a tab code. The UAP shared library name contains an environment variable at a position other than the beginning of the path name. 	--
445	RPC-0024	KFCA00372-W	E	betranrc	dcbin dht	--	--	IP address converted from the host name specified in the -h option == 127.x.x.x	x: Numeric value from 0 to 255
446	RPC-0025	KFCA00378-W	C	User service definition	service	--	--	UAP shared library name is specified.	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
447	RPC-0026	KFCA00269-W	C	<ul style="list-style-type: none"> usrsrc User service definition 	atomic_update	betranrc	jnl_fileless_option	(jnl_fileless_option == Y) && (atomic_update == Y)	<ul style="list-style-type: none"> RPC#1 atomic_update (default: Y)
448	--	KFCA00323-E	--	betranrc	dcbin dht	--	--	The host names specified in the -h option cannot be mapped to IP addresses by using the hosts file or DNS.	--
449	--	KFCA00324-E	--	betranrc	dcbin dht	--	--	The network names specified in the -n option cannot be mapped to network numbers by using the networks file or NIS.	--
450	--	KFCA00340-W (error reason code: 3)	--	usrnet	dcsvg def	--	--	The host names specified in the -h option cannot be mapped to IP addresses by using the hosts file or DNS.	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
451	--	KFCA 00340-W (error reason code: 7)	--	usrnet	dcsvg def	--	--	(-w option is specified) && (-t option is specified)	--
452	--	KFCA 00340-W (error reason code: 7)	--	usrnet	dcsvg def	--	--	(one of the hosts specified in the -h option) && (-t option is specified)	--
453	RTS-0001	KFCA 00267-W	E	rts	rts_log_file_name	--	--	(rts_log_file == Y) && (directory in which RTS log files to be created is non-existent)	--
454	RTS-0002	KFCA 00272-W	C	rts	rts_log_file_count	--	--	(rts_log_file == Y) && (rts_log_file_count < 3)	--
455	RTS-0003	KFCA 00280-W	C	rts	rts_log_file_name	rts	rts_log_file	(rts_log_file == N) && (rts_log_file_name is specified)	--
456	RTS-0004	KFCA 00280-W	C	rts	rts_log_file_size	rts	rts_log_file	(rts_log_file == N) && (rts_log_file_size is specified)	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
457	RTS-0005	KFCA 00280-W	C	rts	rts_log_file_count	rts	rts_log_file	(rts_log_file == N) && (rts_log_file_count is specified)	--
458	RTS-0006	KFCA 00280-W	C	rts	rts_swap_message	rts	rts_log_file	(rts_log_file == N) && (rts_swap_message == Y)	--
459	RTS-0007	KFCA 32765-W	C	rts	rtspurt	rts	rts_service_max	Number of registered items that are to be acquired > rts_service_max	--
460	RTS-0008	KFCA 00275-W	W	User service definition	type	--	--	((type != RTS) && (definition file name is not RTSSUP)) ((type != RTS) && (definition file name is not RTSSPP))	--
461	RTS-0009	KFCA 00275-W	W	User service definition	module	--	--	((type != RTS) && (module == rtssup) && (definition file name is not RTSSUP)) ((type != RTS) && (module == rtsspp) && (definition file name is not RTSSPP))	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
462	RTS-0010	KFCA32763-W	W	User service definition (RTSSUP or RTSSPP)	type	User service definition	module	((type != RTS) && (module == rtssup) && (definition file name is RTSSUP)) ((type != RTS) && (module == rtsspp) && (definition file name is RTSSPP))	--
463	RTS-0011	KFCA32764-W	W	User service definition (RTSSUP or RTSSPP)	--	--	--	The contents of RTSSUP or RTSSPP are different from their contents when they were created by using the rtssetup command.	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
464	RTS-0012	KFCA00267-W	E	rts	rts_log_file_name	--	--	(rts_log_file == Y) && ((OpenTP1 administrator does not have write permission for the directory in which RTS log files to be created) (OpenTP1 administrator does not have execution permission for the directory in which RTS log files are to be created))	--
465	RTS-0013	KFCA00268-W	E	rts	rts_log_file_name	--	--	(rts_log_file == Y) && (OpenTP1 administrator does not have execution permission for the RTS log file specified in rts_log_file_name)	RTS#1
466	RTS-0014	KFCA00268-W	E	rts	rts_log_file_name	--	--	(rts_log_file == Y) && (a file was not specified as an RTS log file in rts_log_file_name)	RTS#1

No .	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
467	RTS-0015	KFCA00272-W	C	rts	rts_log_file	--	--	rts_log_file == N	--
468	RTS-0016	KFCA00280-W	C	rts	rts_log_file_backup	--	rts_log_file	(rts_log_file == N) && (rts_log_file_backup == Y)	--
469	RTS-0017	KFCA00268-W	C	rts	rts_log_file_backup	--	<ul style="list-style-type: none"> • rts_log_file • rts_log_file_name 	(rts_log_file == Y) && (rts_log_file_backup == Y) && (directory with the same name as a backup file exists)	RTS#2
470	--	KFCA00242-E	--	rts	rtspu t	--	--	((-usrv) && (-s non-existent user service definition file name)) (-f non-existent real-time acquisition items definition file name)	--
471	--	KFCA32710-W	--	rts	rtspu t	rts	rts_item_max	Number of registered items that are to be acquired > rts_item_max	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
472	--	KFCA 32709-W	--	rts	rtspu t	rts	rts_s ervic e_max	Number of registered acquisition targets > rts_servic e_max	--
473	SCD-0001	KFCA 00262-W	C	scd	scd_s erver _coun t	env	serve r_cou nt	scd_server _count > server_cou nt	--
474	SCD-0002	KFCA 00279-W	C	scd	scd_h old_r ecove ry	env	start _sche dulin g_tim ing	(scd_hold_r ecovery is specified) && (start_sche duling_tim ing is not specified)	--
475	SCD-0003	KFCA 00278-W	C	scd	scd_h old_r ecove ry	env	start _sche dulin g_tim ing	(scd_hold_r ecovery is specified) && (start_sche duling_tim ing == AFTER)	--
476	SCD-0004	KFCA 00278-W	C	scd	scd_h old_r ecove ry	scd	scd_h old_r ecove ry_co unt	(scd_hold_r ecovery is specified) && (scd_hold_r ecovery_co unt == 0))	--
477	SCD-0005	KFCA 33200-W	E	scd	scd_h old_r ecove ry_co unt	betra nrc	rpc_m ax_me ssage _size	↑(scd_hol d_recovery _count / 7280) ↑ > (rpc_max_me ssage_size value (default: 1))	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
478	SCD-0006	KFCA00266-W	C	scd	scd_port	--	--	scd_port is specified.	--
479	SCD-0007	KFCA00272-W	C	scd	scd_announce_server_statuses	--	--	scd_announce_server_status == N	--
480	SCD-0008	KFCA00278-W	C	scd	scd_advertise_control	env	start_scheduling_timing	(scd_advertise_control == AFTER) && (start_scheduling_timing == BEFORE)	--
481	SCD-0009	KFCA00272-W	C	scd	scd_message_level	--	--	scd_message_level == 1	--
482	SCD-0010	KFCA00259-W	E	scd	scdbufgrp	scd	scdbufgrp	The schedule buffer group name is also specified in another scdbufgrp definition.	--
483	SCD-0011	KFCA00274-W	E	scd	scdbufgrp	--	--	(value of the -n option in scdbufgrp x value of the -l option in scdbufgrp) > 31457280 Recommended value: 31457280 / value of the -n option	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
484	SCD-0012	KFCA00259-W	E	scd	scdmulti	scd	scdmulti	The multi-scheduler group name is also specified in another scdmulti definition (when more than one scdmulti definition is specified without the -g option)	--
485	SCD-0013	KFCA33201-W	E	scd	scdmulti	prc	prc_process_count	(total of the values of the -m options in all scdmulti definitions) > (prc_process_count value)	--
486	SCD-0014	KFCA33201-W	E	scd	scdmulti	env	server_count	(total of the values of the -m options in all scdmulti definitions) > (server_count value)	--
487	SCD-0015	KFCA33202-W	E	scd	scdmulti	scd	scd_port	(scd_port is not specified) && (-p option is not specified in the first scdmulti definition)	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
488	SCD-0016	KFCA33203-W	E	scd	scdmulti	--	--	(value of the -p option in scdmulti + value of the -m option in scdmulti (default: 1) - 1) > 65535)	--
489	SCD-0017	KFCA33203-W	E	scd	scdmulti	scd	scd_port	(-p option is not specified in scdmulti) && ((value of the -m option in scdmulti (default: 1) + scd_port value) > 65535)	--
490	SCD-0018	KFCA00266-W	C	scd	scdmulti	--	--	Logic checking of other scdmulti definitions did not result in an error.	--
491	SCD-0019	KFCA00285-W	E	scd	scdbufgrp	scd	scdbufgrp	Schedule buffer group name is not specified in scdbufgrp.	--
492	SCD-1001	KFCA00285-W	E	User service definition	service_group	User service definition	receive_from	(receive_from == socket) && (service_group is not specified)	--
493	SCD-1002	KFCA00285-W	E	User service definition	service_group	User service definition	receive_from	(receive_from == queue) && (service_group is not specified)	--

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No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
494	SCD-1003	KFCA33204-W	E	User service definition	parallel_count	--	--	(receive_from == queue) && (number of resident processes for parallel_count == 0) && (maximum number of processes for parallel_count == 0)	<ul style="list-style-type: none"> • SCD#1 • Value of parallel_count is either of the following : <ul style="list-style-type: none"> • set parallel_count = 0,0 • set parallel_count = 0
495	SCD-1004	KFCA33205-W	E	User service definition	parallel_count	--	--	(receive_from == queue) && (number of resident processes for parallel_count > maximum number of processes for parallel_count)	SCD#1
496	SCD-1005	KFCA00262-W	E	User service definition	parallel_count	prc	prc_processes_count	(receive_from == queue) && (number of resident processes for parallel_count >= prc_processes_count)	SCD#1

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
497	SCD-1006	KFCA00262-W	C	User service definition	parallel_count	prc	prc_processes_count	(receive_from == queue) && (number of resident processes for parallel_count < prc_processes_count) && (maximum number of processes for parallel_count >= prc_processes_count)	SCD#1
498	SCD-1007	KFCA00278-W	C	User service definition	hold_recovery	scd	scd_hold_recovery_count	(receive_from == queue) && (type == other) && (hold_recovery is specified) && (hold_recovery == Y) && (scd_hold_recovery_count == 0)	SCD#1
499	SCD-1008	KFCA00280-W	C	User service definition	hold_recovery	<ul style="list-style-type: none"> • env • scd 	<ul style="list-style-type: none"> • start_scheduling_timeing • scd_hold_recovery 	(receive_from == queue) && (type == other) && (hold_recovery is specified) && (hold_recovery == Y) && (start_scheduling_timeing == BEFORE) && (scd_hold_recovery != F)	SCD#1

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No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
500	SCD-1009	KFCA00281-W	C	User service definition	message_store_buflen	User service definition	scdbufgrp	(receive_from == queue) && (message_store_buflen is specified) && (scdbufgrp is specified)	SCD#1
501	SCD-1010	KFCA00265-W	C	User service definition	message_store_buflen	User service definition	type	(receive_from == queue) && (type == other) && (scdbufgrp is not specified)	SCD#1
502	0	<ul style="list-style-type: none"> • KFC A0 02 73 -W • KFC A0 02 65 -W 	C	User service definition	message_store_buflen	User service definition	type	(receive_from == queue) && (type == MHP) && ((number of resident processes for parallel_count == maximum number of processes) balance_count == 0) && (message_store_buflen value < (512 x maximum number of processes for parallel_count))	<ul style="list-style-type: none"> • SCD#1 • SCD#2

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
503	SCD-1012	<ul style="list-style-type: none"> • KFC A00273-W • KFC A00265-W 	C	User service definition	message_store_bufllen	User service definition	type	(receive_from == queue) && (type == MHP) && ((number of resident processes for parallel_count != maximum number of processes) && balance_count > 0) && (message_store_bufllen value < (512 x maximum number of processes for parallel_count x balance_count value))	<ul style="list-style-type: none"> • SCD#1 • SCD#2
504	SCD-1013	KFCA33209-W	C	User service definition	balance_count	User service definition	parallel_count	(receive_from == queue) && (balance_count is specified) && (number of resident processes for parallel_count == maximum number of processes)	SCD#1

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
505	SCD-1014	KFCA00281-W	C	User service definition	message_cell_size	User service definition	scdbufgrp	(receive_from == queue) && (message_cell_size is specified) && (scdbufgrp is specified)	SCD#1
506	SCD-1015	KFCA33206-W	C	User service definition	message_cell_size	User service definition	<ul style="list-style-type: none"> • service_priority_control • service_hold 	(receive_from == queue) && (type == other) && (message_cell_size is specified) && ((service_priority_control == N) && (service_hold == N))	SCD#1
507	SCD-1016	KFCA33207-W	C	User service definition	purge_message	User service definition	parallel_count	(receive_from == queue) && (purge_message is specified) && (number of resident processes for parallel_count > 0)	SCD#1
508	SCD-1017	KFCA00278-W	C	User service definition	service_term_watch_time	User service definition	hold	(receive_from == queue) && (type == other) && (service_term_watch_time > 0) && (hold == Y)	SCD#1

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
509	SCD-1018	KFCA00279-W	C	User service definition	service_term_watch_time	User service definition	hold	(receive_from == queue) && (type == other) && (service_term_watch_time > 0) && (hold is not specified)	SCD#1
510	SCD-1019	KFCA00278-W	C	User service definition	service_term_watch_time	User service definition	service_hold	(receive_from == queue) && (type == other) && (service_term_watch_time > 0) && (service_hold is specified) && (service_hold == N)	SCD#1
511	SCD-1020	KFCA00279-W	C	User service definition	service_term_watch_time	User service definition	service_hold	(receive_from == queue) && (type == other) && (service_term_watch_time > 0) && (service_hold is not specified)	SCD#1
512	SCD-1021	KFCA33209-W	C	User service definition	terminated_after_service	User service definition	parallel_count	(receive_from == queue) && (number of resident processes for parallel_count == maximum number of processes) && (terminated_after_service == Y)	SCD#1

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No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
513	SCD-1023	KFCA00282-W	C	User service definition	schedule_method	--	--	schedule_method is specified.	SCD#1
514	SCD-1024	KFCA00282-W	C	User service definition	service_wait_time	--	--	service_wait_time is specified.	SCD#1
515	SCD-1027	KFCA00278-W	C	User service definition	make_queue_on_starting	User service definition	purge_msgget	(receive_from == queue) && (make_queue_on_starting == Y) && (purge_msgget == Y)	SCD#1
516	SCD-1028	KFCA33207-W	C	User service definition	make_queue_on_starting	User service definition	parallel_count	(receive_from == queue) && (make_queue_on_starting == Y) && (number of resident processes for parallel_count > 0)	SCD#1
517	SCD-1029	KFCA00278-W	C	User service definition	scd_poolfull_check_count	User service definition	scd_poolfull_check_interval	(receive_from == queue) && (scd_poolfull_check_count is specified) && (scd_poolfull_check_interval == 0)	SCD#1

No .	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
518	SCD-1030	KFCA00279-W	C	User service definition	scd_poolfull_check_count	User service definition	scd_poolfull_interval	(receive_from == queue) && (scd_poolfull_check_count is specified) && (scd_poolfull_check_interval is not specified)	SCD#1
519	SCD-1031	KFCA00278-W	C	User service definition	loadcheck_interval	scd	scd_announcement_server_statuses	(receive_from == queue) && (type == other) && (loadcheck_interval > 0) && (scd_announcement_server_status == N)	SCD#1
520	SCD-1032	KFCA00278-W	C	User service definition	levelup_queue_count	scd	scd_announcement_server_statuses	(receive_from == queue) && (type == other) && (levelup_queue_count is specified) && (scd_announcement_server_status == N)	<ul style="list-style-type: none"> • SCD#1 • Make sure that both the levelup_queue_count value and the leveldown_queue_count value satisfy the following condition: $0 \leq D0 < U1 \leq D1 < U2$

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
521	SCD-1033	KFCA00261-W	E	User service definition	levelup_queue_count	User service definition	leveldown_queue_count	(receive_from == queue) && (type == other) && (levelup_queue_count is specified) && ((scd_announcement_server_status == Y) (scd_announcement_server_status is not specified)) && (U1 < 1)	<ul style="list-style-type: none"> • SCD#1 • Make sure that both the levelup_queue_count value and the leveldown_queue_count value satisfy the following condition: $0 \leq D0 < U1 \leq D1 < U2$
522	SCD-1034	KFCA00262-W	E	User service definition	levelup_queue_count	--	--	(receive_from == queue) && (type == other) && (levelup_queue_count is specified) && ((scd_announcement_server_status == Y) (scd_announcement_server_status is not specified)) && (U1 > 0) && (U2 ≤ U1)	SCD#1

No .	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
523	SCD-1035	KFCA00279-W	C	User service definition	level down_queue_count	User service definition	level up_queue_count	(receive_from == queue) && (type == other) && (leveldown_queue_count is specified) && (levelup_queue_count is not specified)	<ul style="list-style-type: none"> • SCD#1 • Make sure that both the levelup_queue_count value and the leveldown_queue_count value satisfy the following condition: $0 \leq D0 < U1 \leq D1 < U2$
524	SCD-1036	KFCA00262-W	E	User service definition	level down_queue_count	User service definition	level up_queue_count	(receive_from == queue) && (type == other) && (leveldown_queue_count is specified) && (levelup_queue_count is specified) && ((scd_announcement_server_status == Y) (scd_announcement_server_status is not specified)) && (D0 ≥ U1)	<ul style="list-style-type: none"> • SCD#1 • Make sure that both the levelup_queue_count value and the leveldown_queue_count value satisfy the following condition: $0 \leq D0 < U1 \leq D1 < U2$

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No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
525	SCD-1037	KFCA00262-W	E	User service definition	level_down_queue_count	User service definition	level_up_queue_count	(receive_from == queue) && (type == other) && (level_down_queue_count is specified) && (level_up_queue_count is specified) && ((scd_announcement_server_status == Y) (scd_announcement_server_status is not specified)) && (D1 ≥ U2)	SCD#1
526	SCD-1038	KFCA00278-W	C	User service definition	schedule_delay_abort	User service definition	schedule_delay_limit	(receive_from == queue) && (type == other) && schedule_delay_abort is specified && (schedule_delay_limit == 0)	SCD#1
527	SCD-1039	KFCA00279-W	C	User service definition	schedule_delay_abort	User service definition	schedule_delay_limit	(receive_from == queue) && (type == other) && schedule_delay_abort is specified && (schedule_delay_limit is not specified)	SCD#1

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
528	SCD-1040	KFCA00278-W	C	User service definition	scd_pool_warning_interval	User service definition	scd_pool_warning_rate	(receive_from == queue) && (type == other) && (scd_pool_warning_interval > 0) && (scd_pool_warning_use_rate == 0)	SCD#1
529	SCD-1041	KFCA00279-W	C	User service definition	scd_pool_warning_interval	User service definition	scd_pool_warning_rate	(receive_from == queue) && (type == other) && (scd_pool_warning_interval > 0) && (scd_pool_warning_use_rate is not specified)	SCD#1
530	SCD-1042	KFCA00278-W	C	User service definition	stay_watch_check_rate	User service definition	stay_watch_queue_count	(receive_from == queue) && (type == other) && (stay_watch_queue_count == 0) && (stay_watch_check_rate is specified)	SCD#1
531	SCD-1043	KFCA00279-W	C	User service definition	stay_watch_check_rate	User service definition	stay_watch_queue_count	(receive_from == queue) && (type == other) && (stay_watch_queue_count is not specified) && (stay_watch_check_rate is specified)	SCD#1

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No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
532	SCD-1044	KFCA00278-W	C	User service definition	stay_watch_abort	User service definition	stay_watch_queue_count	(receive_from == queue) && (type == other) && (stay_watch_abort is specified) && (stay_watch_queue_count == 0)	SCD#1
533	SCD-1045	KFCA00279-W	C	User service definition	stay_watch_abort	User service definition	stay_watch_queue_count	(receive_from == queue) && (type == other) && (stay_watch_abort is specified) && (stay_watch_queue_count is not specified)	SCD#1
534	SCD-1046	KFCA00278-W	C	User service definition	stay_watch_start_interval	User service definition	stay_watch_queue_count	(receive_from == queue) && (type == other) && (stay_watch_start_interval is specified) && (stay_watch_queue_count == 0)	SCD#1
535	SCD-1047	KFCA00279-W	C	User service definition	stay_watch_start_interval	User service definition	stay_watch_queue_count	(receive_from == queue) && (type == other) && (stay_watch_start_interval is specified) && (stay_watch_queue_count is not specified)	SCD#1

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
536	SCD-1048	KFCA00278-W	C	User service definition	stay_watch_check_interval	User service definition	stay_watch_queue_count	(receive_from == queue) && (type == other) && (stay_watch_check_interval is specified) && (stay_watch_queue_count == 0)	SCD#1
537	SCD-1049	KFCA00279-W	C	User service definition	stay_watch_check_interval	User service definition	stay_watch_queue_count	(receive_from == queue) && (type == other) && (stay_watch_check_interval is specified) && (stay_watch_queue_count is not specified)	SCD#1
538	SCD-1050	KFCA00276-W	E	User service definition	scdbu_fgrp	scd	scdbu_fgrp	The specified buffer group is not specified in the schedule service definition.	--
539	SCD-1051	KFCA33208-W	E	User service definition	scdmulti	User service definition	scdmulti	More than one scdmulti is specified in one user service definition.	--
540	SCD-1052	KFCA00276-W	E	User service definition	scdmulti	scd	scdmulti	The specified multi-schedule group is not specified for scdmulti in the schedule service definition.	--

D. Details of Definition Checking

No .	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
541	SCD-1053	KFCA00281-W	C	User service definition	termed_after_service	User service definition	service_wait_time	(receive_from == queue) && (termed_after_service == Y) && (schedule_method == namedpipe) && (service_wait_time is specified)	The definition is not checked when the OS is Windows.
542	SCD-1054	KFCA00278-W	C	User service definition	service_wait_time	User service definition	schedule_method	(receive_from == queue) && ((schedule_method == msgque) (schedule_method is not specified)) && (service_wait_time is specified)	<ul style="list-style-type: none"> • SCD#1 • The definition is not checked when the OS is Windows.

No .	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
543	SCD-1055	KFCA00259-W	W	User service definition	scdsv cdef	User service definition	scdsv cdef	One of the following conditions exists: <ul style="list-style-type: none"> The specified service name is specified in another scdsvcd ef definition command . More than one scdsvcd ef definition command is specified without a service name specified. 	--
544	SCD-1056	KFCA00276-W	W	User service definition	scdsv cdef	User service definition	service	The specified service name is not specified in the service definition command.	--

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No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
545	SCD-1057	KFCA00262-W	W	User service definition	scdsv cdef	User service definition	message_store_buf flen	(receive_from == queue) && (type == other) && (scdbufgrp is not specified) && (scdsvcdef -l value >= message_store_buf flen)	SCD#1
546	SCD-1058	KFCA00262-W	W	User service definition	scdsv cdef	User service definition	scdbuf grp	(receive_from == queue) && (type == other) && (scdbufgrp is specified) && (scdsvcdef -l value >= (scdbufgrp -n value x scdbufgrp -l value))	--
547	SCD-1059	KFCA00262-W	W	User service definition	scdsv cdef	User service definition	parallel_c ount	(receive_from == queue) && (type == other) && (scdsvcdef -p value >= parallel_c ount)	SCD#1
548	SCS-0001	KFCA27770-W	C	User service definition for the RAP-processing listener	rap_c lient _mana ger_n ode	--	--	(rap_client_manager_node == my_host value) (host name of rap_client_manager_node == local loopback address)	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
549	SCS-002	KFCA 27772-W	E	User service definition for the RAP-processing listener	rap_client_manager_node	--	--	rap_client_manager_node != "host-name:port"	--
550	SCS-002	KFCA 27772-W	E	User service definition for the RAP-processing listener	module	--	--	(DCSCSLNAME value == definition file name) && (module != raplisnr)	--
551	SCS-002	KFCA 27772-W	E	User service definition for the RAP-processing listener	atomic_update	--	--	atomic_update != N	--
552	SCS-002	KFCA 27772-W	E	User service definition for the RAP-processing listener	receive_from	--	--	receive_from != none	--
553	SCS-002	KFCA 27772-W	E	User service definition for the RAP-processing listener	auto_restart	--	--	auto_restart != Y	--
554	SCS-002	KFCA 27772-W	E	User service definition for the RAP-processing listener	critical	--	--	critical != N	--

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No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
555	SCS-0002	KFCA 27772-W	E	User service definition for the RAP-processing listener	trf_put	--	--	trf_put != N	--
556	SCS-0002	KFCA 27772-W	E	User service definition for the RAP-processing listener	node_down_restart	--	--	node_down_restart != Y	--
557	SCS-0002	KFCA 27772-W	E	User service definition for the RAP-processing listener	term_watch_time	--	--	term_watch_time != 0	--
558	SCS-0002	KFCA 27772-W	E	User service definition for the RAP-processing listener	max_open_fds	--	--	max_open_fds != value generated by rapdfgen	--
559	SCS-0002	KFCA 27772-W	E	User service definition for the RAP-processing listener	rpc_destination_mode	--	--	rpc_destination_mode != namdonly	--
560	SCS-0002	KFCA 27772-W	E	User service definition for the RAP-processing listener	status_change_when_terminating	--	--	status_change_when_terminating != N	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
561	SCS-002	KFCA 27772-W	E	User service definition for the RAP-processing listener	DCSCS PARA (rap_parallel_server)	Any (RAP-processing server)	parallel_count	DCSCSPARA value != parallel_count	--
562	SCS-003	KFCA 00266-W	C	User service definition for the RAP-processing listener	rap_client_manager_node	--	--	rap_client_manager_node is specified.	--
563	SCS-004	KFCA 27771-W	E	User service definition for the RAP-processing listener	module	--	--	(type != RAP) && (module == raplisnr)	--
564	SCS-005	KFCA 00278-W	C	User service definition for the RAP-processing listener	rap_client_manager_node	--	--	(rap_notify == N) && (rap_client_manager_node is specified)	--
565	SCS-006	KFCA 00266-W	C	User service definition for the RAP-processing listener	DCSCS PORT (rap_listen_port)	--	--	DCSCSPORT is specified.	--

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No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
566	SCS-0007	KFCA 27777-W	W	User service definition for the RAP-processing listener	max_socket_desc ripts	<ul style="list-style-type: none"> • betranrc • usrrc 	max_open_fds	((OS != Solaris) && (OS != Linux)) && ((max_socket_descs + max_open_fds) > 2048) ((OS == Solaris) (OS == Linux)) && ((max_socket_descs + max_open_fds) > 1024)	--
567	SCS-0008	KFCA 27778-W	E	User service definition for the RAP-processing listener	--	Any (RAP-processing server)	--	No RAP-processing server definition file	--
568	SCS-0009	KFCA 27775-W	E	User service definition for the RAP-processing listener	rap_client_manager_node	--	--	The host name cannot be resolved into an address.	--
569	SCS-0010	KFCA 00279-W	C	User service definition for the RAP-processing listener	rap_client_manager_node	--	--	(rap_notify == Y) && (rap_client_manager_node is not specified)	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
570	SCS-0011	KFCA00262-W	C	User service definition for the RAP-processing listener	rap_term_disconnect_time	env	system_terminate_watch_time	(system_terminate_watch_time != 0) && ((rap_term_disconnect_time == 0) (rap_term_disconnect_time >= system_terminate_watch_time))	--
571	SCS-0012	KFCA00274-W	C	User service definition for the RAP-processing listener	rap_stay_watch_time	--	--	rap_stay_watch_time > 30	--
572	SCS-0013	KFCA00278-W	C	User service definition for the RAP-processing listener	rap_stay_warning_interval	User service definition for the RAP-processing listener	rap_stay_watch_time	(rap_stay_watch_time == 0) && rap_stay_warning_interval is specified	--
573	SCS-0101	KFCA27772-W	E	User service definition for the RAP-processing server	service_group	--	--	(type == RAP) && (service_group != definition file name)	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
574	SCS-0101	KFCA 27772-W	E	User service definition for the RAP-processing server	module	--	--	(type == RAP) && (module != rapserver)	--
575	SCS-0101	KFCA 27772-W	E	User service definition for the RAP-processing server	atomic_update	--	--	atomic_update != Y	--
576	SCS-0101	KFCA 27772-W	E	User service definition for the RAP-processing server	hold	--	--	hold != N	--
577	SCS-0101	KFCA 27772-W	E	User service definition for the RAP-processing server	hold_recovery	--	--	hold_recovery != N	--
578	SCS-0101	KFCA 27772-W	E	User service definition for the RAP-processing server	service	--	--	service != "rapexec=service_exec"	--
579	SCS-0101	KFCA 27772-W	E	User service definition for the RAP-processing server	balance_count	--	--	balance_count != 0	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
580	SCS-0101	KFCA27772-W	E	User service definition for the RAP-processing server	auto_restart	--	--	auto_restart != Y	--
581	SCS-0101	KFCA27772-W	E	User service definition for the RAP-processing server	critical	--	--	critical != N	--
582	SCS-0101	KFCA27772-W	E	User service definition for the RAP-processing server	service_hold	--	--	service_hold != N	--
583	SCS-0101	KFCA27772-W	E	User service definition for the RAP-processing server	service_priority_control	--	--	service_priority_control != N	--
584	SCS-0101	KFCA27772-W	E	User service definition for the RAP-processing server	node_down_restart	--	--	node_down_restart != N	--
585	SCS-0101	KFCA27772-W	E	User service definition for the RAP-processing server	server_type	--	--	server_type != betran	--

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No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
586	SCS-0101	KFCA 27772-W	E	User service definition for the RAP-processing server	term_watch_time	--	--	term_watch_time != 0	--
587	SCS-0101	KFCA 27772-W	E	User service definition for the RAP-processing server	max_open_fds	--	--	max_open_fds != value generated by rapdfgen	--
588	SCS-0101	KFCA 27772-W	E	User service definition for the RAP-processing server	server_security	--	--	server_security != N	--
589	SCS-0101	KFCA 27772-W	E	User service definition for the RAP-processing server	message_store_buflen	--	--	message_store_buflen != value generated by rapdfgen	--
590	SCS-0101	KFCA 27772-W	E	User service definition for the RAP-processing server	schedule_delay_limit	--	--	schedule_delay_limit != 0	--
591	SCS-0101	KFCA 27772-W	E	User service definition for the RAP-processing server	schedule_delay_abort	--	--	schedule_delay_abort != N	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
592	SCS-0102	KFCA2777-W	W	User service definition for the RAP-processing server	max_socket_descriptors	<ul style="list-style-type: none"> • betrandrc • usrrc 	max_open_fds	<pre>((OS != Solaris) && (OS != Linux)) && ((max_socket_descriptors + max_open_fds) > 2048) ((OS = Solaris) (OS = Linux)) && ((max_socket_descriptors + max_open_fds) > 1024)</pre>	--
593	SCS-0103	KFCA2777-W	E	User service definition for the RAP-processing server	module	--	--	<pre>(type != RAP) && (module == rapserver)</pre>	--
594	SCS-0201	KFCA2777-W	E	User service definition for the RAP-processing client manager	module	--	--	<pre>(type == RAP) && (module != rapclman)</pre>	--
595	SCS-0201	KFCA2777-W	E	User service definition for the RAP-processing client manager	atomic_update	--	--	<pre>atomic_update != N</pre>	--

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No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
596	SCS-0201	KFCA27772-W	E	User service definition for the RAP-processing client manager	receive_from	--	--	receive_from != none	--
597	SCS-0201	KFCA27772-W	E	User service definition for the RAP-processing client manager	auto_restart	--	--	auto_restart != Y	--
598	SCS-0201	KFCA27772-W	E	User service definition for the RAP-processing client manager	critical	--	--	critical != N	--
599	SCS-0201	KFCA27772-W	E	User service definition for the RAP-processing client manager	trf_put	--	--	trf_put != N	--
600	SCS-0201	KFCA27772-W	E	User service definition for the RAP-processing client manager	node_down_restart	--	--	node_down_restart != Y	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
601	SCS-0201	KFCA27772-W	E	User service definition for the RAP-processing client manager	term_watch_time	--	--	term_watch_time != 0	--
602	SCS-0201	KFCA27772-W	E	User service definition for the RAP-processing client manager	max_open_fds	--	--	max_open_fds != value generated by rapdfgen	--
603	SCS-0201	KFCA27772-W	E	User service definition for the RAP-processing client manager	rpc_destination_mode	--	--	rpc_destination_mode != namdonly	--
604	SCS-0201	KFCA27772-W	E	User service definition for the RAP-processing client manager	status_change_when_terminating	--	--	status_change_when_terminating != N	--
605	SCS-0201	KFCA27772-W	E	User service definition for the RAP-processing client manager	rap_listen_inf	--	--	rap_listen_inf != "node-name:port=host-name:port"	--

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No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
606	SCS-0202	KFCA00266-W	C	User service definition for the RAP-processing client manager	rap_client_manager_port	--	--	rap_client_manager_port is specified.	--
607	SCS-0203	KFCA27777-W	W	User service definition for the RAP-processing client manager	max_socket_descriptors	<ul style="list-style-type: none"> • betrandrc • usrrc 	max_open_fds	<pre>((OS != Solaris) && (OS != Linux)) && ((max_socket_descriptors + max_open_fds) > 2048) ((OS == Solaris) (OS == Linux)) && ((max_socket_descriptors + max_open_fds) > 1024)</pre>	--
608	SCS-0204	KFCA27771-W	E	User service definition for the RAP-processing client manager	module	--	--	(type!=RAP) && (module==rapclman)	--
609	SCS-0205	KFCA27770-W	C	User service definition for the RAP-processing client manager	rap_listen_inf	--	--	(rap_listen_inf == my_host value) (rap_listen_inf == local loopback address)	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
610	SCS-0206	KFCA 27775-W	E	User service definition for the RAP-processing client manager	rap_listen_inf	--	--	The host name cannot be resolved into an address.	--
611	SCS-0501	KFCA 00260-W	C	usrnet	dcsvg def	--	--	One of the following conditions exists: <ul style="list-style-type: none"> • Host name specified in -h == my_host value • Host name specified in -h == local loopback address 	--
612	STS-0001	KFCA 00286-W	E	sts	All	--	--	No status service definition file (sts)	--
613	STS-0002	KFCA 00285-W	E	sts	sts_file_name_1 to sts_file_name_7	--	--	sts_file_name_1 is not specified.	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
614	STS-0003	KFCA 01020-W	E	sts	sts_file_name_1 to sts_file_name_7	--	--	One of the following conditions exists: <ul style="list-style-type: none"> The specified file system is not a character-type special file. The device corresponding to this file system does not exist. 	--
615	STS-0004	KFCA 01021-W	E	sts	sts_file_name_1 to sts_file_name_7	--	--	The specified file has not been initialized for an OpenTP1 file system by using the <code>filmkfs</code> command.	--
616	STS-0005	KFCA 01022-W	E	sts	sts_file_name_1 to sts_file_name_7	--	--	The status file does not exist.	--
617	STS-0006	KFCA 01023-W	E	sts	sts_file_name_1 to sts_file_name_7	--	--	OpenTP1 file system versions do not match.	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
618	STS-007	KFCA 01024-W	E	sts	sts_file_name_1 to sts_file_name_7	--	--	An attempt was made to open more status files than the maximum.	--
619	STS-008	KFCA 01025-W	E	sts	sts_file_name_1 to sts_file_name_7	--	--	Access permission for the relevant special file has not been granted.	--
620	STS-009	KFCA 01026-W	E	sts	sts_file_name_1 to sts_file_name_7	--	--	Access permission for the relevant status file has not been granted.	--
621	STS-010	KFCA 01027-W	E	sts	sts_file_name_1 to sts_file_name_7	--	--	An I/O error occurred for a status file.	--
622	STS-011	KFCA 01028-W	E	sts	sts_file_name_1 to sts_file_name_7	--	--	Memory was insufficient when a status file was opened.	--
623	STS-012	KFCA 01029-W	E	sts	sts_file_name_1 to sts_file_name_7	--	--	The specified file cannot be used as a status file.	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
624	STS-0013	KFCA 01030-W	E	sts	sts_file_name_1 to sts_file_name_7	--	--	The record lengths of physical files in system A and in system B are different.	--
625	STS-0014	KFCA 01031-W	E	sts	sts_file_name_1 to sts_file_name_7	--	--	The number of physical files in system A and the number in system B are different.	--
626	STS-0015	KFCA 01032-W	E	sts	sts_file_name_1 to sts_file_name_7	sts	sts_file_name_1 to sts_file_name_7	The same logical file name and physical file name are specified more than once in sts_file_name_1 to sts_file_name_7.	--
627	STS-0016	KFCA 01033-W	W	sts	sts_last_active_file	--	--	sts_last_active_file is specified.	--
628	STS-0017	KFCA 01034-W	C	sts	sts_last_active_file	sts	sts_file_name_1 to sts_file_name_7	The specified logical file does not exist in sts_file_name_1 to sts_file_name_7.	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
629	STS-0018	KFCA00278-W	C	sts	sts_last_active_file	sts	sts_initial_error_switch	(sts_last_active_file is specified) && (sts_initial_error_switch == stop)	--
630	STS-0019	KFCA00279-W	C	sts	sts_last_active_file	sts	sts_initial_error_switch	(sts_last_active_file is specified) && (sts_initial_error_switch is not specified)	--
631	STS-0020	KFCA01033-W	W	sts	sts_last_active_side	--	--	sts_last_active_side is specified.	--
632	STS-0021	KFCA00278-W	C	sts	sts_last_active_side	sts	sts_single_operation_switch	(sts_last_active_side is specified) && (sts_single_operation_switch != continue)	--
633	STS-0022	KFCA00279-W	C	sts	sts_last_active_side	sts	sts_single_operation_switch	(sts_last_active_side is specified) && (sts_single_operation_switch is not specified)	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
634	STS-0023	KFCA 00278-W	C	sts	sts_last_active_side	sts	sts_initial_error_switch	(sts_last_active_side is specified) && (sts_initial_error_switch == stop)	--
635	STS-0024	KFCA 00279-W	C	sts	sts_last_active_side	sts	sts_initial_error_switch	(sts_last_active_side is specified) && (sts_initial_error_switch is not specified)	--
636	TAM-0001	KFCA 00285-W	E	tam	tam_max_tblnum	--	--	tam_max_tblnum is not specified.	--
637	TAM-0002	KFCA 26208-W	E	tam	tam_max_tblnum	tam	tamtable	tam_max_tblnum < tamtable value	--
638	TAM-0003	KFCA 00285-W	E	--	tam_max_resize	--	--	tam_max_resize is not specified.	--
639	TAM-0004	KFCA 00285-W	E	--	tam_max_filesize	--	--	tam_max_filesize is not specified.	--
640	TAM-0005	KFCA 00264-W	C	tam	tam_max_trnnum	trn	trn_transaction_count	tam_max_trnnum > trn_transaction_count	--
641	TAM-0006	KFCA 00264-W	C	tam	tam_max_trnfilnum	tam	tam_max_tblnum	tam_max_tblnum < tam_max_trnfilnum	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
642	TAM-0007	KFCA 00286-W	E	tam	--	--	--	(TAM set up) && (TAM service definition missing)	--
643	--	KFCA 01719-E	--	tam	tam_max_recsize	System journal service definition	jnl_max_data_size	(tam_max_recsize value rounded up to the nearest multiple of 4) $x2 + 96 < jnl_max_data_size$	<ul style="list-style-type: none"> • JNL#1 • When the OS is Linux (IPF), the value is rounded up to the nearest multiple of 8.
644	--	KFCA 01734-E	--	tam	tamtable	--	--	The same table name is specified more than once.	--
645	--	KFCA 01733-E	--	tam	tamtable	--	--	The same file name is specified more than once.	--
646	--	KFCA 01740-E	--	tam	tamtable	--	--	The TAM file specified in the definition file is not a special file name.	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
647	--	KFCA 01741-E	--	tam	tamtable	--	--	The disk partition to which the TAM file specified in the definition file is to be allocated has not been initialized as an OpenTP1 file system.	--
648	--	KFCA 01742-E	--	tam	tamtable	--	--	The file specified in the definition file does not exist.	--
649	--	KFCA 01743-E	--	tam	tamtable	--	--	The TAM file specified in the definition file is unavailable because it is already being used by another process.	--
650	--	KFCA 01747-E	--	tam	tamtable	--	--	The system reported an error because an attempt was made to open too many character-type special files for the TAM files specified in the definition file.	--

No .	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
651	--	KFCA 01744-E	--	tam	tamtable	--	--	Access permission for the special file for a TAM file specified in the definition file has not been granted.	--
652	--	KFCA 01745-E	--	tam	tamtable	--	--	Access permission for the TAM file specified in the definition file has not been granted.	--
653	--	KFCA 01701-E	--	tam	tamtable	--	--	The system cannot continue processing because memory is insufficient.	--
654	--	KFCA 01736-E	--	tam	tamtable	--	--	An I/O error occurred in a TAM file specified in the definition file.	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
655	--	KFCA 01746-E	--	tam	tamtable	--	--	For a TAM file specified in the definition file, the version of the system used when the file system is executed is different from the version of the system used when the file system was created.	--
656	--	KFCA 01786-E	--	tam	tamtable	--	--	TAM file size > 1000000000	--
657	--	KFCA 01787-E	--	tam	tamtable	--	--	The TAM file was not created by using the tamcre command.	--
658	--	KFCA 01764-E	--	tam	tamtable	--	--	The TAM file in use is not compatible with the currently used TAM.	--
659	--	KFCA 01786-E	--	tam	tamtable	tam	tam_max_filesiz e	TAM file size > tam_max_filesiz e	--
660	--	KFCA 02883-E	--	tam	tamtable	tam	tam_max_re csize	TAM file record size > tam_max_re csize	--
661	TIM-001	KFCA 00265-W	C	tim	tim_watch_ count	--	--	tim_watch_ count is specified.	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
662	TRN-0001	KFCA00285-W	E	trn	trn_tran_process_count	--	--	trn_tran_process_count is not specified.	--
663	TRN-0002	KFCA00265-W	C	trn	trn_tran_process_count	trn	trn_recovery_process_count	trn_tran_process_count is specified.	--
664	TRN-0003	KFCA00262-W	C	trn	trn_recovery_process_count	trn	trn_tran_process_count	trn_recovery_process_count value > trn_tran_process_count value	--
665	TRN-0004	KFCA00262-W	E	trn	trn_recovery_process_count	prc	prc_process_count	trn_recovery_process_count value > prc_process_count value	--
666	TRN-0005	KFCA32523-W	C	<ul style="list-style-type: none"> trn User service definition 	trn_expiration_time	trn	trn_completion_limit_time	(trn_expiration_time > 0) && (trn_completion_limit_time > 0) && (trn_expiration_time value > trn_completion_limit_time value)	--
667	TRN-0006	KFCA00282-W	C	<ul style="list-style-type: none"> trn User service definition 	trn_statistics_item	--	--	cputime is specified in trn_statistics_item.	Definition checking is not supported when the OS is Windows.

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
668	TRN-0007	KFCA00278-W	C	<ul style="list-style-type: none"> • trn • User service definition 	trn_expiration_time_suspend	trn	trn_expiration_time	(trn_expiration_time_suspend is specified) && (trn_expiration_time == 0)	--
669	TRN-0008	KFCA00279-W	C	<ul style="list-style-type: none"> • trn • User service definition 	trn_expiration_time_suspend	trn	trn_expiration_time	(trn_expiration_time_suspend is specified) && (trn_expiration_time is not specified)	--
670	TRN-0009	KFCA00272-W	C	trn	trn_tran_recover_list	--	--	trn_tran_recover_list != Y	--
671	TRN-0010	KFCA00282-W	C	<ul style="list-style-type: none"> • trn • User service definition 	trn_cpu_time	--	--	trn_cpu_time is specified (only when 0 is specified)	Definition checking is not supported when the OS is Windows.
672	TRN-0011	KFCA00265-W	C	trn	trn_max_subordinate_count	--	--	trn_max_subordinate_count is specified.	--
673	TRN-0012	KFCA00272-W	C	<ul style="list-style-type: none"> • trn • User service definition 	trn_rm_open_close_scope	--	--	trn_rm_open_close_scope != process	--
674	TRN-0013	KFCA00272-W	C	<ul style="list-style-type: none"> • trn • User service definition 	trn_optimum_item	--	--	base is not specified in trn_optimum_item.	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
675	TRN-0014	KFCA00272-W	C	trn	trn_processing_in_rm_error	--	--	(trn_processing_in_rm_error != down) && (trn_processing_in_rm_error != retry)	--
676	TRN-0015	KFCA00278-W	C	trn	trn_recovery_list_remove	trn	trn_tran_recovery_list	(trn_recovery_list_remove is specified) && (trn_tran_recovery_list == N)	--
677	TRN-0016	KFCA00279-W	C	trn	trn_recovery_list_remove	trn	trn_tran_recovery_list	(trn_recovery_list_remove is specified) && (trn_tran_recovery_list is not specified)	--
678	TRN-0017	KFCA00272-W	C	trn	trn_recovery_list_remove	trn	trn_tran_recovery_list	(trn_tran_recovery_list == Y) && ((trn_recovery_list_remove == no) (trn_recovery_list_remove is not specified))	--
679	TRN-0018	KFCA00278-W	C	trn	trn_recovery_list_remove_level	trn	trn_tran_recovery_list	(trn_recovery_list_remove_level is specified) && (trn_tran_recovery_list == N)	--

D. Details of Definition Checking

No .	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
680	TRN-0019	KFCA00279-W	C	trn	trn_recovery_list_remove_level	trn	trn_tran_recovery_list	(trn_recovery_list_remove_level is specified) && (trn_tran_recovery_list is not specified)	--
681	TRN-0020	KFCA00282-W	C	trn	trn_crm_use	--	--	trn_crm_use is specified.	--
682	TRN-0021	KFCA00282-W	C	trn	trn_max_crm_subordinate_count	--	--	trn_max_crm_subordinate_count is specified.	--
683	TRN-0022	KFCA00262-W	C	<ul style="list-style-type: none"> trn User service definition 	trn_watch_time	trn	trn_limit_time	(trn_limit_time != 0) && (trn_watch_time value > trn_limit_time value)	<ul style="list-style-type: none"> TRN#1 If trn_watch_time is omitted in all definitions, the watch_time value is used. If watch_time is 0, 120 is used as the default for trn_watch_time.

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
684	TRN-0023	KFCA00262-W	C	<ul style="list-style-type: none"> trn User service definition 	trn_watch_time	trn	trn_completion_limit_time	(trn_completion_limit_time != 0) && ((trn_watch_time value > trn_completion_limit_time value))	<ul style="list-style-type: none"> TRN#1 If trn_watch_time is omitted in all definitions, the watch_time value is used. If watch_time is 0, 120 is used as the default for trn_watch_time.
685	TRN-0024	KFCA00272-W	C	<ul style="list-style-type: none"> trn User service definition 	trn_rollback_information_put	--	--	trn_rollback_information_put != all trn_rollback_information_put is not specified	--
686	TRN-0025	KFCA00272-W	C	trn	trn_retry_failmsg_interval	--	--	trn_retry_failmsg_interval == 0	--
687	TRN-0026	KFCA00278-W	C	trn	trn_retry_interval_retry_m_open	trn	trn_wait_retry_m_open	(trn_retry_interval_retry_m_open is specified) && (trn_wait_retry_m_open != retry_continue) && (trn_wait_retry_m_open != retry_stop)	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
688	TRN-0027	KFCA00278-W	C	trn	trn_retry_count_rm_open	trn	trn_wait_rm_open	(trn_retry_count_rm_open is specified) && (trn_wait_rm_open != retry_continue) && (trn_wait_rm_open != retry_stop)	--
689	TRN-0028	KFCA32521-W	C	trn	thread_stack_size	--	--	thread_stack_size is specified.	--
690	TRN-0029	KFCA00279-W	C	trn	trn_start_recovery_mode	trn	trnstring	(trn_start_recovery_mode is specified) && (trnstring is not specified)	--
691	TRN-0030	KFCA00279-W	C	trn	trn_start_recovery_mode	trn	trnstring	(trn_start_recovery_mode is specified) && (-m option is not specified in trnstring)	--
692	TRN-0031	KFCA00279-W	C	trn	trn_start_recovery_watch_time	trn	trnstring	(trn_start_recovery_watch_time is specified) && (trnstring is not specified)	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
693	TRN-0032	KFCA00279-W	C	trn	trn_start_recovery_watch_time	trn	trnstring	(trn_start_recovery_watch_time is specified) && (-m option is not specified in trnstring)	--
694	TRN-0033	KFCA00279-W	C	trn	trn_start_recovery_interval	trn	trnstring	(trn_start_recovery_interval is specified) && (trnstring is not specified)	--
695	TRN-0034	KFCA00279-W	C	trn	trn_start_recovery_interval	trn	trnstring	(trn_start_recovery_interval is specified) && (-m option is not specified in trnstring)	--
696	TRN-0035	KFCA00278-W	C	trn	trn_start_recovery_interval	trn	trn_start_recovery_watch_time	(trn_start_recovery_interval is specified) && (-m option is specified in trnstring) && (trn_start_recovery_watch_time == 0)	--
697	TRN-0036	KFCA00272-W	C	trn	trn_xa_commit_error	--	--	trn_xa_commit_error != down	--

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No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
698	TRN-0037	KFCA00272-W	C	trn	trn_prf_event_trace_level	--	--	(trn_prf_event_trace_level & 00000007) != 00000007	--
699	TRN-0038	KFCA00272-W	C	trn	trn_prf_event_trace_condition	--	--	xafunc is not specified.	--
700	TRN-0039	KFCA00259-W	C	trn	trnstring	trn	trnstring	The specified value is the same as the value of the -n option in another trnstring definition. Alternatively, the specified value is the same as the resource manager name when both the -n and -i options are specified.	--
701	TRN-0040	KFCA32524-W	E	User service definition	trnrmid	trn	trnstring	The combination of the -n and -i options for trnrmid has not been specified in trnstring.	--
702	TRN-0041	KFCA32522-W	C	_tr	prf_file_size	--	--	prf_file_size < default value (10240)	--

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
703	TRN-0043	KFCA00286-W	E	trn	All	--	--	The transaction service definition file (trn) does not exist.	--
704	TRN-0044	KFCA00261-W	C	<ul style="list-style-type: none"> trn User service definition 	trn_expiration_time	<ul style="list-style-type: none"> trn User service definition 	trn_cpu_time	(trn_expiration_time > 0) && (trn_cpu_time > 0) && (trn_expiration_time < trn_cpu_time)	The definition is not checked when the OS is Windows.
705	TRN-0045	KFCA00262-W	C	<ul style="list-style-type: none"> trn User service definition 	trn_cpu_time	<ul style="list-style-type: none"> trn User service definition 	trn_completion_limit_time	(trn_cpu_time > 0) && (trn_completion_limit_time > 0) && (trn_cpu_time > trn_completion_limit_time)	The definition is not checked when the OS is Windows.
706	TRN-0046	KFCA00278-W	C	trn	trn_max_crm_subordinate_count	trn	trn_crm_user	(trn_max_crm_subordinate_count is specified) && (trn_crm_user == N)	The definition is not checked when the OS is Windows.
707	TRN-0047	KFCA00279-W	C	trn	trn_max_crm_subordinate_count	trn	trn_crm_user	(trn_max_crm_subordinate_count is specified) && (trn_crm_user is omitted)	The definition is not checked when the OS is Windows.
708	TRN-0048	KFCA00265-W	C	trn	trn_max_crm_subordinate_count	trn	trn_crm_user	trn_max_crm_subordinate_count is specified && (trn_crm_user == Y)	The definition is not checked when the OS is Windows.

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
709	UTL-0001	KFCA00271-W	W	<ul style="list-style-type: none"> • betranrc • usrrc • User service definition 	rpc_trace	--	--	rpc_trace == Y	--
710	UTL-0002	KFCA00268-W	W	<ul style="list-style-type: none"> • betranrc • usrrc • User service definition 	rpc_trace_name	--	--	(rpc_trace_name is specified) && (RPC trace file specified in rpc_trace_name is not a file)	<ul style="list-style-type: none"> • UTL#1 • UTL#2
711	UTL-0003	KFCA00268-W	W	<ul style="list-style-type: none"> • betranrc • usrrc • User service definition 	rpc_trace_name	--	--	(rpc_trace_name is specified) && (write permission is not granted for the RPC trace file specified in rpc_trace_name)	<ul style="list-style-type: none"> • UTL#1 • UTL#2
712	UTL-0004	KFCA00268-W	W	<ul style="list-style-type: none"> • betranrc • usrrc • User service definition 	rpc_trace_name	--	--	(OS == Windows) && ((rpc_trace_name is specified) && (rpc_trace_name value > 259)) (OS != Windows) && ((rpc_trace_name is specified) && (rpc_trace_name value > 1023))	<ul style="list-style-type: none"> • UTL#1 • UTL#3

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
713	UTL-0005	KFCA00267-W	W	<ul style="list-style-type: none"> • betranrc • usrrrc • User service definition 	rpc_trace_name	--	--	(rpc_trace_name is specified) && (no directory for output of RPC trace files)	UTL#1
714	UTL-0006	KFCA00267-W	W	<ul style="list-style-type: none"> • betranrc • usrrrc • User service definition 	rpc_trace_name	--	--	(rpc_trace_name is specified) && (the directory to which RPC trace files are to be output is not a directory)	UTL#1
715	UTL-0007	KFCA00267-W	W	<ul style="list-style-type: none"> • betranrc • usrrrc • User service definition 	rpc_trace_name	--	--	(rpc_trace_name is specified) && ((write permission not granted for the directory to which RPC trace files are to be output) (execution permission not granted for the directory to which RPC trace files are to be output))	UTL#1

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
716	UTL-0008	KFCA00287-W	W	<ul style="list-style-type: none"> • betranrc • usrrc • User service definition 	rpc_trace_name	--	--	(rpc_trace_name is specified) && (length of the file specified in rpc_trace_name > 13 bytes)	If the file name specified in rpc_trace_name to be output in the message is too long, the file name is cut off after the 371st byte.
717	UTL-0009	KFCA00276-W	C	<ul style="list-style-type: none"> • betranrc • usrrc • User service definition 	rpc_trace_name	User service definition	rpc_trace	(rpc_trace != Y) && (rpc_trace_name is specified)	<ul style="list-style-type: none"> • UTL#4 • If the file path name specified in rpc_trace_name to be output in the message is too long, the path name is cut off after the 346th byte.
718	UTL-0010	KFCA00276-W	C	<ul style="list-style-type: none"> • betranrc • usrrc • User service definition 	rpc_trace_size	User service definition	rpc_trace	(rpc_trace != Y) && (rpc_trace_size is specified)	UTL#4
719	UTL-0011	KFCA00272-W	W	<ul style="list-style-type: none"> • usrrc • User service definition 	uap_trace_max	--	--	(uap_trace_max < 32)	--

No .	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
720	UTL-0012	KFCA00288-W	W	<ul style="list-style-type: none"> • betranrc • usrrc • User service definition 	rpc_trace_name	--	--	(rpc_trace_name value contains \$)&& (the \$ is not at the beginning of the value)	--
721	XAR-0001	KFCA00271-W	W	xar	xar_eventtrace_level	--	--	xar_eventtrace_level != ERR	--
722	XAR-0002	KFCA32164-W	W	xar	xarfile	xar	xar_msdtc_use	(xar_msdtc_use == Y)&& (XAR file record length < 1024)	--
723	XAR-0003	KFCA00286-W	E	xar	--	trn	trn_xar_use	(trn_xar_use == Y)&& (XA resource service definition is not specified)	--
724	XAR-0004	KFCA32172-W	E	--	--	<ul style="list-style-type: none"> • trn • betranrc 	<ul style="list-style-type: none"> • tm_xar_use • jnl_filele_ss_option 	(trn_xar_use == Y)&& (jnl_filele_ss_option == Y)	--
725	XAR-0005	KFCA00272-W	C	xar	xar_prf_trace_level	--	--	(xar_prf_trace_level & 00000003) != 00000003	--

D. Details of Definition Checking

No	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
726	XAR-0006	KFCA 32163-W	C	_xr	prf_file_size	--	--	prf_file_size < default value (10240)	--
727	--	KFCA 32019-E	--	xar	xarfile	--	--	The specification is not a combination of xarfile -t online -a XAR-file and xarfile -t backup -a XAR-file.	--
728	--	KFCA 32025-E	--	xar	xarfile	--	--	The XAR file path name is incorrect.	--
729	--	KFCA 32026-E	--	xar	xarfile	--	--	Access permission for the OpenTP1 file system has not been granted.	--
730	--	KFCA 32027-E	--	xar	xarfile	--	--	The number of open files exceeds the system limit.	--
731	--	KFCA 32028-E	--	xar	xarfile	--	--	An I/O error occurred in the XAR file.	--
732	--	KFCA 32029-E	--	xar	xarfile	--	--	Memory was insufficient.	--
733	--	KFCA 32030-E	--	xar	xarfile	--	--	The XAR file version is incorrect.	--

No .	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
734	--	KFCA 32031-E	--	xar	xarfile	--	--	The machine with the OpenTP1 file system has not been initialized.	--
735	--	KFCA 32032-E	--	xar	xarfile	--	--	The XAR file name is incorrect.	--
736	--	KFCA 32036-E	--	xar	xarfile	--	--	The XAR file does not exist.	--
737	--	KFCA 32038-E	--	xar	xarfile	--	--	Access permission for the XAR file has not been granted.	--
738	--	KFCA 32111-E	--	xar	xarfile	--	--	The file specified in the definition is not an XAR file.	--
739	--	KFCA 32044-E	--	xar	xarfile	--	--	The version of the XAR file specified in the definition is incorrect.	--
740	--	<ul style="list-style-type: none"> • KFC A3 20 21 -E • KFC A3 20 24 -E 	--	xar	xarfile	trn	trn_tran_processes_count	Number of records in the XAR file < trn_tran_processes_count	--

D. Details of Definition Checking

No .	Code	ID	Type	File name	Definition	Related file name	Related definition	Conditional expression or judgment basis	Remarks
741	--	KFCA 32014-W	--	xar	xarfile	--	--	The XAR file specified in the definition cannot be closed.	--
742	--	<ul style="list-style-type: none"> • KFC A3 20 22 -E • KFC A3 20 24 -E 	--	xar	xarfile	--	--	Number of records in the online XAR file != number of records in the backup XAR file	--
743	--	<ul style="list-style-type: none"> • KFC A3 20 23 -E • KFC A3 20 24 -E 	--	xar	xarfile	--	--	Record length of the online XAR file != record length of the backup XAR file	--
744	--	KFCA 32048-E	--	xar	xarfile	--	--	Name of the online XAR file == name of the backup XAR file	--

Legend:

--: Not applicable

↑ ↑: The calculation result between these symbols is rounded up to the nearest whole number.

ADM#1: The definition is checked only when an absolute path is specified.

ADM#2: When the OS is Windows and no extension is specified, extensions .bat, .exe, and .com are automatically added during checking.

ADM#3: An attempt is made to check whether the file itself is an executable file.

CPD#1: The definition is not checked when Y is specified for the `jnl_fileless_option` operand in the system common definition.

JNL#1: The definition is not checked when Y is specified for the `jnl_fileless_option` operand in the system common definition.

PRC#1: When the OS is Windows, whether the path uses a backslash (\) is checked, as well as the drive letters.

PRC#2: When the OS is Windows, semicolons (;) are checked instead of colons (:).

PRC#3: When the OS is Windows, `$DCDIR/bin` is not checked.

PRC#4: When the OS is Windows, the extension `.exe` is added to the specified name during checking. `$DCDIR/bin` is automatically checked regardless of the `prcsvpath` specification.

RPC#1: If none of the definition files that can be specified are specified, `*****` might be output as *definition-file-name* in the output message.

RTS#1: File path names are checked by adding a value in the range from 1 to `rts_log_file_count` to the `rts_log_file_name` value.

RTS#2: File path names are checked by adding the extension `.bk` to RTS log file path names.

SCD#1: If none of the definition files that can be specified are specified, `*****` might be output as *definition-file-name* in the output message.

SCD#2: If the KFCA00265-W message is output, review all user service definitions for the programs started as MHPs.

TRN: If none of the definition files that can be specified are specified, `*****` might be output as *definition-file-name* in the output message.

UTL#1: The definition is checked only when an absolute path is specified.

UTL#2: `1, 2` and `1` are added to the file path names specified in `rpc_trace_name` during checking.

UTL#3: The length of the `rpc_trace_name` value is checked.

UTL#4: If none of the definition files that can be specified are specified, `*****` might be output as *definition-file-name* in the output message.

Note:

If `*****` is output as *definition-file-name* in the output message, review all definition files in which the checked definition can be specified.

E. Notes on Migrating from Earlier Products

This appendix explains the points you should note when migrating from OpenTP1 Version 5 or earlier to Version 7.

E.1 Migrating from Version 5 or Earlier

This section provides notes on migrating from Version 5 or earlier to Version 7.

Default values of operands have changed from Version 5 or earlier to Version 7. The table below shows these changes in operand default values.

Table E-1: Changes in operand default values

Definition name/ Definition command name	Option	Operand name/ Command argument	Default value in Version 5 or earlier	Default value in Version 7
System common definition	--	thdlock_sleep_time	300 (unit: millisecond)	15 (unit: millisecond)
Lock service definition	--	lck_release_detect	interval	pipe
mcfittim	-t	btim	5 (unit: second)	1 (unit: second)
mcftrrc	-t	size	204800 (unit: byte)	204800 (unit: byte)
System service common information definition	--	max_open_fds	100	500
	--	thdlock_sleep_time	300 (unit: millisecond)	15 (unit: millisecond)

Legend:

--: Not applicable

Also, when migrating from Version 5 or earlier to Version 7, you must pay attention to the changes from Version 6 to Version 7.

For details about the Version 6 to Version 7 changes, see the section that explains changes made during version upgrades in the manual *OpenTP1 Description*.

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