

For UNIX Systems

# Job Management Partner 1/Performance Management - Agent Option for Platform Description, User's Guide and Reference

3020-3-R49(E)

#### Relevant program products

P-242C-AA97 Job Management Partner 1/Performance Management - Manager version 09-00 (for Windows Server 2003) P-2A2C-AA97 Job Management Partner 1/Performance Management - Manager version 09-00 (for Windows Server 2008) P-9D2C-AA92 Job Management Partner 1/Performance Management - Manager version 09-00 (for Solaris 9 (SPARC), Solaris 10 (SPARC))

P-1M2C-AA92 Job Management Partner 1/Performance Management - Manager version 09-00 (for AIX 5L V5.3, AIX V6.1) P-9S2C-BA92 Job Management Partner 1/Performance Management - Manager version 09-00 (for Linux 5 (x86), Linux 5 Advanced Platform (x86), Linux 5 (AMD/Intel 64), Linux 5 Advanced Platform (AMD/Intel 64))

P-1J2C-AJ92 Job Management Partner 1/Performance Management - Base version 09-00 (for HP-UX 11i V2 (IPF), HP-UX 11i V3 (IPF))

P-9D2C-AJ92 Job Management Partner 1/Performance Management - Base version 09-00 (for Solaris 9 (SPARC), Solaris 10 (SPARC))

P-9E2C-AJ92 Job Management Partner 1/Performance Management - Base version 09-00 (for Solaris 10 (x86), Solaris 10 (x64)) P-1M2C-AJ92 Job Management Partner 1/Performance Management - Base version 09-00 (for AIX 5L V5.3, AIX V6.1)

P-9S2C-BJ92 Job Management Partner 1/Performance Management - Base version 09-00 (for Linux AS 4 (x86), Linux ES 4 (x86), Linux AS 4 (AMD64 & Intel EM64T), Linux ES 4 (AMD64 & Intel EM64T), Linux 5 (x86), Linux 5 Advanced Platform (x86), Linux 5 (AMD/Intel 64), Linux 5 Advanced Platform (AMD/Intel 64))

P-9V2C-AJ92 Job Management Partner 1/Performance Management - Base version 09-00 (for Linux AS 4 (IPF), Linux 5 (IPF), Linux 5 Advanced Platform (IPF))

P-242C-AR97 Job Management Partner 1/Performance Management - Web Console version 09-00 (for Windows Server 2003)

P-2A2C-AR97 Job Management Partner 1/Performance Management - Web Console version 09-00 (for Windows Server 2008) P-9S2C-AR92 Job Management Partner 1/Performance Management - Web Console version 09-00 (for Linux 5 (x86), Linux 5 Advanced Platform (x86), Linux 5 (AMD/Intel 64), Linux 5 Advanced Platform (AMD/Intel 64))

P-1J2C-AC92 Job Management Partner 1/Performance Management - Agent Option for Platform version 09-00 (for HP-UX 11i V2 (IPF), HP-UX 11i V3 (IPF))

P-9D2C-AC92 Job Management Partner 1/Performance Management - Agent Option for Platform version 09-00 (for Solaris 9(SPARC), Solaris 10 (SPARC))

P-1M2C-AC92 Job Management Partner 1/Performance Management - Agent Option for Platform version 09-00 (for AIX 5L V5.3, AIX V6.1)

P-9E2C-AC92 Job Management Partner 1/Performance Management - Agent Option for Platform version 09-00 (for Solaris 10 (x86), Solaris 10 (x64))

P-9S2C-BC92 Job Management Partner 1/Performance Management - Agent Option for Platform version 09-00 (for Linux AS 4 (x86), Linux ES 4 (x86), Linux AS 4 (AMD64 & Intel EM64T), Linux ES 4 (AMD64 & Intel EM64T), Linux 5 (x86), Linux 5 Advanced Platform (x86), Linux 5 (AMD/Intel 64), Linux 5 Advanced Platform (AMD/Intel 64))

P-9V2C-AC92 Job Management Partner 1/Performance Management - Agent Option for Platform version 09-00 (for Linux AS 4 (IPF), Linux 5 (IPF), Linux 5 Advanced Platform (IPF))

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# Preface

This manual explains the features of Job Management Partner 1/Performance Management - Agent Option for Platform, and the records it collects.

Note that in this manual, Job Management Partner 1 is hereafter abbreviated as JP1.

## Intended readers

This manual is intended for the following users:

- Those who want to learn about the features of JP1/Performance Management Agent Option for Platform and the records it collects
- Those who want to set up and operate a system that uses JP1/Performance Management to collect UNIX performance data

This manual also assumes that the reader is familiar with UNIX.

For details about setting up and operating a system that uses JP1/Performance Management, the reader is directed to the following manuals as well:

- Job Management Partner 1/Performance Management Planning and Configuration Guide (3020-3-R31(E))
- Job Management Partner 1/Performance Management User's Guide (3020-3-R32(E))
- Job Management Partner 1/Performance Management Reference (3020-3-R33(E))

### Organization of this manual

This manual is organized into the parts listed below. Note that this manual applies to the following OSs: HP-UX, Solaris, AIX, and Linux(R). When there are differences in functionality between OSs, this manual provides a separate description for each OS.

PART 1: Overview

Part 1 provides an overview of JP1/Performance Management - Agent Option for Platform.

PART 2: Setup and Operation

Part 2 explains installation and setup of JP1/Performance Management - Agent Option for Platform, and how to collect user records.

PART 3: Reference

Part 3 explains the monitoring templates, records, and messages for JP1/ Performance Management - Agent Option for Platform.

PART 4: Troubleshooting

Part 4 explains the actions to take when a problem occurs with JP1/Performance Management - Agent Option for Platform.

### **Related publications**

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

For JP1/Performance Management publications:

- Job Management Partner 1/Performance Management Planning and Configuration Guide (3020-3-R31(E))
- Job Management Partner 1/Performance Management User's Guide (3020-3-R32(E))
- Job Management Partner 1/Performance Management Reference (3020-3-R33(E))

For Job Management Partner 1 publications:

- Job Management Partner 1/Software DistributionManager Description and Administrator's Guide (3000-3-841(E))
- Job Management Partner 1/Software Distribution SubManager Description and Administrator's Guide (3020-3-L42(E)), for UNIX systems
- Job Management Partner 1/Software Distribution Client Description and User's Guide (3020-3-S85(E)), for UNIX systems

## **Conventions: Abbreviations**

This manual uses the following abbreviations for product names:

	Abbreviation	Full name or meaning
AIX		AIX 5L V5.3
		AIX V6.1
HP-UX	HP-UX 11i	HP-UX 11i V2 (IPF)
		HP-UX 11i V3 (IPF)
Internet Explorer		Microsoft(R) Internet Explorer(R)

Abbreviation		Full name or meaning	
			Windows(R) Internet Explorer(R)
IPF			Itanium(R) Processor Family
JP1/IM	I/IM JP1/IM - Manager		Job Management Partner 1/Integrated Management - Manager
	JP1/IM - View		Job Management Partner 1/Integrated Management - View
JP1/NETM/DM	`		Job Management Partner 1/NETM/DM Client
			Job Management Partner 1/NETM/DM Manager
			Job Management Partner 1/NETM/DM SubManager
Linux	Linux (IPF)	Linux 5 Advanced Platform (IPF)	Red Hat Enterprise Linux(R) 5 Advanced Platform (IPF)
		Linux 5 (IPF)	Red Hat Enterprise Linux(R) 5 (IPF)
		Linux AS 4 (IPF)	Red Hat Enterprise Linux(R) AS 4 (IPF)
	Linux (x64)	Linux 5 Advanced Platform (AMD/Intel 64)	Red Hat Enterprise Linux(R) 5 Advanced Platform (AMD/Intel 64)
		Linux 5 (AMD/Intel 64)	Red Hat Enterprise Linux(R) 5 (AMD/Intel 64)
		Linux AS 4 (AMD64 & Intel EM64T)	Red Hat Enterprise Linux(R) AS 4 (AMD64 & Intel EM64T)

Abbreviation		Full name or meaning	
		Linux ES 4 (AMD64 & Intel EM64T)	Red Hat Enterprise Linux(R) ES 4 (AMD64 & Intel EM64T)
	Linux (x86)	Linux 5 Advanced Platform (x86)	Red Hat Enterprise Linux(R) 5 Advanced Platform (x86)
		Linux 5 (x86)	Red Hat Enterprise Linux(R) 5 (x86)
		Linux AS 4 (x86)	Red Hat Enterprise Linux(R) AS 4 (x86)
		Linux ES 4 (x86)	Red Hat Enterprise Linux(R) ES 4 (x86)
NNM	HP NNM		HP Network Node Manager Software version 6 or earlier
			HP Network Node Manager Starter Edition Software version 7.5 or earlier
Performance Management		Job Management Partner 1/Performance Management	
PFM - Agent	PFM - Agent for Enterprise Applications		Job Management Partner 1/Performance Management - Agent Option for Enterprise Applications
	PFM - Agent for Job Management		Job Management Partner 1/Performance Management - Agent Option for Job Management
	PFM - Agent for Microsoft SQL Server		Job Management Partner 1/Performance Management - Agent Option for Microsoft(R) SQL Server

Abbreviation		Full name or meaning	
	PFM - Agent for Orac	PFM - Agent for Oracle	
	PFM - Agent for Platform	PFM - Agent for Platform (UNIX)	Job Management Partner 1/Performance Management - Agent Option for Platform (for UNIX systems)
		PFM - Agent for Platform (Windows)	Job Management Partner 1/Performance Management - Agent Option for Platform (for Windows systems)
	PFM - Agent for Servi Response	ce	Job Management Partner 1/Performance Management - Agent Option for Service Response
	PFM - Agent for Virtu Machine	al	Job Management Partner 1/Performance Management - Agent Option for Virtual Machine
PFM - Base		Job Management Partner 1/Performance Management - Base	
PFM - Manager		Job Management Partner 1/Performance Management - Manager	
PFM - RM	PFM - RM for Microso SQL Server	oft	Job Management Partner 1/Performance Management - Remote Monitor for Microsoft(R) SQL Server
	PFM - RM for Oracle		Job Management Partner 1/Performance Management - Remote Monitor for Oracle

Abbreviation		Full name or meaning
	PFM - RM for Platform	Job Management Partner 1/Performance Management - Remote Monitor for Platform
PFM - Web Console		Job Management Partner 1/Performance Management - Web Console
Solaris	Solaris 9	Solaris 9 (SPARC)
	Solaris 10	Solaris 10 (SPARC)
		Solaris 10 (x64)
		Solaris 10 (x86)
Windows Server 2003	Windows Server 2003 (x64) or 2003 (x64)	Microsoft(R) Windows Server(R) 2003, Enterprise x64 Edition
		Microsoft(R) Windows Server(R) 2003, Standard x64 Edition
		Microsoft(R) Windows Server(R) 2003 R2, Enterprise x64 Edition
		Microsoft(R) Windows Server(R) 2003 R2, Standard x64 Edition
	Windows Server 2003 (x86) or 2003 (x86)	Microsoft(R) Windows Server(R) 2003, Enterprise Edition
		Microsoft(R) Windows Server(R) 2003, Standard Edition
		Microsoft(R) Windows Server(R) 2003 R2, Enterprise Edition
		Microsoft(R) Windows Server(R) 2003 R2, Standard Edition

Abbreviation		Full name or meaning
Windows Server 2008	Windows Server 2008 Enterprise	Microsoft(R) Windows Server(R) 2008 Enterprise
		Microsoft(R) Windows Server(R) 2008 Enterprise without Hyper-V(TM)
	Windows Server 2008 Standard	Microsoft(R) Windows Server(R) 2008 Standard
		Microsoft(R) Windows Server(R) 2008 Standard without Hyper-V(TM)

- PFM Manager, PFM Agent, PFM Base, PFM Web Console, and PFM RM may be referred to collectively as *Performance Management*.
- Windows Server 2003 and Windows Server 2008 may be referred to collectively as *Windows*.
- HP-UX, Solaris, AIX, and Linux may be referred to collectively as UNIX.

This manual also uses the following abbreviations:

Abbreviation	Full name or meaning
APV	PowerVM Edition (Previously called <i>Advanced POWER Virtualization</i> )
DLPAR	Dynamic Logical Partitioning
DR	Dynamic Reconfiguration
I/O	Input/Output
IP	Internet Protocol
IPv4	Internet Protocol Version 4
IPv6	Internet Protocol Version 6
IVM	Integrated Virtualization Manager
I-VM	Integrity Virtual Machines
LAN	Local Area Network

Abbreviation	Full name or meaning
LPAR	Logical Partitioning
NAPT	Network Address Port Translation
NAT	Network Address Translation
NFS	Network File System
NIS	Network Information Service
OS	Operating System
VM	Virtual Machine
vPars	Virtual Partitions
VSE	HP Virtual Server Environment
WPAR	Workload Partition

# **Conventions: Diagrams**

This manual uses the following conventions in diagrams:



# **Conventions: Fonts and symbols**

Font and symbol conventions are classified as:

- General font conventions
- Conventions in syntax explanations

These conventions are described below.

### **General font conventions**

The following table lists the general font conventions:

Font	Convention
Bold	<ul> <li>Bold type indicates text in a window, other than the window title. Such text includes menus, menu options, buttons, radio box options, and explanatory labels. For example, bold is used in sentences such as the following:</li> <li>From the File menu, choose Open.</li> <li>Click the Cancel button.</li> <li>In the Enter name entry box, type your name.</li> </ul>
Italics	<ul> <li>Italics are used to indicate a placeholder for actual text provided by the user or system. Italics are also used for emphasis. For example:</li> <li>Write the command as follows: <ul> <li>copy source-file target-file</li> </ul> </li> <li>Do not delete the configuration file.</li> </ul>
Code font	<ul> <li>A code font indicates text that the user enters without change, or text (such as messages) output by the system. For example:</li> <li>At the prompt, enter dir.</li> <li>Use the send command to send mail.</li> <li>The following message is displayed: The password is incorrect.</li> </ul>

Examples of coding and messages appear as follows (although there may be some exceptions, such as when coding is included in a diagram): MakeDatabase

StoreDatabase temp DB32

In examples of coding, an ellipsis (...) indicates that one or more lines of coding are not shown for purposes of brevity.

### **Conventions in syntax explanations**

Syntax definitions appear as follows:

**S**tore**D**atabase [temp|perm] (*database-name* ...)

The following table lists the conventions used in syntax explanations:

Example font or symbol	Convention
StoreDatabase	Code-font characters must be entered exactly as shown.
database-name	This font style marks a placeholder that indicates where appropriate characters are to be entered in an actual command.
SD	Bold code-font characters indicate the abbreviation for a command.
perm	Underlined characters indicate the default value.
[]	Square brackets enclose an item or set of items whose specification is optional.
I	Only one of the options separated by a vertical bar can be specified at the same time.
	An ellipsis () indicates that the item or items enclosed in () or [] immediately preceding the ellipsis may be specified as many times as necessary.
()	Parentheses indicate the range of items to which the vertical bar ( ) or ellipsis () is applicable.

### Conventions for mathematical expressions

The following table lists the conventions used in mathematical formulas:

Symbol	Meaning
х	Multiplication sign
/	Division sign

# Conventions: Format of product names, service IDs, and service keys in this manual

In Performance Management 09-00 or later, the service ID and service key can be displayed in the product name when the product name display functionality is enabled.

Identifier	Product name display functionality	
	Disabled	Enabled
Service ID	US1host-name	<i>host-name</i> <unix>(Store)</unix>
	UA1host-name	host-name <unix></unix>
Service key	agtu	UNIX

This manual uses the format that is used when the product name display functionality is enabled.

Note that the product name display functionality can be enabled when both of the following conditions exist:

- The version of the prerequisite program (PFM Manager or PFM Base) on the same device as PFM-Agent is 09-00 or later.
- The versions of PFM Web Console and the PFM Manager to which it connects are 09-00 or later.

### **Conventions: Formats of commands in this manual**

New-format commands have been added in Performance Management 09-00 and later versions. Because these commands are compatible with the commands of Performance Management 08-11 and earlier versions, commands in this manual are indicated as follows:

new-format-command (command-for-08-11-or-earlier)

Example:

jpcconf agent setup (jpcagtsetup)

In this example, jpcconf agent setup is the new-format command and jpcagtsetup is the command for 08-11 or earlier.

New-format commands are available when the version of the prerequisite program (PFM - Manager or PFM - Base) on the same device as PFM-Agent is 09-00 or later. Note that the commands for 08-11 or earlier are also available when the version of the prerequisite program is 09-00 or later.

### Conventions: KB, MB, GB and TB

This manual uses the following conventions:

- 1 KB (kilobyte) is 1,024 bytes.
- 1 MB (megabyte) is 1,024<sup>2</sup> bytes.
- 1 GB (gigabyte) is 1,024<sup>3</sup> bytes.
- 1 TB (terabyte) is 1,024<sup>4</sup> bytes.

## Conventions: Meaning of "folder" and "directory"

In this manual, *directory* is generally used to mean both *folder*, as used in Windows, and *directory*, as used in UNIX.

### **Conventions: Performance Management installation directories**

In this manual, installation folders for the Windows version of Performance Management are referred to as *installation folders*, and installation directories for the UNIX version of Performance Management are referred to as *installation directories*. The default installation folders for the Windows version of Performance Management are as follows:

Default installation folder for Performance Management programs other than PFM - Web Console

- For Windows OSs other than Windows Server 2003 (x64) and the 64-bit version of Windows Server 2008:

system-drive\Program Files\Hitachi\jp1pc\

- For Windows Server 2003 (x64) and the 64-bit version of Windows Server 2008

system-drive\Program Files (x86)\Hitachi\jp1pc\

Default installation folder for PFM - Web Console

- For Windows OSs other than Windows Server 2003 (x64) and the 64-bit version of Windows Server 2008:

system-drive\Program Files\Hitachi\jp1pcWebCon\

- For Windows Server 2003 (x64) and the 64-bit version of Windows Server 2008

system-drive\Program Files (x86)\Hitachi\jp1pcWebCon\

The default installation directories for the UNIX version of Performance Management are as follows:

Default installation directory for Performance Management programs other than PFM - Web Console

/opt/jp1pc/

Default installation directory for PFM - Web Console

/opt/jp1pcwebcon/

### **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*.

# NNM products supported by Performance Management

Performance Management supports linkage with the following products:

- HP Network Node Manager Software version 6 or earlier
- HP Network Node Manager Starter Edition Software version 7.5 or earlier

In this manual, these products are referred to as *NNM*, and the functionality that provides linkage with these products is referred to as *NNM linkage*.

Note that Performance Management does not support linkage with the following product:

• HP Network Node Manager i Software v8.10

# Contents

# Preface

	i
Intended readers	i
Organization of this manual	i
Related publications	ii
Conventions: Abbreviations	ii
Conventions: Diagrams	viii
Conventions: Fonts and symbols	ix
Conventions: Format of product names, service IDs, and service keys in this	
manual	x
Conventions: Formats of commands in this manual	xi
Conventions: KB, MB, GB and TB	xi
	vi
Conventions: Meaning of "folder" and "directory"	AI
Conventions: Meaning of "folder" and "directory" Conventions: Performance Management installation directories	xi
Conventions: Meaning of "folder" and "directory" Conventions: Performance Management installation directories Conventions: Version numbers	xi xi

# PART 1: Overview

1. Overview of PFM - Agent for Platform	1
1.1 Features of PFM - Agent for Platform	2
1.1.1 Collect UNIX performance data	2
1.1.2 Collect performance data according to its characteristics	3
1.1.3 Save performance data	4
1.1.4 Notify about problems in UNIX operations	4
1.1.5 Easily define alarms and reports	5
1.2 Overview of collecting and managing performance data	6
1.3 Example of performance monitoring operation	8
1.3.1 Overview of performance monitoring	8
1.3.2 How to monitor performance	10
1.3.3 Definition examples	27
1.3.4 Operation in virtualized systems	

# PART 2: Setup and Operation

2. Installation and Setup	79
2.1 Installation and setup	
2.1.1 Before installing and setting up PFM - Agent for Platform	

2.1.2 Installation and setup workflow	. 88
2.1.3 Installation procedure	. 90
2.1.4 Setting up PFM - Agent for Platform	. 96
2.2 Uninstallation and unsetup	102
2.2.1 Before uninstalling PFM - Agent for Platform	102
2.2.2 Unsetup procedures	103
2.2.3 Uninstallation procedure	103
2.3 Changing the system configuration of PFM - Agent for Platform	105
2.4 Changing the operation of PFM - Agent for Platform	106
2.4.1 Changing the storage location of performance data	106
2.4.2 Updating the Store version to 2.0	109
2.5 Backup and restoration	113
2.5.1 Backup	113
2.5.2 Restoration	114
2.6 Settings for browsing manuals in a Web browser	115
2.6.1 Setup procedures	115
2.6.2 Browsing procedures	116
3. Collecting Log Information	117
3.1 Overview of collecting log information	118
3.2 Setup procedure for collecting log information	120
3.2.1 Setting up the event file	120
3.2.2 Setting up PFM - Web Console	122
3.2.3 Notes on collecting log information	122
4. User-Defined Record Collection	125
4.1 Overview of user-defined record collection	126
4.1.1 Information that can be defined as user-defined records	126
4.2. Setting up user-defined record collection	130
	150
4.2.1 Settings for collecting workgroup information	130
<ul><li>4.2.1 Settings for collecting workgroup information</li><li>4.2.2 Settings for collecting information about the application operating status</li></ul>	130 130 139
<ul> <li>4.2.1 Settings for collecting workgroup information</li></ul>	130 130 139 153
<ul> <li>4.2.1 Settings for collecting workgroup information</li></ul>	130 130 139 153

5.	Monitoring Templates	181
	Overview of monitoring templates	
	Format of alarm explanations	
	List of alarms	
	Disk Service Time	
	I/O Wait Time	
	Kernel CPU	
	Pagescans	

Run Queue	191
Swap Outs	192
User CPU	193
CPU Per Processor(K)	194
CPU Per Processor(U)	196
Alloc Mem Mbytes	198
File System Free(L)	199
File System Free(R)	201
Disk Busy %	203
Disk Queue	205
Network Rcvd/sec	207
Process End	208
Process Alive	209
Format of report explanations	211
Organization of report folders	213
List of reports	216
Avg Service Time - Top 10 Devices	219
Avg Service Time Status - Top 10 Devices	220
Console Messages	221
CPU Per Processor Status	222
CPU Per Processor Usage	223
CPU Status	224
CPU Status (Multi-Agent)	226
CPU Trend	228
CPU Trend (Multi-Agent)	229
CPU Usage - Top 10 Processes	230
CPU Usage Summary	231
Device Detail	233
Device Usage Status	234
Device Usage Status (Multi-Agent)	235
Free Space Mbytes - Top 10 Local File Systems	236
I/O Activity - Top 10 Processes	237
I/O Overview	238
Local File System Detail	239
Major Page Faults - Top 10 Processes	240
Memory Paging	241
Memory Paging Status	242
Memory Paging Status (Multi-Agent)	
Network Interface Detail	
Network Interface Summary (real-time report indicating network usage status)	
Network Interface Summary (historical report indicating network usage status)	247
Network Overview	
Network Status	
Network Status (Multi-Agent)	250
$\sim$	

NFS Activity Overview	252
NFS Load Trend	253
NFS Usage Status	
NFS Usage Status (Multi-Agent)	255
Paging Trend (Multi-Agent)	
Process Detail	257
Process Overview	259
Process Summary Status	
Process Trend	
Remote File System Detail	
Space Usage - Top 10 Local File Systems	
Space Usage - Top 10 Remote File Systems	
System Overview (real-time report indicating system operation status)	
System Overview (historical report indicating system operation status)	
System Utilization Status	270
Workload Status	271
Workload Status (Multi-Agent)	272
6. Records	273
Dete model	274
Data model	
Format of record expranations	
List of ODBC key fields	
Summarization rules	
Field velues	
Field values	
Fields that are output when data stored in the Store database is experted	
Notes on records	
List of records	
Application Summary (DD ADD)	
CDU Der Drogeser Deteil (DL CDUD)	
Device Detail (DL DEVD)	
Device Detail (FI_DEVD)	
File System Detail Least (PD_ESL)	
File System Detail - Local (PD_TSL)	
Laggad Massagas (PL_MESS)	
Network Interface Detail (PL_NIND)	
Network Interface Summery (PL NINS)	
Process Datail (PD)	
Process Detail Interval (PD PDI)	
Process Summary (PD, PDS)	
Program Summary (PD_PGM)	
Sustam Summary (PD_rOW)	
Terminal Summery (DD TEDM)	

xviii

User Data Detail (PD UPD)	410
User Data Detail - Extended (PD UPDB)	
User Data Interval (PI UPI).	
User Data Interval - Extended (PI UPIB)	
User Summary (PD USER)	
Workgroup Summary (PI_WGRP)	
7. Messages	435
7.1 Message format	
7.1.1 Format of output messages	
7.1.2 Format of message explanations	
7.2 Message output destinations	
7.3 List of messages output to syslog	
7.4 Messages	

# PART 4: Troubleshooting

8. Error Handling Procedures	471
8.1 Error handling procedures	
8.2 Troubleshooting	
8.2.1 Setting up or starting a service	
8.2.2 Executing commands	
8.2.3 Report definitions	
8.2.4 Alarm definitions	
8.2.5 Collecting and managing performance data	
8.2.6 Other problems	
8.3 Log information	
8.3.1 Log types	
8.3.2 Log files and directories	
8.4 Data to be collected in the event of an error	
8.4.1 In UNIX	
8.5 Data collection procedure	
8.5.1 In UNIX	
8.6 Performance Management error detection	
8.7 Performance Management system error recovery	
Appendixes	497
A. Estimating System Requirements	
A.1 Estimating memory requirements	
A.2 Estimating disk space requirements	
B. Kernel Parameters	
C. List of Identifiers	
D. List of Processes	

E. List of Port Numbers	530
E.1 Port numbers of PFM - Agent for Platform	530
E.2 Firewall passage directions	530
F. Properties of PFM - Agent for Platform	533
F.1 Agent Store service properties	533
F.2 Agent Collector service properties	537
G. List of Files and Directories	548
H. Migration Procedure and Notes on Migration	552
I. Version Compatibility	553
J. Outputting Action Log Data	555
J.1 Types of events output to the action log	555
J.2 Format for saving the action log files	556
J.3 Format of output action log data	556
J.4 Settings for outputting action log data	563
K. Version Changes	565
K.1 Changes in 09-00	565
K.2 Changes in 08-11	568
K.3 Changes in version 08-00	570
K.4 Changes in version 07-00	575
L. Glossary	577
Index	585

1

# Chapter

# 1. Overview of PFM - Agent for Platform

This chapter provides an overview of PFM - Agent for Platform.

- 1.1 Features of PFM Agent for Platform
- 1.2 Overview of collecting and managing performance data
- 1.3 Example of performance monitoring operation

### 1.1 Features of PFM - Agent for Platform

PFM - Agent for Platform is a program for collecting and managing performance data to monitor the performance of a system running under UNIX. This program is installed and used on hosts to be monitored.

PFM - Agent for Platform has the following features:

Analysis of UNIX operating status

From the UNIX system being monitored, you can use PFM - Agent for Platform to collect and summarize performance data, such as CPU usage and the number of active processes. By displaying the trends in graphs, you can easily analyze UNIX operating status.

 Early detection of problems in UNIX operation and provision of information for troubleshooting

If a problem, such as a system resource shortage, occurs in the UNIX system being monitored, PFM - Agent for Platform can send an email notification, for example, to the user to ensure early detection of the problem. Furthermore, by graphically displaying the information related to the problem, PFM - Agent for Platform can provide troubleshooting information.

PFM - Agent for Platform requires PFM - Manager and PFM - Web Console.

#### Reference note:

In addition to PFM - Agent for Platform, PFM - RM for Platform is another product that can analyze UNIX operation statuses in Performance Management. PFM - RM for Platform does not need to be installed on the monitored host, allowing host performance data to be monitored without any modification to the monitored host environment (called *agentless monitoring*). Note that PFM - RM for Platform collects fewer types of performance data when compared to PFM - Agent for Platform, but a single instance of PFM - RM for Platform can monitor performance data for multiple hosts.

Consider installing PFM - RM for Platform if you want to implement agentless monitoring or collect and manage performance data for multiple monitored hosts.

PFM - Agent for Platform is explained in detail below.

### 1.1.1 Collect UNIX performance data

You can use PFM - Agent for Platform to collect UNIX performance data, such as system resource usage.

PFM - Agent for Platform lets you use performance data in the following ways:

Graphically displaying UNIX operating status

Using PFM - Web Console, you can process performance data into a graphical format called *report* and display it. Reports make it easy to analyze the UNIX operating status.

The following types of reports are available:

Real-time report

This report shows the current status of the UNIX system being monitored. It is used primarily for checking the system's current status and problems. The real-time performance data collected is used to directly display a real-time report.

· Historical report

This report shows the status of a monitored instance of UNIX from past to present. The report is used primarily for analyzing system trends. Performance data stored in the database of PFM - Agent for Platform is used to display a historical report.

■ Using performance data to determine whether a problem has occurred

If the performance data value collected indicates some sort of error, an action can be taken, such as notifying the user.

### **1.1.2 Collect performance data according to its characteristics**

Performance data is collected in the form of a *record*. Each record is further divided into units called *fields*. Records and fields are generically referred to as *data models*.

According to their characteristics, records can be classified into three types. The kind of performance data to be collected by each type of record is defined by PFM - Agent for Platform. Using PFM - Web Console, the user can select the kinds of performance data to be collected as records.

The following record types are available in PFM - Agent for Platform:

Product Interval record type (hereafter referred to as *PI record type*)

Performance data for a specific duration (interval), such as the number of active processes during every minute, is collected as a PI record. Use the PI record type when you want to analyze the changes and trends in the system status over time.

Product Detail record type (hereafter referred to as PD record type)

Performance data that indicates the system status at a given point in time, such as detailed information on the processes that are currently active, is collected as a PD record. Use the PD record type when you want to determine the system status at

a given point in time.

■ Product Log record type (hereafter referred to as *PL record type*)

Log information from applications being run on UNIX or databases is collected as a PL record.

For details about these record types, see 6. Records.

### 1.1.3 Save performance data

By saving the collected performance data in the database of PFM - Agent for Platform called the *Store database*, you can save the performance data up to the present and analyze the trends in the UNIX operating status. To analyze trends, you use historical reports.

Using PFM - Web Console, the user can select the performance data records to be saved in the Store database. For details about how to select records in PFM - Web Console, see the chapter explaining how to manage operation monitoring data in the manual *Job Management Partner 1/Performance Management User's Guide*.

### 1.1.4 Notify about problems in UNIX operations

Performance data collected by PFM - Agent for Platform can be displayed as a report on UNIX performance, and can warn the user when a UNIX operation problem or error occurs.

For example, when the amount of available system resources falls to 10% of its capacity, an email notification can be sent to the user. To accomplish this, available system resource level of less than 10% is set as the threshold, and PFM - Agent for Platform can be set to send an e-mail notification when this threshold is reached. The operation that occurs when the threshold is reached is called an *action*. The following types of actions are available:

- Email transmission
- Command execution
- SNMP trap issuance
- JP1 event issuance

Thresholds and actions are defined in a unit called an *alarm*. A table in which one or more alarms are collected is called an *alarm table*. After you define an alarm table, you associate it with PFM - Agent for Platform. The operation of associating an alarm table with PFM - Agent for Platform is called *binding*. Once binding occurs, when the performance data collected by PFM - Agent for Platform reaches the threshold defined in the alarm, the user can be notified.

By defining alarms and actions in this way, you can detect UNIX operational problems early and take the necessary corrective measures.

For details about how to specify alarms and actions, see the chapter explaining how to use alarms to monitor operations in the manual *Job Management Partner 1/ Performance Management User's Guide.* 

### 1.1.5 Easily define alarms and reports

PFM - Agent for Platform provides a *monitoring template*, which contains reports and alarms in which necessary information is already defined. The monitoring template facilitates preparation for monitoring UNIX operating statuses without complex definitions. The monitoring template can also be customized to suit the user environment. For details about how to use the monitoring template, see the chapter explaining the creation of reports for operation analysis or operation monitoring by alarms in the manual *Job Management Partner 1/Performance Management Operation Guide*. For details about the monitoring template, see *5. Monitoring Templates*.

## 1.2 Overview of collecting and managing performance data

The methods of collecting and managing performance data differ depending on the type of record that stores performance data. Records in PFM - Agent for Platform are classified into the following types:

- PI record type
- PD record type
- PL record type

For details about how to collect and manage performance data, see the following sections or chapters:

Performance data collection methods

For details about performance data collection methods, see the chapter explaining Performance Management functions in the manual *Job Management Partner 1/ Performance Management Planning and Configuration Guide.* 

For details about the performance data values that are collected, see 6. Records.

Performance data management methods

For details about the PI and PD record type performance data management methods, see the chapter explaining operation monitoring data management in the manual *Job Management Partner 1/Performance Management User's Guide*.

When the PL record exceeds the upper limit of the set number of record items, the record is overwritten, starting with the oldest one.

You can use PFM - Web console to change the upper limit of the number of record items. For details about how to set the upper limit of the number of record items, see the chapter explaining operation monitoring data management in the manual *Job Management Partner 1/Performance Management User's Guide*.

PL records are not summarized by time.

You use PFM - Web Console to select which records collected and managed by PFM - Agent are to be used as performance data. For details about how to select performance data, see the chapter explaining operation monitoring data management in the manual *Job Management Partner 1/Performance Management User's Guide*.

To collect UNIX log information, you need to specify settings in PFM - Agent for Platform in addition to those specified in PFM - Web Console. For details about collecting log information, see *3. Collecting Log Information*.

Note that in addition to the default performance data, PFM - Agent for Platform can collect other types of performance data and store the data in records. These records are

called *user-defined records*. For details about how to collect user-defined records, see *4. User-Defined Record Collection*.

## **1.3 Example of performance monitoring operation**

To maintain stable system operation, it is important to monitor performance in order to have a good understanding of the status of a system. This section explains how to use PFM - Agent for Platform to monitor performance.

### **1.3.1 Overview of performance monitoring**

This subsection provides an overview of performance monitoring.

### (1) Objective of the performance monitoring

The monitoring of performance is an important task in the creation and management of a system environment.

You can achieve the following major performance monitoring objectives by using PFM - Agent for Platform:

- Determine the causes of bottlenecks (by analyzing performance data).
- Understand load characteristics and their impact on the corresponding system resources (by analyzing performance data trends).
- Verify whether the system is operating correctly (by monitoring it).

Certain types of bottlenecks can affect the operating performance of the entire system, such as bottlenecks produced by the following causes:

- Insufficient memory
- Monopolization of specific resources by programs
- A damaged subsystem
- An incorrect subsystem configuration (for example, 10 Mbps is set for a 100-Mbps NIC)
- Unbalanced subsystem loads

By monitoring performance under different conditions (such as different numbers of users connected concurrently) and by monitoring performance continuously, you can check the load characteristics and the impact on the corresponding system resources in the system environment. The benefits of such monitoring are as follows:

- Changing and adjusting the system configuration are simplified.
- System resource upgrades can be planned.

Checking whether a production system is operating correctly is extremely important. You can check whether the system environment is operating correctly by using the following types of monitoring together with performance monitoring:

- · Monitoring of the operation of processes that provide system functionality
- Monitoring of the operation of services that are prerequisite for the system
- Monitoring the system for invalid processes

Using PFM - Agent for Platform as described above to correctly monitor performance is vital for stable system operation.

This section explains how you can use PFM - Agent for Platform to monitor performance to ensure stable system operation.

This section uses examples to explain the various methods of performance monitoring. Note, however, that the thresholds used in the examples are not applicable in all situations. Accordingly, actual thresholds must be determined only after a baseline is selected. In addition, other settings will be dependent on the operating requirements of the system.

### (2) Most important system resources in need of performance monitoring

The performance monitoring performed by PFM - Agent for Platform treats the following system resources as being the most important:

- Processor
- Memory
- Disks
- Network
- Processes

PFM - Agent for Platform provides a monitoring template containing these important items. This section focuses on explaining how monitoring templates are used to perform monitoring. This section also provides related information for advanced monitoring.

### (3) Determining baselines

Determining baselines is a task in which system values unlikely to affect normal system operation are determined from the performance measurement results.

PFM products use baseline values as thresholds for monitoring system operation. The determination of baselines is therefore an important task for successfully monitoring performance.

Note the following recommendations when you determine baselines:

- Measure system performance at peak load (for example, when a high-load test is run for the operating environment).
- Thresholds depend greatly on the system configuration. Therefore, performance should be measured again to redetermine the baselines if system resources and the

operating environment have been changed.

### 1.3.2 How to monitor performance

The following explains how to monitor performance for each system resource, and provides examples of performance data collection.

- Record IDs are used as record names, and PFM View names are used as field names. For details about the formal record names and field names, see *6. Records*.
- Fields are not explained in detail. For details about fields, see 6. Records.
- If you want to monitor information from multiple programs together, see 4.2.1 *Settings for collecting workgroup information.*
- If you want to monitor information about the application operating status, see 4.2.2 Settings for collecting information about the application operating status.

### (1) Processor

This subsection explains how to monitor processor performance.

### (a) Overview

By monitoring processor performance, you can check the performance trends for the entire system. In UNIX, as illustrated in the following figure, the processor operations include processor operations for the kernel and for user processes.



Figure 1-1: Relationship between the kernel and processes

The processor usage status can be checked by monitoring the CPU usage, which is the typical way, or by monitoring the number of queued jobs.

Jobs, such as processes, are executed by the CPU according to the schedule determined by the OS. The number of queued jobs is the number of jobs that are waiting to be executed by the CPU. When overall system load is high, the number of queued jobs tends to increase. The monitoring template provides such functionality as CPU Usage alarms and CPU Status (Multi-Agent) reports.

To monitor processor performance with more detail than with the monitoring template, the processor usage per processor, processor usage per process, processor queue count, and processor interrupts from hardware can also be monitored.

The following table lists and describes the principal records and fields related to processor monitoring.

Record	Field	Description (example)
PI	1-Minute Run Queue Avg	The average number of threads that were queued for execution. If value of this field is large, there might be a problem with the efficiency of processor usage.
	5-Minute Run Queue Avg	
	15-Minute Run Queue Avg	
	CPU %	The CPU usage (the percentage of time that the CPU was being used). If value of this field is large, the CPU load is high.
	Idle %	The percentage of time that the CPU was not being used. If value of this field is large, the CPU load is low.
PI_CPUP	CPU %	The CPU usage for a processor.
	System %	The CPU usage for a processor executed in kernel mode. If the value of this field is large, there might be a problem with the OS or operation.
	User CPU %	The CPU usage for a processor executed in user mode. If the value of this field is large, there might be a problem with a specific application.
PD_PDI	CPU %	The CPU usage for a process. If the value of this field is large, there might be a problem with the OS, operation, or a specific application.
	System CPU	The CPU usage for a processor executed in kernel mode. If the value of this field is large, there might be a problem with the OS.
	User CPU	The CPU usage for a processor executed in user mode. If the value of this field is large, there might be a problem with a specific application.

Table 1-1: Principal records and fields related to processor monitoring

### (b) Monitoring methods

### Monitoring kernel CPU usage

You can use the Kernel CPU alarm provided by the monitoring template to monitor system-wide kernel CPU usage.

For details, see 1.3.3(1)(a) Monitoring template.

### Monitoring user CPU usage

You can use the User CPU alarm provided by the monitoring template to monitor system-wide user CPU usage.

For details, see 1.3.3(1)(a) Monitoring template.

### Monitoring the CPU usage for each processor

By monitoring the CPU usage for each processor, you can check for problems with OS operation, such as an unbalanced CPU load. You can use the monitoring result of the CPU usage as a guideline for taking corrective measures.

Monitoring the kernel CPU usage, user CPU usage, and processor congestion is an effective way to monitor the CPU usage for each processor.

If the user CPU usage for a processor (the User CPU % field of the PI\_CPUP record) is at or above the threshold, you might need to look for processes that excessively use the CPU and to take action.

If the kernel CPU usage for a processor (the System % field of the PI\_CPUP record) is at or above the threshold, the system environment is inadequate for the processing. In this case, you might need to upgrade the processor or add processors.

For definition examples, see 1.3.3(1)(b) Definition examples other than for monitoring templates.

### Monitoring processor congestion

You can use the Run Queue alarm provided by the monitoring template to monitor processor congestion.

In addition to processor usage, you can monitor processor congestion (the number of queued requests) to monitor the processor load status. Monitoring both processor congestion and processor usage is an effective way to monitor the processor load status.

For details, see 1.3.3(1)(a) Monitoring template.

### Checking processes whose processor usage is high

By monitoring kernel CPU usage, user CPU usage, CPU usage for each processor, and processor congestion, you can determine if a bottleneck exists. If one does exist, you can use a real-time report (the CPU % field of the PD\_PDI record) to find processes that are monopolizing the processor.
If no such processes exist, the system environment is inadequate for the processing. In this case, you might need to upgrade the processor or add processors.

For definition examples, see 1.3.3(1)(b) Definition examples other than for monitoring templates.

# (2) Memory

This subsection explains how to monitor memory performance.

### (a) Overview

You can monitor memory performance to detect physical memory shortages and incorrect process operations.

Memory consists of physical memory and a swap file, as illustrated below. However, because the causes of bottlenecks are not limited to a small amount of physical memory or a small swap file, the paging status, page faults, and other items related to efficient memory usage must be monitored as well.

The following figure illustrates the configuration of the memory space.

Figure 1-2: Conceptual diagram of the memory space



Insufficient physical memory degrades overall system performance.

Memory areas not accessed by programs for a long time are saved to the swap file, and are loaded into physical memory on demand. Physical memory is efficiently used in this manner. Note, however, that swap file access is markedly slower than physical memory access. Therefore, frequent swapping or frequent page faults will considerably delay system processing.

• Paging

Paging is the movement of code and data between physical memory and a paging file. Loading from the paging file into physical memory is referred to by the term *page-in*, and saving from physical memory to the paging file is referred to by the term *page-out*.

• Page fault

A page fault is an attempt to access an area that does not exist in physical memory.

Because paging often occurs even in normal processing, measure performance when the system is operating stably before attempting to determine proper thresholds.

The Available Memory alarm is provided by the monitoring template. If you want to perform more detailed monitoring, see the following table, which lists and describes the principal records and fields related to memory monitoring.

Record	Field	Description (example)
PI	Total Physical Mem Mbytes	The amount of physical memory.
	Free Mem Mbytes	The amount of available physical memory.
	Alloc Mem Mbytes	The amount of physical memory in use.
	Alloc Mem %	Physical memory usage.
	Total Swap Mbytes	The amount of virtual memory.
	Free Mem Mbytes	The amount of available virtual memory.
	Alloc Swap Mbytes	The amount of virtual memory in use. If the value of this field continues to be at or above the threshold (the Total Physical Mem Mbytes field value of the PI record), a larger amount of memory might be required.
	Alloc Swap %	Virtual memory usage. If the value of this field continues to be at or above the threshold (determined by the system load status), the swap area might need to be expanded.
	Page Scans/sec	The number of page scans that occurred per second. If the value of this field continues to be at or above the threshold (150), memory might be a bottleneck.
	Swapped-Out Pages/sec	The number of swapped-out pages per second. If the value of this field continues to be at or above the threshold (200), memory might be a bottleneck.
	Buffers Mem $%^{\#}$	The percentage of physical memory allocated to the file buffer.
	Buffers Mem Mbytes <sup>#</sup>	The amount of physical memory allocated to the file buffer (MB).
	Cache Mem % <sup>#</sup>	The percentage of physical memory allocated as cache memory.
	Cache Mem Mbytes $^{\#}$	The amount of physical memory allocated as cache memory (MB).
	Effective Free Mem $text{*}^{\#}$	The percentage of physical memory available to applications.
	Effective Free Mem Mbytes <sup>#</sup>	The amount of physical memory available to applications (MB).

Table 1-2: Principal fields related to memory monitoring

#

This field can be used only when PFM - Agent for Platform 08-11 or later is installed in Linux.

The cause of a system memory shortage is not always physical memory itself. A problem with a program can also cause a shortage. By monitoring memory usage for each process, you can identify the cause of a shortage. If there is a process improperly occupying memory or if the amount of memory used by a process continues to increase steadily, the program running the process is likely to be defective.

The following table lists and describes the principal records and fields related to monitoring the memory usage of a specific process.

Table 1-3: Principal fields related to the memory monitoring for each process

Record	Field	Description (example)	
PD_PDI	Real Mem Kbytes	The amount of physical memory used by a process. If the value of this field is large, a specific process might be using a large amount of physical memory.	
	Virtual Mem Kbytes	The amount of virtual memory used by a process. If the value of this field is large, a specific process might be using a large amount of virtual memory.	
	Swaps	The number of times swapping occurred for a process. If the value of this field is large, you might need to look for a process that is causing a bottleneck due to frequent swapping.	

### (b) Monitoring methods

#### · Monitoring the memory usage status

You can use the usage status of virtual memory as a guideline for determining whether to increase physical memory.

Even when memory usage is temporarily high, if the high load status does not persist, performance degradation might be permissible. Therefore, monitoring the number of page scans and the number of swapped-out pages in addition to memory usage is recommended.

If the amount of used virtual memory (the Alloc Swap Mbytes field of the PI record) is larger than the total amount of physical memory (the Total Physical Mem Mbytes field of the PI record), more memory might be required.

For definition examples, see 1.3.3(2)(b) Definition example other than for monitoring templates.

### · Monitoring the number of page scans

You can use the Pagescans alarm provided by the monitoring template to monitor the number of page scans (Page Scans/sec field of the PI record).

Monitoring the swap-out status and memory usage in addition to the number of page scans is recommended.

If you find processes that are performing many page scans, you can take appropriate action. If no such processes exist, the system environment is inadequate for the processing. In this case, you might need to increase the amount of physical memory.

For details, see 1.3.3(2)(a) Monitoring template.

### · Monitoring the swap-out status

You can use the Swap Outs alarm provided by the monitoring template to monitor the swap-out processes (Swapped-Out Pages/sec field of the PI record).

Monitoring the number of page scans and the memory usage status in addition to the swap-out status is recommended.

If you find processes that are excessively swapping pages, take appropriate action. If no such processes exist, the system environment is inadequate for the processing. In this case, you might need to increase the amount of physical memory.

For details, see 1.3.3(2)(a) Monitoring template.

## · Monitoring memory usage by process

If you think there is a problem with a process after monitoring the memory usage status, the number of page scans, and the swap-out status, you must identify the process causing the problem.

If server activities have not increased, you can use a real-time report to monitor the memory usage of each process (by using the Real Mem Kbytes field of the PD\_PDI record, for example) for a number of minutes. In the results displayed as a line graph, you can then check for a process whose memory usage is increasing steadily.

If you identify a process that is causing a memory leak or is excessively swapping pages, contact the vendor or take other appropriate action.

For definition examples, see 1.3.3(2)(b) Definition example other than for monitoring templates.

### Checking the amount of memory that the system can actually use (Linux only)

In Linux, once information is stored in memory, Linux retains that information in memory as long as possible. For this reason, when the Free Mem Mbytes field of the PI record is used to monitor the amount of available memory, the value of the field gradually approaches 0. However, the stored information can be released from memory anytime and does not prevent applications from using memory. In PFM - Agent for Platform 08-11 and later versions, the amount of memory that can be freed up anytime can be monitored by using the Buffers Mem Mbytes and Cache Mem Mbytes fields of the PI record. PFM - Agent for Platform calculates the amount of memory that is available in reality from these fields and outputs the result to the

Effective Free Mem Mbytes field of the PI record. You can use this field to monitor the amount of memory that is actually available to the system.

### (3) Disks

This subsection explains how to monitor disk performance.

### (a) Overview

You can monitor disk performance to detect disk resource shortages and bottlenecks caused by a disk. Continuous monitoring of disk performance allows you to check for trends in increased disk space usage so that you can determine an appropriate configuration for the system or determine when the system configuration should be expanded.

A disk stores programs, the data used by the programs, and other data. If the amount of free disk space becomes insufficient, data might be lost or system response might slow down.

If a program that is performing a disk I/O operation must pause (that is, wait for the response), the disk is becoming a bottleneck.

A disk bottleneck can cause any of several types of performance degradation, such as slow process response. For this reason, it is important to check that disk performance is not degrading.

When you monitor the number of disk I/O operations, note the following.

I/O information for a disk that PFM - Agent for Platform acquires is the I/O information that the OS has acquired from the disk device. This information is not related to the I/O operations on the actual disk. The following figure shows I/O processing that occurs between an application and a disk.





The fields related to disk I/O load are Avg Service Time and Busy %.

The Avg Service Time field indicates the average time required for one I/O operation. If a very large amount of information is input or output, or if an I/O operation is delayed, the value of this field becomes large.

The Busy % field indicates the percentage of time that the disk device was operating during a collection interval. The value of this field becomes large if I/O operations are concentrated in a short period of time.

As described above, the Avg Service Time and Busy % fields are related to the disk device load. You can therefore use these fields in the way that best suits your monitoring requirements.

The following figure explains what the Avg Service Time and Busy % field values indicate.





The monitoring template provides the Disk Space alarm. If you want to perform more detailed monitoring, see the following table, which lists and describes the principal records and fields related to the monitoring of disk performance.

Record	Field	Description (example)
PI_DEVD	Avg Service Time	The average time for I/O operations. If the value of this field is large, the amount of information being input or output might be very large.
	Avg Wait Time	The average wait time for I/O operations. If the value of this field is large, the amount of information being input or output might be very large.
	Busy %	The disk busy rate. If the value of this field is large, I/O operations might be concentrated on a specific disk.
	I/O Mbytes	The total amount of information input or output. If the value of this field is large, the amount of information being input or output might be very large.
	Total I/O Ops	The number of I/O operations that occurred. If the value of this field is large, I/O operations might be concentrated on a specific disk.
	Queue Length	The queue length. If the value of this field continues to be at or above the threshold, the device is congested.
PD_FSL	Mbytes Free	The amount of available disk space. If the value of this field is small, the amount of free disk space is insufficient.

Table	1-4:	Principal	fields	related <sup>*</sup>	to disk	monitoring

Record	Field	Description (example)
	Mbytes Free %	
PD_FSR	Mbytes Free	
	Mbytes Free %	

### · Monitoring the disk free space

You can use the File System Free(L) alarm or File System Free(R) alarm provided by the monitoring template to monitor the amount of free disk space.

You can use an alarm to effectively monitor the percentage of free logical-disk space.

If the amount of free logical-disk space (the Mbytes Free or Mbytes Free % field of the PD\_FSL or PD\_FSR record) falls below the threshold, you might need to take appropriate action, such as deleting unnecessary files or adding a disk.

For details, see 1.3.3(3)(a) Monitoring template.

# Monitoring the disk I/O delay status

You can use the I/O Wait Time alarm provided by the monitoring template to monitor the disk I/O delay.

The alarm includes the Wait % field (of the PI record), with which you can monitor the disk I/O delay status. If the value of this field is large, you might need to take appropriate action, such as checking for a process that is performing too many I/O operations to update a database, for example.

For details, see 1.3.3(3)(a) Monitoring template.

# Monitoring the disk I/O status

You can use the Disk Service Time alarm provided by the monitoring template to monitor the disk I/O.

The alarm includes the Avg Service Time field (of the PI\_DEVD record), which enables you to check for a process that is inputting or outputting a very large amount of information.

For details, see 1.3.3(3)(a) Monitoring template.

#### · Monitoring the disk busy rate

You can use the Disk Busy % alarm provided by the monitoring template to monitor the disk busy rate.

You can monitor the disk busy rate by using an alarm to check whether excessive paging (reading and writing of pages by processes) is occurring.

If the disk busy rate (the Busy % field of the PI\_DEVD record) continues to be at or

above the threshold, you might need to take action. For example, you might need to identify the processes that frequently request disk I/O operations, and then distribute the processing of these processes.

When you monitor the disk busy rate, monitoring the disk I/O delay status, disk I/O status, and disk congestion is also recommended.

For details, see 1.3.3(3)(a) Monitoring template.

### Monitoring disk congestion

You can use the Disk Queue alarm provided by the monitoring template to monitor disk congestion.

You can monitor disk congestion by using an alarm to check whether I/O requests have been excessive.

If the disk congestion level (the Queue Length field of the PI\_DEVD record) continues to be at or above the threshold, you might need to take action. For example, you might need to identify those processes that frequently request disk I/O, and then distribute the processing of the processes.

When you monitor disk congestion, monitoring the disk I/O delay status, disk I/O status, and disk busy rate is also recommended.

For details, see 1.3.3(3)(a) Monitoring template.

# (4) Network

This subsection explains how to monitor network performance.

# (a) Overview

You can monitor network information to check the response time of system functionality.

Continuous monitoring of network data traffic allows you to plan network reconfiguration or expansion.

The following table lists and describes the principal records and fields related to monitoring network performance.

Record	Field	Description (example)
PI_NIND	Pkts Rcvd/sec	The number of packets received per second. If the value of this field is large, many packets have been received successfully.
PI_NINS		
PI_NIND	Pkts Xmitd/sec	The number of packets sent per second. If the value of this field is large, many packets have been sent successfully.

Table 1-5: Principal fields related to network monitoring

Record	Field	Description (example)
PI_NINS		
PI_NIND	Max Transmission Unit	The maximum packet size. In an environment in which an MTU is automatically allocated, if the value of this field is large (1500 or more), splitting of sent or received data occurs. If the value of this field is small (below 1500), the number of control signals and blocks increases. This increase could cause a network bottleneck.

# (b) Monitoring methods

 Monitoring for data traffic that exceeds the NIC bandwidth (the maximum amount of data that can be transferred per unit of time)

You can use the Network Rcvd/sec alarm provided by the monitoring template to monitor the bandwidth of a network interface card.

You can monitor the number of packets sent or received over the network by using an alarm to monitor the bandwidth of a network interface card (NIC).

If the number of packets continues to be at or above the threshold, you might need to upgrade the NIC or the physical network.

For details, see 1.3.3(4)(a) Monitoring template.

### (5) Processes

This subsection explains how to monitor process performance.

### (a) Overview

Because system functionality is provided by individual processes, understanding the operating status of processes is essential for stable system operation.

If one of the processes that provides system functionality terminates abnormally, the system stops with serious consequences. In order to detect such an abnormal condition early and take appropriate action, it is necessary to monitor the status of processes, including their generation and disappearance.

Note that PFM - Agent for Platform performs a process check at the same intervals that information is collected. Accordingly, the time that the disappearance of a process is detected is the time that PFM - Agent for Platform collects information, not the actual time that the process disappeared.

The following table lists and describes the principal records and fields related to the monitoring of processes.

Record	Field	Description (example)
PI_WGRP	Process Count	The number of processes. If the value of this field is the threshold or less (the minimum number of processes that need to be activated), some or all of the required processes are not running. <sup>#</sup>
PD_PDI	Program	The name of a process. If this record is not collected, the process is not running.

<i>Table 1-6</i> . Principal fields related to the monitoring of p	t processes
--	-------------

#

The /opt/jplpc/agtu/agent/wgfile file must be setup to collect this record.

### (b) Monitoring methods

### Monitoring process disappearance

You can use the Process End alarm provided by the monitoring template to monitor process disappearance.

If a process terminates abnormally, the system stops with serious consequences. You can monitor the disappearance of processes by using an alarm, enabling prompt recovery of the system.

For details, see 1.3.3(5)(a) Monitoring template.

# Monitoring process generation

You can use the Process Alive alarm provided by the monitoring template to monitor process generation.

You can use an alarm to monitor the generation of processes for each application or the status of scheduled processes, enabling you to check the operation status of the production system.

By setting a workgroup in the wgfile file and using the PI\_WGRP record, you can perform several types of monitoring. For example, you can monitor the following items: process generation, process disappearance, the number of processes that have the same name, the number of processes for each application, and the number of processes activated for each user.

For details, see 1.3.3(5)(a) Monitoring template.

# (6) Example of collecting information about used ports

PFM - Agent for Platform provides functionality to convert user-specific performance data output by users to text files (user-created data) into a format that can be stored in records provided by PFM - Agent for Platform (user data files). For details about user-specific performance data, see *4.2.3 Settings for collecting user-specific* 

### performance data.

The following shows an example for collecting used port information in PI\_UPIB records as user-specific performance data. The following table shows the format in which used port information is stored.

Option	Value
tt	"TCP"
ks	The host name
lr	The total number of TCP ports for the host
lr	The number of currently active TCP ports for the host
lr	The number of listening TCP ports for the host

Table 1-7: Format for user-created data

To collect information:

1. Create a shell script for collecting information about used ports.

In this example, a shell script is used to collect information about used ports. The following shows an example of creating a shell script.

Example of creating a shell script in Linux (/homework/sample.sh): #!/bin/sh echo "Product Name=PFM-Agent for Platform (UNIX)" > / homework/userdata.tcp echo "FormVer=0001" >> /homework/userdata.tcp echo "tt ks lr lr lr" >> /homework/userdata.tcp #All TCP port ALL\_TCP=`netstat -at | wc -l` ALL TCP=`expr \$ALL TCP - 2` #Active TCP port ACTIVE\_TCP=`netstat -at | grep ESTABLISHED | wc -1` #Listen TCP port LISTEN\_TCP=`netstat -at | grep LISTEN | wc -1` #Output echo "TCP `uname -n` \$ALL TCP \$ACTIVE TCP \$LISTEN TCP" >> / homework/userdata.tcp

Note:

Note that the example shell script shown here was created for Linux. This shell script might not operate correctly in other OSs, and might not always operate correctly in Linux due to differences in environments.

2. Execute the shell script created in step 1.

The following shows the user-created data created as a result of executing the shell script.

```
User-created data (/homework/userdata.tcp):
Product Name=PFM-Agent for Platform (UNIX)
FormVer=0001
tt ks lr lr lr
TCP jp1ps05 15 3 12
```

3. Convert the user-created data created in step 2 to a user data file.

The following shows an example of executing the jpcuser command to convert user-created data into a user data file.

```
Example of jpcuser command execution:
/opt/jplpc/agtu/agent/jpcuser/jpcuser PI_UPIB
-file /homework/userdata.tcp
```

4. Use PFM - Agent for Platform to collect the user data file output in step 3.

When PFM - Agent for Platform collects records, the contents of the user data file are stored in user records.

# (7) Example of collecting performance data from multiple hosts on which PFM products are not installed

You can use the user-created data collection functionality provided by PFM - Agent for Platform to collect performance data specific to hosts on which PFM products are not installed. You can also monitor the status of multiple hosts at the same time by converting the performance data for the hosts into a single user data file. In this case, a script such as a shell script needs to be prepared because user-created data will be created on each host on which PFM products have not been installed. The following shows an example for collecting performance data from hosts on which PFM products are not installed, and outputting the data as PFM - Agent for Platform record information.

#### (a) Collected data

The following example obtains information using the user-created data created in (6) *Example of collecting information about used ports*.

### (b) Prerequisites

The prerequisites for collecting performance data from multiple hosts on which PFM products are not installed are as follows:

- The hosts on which PFM products are installed and the hosts on which PFM products are not installed are connected in a trusted environment to enable the exchange of files (an NFS area shared by the hosts is set).
- The version of PFM Agent for Platform on the hosts on which PFM products are

installed is 08-11 or later.

# (c) Procedures for data collection

The following figure shows the flow of data collection for hosts on which PFM products are not installed.

*Figure 1-5:* Flow of data collection for hosts on which PFM products are not installed



The following uses the numbering in the figure to explain processing. To collect

performance data from multiple hosts, perform these steps for each host.

1. Create user-created data for hosts on which PFM products are not installed.

Execute the script to collect performance data, and generate user-created data. The user-created data generated in *(6) Example of collecting information about used ports* is used here.

2. Copy files between remote hosts.

Copy the user-created data created in step 1 to the hosts on which PFM products are installed. Here, user-created data is copied to the /nfshome/ area shared between hosts by using NFS. The following shows an example of the cp command.

Example of the cp command: #/homework/sample.sh #cp /homework/userdata.tcp /nfshome/userdata.tcp

Note:

When collecting user-created data from multiple hosts, make sure that the file names are unique. If file names are duplicated, files might be overwritten during file copying.

3. Execute the jpcuser command on hosts on which PFM products are installed.

Execute the jpcuser command on hosts on which PFM products are installed to convert the user-created data copied in step 2 to user data files. The following shows an example in which the user-created data obtained through steps 1 and 2 from the hosts on which PFM products are not installed is converted into a single user data file.

Example of the jpcuser command: /opt/jplpc/agtu/agent/jpcuser/jpcuser PI\_UPIB -file user-created-data-1 -file user-created-data-2 -file user-created-data-3

4. Collect record data for hosts on which PFM products are installed.

On the hosts on which PFM products are installed, collect the contents of the user data file output in step 3 as record data.

# 1.3.3 Definition examples

The following provides examples of definitions for the monitoring template and definitions for items not included in the monitoring template for each monitored resource. The following notes apply to reading the definition examples:

• In the examples, the PFM - Web Console check boxes are shown as follows:

- $\boxtimes$  (selected) and  $\square$  (not selected)
- In the examples, the PFM Web Console radio buttons are shown as follows:

 $\bullet$  (selected) and  $\bigcirc$  (not selected)

- In the examples, *xxx*, *yyy*, *zzz*, and *dummy* are variables that the user replaces with the character strings appropriate for the system environment. For other definition items, the values should be changed as required.
- In the examples, the proper values for the frequency of occurrence settings (for example, *m* occurrence(s) during *n* interval(s)) differ depending on the system environment. Accordingly, specify the appropriate values. For example, assume that the status whose threshold has been exceeded for at least two minutes in the system environment is the high-load status. Further assume that the collection interval is 60 seconds and that the maximum for the number of times that the threshold can be exceeded is twice per five intervals. Under these conditions, an unacceptable high-load condition occurs when the threshold is exceeded at least three times per five intervals. The setting in this case is 3 occurrence(s) during 5 interval(s).

### (1) Processor

The following shows definition examples for the monitoring template and for items not included in the monitoring template.

# (a) Monitoring template

### · Processor-related monitoring template alarms

Processor-related alarms in the monitoring template are stored in the alarm table for PFM UNIX Template Alarms [CPU] 09.00.

Monitorin g template alarm	Record	Field	Error threshold	Warning threshold	Description
Kernel CPU	ΡΙ	Kernel CPU %	> 75	> 50	If the percentage of time during which the processor operates continues to be above the threshold, there might be a problem with the OS or the operation method. <sup>#</sup>
User CPU	PI	User CPU %	> 85	> 65	If the percentage of time during which the processor operates continues to be above the threshold, there might be a problem with a specific application. <sup>#</sup>

Table 1-8: Processor-related monitoring template alarms

Monitorin g template alarm	Record	Field	Error threshold	Warning threshold	Description
Run Queue	ΡΙ	5-Minute Run Queue Avg	> 4	> 8	If the average number of threads is above the threshold, there might be a problem with the OS, operation method, or a specific application. <sup>#</sup>
CPU Per Processor(K )	PI_CPUP	Processor ID	>= 0	>= 0	If the CPU usage continues to be at or above the threshold, there might be a problem with the OS or operation method.
		System %	> 75	> 50	
CPU Per Processor(U )	PI_CPUP	Processor ID	>= 0	>= 0	If the CPU usage continues to be at or above the threshold, there might be a problem with a specific application.
		User %	> 85	> 65	

#

Any processes that are excessively using the processor must be found, and appropriate action must be taken. If no such processes exist, operations that outstrip the kernel's scheduling capabilities, such as the generation and deletion of many processes in a short time, might be occurring. In such a case, because the system environment is not adequate for the processing, you might need to upgrade the processor or add processors.

If you want to perform more detailed monitoring of processor performance you can use your own alarms or reports in addition to the existing alarms. For details about how to create your own alarms or reports, see 1.3.2(1)(b) Monitoring methods.

For details about the settings for the existing alarms, see 5. Monitoring Templates.

# Processor-related monitoring template reports

Table 1-9: Processor monitoring template reports

Report name	Displayed information
CPU Per Processor Status	Real-time information about the processor status
CPU Per Processor Usage	Real-time information about the CPU usage for a processor
CPU Trend	Daily CPU usage for a host for the last month
CPU Usage Summary	A history of the CPU usage on a minute-by-minute basis for the last hour

Report name	Displayed information
CPU Status(Multi-Agent)	An hourly history of the CPU usage by multiple hosts for the last 24 hours
CPU Status	Real-time information about the CPU usage
CPU Trend(Multi-Agent)	A daily history of the CPU usage by multiple hosts for the last month

For details about settings for existing reports, see 5. Monitoring Templates.

# (b) Definition examples other than for monitoring templates

# • Real-time report for checking processes whose processor usage is high

Table 1-10: Definition example

	Ite	m	Explanation
Name and Type	Report name		PD_PDI - Memory
	Product		UNIX (6.0)
	Report type	O Real-time (single agent)	• (Select)
		O Historical (single agent)	
		O Historical (multiple agents)	
Field	Record		PD_PDI
	Selected fields		Program PDI CPU % System CPU User CPU
Filter	Conditional ex	pression:	(Select Simple or Complex.)     PID <> "0"
	Specify when d	lisplayed	(Clear)
Indication settings	□ Specify wh	en displayed	(Select)
	🗌 Indicate de	lta value	Clear)

	Ite	m	Explanation
	Refresh interval	Do not refresh automatically	(Clear)
		Initial value	30
		Minimum value	30
	Display by ranking	Field	CPU %
		Display number	10#
		□ In descending order	(Clear)
Component s	Table		All fields
	List		
	Graph		System CPU User CPU
	Display key	Field	(None)
		In descending order	
Graph	Graph type		Stacked bar graph
	Series direction		Row
	Axis labels	X-axis	Process name (process ID)
		Y-axis	CPU usage time
	Data label	Data label 1	Process name
		Data label 2	Process ID
Drilldown	Report drilldov	vn	Arbitrary
	Field drilldown		Arbitrary

Legend:

--: Do not specify this item.

#

Specify a value appropriate for the circumstances.

# (2) Memory

The following shows definition examples for the monitoring template and for items not included in the monitoring template.

# (a) Monitoring template

# Memory-related monitoring template alarms

Memory-related alarms in the monitoring template are stored in the alarm table for PFM UNIX Template Alarms [MEM] 09.00.

Monitorin g template alarm	Record	Field	Error threshold	Warning threshold	Description
Pagescans	ΡI	Page Scans/sec	> 150	> 100	If the number of page scans that occurred is greater than the threshold, memory might be insufficient.
Swap Outs	PI	Swapped-Out Pages/sec	> 200	> 100	If the number of pages is greater than the threshold, memory might be insufficient.
Alloc Mem Mbytes	PI	Alloc Swap Mbytes	>= 1800	>= 1024	If the amount of used memory continues to be at or above the threshold (the Total Physical Mem Mbytes field value of the PI record), physical memory might be insufficient.

### *Table 1-11:* Memory monitoring template alarms

For details about the settings for the existing alarms, see 5. Monitoring Templates.

# · Memory-related monitoring template reports

# Table 1-12: Memory monitoring template reports

Report name	Displayed information
Memory Paging	A history of memory use on a minute-by-minute basis for the last hour <sup>#</sup>
Memory Paging Status	Real-time information about memory usage and the paging status <sup>#</sup>
Memory Paging Status (Multi-Agent)	An hourly history of memory usage by multiple hosts for the last 24 hours <sup>#</sup>
Paging Trend (Multi-Agent)	A daily history of page scans performed by multiple hosts for the last month <sup>#</sup>

#

This report cannot be used in Linux.

# • System-related monitoring template reports (for memory)

Table	1-13:	System	monitoring	template	reports

Report name	Displayed information
I/O Overview	A history of the number of I/Os on a minute-by-minute basis for the last hour. This report cannot be used in Linux.
Process Trend	A daily history of the number of operated processes for the last month
System Overview (real-time report indicating the system operating status)	Real-time information about the system operating status
System Overview (historical report indicating the system operating status)	A history of the system operating status on a minute-by-minute basis for the last hour
System Utilization Status	Real-time information about the system operating status
Workload Status	Real-time information about the system workload
Workload Status (Multi-Agent)	An hourly history of the workload for multiple hosts for the last 24 hours

For details about the settings for the existing reports, see 5. Monitoring Templates.

# (b) Definition example other than for monitoring templates

- Real-time report for checking the memory usage of a process
  - Table 1-14: Definition example

	Ite	m	Explanation
Name and Type	Report name		PD_PDI - Memory
	Product		UNIX (6.0)
	Report type	O Real-time (single agent)	• (Select)
		O Historical (single agent)	
		O Historical (multiple agents)	
Field	Record		PD_PDI

	Iter	n	Explanation
	Selected fields		Select all fields.
Filter	Conditional exp	pression:	• (Select Simple or Complex.) PID <> "0"
	Specify when di	splayed	(Clear)
Indication settings	□ Specify whe	en displayed	(Select)
	🗆 Indicate del	ta value	(Clear)
	Refresh interval	Do not refresh automatically	Clear)
		Initial value	30
		Minimum value	30
	Display by ranking	Field	Virtual Mem Kbytes <sup>#1</sup>
		Display number	30#2
		□ In descending order	X (Select)
Component s	Table		Program PID Real Mem Kbytes Virtual Mem Kbytes Major Faults Swaps Context Switches CPU %
	List		
	Graph		Virtual Mem Kbytes Real Mem Kbytes
	Display name		
	Display key	Field	(None)
		In descending order	
Graph	Graph type		Line graph
	Series direction		Row

	Iten	n	Explanation
	Axis labels	X-axis	Time
		Y-axis	Memory usage
	Data label	Data label 1	(None)
		Data label 2	(None)
Drilldown	Report drilldow	n	Arbitrary
	Field drilldown		Arbitrary

Legend:

--: Do not specify this item.

#1

Set the fields that you want to monitor.

#2

Specify a value appropriate for the circumstances.

# (3) Disks

The following shows definition examples for the monitoring template.

# (a) Monitoring template

# Disk-related monitoring template alarms

Disk-related alarms in the monitoring template are stored in the alarm table for PFM UNIX Template Alarms [DSK] 09.00.

There i ie. Disk monitoring template alarmis
--

Monitoring template alarms	Record	Field	Error threshol d	Warning threshol d	Description
I/O Wait Time	PI	Wait %	> 80	> 60	If the percentage of time during which the processor is waiting for I/O is greater than the threshold, I/ O operations, such as updating a database, might be delayed.
Disk Service Time	PI_DEVD	Avg Service Time	> 0.1	> 0.06	If the average operating time is greater than the threshold, the amount of information being input or output might be very large.

Monitoring template alarms	Record	Field	Error threshol d	Warning threshol d	Description
File System Free(L)	PD_FSL	File System	<> dummy	<> dummy	If there is little unused area, disk space is insufficient.
		Mbytes Free	< 5120	< 10240	
File System Free(R)	PD_FSR	File System	<> dummy	<> dummy	If there is little unused area, disk space is insufficient.
		Mbytes Free	< 5120	< 10240	
Disk Busy %	PI_DEVD	Device Name	⇔ dummy	⇔ dummy	If the disk busy rate continues to be at or above the threshold, I/O operations might be concentrated on a specific disk.
		Busy %	>= 90	>= 80	
Disk Queue	PI_DEVD	Device Name	⇔ dummy	<> dummy	If the queue length continues to be at or above the threshold, the device is congested.
		Queue Length	>= 5	>= 3	

For details about the settings for the existing alarms, see 5. Monitoring Templates.

# Disk-related monitoring template reports

Table 1-16: Disk monitoring template reports

Report name	Displayed information			
Avg Service Time - Top 10 Devices	Real-time information about the 10 devices with the longest average operating time			
Avg Service Time Status - Top 10 Devices	Real-time information about the 10 devices with the longest average operating time			
Device Detail	Real-time information about the selected device			
Device Usage Status	Real-time information about device usage			
Device Usage Status (Multi-Agent)	An hourly history of device usage by multiple hosts for the last 24 hours			
Free Space Mbytes - Top 10 Local File Systems	Real-time information about the 10 local file systems with the smallest amount of free space			
Local File System Detail	Real-time information about the selected local file system			
Remote File System Detail	Real-time information about the selected remote file system			

Report name	Displayed information			
Space Usage - Top 10 Local File Systems	Real-time information about the 10 local file systems with the highest usage			
Space Usage - Top 10 Remote File Systems	Real-time information about the 10 remote file systems with the highest usage			
NFS Activity Overview	A history of the operating status of the NFS clients and server on a minute-by-minute basis for the last hour <sup>#</sup>			
NFS Load Trend	A daily history of the operating status of the NFS clients and server for the last month <sup><math>\#</math></sup>			
NFS Usage Status	Real-time information about the operating status of the NFS clients and server <sup>#</sup>			
NFS Usage Status (Multi-Agent)	An hourly history of the operating status of the NFS clients and server for the last 24 hours <sup>#</sup>			

### #

This report cannot be used in Linux.

For details about the settings for the existing reports, see 5. Monitoring Templates.

# (4) Network

The following shows definition examples for the monitoring template.

# (a) Monitoring template

# Network-related monitoring template alarms

Network-related alarms in the monitoring template are stored in the alarm table for PFM UNIX Template Alarms [NET] 09.00.

Monitoring template alarm	Record used	Field used	Abnorm al conditi on	Warnin g conditi on	Meaning
Network Rcvd/ sec	PI_NIN S	Pkts Rcvd/sec	>=9	>= 8	If the number of packets is large, many packets have been received successfully.

Table 1-17: Network monitoring template alarms

For details about the settings for the existing alarms, see 5. Monitoring Templates.

# · Network-related monitoring template reports

Report name	Displayed information		
Network Interface Detail	Real-time information about network usage of the selected system		
Network Interface Summary (real-time report indicating the network usage)	Real-time information about network usage		
Network Interface Summary (historical report indicating the network usage)	A history of network usage on a minute-by-minute basis for the last hour		
Network Overview	A history of network usage on a minute-by-minute basis for the last hour		
Network Status (Multi-Agent)	An hourly history of the network usage by multiple hosts for the last 24 hours		
Network Status	Real-time information about network usage		

For details about the settings for the existing reports, see 5. Monitoring Templates.

# (5) Processes

The following shows definition examples for the monitoring template.

# (a) Monitoring template

# Process-related monitoring template alarms

Process-related monitoring template alarms are stored in the alarm table for PFM UNIX Template Alarms [PS] 09.00.

Monitoring template alarms	Record used	Field used	Abnorm al conditio n	Warnin g conditio n	Meaning
Process End	PD_PDI	Program	= jpcsto	= jpcsto	If performance data is not collected, the process has stopped.
Process Alive	PI_WGRP	Process Count	> 0	> 0	This indicates that the workgroup process is running.
		Workgroup	= workgrou p	= workgrou p	

Table 1-19: Process monitoring template alarms

For details about the settings for the existing alarms, see 5. Monitoring Templates.

#### · Process-related monitoring template reports

Report name	Displayed information			
CPU Usage - Top 10 Processes	Real-time information about the 10 processes with the highest CPU usage			
I/O Activity - Top 10 Processes	Real-time information about the 10 processes that processed the most I/O operations. This report cannot be used in HP-UX, AIX, and Linux.			
Major Page Faults - Top 10 Processes	Real-time information about the 10 processes with the most page faults causing physical I/O operations			
Process Detail	Real-time information about the processes on the selected host			
Process Overview	A history of the process operating status on a minute-by-minute basis for the last hour			
Process Summary Status	Real-time information about the process operating status			

#### Table 1-20: Process monitoring template reports

For details about the settings for the existing reports, see 5. Monitoring Templates.

# 1.3.4 Operation in virtualized systems

This subsection explains how to use PFM - Agent for Platform to monitor performance in virtualized systems.

### (1) Objectives of operation in virtualized systems

The following explains the advantages of virtualized systems, and the objectives in running PFM - Agent for Platform in a virtualized system.

# (a) Advantages of virtualized systems

Virtualized systems are attracting attention as a technology that makes the most of excess system resources. For example, with the current one-server, one-application paradigm, most servers consistently have excess resources. Specifically, except for times of server job congestion, usually only 5% to 7% of resources are used. Virtualized systems are a way to solve this issue.

Virtualized systems also have the following advantages:

- Operating systems and devices can be shared and centrally managed.
- Several old servers can be made into a virtual server, and run as one new server.
- The number of servers can be reduced, cutting electricity and air conditioning costs.

# (b) Objectives of performance monitoring

As discussed above, the benefits of a virtualized system are greatest when system resources are used in the proper amounts. Virtualized systems cannot be used

effectively if system resources are overconsumed, or at the other extreme, hardly used at all.

In situations like these, the status of resource consumption can be monitored to determine whether the current system is set up effectively.

At a basic level, PFM - Agent for Platform is designed to collect information about a single physical operating system. However, it can be used creatively to monitor performance information that depends on virtualized systems.

The main objectives of using PFM - Agent for Platform to monitor virtualized system performance are as follows:

- Analyzing performance data trends to better understand impact on load allocation and the affected system resources.
- Analyzing performance data to find the causes of bottlenecks.
- Monitoring whether the operating system is running properly in the virtualized system.

In virtualized systems, specific bottlenecks might adversely affect performance of the entire virtualized system. The following may cause such bottlenecks:

- Insufficient memory on a logical partition
- Load allocation between virtualized systems
- Monopolization of a specific resource by a program

The following explains methods for using PFM - Agent for Platform to monitor the performance of virtualized systems. Note that the thresholds shown here for performance monitoring are just reference values. Use the appropriate values based on the system configuration and usage.

# (2) Monitoring resources in virtualized systems

### (a) Overview

The following are the most important system resources to be monitored for performance:

- Processors
- Memory
- Disks
- Networks
- Processes

In a virtualized system, some performance data for the above resources might not be collected or might become meaningless when changed dynamically. Performance

changes for each OS, or by each virtualized system.

### (b) Installing PFM - Agent for Platform in a virtualized system

In a virtualized system, each type of resource is basically managed by virtualized functionality (software or hardware), and configured by being allocated to different logical partitions. The managed resources include processors, memory, disks, and networks.

These resources can be obtained as performance data on the logical partition on which PFM - Agent for Platform is installed.

Some virtualized systems distinguish between guest OSs and host OSs, as is the case with VMWare, Virtage, and other software-based virtualizations. The host OS manages the guest OS, and the guest OS runs on the host OS. In such cases, PFM - Agent for Platform is installed on the guest OS to monitor performance.

PFM - Agent for Platform collects performance data on the installed logical partition, or guest OS.

Precautionary note

Because the host OS for VMWare is a special OS for managing virtualized functionality, operation of applications is not guaranteed. Since Virtage creates an off-disk management area called an *SVP (Service Processor) frame*, data collected by PFM - Agent for Platform cannot be saved as a database in this management area.

# (c) Setting up PFM - Agent for Platform in a virtualized system

The procedures for collecting information for an installed instance of PFM - Agent for Platform are the same for virtualized systems. The existing settings can be used as is.

When a virtual machine is set up using a virtualized system, and PFM - Agent for Platform is installed on the machine, PFM - Agent for Platform collects performance data about the virtual machine.

### (3) Examples of using of PFM - Agent for Platform in a virtualized system

The following gives simple examples of usage in a virtualized system.

#### (a) Determining whether to change virtualized system settings

If there are extra physical resources despite the consumption of a significant amount of resources on a specific guest OS or logical partition, we recommend that you change the virtualized system settings.

PFM - Agent for Platform can be used as a tool to determine these kinds of situations.

The following graph shows a case in which the allocation of processor resources is not sufficient.

*Figure 1-6:* Case in which processor resource allocation is not sufficient (during processor usage monitoring)



Because the processor usage for logical partition A is 100%, the allocation ratio is being switched. However, the processor usage for logical partition A does not decrease, while the processor for logical partition B is not fully used. In cases like this, change the allocation ratio settings.

The following graph shows a case in which the allocation of processor resources is sufficient.

*Figure 1-7:* Case in which processor resource allocation is sufficient (during processor usage monitoring)



The processor resource ratio is being switched while there are many processes in the queue for logical partition A. As a result, the number of processes in the queue for logical partition A is decreasing.

### (b) Determining whether additional physical resources are needed

If physical resources always seem to be heavily loaded, consider adding another physical resource.

Note, however, that even when a single guest OS or logical partition is heavily loaded in a virtualized system, the system-wide load might seem light. Therefore, check whether all guest OSs or all logical partitions are heavily loaded.

When using PFM - Agent for Platform to check the load status in a virtualized system, you might require a different perspective from the one you use for an ordinary environment.

A virtualized system contains resources that can be changed dynamically, such as processors and memory. Therefore, when monitoring processor and memory usage, also monitor the items not easily affected by dynamic changes in resources, such as the current queue length and paging frequency.

The following graph gives an example of processor resources.

*Figure 1-8:* Case in which additional processor resources are recommended (during processor usage monitoring)



In the figure example, the allocation ratio is being switched due to the heavy load on processor usage for logical partition B, but usage is high for both logical partitions A

and B. In this kind of case, physical resources are insufficient.

# (4) Precautions regarding usage of PFM - Agent for Platform in virtualized systems

The performance data collected by PFM - Agent for Platform in a virtualized system is specific to each virtual machine. Therefore, install PFM - Agent for Platform on each virtual machine.

Performance data about each virtual machine cannot be collected from the overall virtualized system, or from the management machine.

The following are precautions regarding the collection of information for each resource.

### (a) Precautions regarding collection of processor information

The processor usage collected in a virtualized system might not yield the intended values. This is because the virtualized system divides up processor resources and dynamically allocates them to other logical partitions. For example, if significant amounts of processor resources are being used in a specific logical partition due to a heavy load, only limited processor resources might be available for other logical partitions.



*Figure 1-9:* Case in which collected values differ due to dynamic resource changes

Note that if an application on a given logical partition is using a physical processor, jobs on other logical partitions might be forced to wait due to the operation. In this case, processor usage cannot be accurately ascertained.

### (b) Precautions regarding collection of memory information

As with processors, information about memory usage in a virtualized system may also differ from the system-wide ratio, due to dynamic resource changes.

For example, when 256 MB of memory area is allocated, and only 64 MB of it is used, PFM - Agent for Platform displays a value of 25% for the memory usage allocation. In this case, when the memory allocation area is dynamically changed from 256 MB to 128 MB, PFM - Agent for Platform displays 50% for the memory usage. Keep in mind that an unexpected warning might occur when a memory resource is specified for an alarm.

Figure 1-10: Case in which the memory resource is specified for an alarm



### (c) Precautions regarding collection of disk information

As with processor resources, sometimes disk busy rates cannot be accurately ascertained. For example, on a virtualized system, some jobs may be using physical disk resources while others are waiting due to operation.

# (d) Precautions regarding collection of network information

PFM - Agent for Platform measures only incoming and outgoing packets for network information. Therefore, operation in a virtualized system is the same as normal usage, but in some cases virtual network information is displayed for network information. This is not an issue, because PFM - Agent for Platform collects network information recognized by the OS running on the virtual machine.

# (e) Precautions regarding collection of process information

Process-related performance data consists of items that show the process count and items that show the amount of resources used by processes. In both cases, since data on the logical partition is obtained for virtualized systems, this process information does not reflect the entire virtualized system.

PFM - Agent for Platform collects both the number of processes on each logical partition, and the amount of resources being used by the processes.

# (5) Virtualized system functionality and collected performance data

In virtualized systems, the setup of provided resources differs depending on how the system is implemented. Also, resource changes might or might not require temporary stoppage of a logical partition. If a logical partition needs to be stopped, this should not affect much because PFM - Agent for Platform is also stopped. However, if a logical partition does not need to be stopped, and the system resources change dynamically, the performance data obtained by PFM - Agent for Platform might be significantly affected. In this case, we recommend that you collect performance data not significantly affected by dynamic resource changes.

The following table shows the resources that can be collected for each virtualized system.

Virtualized system	Resource						
	Processor count	Memory	Disk	Network			
Zone			TS				
APV	DS	DS	TS	TS			
I-VM (VSE)	TS	TS	TS	TS			
VMware ESX Server 3.0	TS	TS	TS	TS			
Virtage	TS	TS		TS			
WPAR	DS	DS	DS				

Table 1-21: Resources for each virtualized system

Legend:

DS: Dynamic change is possible.

TS: The logical partition needs to be temporarily stopped.

--: Not supported

# (a) Zone

### Zone functionality

Unlike the logical resource partitioning functions implemented in other OSs (for example, LPAR in AIX and VMware), the zone functionality installed in Solaris 10 or later provides an application workspace. Accordingly, the positioning of a virtualized system based on zones slightly differs from that of virtualized systems on other OSs. Despite the difference, however, zones are used like similar functions in other OSs (for example, for the implementation of multiple OSs in a single system).

# Structure of the zone functionality

There are two types of zones: a global zone and a non-global zone. The global zone has almost the same meaning as the entire system, whereas a non-global zone represents an application workspace provided by the system.

In an ordinary virtualized system, resources are completely separated from the system when viewed by the user. In a virtualized system based on the zone functionality, resources other than disks are basically owned by the global zone.

PFM - Agent for Platform can collect information about the global zone and non-global zones. Note that some types of information about a non-global zone cannot be collected depending on the record. For details, see Table 1-28.





In a non-global zone, the zone functionality operates by using a single file system as seen from the global zone.

Part of the file system of the global zone is shared in the non-global zone.

In the following example, the entities of sbin and usr under zone a, zone b, and zone c are sbin and usr under /.

Figure 1-12: Example of a zone configuration



### Monitoring resources in the global zone

When PFM - Agent for Platform is running in the global zone, you can set the ALL Zone Collection for Process property to select the zone for which process information is collected. The ALL Zone Collection for Process property is set in the list of Agent Collector service properties for PFM - Web Console. You can set either of the following values for the ALL Zone Collection for Process property.

Y

Collect process information for the global zone and non-global zones.

Ν

Collect process information for the global zone.

The set property will be obtained when PFM - Agent for Platform is started. If the ALL Zone Collection for Process property has not been set, the default of Y is set.

The following figure shows process information that is collected when PFM - Agent for Platform is running in the global zone.






· Monitoring resources in a non-global zone

When PFM - Agent for Platform is running in a non-global zone, information only about that non-global zone is collected regardless of the setting of the ALL Zone Collection for Process property. The following figure shows the process information that is collected when PFM - Agent for Platform is running in a non-global zone.



Figure 1-14: Process information collected for a non-global zone

## (b) APV

## • APV functions

APV is extended functionality that implements an integrated virtualized system. APV provides the following functions:

• Micro-Partitioning

This function allocates processor resources in 10% units to an LPAR.

• Simultaneous multithreading (SMT)

This function simultaneously executes two threads on one physical processor.

• Virtual I/O server (VIOS)

As one of the major components of the APV functionality, this function virtualizes both I/O resources and network resources.

• Virtual SCSI adapter

This function divides up a physical disk into logical partitions and allocates them to virtual machines.

• Shared Ethernet adapter

This adapter is used for sharing a physical Ethernet adapter on an I/O server by the virtual Ethernet adapters of multiple virtual machines.

• Integrated Virtual Manager (IVM)

This virtualized system software enables you to use a Web browser to perform logical partitioning easily without using a special management terminal.

# APV structure

APV uses components to implement a virtualized system.

A simple explanation of the APV structure is that the Micro-Partitioning function allocates one processor resource to multiple LPARs so that the LPARs can use physical device resources limited by the VIOS function. IVM (APV) is the software that facilitates the use of these resources.



Figure 1-15: APV structure

Legend:



: Processor resources partitioned by the micro-partitioning function

## Using PFM - Agent for Platform on APV

When using PFM - Agent for Platform on APV, note that information about processors and memory is changed dynamically. Also note that when you use records for handling processor information, a different type of operation might be required depending on whether your virtualized system creates the same number of instances as the processors that can be allocated.

#### Processor information

For a record that indicates processor information, the number of instances displayed is ten times as many as the number of processors partitioned by the Micro-Partitioning function. Note, however, that this only means that a maximum of 10 logical processors can be allocated to one processor, and a single instance will not always be 10% of the processor resources. Thus, when one physical processor is partitioned into four logical processors by using the Micro-Partitioning function, the total usage of these processors will be 100%. The remaining six logical processors that have not been allocated are displayed as Offline, which means that they are not in use.

When the SMT function is used, one physical processor is partitioned into two logical processors. Operation is therefore the same as when the Micro-Partitioning is used.

#### Memory

Be careful when setting an alarm for memory as a resource that can be changed dynamically. Even when the amount of memory used is fixed, if the allocated memory resources are reduced, memory usage will grow, and could cause alarms to be reported unintentionally.

#### Devices

Disk performance data is only collected for logical partition groups on LPARs. System-wide performance data cannot be collected.

# (c) I-VM (VSE)

## • I-VM (VSE) functions

I-VM (VSE) is provided as a function of the VSE environment. I-VM (VSE) provides a sub-CPU partitioning capability that dynamically partitions a processor resource into 5% units and then allocates the units to logical partitions. By using this function, you can set a maximum of 20 logical processors for one physical processor. When this function is used, PFM - Agent for Platform collects performance data for the logically partitioned processors.

In addition to processor resources, I-VM (VSE) supports sharing of I/O by multiple logical partitions and supports memory virtualization. Because I-VM (VSE) supports Linux as well as HP-UX, Linux compatibility is also provided.

# • I-VM (VSE) structure

The processor resource allocation function provided by I-VM (VSE) is almost the same as the Micro-Partitioning function provided by AIX.





: CPU resources before allocation. Each division holds 5% of the physical resource.

: CPU resources after allocation. Each division holds 5% of the physical resource.

#### Using PFM - Agent for Platform on I-VM (VSE)

When using PFM - Agent for Platform on I-VM (VSE), note that the information about processors, memory, and devices is changed.

#### Processor information

A record that indicates processor information displays the same number of instances as the number of virtual processors allocated to the virtual machine.

Because the resources allocated to the virtual processor on I-VM (VSE) change dynamically, the *amount* of resources that is actually used differs even when the processor usage is the same. For example, 30% of the processor resources might be allocated to processor #1 whose usage is 50%. If the allocation ratio changes to 60%, the usage of processor #1 becomes 25% (in actuality, there is a margin of

error due to overhead and the kernel structure). Accordingly, to determine whether the processor usage is low, you should use fields that are unlikely to be affected by processor resource allocation, such as the current queue length.

#### Memory

Although I-VM (VSE) supports memory virtualization, virtualized memory cannot be changed dynamically. Accordingly, operation can proceed on a virtual machine the same way as on a non-virtual machine.

## Devices

As with memory, I-VM (VSE) supports I/O virtualization. Disk performance data is only collected for logical partition groups. System-wide performance data cannot be collected.

# (d) VMware ESX Server 3.0

VMware is software that provides virtualized systems on the Intel architecture. Because it provides virtualized systems implemented in software, it is a general purpose implementation that can run flexibly on several environments.

# VMware ESX Server functionality

Like other virtualized systems, VMware provides the following functionality:

- Virtual networks
- · Virtual processors
- Virtual memory
- Virtual disks

VMware manages combinations of the above functionality to create a virtual machine (VM). The created VM is recognized as a single host from other hosts, and can be treated the same as a physical machine.

Because multiple VMs can be created and run, operating systems like Linux and Windows can run concurrently.

## VMware ESX Server configuration

VMware implements a virtualized system by creating a distinction between a host OS and a guest OS.

To set up a virtualized system:

- 1. Install Windows, Linux, or another OS on the actual hardware.
- 2. Install VMware on the installed host OS.

Here, the OS on which VMware is installed is called the host OS.

3. Use VMware to create a VM.

Install other operating systems on the created VM. An operating system installed on the VM is called a *guest OS*.

As shown above, VMware uses a parent/child configuration to implement a virtualized system, in which the guest OS is executed on the host OS.

One feature of VMware ESX Server is that a specialized custom OS is used as the host OS instead of Windows or Linux. In other words, VMware ESX Server implements a virtualized system in which Windows or Linux is running on a specialized custom OS.

Depending on the type of VMware, the host OS can also be Windows or Linux instead of the custom OS.



Figure 1-17: VMware configuration

#### Using PFM - Agent for Platform on VMware ESX Server

Keep the following in mind when using PFM - Agent for Platform on VMware ESX Server.

Installing PFM - Agent for Platform

To use PFM - Agent for Platform, install it on the guest OS. Because the host OS for VMware ESX Server is a custom OS optimized to implement virtualized systems with VMware, operation of applications is not guaranteed.

#### Processor information

In a virtualized system, if sufficient resources are not allocated to the host OS, the

impact will extend to the operation of the host OS. In particular, the impact is significant on processor resources. If overload occurs, it might be difficult to determine whether the processor resources allocated to the VM are insufficient, or whether the host OS processor resources are insufficient.

VMware also has a feature that allows upper and lower limits to be set for processor usage allocation, which can cause wide swings in usage because resource switching is automatically performed within the set range.

If this seems to be the case, monitor items that are not easily impacted by dynamic changes to processor resources, such as the current queue length.

#### Memory

Be careful when setting an alarm for memory as a resource that can be changed dynamically. Even when the amount of used memory is fixed, if the allocated memory resources are reduced, memory usage will grow, and could cause alarms to be reported unintentionally.

Devices

Disk performance data is collected only for logical partition groups on the guest OS. System-wide performance data including the host OS cannot be collected. For the network adapter information, information about virtual network adapters allocated to the guest OS is obtained.

# (e) Virtage

# Virtage functionality

Like other virtualized systems, Virtage provides the following functionality:

- Virtual networks
- Virtual processors
- Virtual memory

Virtage manages the above functionality to implement a virtualized system. Whenever any resource is changed, the logical partition needs to be temporarily stopped.

## Virtage configuration

Like VMware, Virtage has a parent/child configuration.

To set up a virtualized system on Virtage:

- 1. Install Virtage on the SVP.
- 2. Start the installed instance of Virtage.
- 3. Create and set up a virtual machine.
- 4. Start the virtual machine.

## • Using PFM - Agent for Platform on Virtage

Keep the following in mind when using PFM - Agent for Platform on Virtage.

Installing PFM - Agent for Platform

Because Virtage is configured in a special environment called an *SVP frame*, do not install PFM - Agent for Platform on an SVP frame.

Processor information

Because a virtualized system based on Virtage runs after the logical partition is set up, the number of processors is not changed while PFM - Agent for Platform is running. Accordingly, operation can be performed as usual, but the number of allocated processors may not match the number of processors that physically exist.

#### Memory

Because a virtualized system based on Virtage implements runs after the logical partition is set up, the amount of memory is not changed while PFM - Agent for Platform is running. Accordingly, operation can be performed as usual.

#### Devices

Disk performance data is collected only for logical partition groups. System-wide performance data including the host OS cannot be collected. For the network adapter information, information about virtual network adapters allocated to the logical partition is obtained.

## (f) WPAR

## • WPAR function

WPAR included in AIX V6.1 or later provides a function that runs multiple AIX V6.1 instances, which are virtualized as software, in a single LPAR. There are two types of WPAR environments, system WPAR and application WPAR. The global environment required for configuring WPAR is also provided. The following describes these environments.

Global environment

This environment has a view that includes all processes, IPC, file systems, devices, and other user-level objects and system-level objects.

• System WPAR

This is a virtual system environment that has a unique file system, users and groups, resource control, login, and network.

Application WPAR

This environment is used for separating applications from their resources.

#### • WPAR structure

The structure of WPAR is similar to that of Solaris Zone, which provides workspace for applications.

In the global environment, you can display or interact with the processes, file systems, and other system components allocated on WPAR running in the system. A new instance of WPAR can be created only in the global environment. Another instance of WPAR cannot be created in the WPAR environment. Most management tasks can be executed only in the global environment. Most commands behave differently depending on whether they are executed in the global environment or in the WPAR environment.

PFM - Agent for Platform can collect performance data in the following cases:

- PFM Agent for Platform is running in the global environment that uses the WPAR function.
- PFM Agent for Platform is running in the system WPAR environment.

## Reference note:

PFM - Agent for Platform installed in the global environment can monitor performance of the entire WPAR environment including the application WPAR environment.

#### · Monitoring resources in the global environment

When PFM - Agent for Platform is running in the global environment, you can set the ALL WPAR Collection for Process property to select the environment for which process information is collected. The ALL WPAR Collection for Process property is set in the list of Agent Collector service properties for PFM - Web Console. You can set either of the following values for the ALL WPAR Collection for Process property.

Y

Collect process information for the global environment and all WPAR environments.

Ν

Collect process information for the global environment.

The set property will be obtained when PFM - Agent for Platform is started. If the ALL WPAR Collection for Process property has not been set, the default of Y is set.

The following figure shows the process information that is collected when PFM - Agent for Platform is running in the global environment.



Figure 1-18: Process information collected for the global environment

· Monitoring resources in a system WPAR environment

When PFM - Agent for Platform is running in a system WPAR environment, information only about that system WPAR environment is collected regardless of the setting of the ALL WPAR Collection for Process property. The following figure shows the process information that is collected when PFM - Agent for Platform is running in the system WPAR environment.



Figure 1-19: Process information collected for the system WPAR environment

# Using PFM - Agent for Platform on WPAR

When using PFM - Agent for Platform on WPAR, note that the information about processors and memory is dynamically changed.

Installing PFM - Agent for Platform

PFM - Agent for Platform can be installed in the global environment or system WPAR environment. Note, however, that when you install PFM - Agent for Platform in the system WPAR environment, the following information cannot be obtained because a separate application environment is provided due to the characteristics of WPAR.

- Information about the WPAR environments other than the system WPAR environment in which PFM Agent for Platform is installed
- Some device information, such as /dev/mem and /dev/kmem

Some network information related to the NFS Server

When you configure a system WPAR environment after PFM - Agent for Platform is installed in the global environment, the files related to PFM - Agent for Platform are copied to the system WPAR environment. However, this does not affect PFM - Agent for Platform in the global environment. Note that the copy of the PFM - Agent for Platform instance in the system WPAR environment cannot be used as is. To use PFM - Agent for Platform in the system WPAR environment, you need to manually delete the files related to PFM - Agent for Platform (all files under the /opt/jplpc directory) in the system WPAR environment. Then perform a new installation of PFM - Agent for Platform.

#### Processor information

Because a virtualized system based on WPAR runs according to the allocation ratio of the processor, the number of processors is not changed while PFM - Agent for Platform is running. However, because the processor allocation ratio can be dynamically changed while the system is running, information such as the processor usage for applications might be affected.

#### Memory

Be careful when setting an alarm for memory as a resource that can be changed dynamically. Even when the amount of memory used is fixed, if the allocated memory resources are reduced, memory usage will grow, and could cause alarms to be reported unintentionally.

Devices

When monitoring devices on WPAR, information for only logical partition groups on WPAR can be collected. To collect information for physical partition groups, install PFM - Agent for Platform in the global environment and monitor the devices in the global environment.

#### (6) Data collected for each virtualized system

## Global zone, non-global zone, and APV, I-VM (VSE), VMware ESX Server 3.0, and Virtage environments

The following table describes the data collected by PFM - Agent for Platform running in a virtualized system in the global zone, non-global zone, APV, I-VM (VSE), VMware ESX Server 3.0, and Virtage environments. For example, when you collect data of the PD record in an environment where PFM - Agent for Platform is running in the shared-IP non-global zone, the Shared-IP Non-Global Zone column indicates *This zone only*. This means that the data only for the shared-IP non-global zone will be collected. When you collect data of the PI record in this environment, the Shared-IP Non-Global Zone column indicates *Entire system*, which means that the data for the global zone and non-global zones will be collected.

Table	1-22:	Data	collect	ed for ea	ich virt	ualized s	system (	global zone,	non-global
zone, .	APV, I	-VM	(VSE),	VMwar	e ESX	Server 3	3.0, and	Virtage envi	ronments)

Record	Global Zone	Global Zone Non-Global Zone		APV and I-VM (VSE)	VMware ESX Server 3.0 and Virtage
		Shared-IP Non-Global Zone	Exclusive-IP Non-Global Zone	-	
PD	Entire system	This zone only	This zone only	Processes on the logical partition	Processes on the guest OS
PD_APP	Entire system	This zone only	This zone only	Processes on the logical partition	Processes on the guest OS
PD_FSL	Entire system	This zone only	This zone only	Local disk information on the logical partition	Local disk information in the guest OS
PD_FSR	Information is collected only for the global zone. Information about a remote file system (NFS) installed in the non-global zone cannot be obtained.	This zone only	This zone only	Remote file system information registered on the logical partition	Remote file system information registered in the guest OS
PD_PDI	Entire system	This zone only	This zone only	Processes on the logical partition	Processes on the guest OS
PD_PDS	Entire system	This zone only	This zone only	Processes on the logical partition	Processes on the guest OS
PD_PGM	Entire system	This zone only	This zone only	Processes on the logical partition	Processes on the guest OS
PD_TERM	Entire system	This zone only	This zone only	Processes on the logical partition	Processes on the guest OS
PD_UPD	Specified value	Specified value	Specified value	Performance data that the user specified on the logical partition	Performance data that the user specified in the guest OS

Record	Global Zone	Non-Global Zone		APV and I-VM (VSE)	VMware ESX Server 3.0 and Virtage
		Shared-IP Non-Global Zone	Exclusive-IP Non-Global Zone		
PD_UPDB	Specified value	Specified value	Specified value	Performance data that the user specified on the logical partition	Performance data that the user specified in the guest OS
PD_USER	Entire system	This zone only	This zone only	Processes on the logical partition	Processes on the guest OS
PI <sup>#1</sup>	Entire system	Entire system	Entire system	System values on the logical partition	System values in the guest OS
PI_CPUP	Entire system	Entire system	Entire system	Processor information allocated to the logical partition	Processor information allocated to the guest OS
PI_DEVD	Entire system	Entire system	Entire system	Disk information allocated to the logical partition	Disk information allocated to the guest OS
PI_DEVS	Entire system	Entire system	Entire system	Disk information allocated to the logical partition	Disk information allocated to the guest OS
PI_NIND <sup>#</sup> 2	Interface information shared by the global zone and all shared-IP non-global zones		This zone only	NIC information allocated to the logical partition	NIC information allocated to the guest OS
PI_NINS <sup>#</sup>	Interface information shared by the global zone and all shared-IP non-global zones		This zone only	NIC information allocated to the logical partition	NIC information allocated to the guest OS

Record	Global Zone	Non-Global Zone		APV and I-VM (VSE)	VMware ESX Server 3.0 and Virtage
		Shared-IP Non-Global Zone	Exclusive-IP Non-Global Zone		
PI_UPI	Specified value	Specified value	Specified value	Performance data that the user specified on the logical partition	Performance data that the user specified in the guest OS
PI_UPIB	Specified value	Specified value	Specified value	Performance data that the user specified on the logical partition	Performance data that the user specified in the guest OS
PI_WGRP	Entire system	This zone only	This zone only	Processes on the logical partition	Processes on the guest OS
PL_MESS	Specified value	Specified value	Specified value	The file specified in evfile or the Messages File property	The file specified in evfile or the Messages File property

Legend:

--: Not collected

#1

For the following fields, interface information is collected even in the non-global zone environment:

ICMP Pkts In, ICMP Pkts Out, ICMP6 Pkts In, ICMP6 Pkts Out, IP Pkts In, IP Pkts Out, IP6 Pkts In, IP6 Pkts Out, TCP Pkts In, TCP Pkts Out, Total Pkts, Total Pkts In, Total Pkts Out, UDP Pkts In, UDP Pkts Out

For the following fields, however, information is not collected in the global zone or non-global zone environment:

NFS Server Lookup Ops, NFS Server Ops/sec, NFS Server Read Ops, NFS Server Read Ops/sec, NFS Server Total Bad Ops, NFS Server Total Ops, NFS Server Write Ops, NFS Server Write Ops/sec

#2

Physical interface information is collected. Because the shared-IP non-global zone is a logical zone, no information is collected.

# WPAR environment

The following table describes the data collected by PFM - Agent for Platform running in a WPAR environment. For example, when you collect data of the PD record in an environment where PFM - Agent for Platform is running in a system WPAR environment, the System WPAR column indicates *System WPAR environment*. This means that the data only for the system WPAR environment is collected. When you collect data of the PI record in this environment, the System WPAR column indicates *Global environment and system WPAR environment*, which means that the data for the global environment and system WPAR environments will be collected.

Table 1-23: Data collected for each virtualized system (WPAR environment)

Record	Field	Global environment	System WPAR
PD	All	Global environment	System WPAR environment
PD_FSL	All	Global environment	System WPAR environment
PD_FSR	All	Global environment	System WPAR environment

Record	Field	Global environment	System WPAR
PI#	1-Minute Run Queue Avg, 15-Minute Run Queue Avg, 5-Minute Run Queue Avg, Active CPUs, Alloc Mem %, Alloc Mem %, Alloc Swap %, Alloc Swap %, Alloc Swap Mbytes, Block Ops, Block Reads, Block Writes, Cache Read %, Cache Write %, Context Switches, CPU %, Faults, Free Mem %, Free Mem %, Free Swap %, Free Swap %, Free Swap Mbytes, Idle %, Kernel CPU %, Logical I/O Ops, Logical Reads, Logical Write Mbytes, Logical Writes, Major Faults, Pages In, Pages Out, Physical I/O Ops, Physical Reads, Physical Writes, Run Queue, Swapped-In Pages, Swapped-Out Pages, System Calls, Total Idle Time, Total Avites, Total Page Scans, Total Physical Mem Mbytes, Total Swap Mbytes, Total Wait Time, User CPU %, Wait %	Global environment and all WPAR environments	Global environment and system WPAR environment

Record	Field	Global environment	System WPAR
	ICMP Pkts In,	Global environment and	System WPAR
	ICMP Pkts Out,	all WPAR environments	environment
	ICMP6 Pkts In,		
	ICMP6 Pkts Out,		
	IP Pkts In,		
	IP Pkts Out,		
	IP6 Pkts In,		
	IP6 Pkts Out,		
	NFS Client Lookup Ops,		
	NFS Client Ops/sec,		
	NFS Client Read Ops,		
	NFS Client Read Ops/sec,		
	NFS Client Total Bad Ops,		
	NFS Client Total Ops,		
	NFS Client Write Ops,		
	NFS Client Write Ops/sec,		
	NFS Server Lookup Ops,		
	NFS Server Ops/sec,		
	NFS Server Read Ops,		
	NFS Server Read Ops/sec,		
	NFS Server Total Bad Ops,		
	NFS Server Total Ops,		
	NFS Server Write Ops,		
	NFS Server Write Ops/sec,		
	Processes,		
	Processes Ended,		
	Processes Started,		
	TCP Pkts In,		
	TCP Pkts Out,		
	Total Pkts,		
	Total Pkts In,		
	Total Pkts Out,		
	UDP Pkts In,		
	UDP Pkts Out,		
	Users		

Record	Field	Global environment	System WPAR
	Block Reads/sec, Block Writes/sec, Context Switches/sec, Logical Reads/sec, Logical Writes/sec, Major Faults/sec, Page Scans/sec, Pages In/sec, Pages Out/sec, Swapped-In Pages/sec, System Calls/sec, Total Faults/sec	Global environment and all WPAR environments	
	Boot Time, Interval, Record Time, System Up Time	Global environment	System WPAR environment
	Record Name, Record Type	Fixed value	Fixed value

Record	Field	Global environment	System WPAR
	Interrupts, Interrupts/sec, Mem I/O Ops, Minor Faults, Minor Faults, Other Pkts In, Other Pkts Out, Page Reclaims/sec, Page-In Ops, Page-In Ops/sec, Page-Out Ops, Page-Out Ops/sec, Software Lock Faults, Software Lock Faults, Software Lock Faults/sec, Swap-In Ops, Swap-In Sec, Swap-Out Ops, Swap-Out Sec, Total Page Pos, Total Swaps, Total Swaps/sec, Traps, Traps/sec		
PI_CPUP	CPU %, Context Switches, Idle %, Idle Time, System %, System Calls, System Time, User %, User Time, Wait %, Wait Time	Global environment and all WPAR environments	Global environment and system WPAR environment
	Context Switches/sec, Sys Calls/sec	Global environment and all WPAR environments	
	Boot Time, Interval, Record Time, Up Time	Global environment	System WPAR environment

Record	Field	Global environment	System WPAR
	Processor ID, Status, Type	Global environment	Global environment
	Record Name, Record Type	Fixed value	Fixed value
	Interrupts, Interrupts/sec, Traps, Traps/sec		
PI_DEVD	All	Global environment	
PI_DEVS	All	Global environment	
PI_NIND	All	Global environment	System WPAR environment
PL_MESS	All	Global environment	System WPAR environment

Legend:

--: Not collected

#

For the following fields, information is not collected in the system WPAR environment:

NFS Server Lookup Ops, NFS Server Ops/sec, NFS Server Read Ops, NFS Server Read Ops/sec, NFS Server Total Bad Ops, NFS Server Total Ops, NFS Server Write Ops, NFS Server Write Ops/sec

## (7) Identifying processes that have the same name in a virtualized system

In a virtualized system, a host might contain processes that have the same name. The following describes how to identify such processes in the virtualized system.

# (a) Zone environment

If processes that have the same name exist in the global and non-global zones, check the value of the Virtual Env ID field to determine the zone from which the process information for the PD and PD\_APP records was collected.

# PD record

For process information obtained by the PD record, the following table describes the relationship between the property setting and the obtained information.

*Table 1-24:* When PFM - Agent for Platform is installed in the global zone in an environment in which zones have been created

ALL ZONE Collection for Process property setting	Obtained information		
	Data is collected from:	Virtual Env ID field value	
Yes	Global zone and all non-global zones	ID of each zone <sup>#</sup>	
No	Global zone	0	

#

When process information is collected from the global zone, the virtualized environment ID (value of the Virtual Env ID field) is 0. When process information is collected from a non-global zone, the virtualized environment ID (value of the Virtual Env ID field) is the ID assigned to that non-global zone.

*Table 1-25:* When PFM - Agent for Platform is installed in a non-global zone in an environment in which zones have been created

ALL ZONE Collection for Process property setting	Obtained information		
	Data is collected from:	Virtual Env ID field value	
Yes	Non-global zone where PFM - Agent for Platform is installed	Non-global zone ID	
No	Non-global zone where PFM - Agent for Platform is installed	Non-global zone ID	

Reference note:

The following table describes the relationship between the property setting and obtained information in an environment in which no zones have been created.

*Table 1-26:* When PFM - Agent for Platform is installed in the global zone in an environment in which no zones have been created

ALL ZONE Collection for Process property setting	Obtained information		
	Data is collected from:	Virtual Env ID field value	
Yes	Global zone	0	
No	Global zone	0	

# ■ PD\_APP record

For process information obtained by the PD\_APP record, the following table describes the relationship between the property setting and the obtained information. Note that for the PD\_APP record, you can set the ADD AN APPLICATION MONITORING SETTING FOR VIRTUAL ENVIRONMENT property to restrict the environment from which process information is to be collected.

*Table 1-27:* When PFM - Agent for Platform is installed in the global zone in an environment in which zones have been created

Property settings		Obtained information	
ALL WPAR Collection for Process	ADD AN APPLICATION MONITORING SETTING FOR VIRTUAL ENVIRONMENT	Data is collected from:	Virtual Env ID field value
Yes	Blank	Global zone and all non-global zones	Blank
Yes	0	Global zone	0
Yes	ID of the existing non-global zone	Specified non-global zone environment	ID of the specified non-global zone
Yes	ID of the nonexistent non-global zone		
No	Blank	Global zone	Blank
No	0	Global zone	0
No	ID of the existing non-global zone		
No	ID of the nonexistent non-global zone		

Legend:

--: Neither collected nor displayed in a report

Table 1-28: When PFM - Agent for Platform is installed in the non-global zon	e
in an environment in which zones have been created	

Property settings		Obtained information		
ALL WPAR Collection for Process	ADD AN APPLICATION MONITORING SETTING FOR VIRTUAL ENVIRONMENT	Data is collected from:	Virtual Env ID field value	
Yes	Blank	Non-global zone where PFM - Agent for Platform is installed	Blank	
Yes	0			
Yes	ID of the non-global zone where PFM - Agent for Platform is installed	Non-global zone where PFM - Agent for Platform is installed	ID of the non-global zone where PFM - Agent for Platform is installed	
Yes	ID of the non-global zone where PFM - Agent for Platform is not installed			
No	Blank	Non-global zone where PFM - Agent for Platform is installed	Blank	
No	0			
No	ID of the non-global zone where PFM - Agent for Platform is installed	Non-global zone where PFM - Agent for Platform is installed	ID of the non-global zone where PFM - Agent for Platform is installed	
No	ID of the non-global zone where PFM - Agent for Platform is not installed			

Legend:

--: Neither collected nor displayed in a report

Reference note:

The following table describes the relationship between the property settings and obtained information in an environment in which no zones have been created.

Property settings		Obtained information	
ALL WPAR Collection for Process	ADD AN APPLICATION MONITORING SETTING FOR VIRTUAL ENVIRONMENT	Data is collected from:	Virtual Env ID field value
Yes	Blank	Global zone	Blank
Yes	0	Global zone	0
Yes	Value other than 0		
No	Blank	Global zone	Blank
No	0	Global zone	0
No	Value other than 0		

*Table 1-29:* When PFM - Agent for Platform is installed in the global zone in an environment in which no zones have been created

Legend:

--: Neither collected nor displayed in a report

# (b) WPAR environment

If processes that have the same name exist in the global environment and WPAR environment, check the value of the Virtual Env ID field to determine the environment from which the process information for the PD and PD\_APP records was collected.

## PD record

For process information obtained by the PD record, the following table describes the relationship between the property setting and the obtained information.

<i>Table 1-30:</i>	When PFM -	Agent for Plat	form is in	stalled	in the glo	bal
environment	in an environ	ment in which	a system	WPAR	has been	created

ALL WPAR Collection for Process property setting	Obtained information		
	Data is collected from:	Virtual Env ID field value	
Yes	Global environment and all WPAR environments	ID of each WPAR <sup>#</sup>	
No	Global environment	0	

#

When process information is collected from the global environment, the virtualized environment ID (value of the Virtual Env ID field) is 0. When process information is collected from a WPAR environment, the virtualized environment ID (value of the Virtual Env ID field) is the ID assigned to that WPAR environment.

*Table 1-31:* When PFM - Agent for Platform is installed in a system WPAR environment in an environment in which a system WPAR has been created

ALL WPAR Collection for Process property setting	Obtained information		
	Data is collected from:	Virtual Env ID field value	
Yes	System WPAR environment in which PFM - Agent for Platform is installed	0	
No	System WPAR environment in which PFM - Agent for Platform is installed	0	

Reference note:

The following table describes the relationship between the property setting and obtained information in an environment in which no system WPAR has been created.

*Table 1-32:* When PFM - Agent for Platform is installed in the global environment in an environment in which no system WPAR has been created

ALL WPAR Collection for Process property setting	Obtained information		
	Data is collected from:	Virtual Env ID field value	
Yes	Global environment	0	
No	Global environment	0	

# PD\_APP record

For process information obtained by the PD\_APP record, the following table describes the relationship between the property setting and the obtained information. Note that for the PD\_APP record, you can set the ADD AN APPLICATION MONITORING SETTING FOR VIRTUAL ENVIRONMENT property to restrict the environment from which process information is collected.

Property settings		Obtained information	
ALL WPAR Collection for Process	ADD AN APPLICATION MONITORING SETTING FOR VIRTUAL ENVIRONMENT	Data is collected from:	Virtual Env ID field value
Yes	Blank	Global environment and all WPAR environments	Blank
Yes	0	Global environment	0
Yes	ID of the existing WPAR	Specified WPAR environment	ID of the specified WPAR
Yes	ID of the non-existing WPAR		
No	Blank	Global environment	Blank
No	0	Global environment	0
No	ID of the existing WPAR		
No	ID of the non-existing WPAR		

*Table 1-33:* When PFM - Agent for Platform is installed in the global environment in an environment in which a system WPAR has been created

Legend:

--: Neither collected nor displayed in a report

<i>Table 1-34</i> :	When PFM -	Agent for Plat	tform is inst	alled in a sys	stem WPAR
environment	in an environ	ment in which	a system W	PAR has bee	en created

Property settings		Obtained information		
ALL WPAR Collection for Process	ADD AN APPLICATION MONITORING SETTING FOR VIRTUAL ENVIRONMENT	Data is collected from:	Virtual Env ID field value	
Yes	Blank	System WPAR environment in which PFM - Agent for Platform is installed	Blank	
Yes	0	System WPAR environment in which PFM - Agent for Platform is installed	0	
Yes	Value other than 0			

Property settings		Obtained information		
ALL WPAR Collection for Process	ADD AN APPLICATION MONITORING SETTING FOR VIRTUAL ENVIRONMENT	Data is collected from:	Virtual Env ID field value	
No	Blank	System WPAR environment in which PFM - Agent for Platform is installed	Blank	
No	0	System WPAR environment in which PFM - Agent for Platform is installed	0	
No	Value other than 0			

Legend:

--: Neither collected nor displayed in a report

*Reference note:* 

The following table describes the relationship between the property settings and obtained information in an environment in which no system WPAR has been created.

*Table 1-35:* When PFM - Agent for Platform is installed in a global environment in an environment in which no system WPAR has been created

Property	v settings	Obtained information		
ALL WPAR Collection for Process	ADD AN APPLICATION MONITORING SETTING FOR VIRTUAL ENVIRONMENT	Data is collected from:	Virtual Env ID field value	
Yes	Blank	Global environment	Blank	
Yes	0	Global environment	0	
Yes	Value other than 0			
No	Blank	Global environment	Blank	
No	0	Global environment	0	
No	Value other than 0			

Legend:

--: Neither collected nor displayed in a report

# Chapter 2. Installation and Setup

This chapter explains how to install and set up PFM - Agent for Platform. For details about how to install and set up the entire Performance Management system, see the chapter explaining installation and setup in the manual *Job Management Partner 1/ Performance Management Planning and Configuration Guide.* 

- 2.1 Installation and setup
- 2.2 Uninstallation and unsetup
- 2.3 Changing the system configuration of PFM Agent for Platform
- 2.4 Changing the operation of PFM Agent for Platform
- 2.5 Backup and restoration
- 2.6 Settings for browsing manuals in a Web browser

# 2.1 Installation and setup

This section explains how to install and set up PFM - Agent for Platform.

# 2.1.1 Before installing and setting up PFM - Agent for Platform

Before installing and setting up PFM - Agent for Platform, make sure that the requirements described below are satisfied.

# (1) Required OS

PFM - Agent for Platform can run on the following OSs:

- HP-UX
- Solaris
- AIX
- Linux (x86), Linux (x64),
- Linux (IPF)

#### (2) Network environment setup

The following explains the network environment that is necessary for Performance Management to operate.

# (a) IP address setup

For the PFM - Agent host, you must set up an environment in which the IP address can be resolved using a host name. PFM - Agent cannot start in an environment in which the IP address cannot be resolved.

Actual host names or alias names can be used for a monitoring host name (the name used as the host name of a Performance Management system).

· When using an actual host name as a monitoring host name

Execute the hostname command on a Windows system or uname -n command on a UNIX system to check the host name, and set up the environment so that it can resolve IP addresses. Note that on a UNIX system, the host name obtained by the hostname command can also be used.

• When using an alias name as a monitoring host name

Set up the environment so that it can resolve the IP addresses for the set alias name.

For details about monitoring host name settings, see the chapter explaining installation and setup in the manual *Job Management Partner 1/Performance Management Planning and Configuration Guide.* 

Use one of the following methods to set up the host name and IP address:

- The host information settings file for Performance Management (jpchosts file)
- hosts file
- DNS (Domain Name System)

## Note:

- Performance Management can be run on a DNS environment, but does not support host names in the FQDN (Fully Qualified Domain Name) format. Accordingly, leave out the domain name when setting monitoring host names.
- If PFM Agent for Platform is to be used in multiple LAN environments, set up the IP address in the jpchosts file. For details, see the chapter explaining installation and setup in the manual *Job Management Partner I/Performance Management Planning and Configuration Guide*.
- Performance Management cannot be run on a host on which DHCP is used to assign dynamic IP addresses. Set fixed IP addresses on all hosts on which Performance Management is installed.

## (b) Port number setup

The default port numbers shown in the table below are assigned to Performance Management program services. For any other services or programs, port numbers currently not in use in the system are automatically assigned when the service or program is started. When you are using Performance Management in an environment with a firewall, assign fixed port numbers. For details about how to fix port numbers, see the chapter explaining installation and setup in the manual *Job Management Partner 1/Performance Management Planning and Configuration Guide*.

<i>Table 2-1:</i> Defa services (for UNI	ult port numbers and X)	Performance	e Management program

Service explanation	Service name	Parameter	Port number	Remarks
Service configuration information management function	Name Server	jplpcnsvr	22285	Port number used by the Name Server service of PFM - Manager. This port number is set for all hosts in Performance Management.

#### 2. Installation and Setup

Service explanation	Service name	Parameter	Port number	Remarks
OpenView linkage facility	NNM Object Manager	jplpcovsvr	22292	Port number used by the OpenView linkage facility of PFM - Manager and PFM - Base for communicating between a map manager and an object manager. This port number is set for hosts in which PFM - Manager and PFM - Base are installed.
Service status management function	Status Server	jplpcstatsvr	22350	Port number used by the Status Server service of PFM - Manager and PFM - Base. This port number is set for hosts in which PFM - Manager and PFM - Base are installed.

Set up the network to enable these PFM - Agents to communicate using the assigned port numbers.

# (3) OS user permission necessary for installation

When installing PFM - Agent for Platform, you must execute the installation procedure from an account that has the superuser permission.

# (4) Prerequisite programs

This subsection explains the prerequisite programs that are necessary for installing PFM - Agent for Platform. The figure below shows the program configuration.





# (a) Monitoring target programs

PFM - Agent for Platform monitors the following programs:

- HP-UX
- Solaris
- AIX
- Linux (x86), Linux (x64)
- Linux (IPF)

These monitoring target programs and PFM - Agent for Platform must be installed on the same host.

## (b) Performance Management programs

Install PFM - Agent and PFM - Base on the monitoring agent. PFM - Base is a prerequisite program for PFM - Agent. Even when installing multiple copies of PFM - Agent on the same host, you need only a single copy of PFM - Base.

However, if you are installing PFM - Manager and PFM - Agent on the same host, you do not need PFM - Base.

To use PFM - Agent for Platform to monitor operation of a UNIX server, you must also have PFM - Manager and PFM - Web Console.

## (5) Environment configuration required for collecting performance data

The following describes the environment configuration required for collecting performance data.

## (a) For collecting performance data in AIX

To collect performance data for the PI record in AIX 5L V5.3, you need to install the following optional packages:

- Performance Statistics Library (patch ID: bos.perf.libperfstat 5.3.0.0)<sup>#</sup>
- Performance Statistics (patch ID: bos.perf.perfstat 5.3.0.0)<sup>#</sup>

#: File set name. This package is installed by default when AIX is installed.

Note that you do not need to install an optional package when collecting performance data for records other than the PI record in AIX 5L V5.3 or collecting performance data in AIX V6.

## (b) For collecting performance data in Linux

To collect performance data in Linux, you need to install the following RPM ( $\underline{\mathbf{R}}$ ed Hat  $\underline{\mathbf{P}}$ ackage  $\underline{\mathbf{M}}$ anager) packages. Use the following command to check the installed RPM package:

/bin/rpm -qa

The following lists the RPM packages required for the performance data to be collected.

Record name	RPM package name		
	In Linux <sup>#</sup>	In Linux (IPF) <sup>#</sup>	Default
CPU - Per Processor Detail (PI_CPUP)	kernel-smp-2.6.9-5.EL	N/A	Yes
Device Detail (PI_DEVD) Device Summary (PI_DEVS)	MAKEDEV-3.15-2	MAKEDEV-3.15-2	Yes
File System Detail - Local (PD_FSL) File System Detail - Remote (PD_FSR)	filesystem-2.3.0-1	filesystem-2.3.0-1	Yes

Table 2-2: RPM packages that must be installed in a Linux system
Record name	RPM package name		
	In Linux <sup>#</sup>	In Linux (IPF) <sup>#</sup>	Default
Network Interface Detail (PI_NIND) Network Interface Summary (PI_NINS)	net-tools-1.60-37	net-tools-1.60-37	Yes
System Summary Overview (PI)	net-snmp-5.1.2-11	net-snmp-5.1.2-11	Yes
User File System Storage (PD_UFSS)	N/A	N/A	Yes

#### Legend:

Yes: Installed by default when Linux is installed.

N/A: Not applicable

#

RPM packages need not be installed in Linux 5.1 or later.

#### (6) Notes

Note the following points when installing and setting up Performance Management.

#### (a) Precautions regarding environment variables

Because Performance Management uses JPC\_HOSTNAME as an environment variable, do not set it as a user-specific environment variable, as this will prevent Performance Management from operating properly.

# (b) Notes on installing and setting up multiple Performance Management programs on the same host

With Performance Management, you can install PFM - Manager, PFM - Web Console, and PFM - Agent on the same host. When doing so, note the following points:

- If you are installing PFM Manager and PFM Agent on the same host, you do
  not need PFM Base. In this case, because the prerequisite program for PFM Agent is PFM Manager, install PFM Manager first and then install PFM Agent.
- You cannot install PFM Base and PFM Manager on the same host. To install PFM Manager on the host on which PFM Base and PFM Agent are installed, first uninstall all Performance Management programs except PFM Web Console, and then install PFM Manager, followed by PFM Agent. To install PFM Base on the host on which PFM Manager and PFM Agent are installed, first uninstall all Performance Management programs except PFM Web Console, and then install PFM Base, followed by PFM Agent are installed, first uninstall all Performance Management programs except PFM Web Console, and then install PFM Base, followed by PFM Agent.
- When you install PFM Agent on a host on which PFM Manager is installed,

PFM - Manager of the local host becomes PFM - Manager for the connection destination. In this case, you cannot change PFM - Manager for the connection destination to PFM - Manager of a remote host. To connect to PFM - Manager of a remote host, make sure that PFM - Manager is not installed on the host on which you want to install PFM - Agent.

- When you install PFM Manager on a host on which PFM Agent is installed, PFM - Manager for the connection destination of PFM - Agent is reset to the local host name. Check the setting results that are output to the common message log.
- To install PFM Agent on a host on which PFM Web Console is installed, close all browser windows before installing PFM Agent.
- When a Performance Management program is newly installed, the status management function is enabled as the default. However, if you upgrade from version 07-00 to 08-00 or newer, the settings for the status management function remain the same as they were in the older version. For details about how to change the settings for the status management function, see the chapter explaining error detection in Performance Management in the manual *Job Management Partner 1/Performance Management User's Guide*.

#### Hint:

To improve system performance and reliability, we recommend running PFM - Manager, PFM - Web Console, and PFM - Agent on separate hosts.

# (c) Notes on version upgrade

Note the following points when upgrading PFM - Agent from an older version to a newer one:

For details about upgrading, see the appendix in the manual *Job Management Partner 1/Performance Management Planning and Configuration Guide*.

- Before installing a Performance Management program, stop all Performance Management programs and services of the local host. For details about how to stop services, see the chapter explaining how to start and stop Performance Management in the manual *Job Management Partner 1/Performance Management User's Guide*.
- You cannot install PFM Base and PFM Manager on the same host. To install PFM Manager on the host on which PFM Base and PFM Agent are installed, first uninstall all Performance Management programs except PFM Web Console, and then install PFM Manager, followed by PFM Agent. To install PFM Base on the host on which PFM Manager and PFM Agent are installed, first uninstall all Performance Management programs except PFM Web Console, and then install PFM Base, followed by PFM Agent.
- In Performance Management programs of version 08-00 or later, the locations of

the Store execution programs (jpcsto and stpqlpr) have been changed. When PFM - Agent is upgraded to version 08-00 or later, the Store execution modules in the previous locations are deleted.

• During upgrade installation, because the existing Store database is automatically upgraded, twice as much disk capacity as that needed for the Store database is temporarily required. Before performing an upgrade installation, make sure that the disk on which the Store database is stored has sufficient free space.

#### (d) Other notes

- When installing a Performance Management program, check whether any of the following security-related programs are installed. If they are installed, perform the measures explained.
  - Security monitoring programs

Stop or change the settings for security monitoring programs so that installation of the Performance Management program is not prevented.

Virus detection programs

We recommend that any virus detection programs be stopped before the Performance Management program is installed.

If a virus detection program is running during installation of the Performance Management program, the installation speed may suffer, and installation might not be executed, or might not be performed correctly.

• Process monitoring programs

Stop or change the settings for any process monitoring programs, so that monitoring is not performed for Performance Management services or processes, and Common Component services or processes.

If a process monitoring program starts or stops these services or processes during installation of the Performance Management program, installation might fail.

- If you install a new Performance Management program in an environment in which no Performance Management program is installed, make sure that there is no file or directory in the installation directory.
- If Installation failed appears in the status bar during installation and installation fails, obtain the installation log and store it in a file. You need to back up the log file as needed because this log file is overwritten the next time you install a program. For details about the default file name for the installation log, see 8.4.1(2) Performance Management information.
- When you install Performance Management programs by setting a link to the installation directory, some files and directories might remain in the linked

directory even if you uninstall all of the Performance Management programs. Also, you must be careful when you install Performance Management programs in the linked directory, as files or directories having the same name in the linked directory are overwritten.

• When the PFM - Agent for Platform setup file exists in the /opt/jplpc/setup directory, additional setup of a new PFM - Agent for Platform is executed. When additional setup of the new PFM - Agent for Platform is successful, the execution result message KAVE05908-I New agent setup ended successfully. is output to the common message log. Check the log.

# 2.1.2 Installation and setup workflow

This section explains the flow for installing and setting up PFM - Agent for Platform.



Figure 2-2: Installation and setup flow

: Required setup item

: Optional setup item

: Setup item that is required depending on the case

Item for which a procedure is described in the manual *Job Management Partner 1/ Performance Management System Configuration and User's Guide.* 

[ ] : Text reference

For details about how to install and set up PFM - Manager and PFM - Web Console, see the chapter explaining installation and setup in the manual *Job Management Partner 1/Performance Management Planning and Configuration Guide*.

# 2.1.3 Installation procedure

This section explains the order in which to install PFM - Agent programs and how to install them from the CD-ROM provided.

# (1) Program installation procedure

First install PFM - Base and then install PFM - Agent. You cannot install PFM - Agent on a host on which PFM - Base is not installed.

When installing PFM - Agent on the same host as PFM - Manager, install PFM - Manager first, followed by PFM - Agent. When the Store database version is updated from 1.0 to 2.0, the setup procedure differs depending on the version of PFM - Manager or PFM - Base that is already installed. For details about how to set up version 2.0 of the Store database, see 2.4.2 Updating the Store version to 2.0.

When installing multiple copies of PFM - Agent on the same host, the order in which the copies are installed does not matter.



Figure 2-3: Order of program installation

2. Installation of PFM - Agent

# (2) Program installation method

To install Performance Management programs on a UNIX host, you can either use the CD-ROM provided or remotely install them using JP1/Software Distribution. For details about how to use JP1/Software Distribution, see the following manuals:

- Job Management Partner 1/Software Distribution Manager
- Job Management Partner 1/Software Distribution SubManager (for UNIX(R)

<sup>1.</sup> Installation of PFM - Base

#### systems)

Job Management Partner 1/Software Distribution Client (for UNIX(R) systems)

#### Note:

If Performance Management programs and services are active on the host on which Performance Management programs are to be installed, stop all the active programs and services. For details about how to stop services, see the chapter explaining how to start and stop Performance Management in the manual *Job Management Partner 1/Performance Management User's Guide*.

The following explains the installation procedure for each OS when you use the provided media for the CD-ROM.

#### (a) For HP-UX

To install Performance Management programs using the CD-ROM:

- 1. As a superuser, log on to the host on which Performance Management programs are to be installed, or use the su command to change the user to superuser.
- 2. Stop all Performance Management programs and services on the local host.

If Performance Management programs and services are active, stop them all.

- 3. Set the media for Performance Management programs.
- 4. Execute the mount command to mount the CD-ROM device.

For example, to mount the CD-ROM device to /cdrom, specify as follows to execute the command:

/usr/sbin/mount -F cdfs -r *device-special-file-name* /cdrom

The specified command differs depending on the environment used.

5. Execute the following command to start Hitachi PP Installer: /cdrom/IPFHPUX/SETUP /cdrom

Hitachi PP Installer starts and the initial window appears.

6. Enter I in the initial window.

A list of programs that can be installed appears.

7. Select the Performance Management programs you wish to install, and enter I.

The selected programs are installed. Note that you can move the cursor and use the space key to select programs.

8. After installation is correctly finished, enter Q.

The initial window of Hitachi PP Installer reappears.

# (b) For Solaris 9 (SPARC) and Solaris 10 (SPARC)

To install Performance Management programs using the CD-ROM:

- 1. As the superuser, log on to the host on which Performance Management programs are to be installed, or use the su command to change the user to superuser.
- 2. Stop all Performance Management programs and services on the local host.

If Performance Management programs and services are active, stop them all.

- 3. Set the media for Performance Management programs.
- 4. Execute the following command to start Hitachi PP Installer:<sup>#</sup>

/cdrom/cdrom/SOLARIS/SETUP /cdrom/cdrom

Hitachi PP Installer starts and the initial window appears.

The specified command differs depending on the environment used.

5. Enter I in the initial window.

A list of programs that can be installed appears.

6. Select the Performance Management programs you wish to install, and enter I.

The selected programs are installed. Note that you can move the cursor and use the space key to select programs.

7. After installation is correctly finished, enter Q.

The initial window of Hitachi PP Installer reappears.

#

In an environment in which the auto mount function is disabled, specify the / usr/sbin/mount command as follows and mount the CD-ROM device before starting Hitachi PP Installer:

/usr/sbin/mount -F cdfs -r *device-special-file-name* /cdrom/cdrom

The specified command differs depending on the environment used.

# (c) For Solaris 10 (x86) and Solaris 10 (x64)

To install Performance Management programs using the CD-ROM:

- 1. As the superuser, log on to the host on which Performance Management programs are to be installed, or use the su command to change the user to superuser.
- 2. Stop all Performance Management programs and services on the local host.

If Performance Management programs and services are active, stop them all.

- 3. Set the media for Performance Management programs.
- 4. Execute the following command to start Hitachi PP Installer:<sup>#</sup>

/cdrom/cdrom/X86SOL/SETUP /cdrom/cdrom

Hitachi PP Installer starts and the initial window appears.

Note that the command you need to specify differs depending on the environment.

5. In the initial window, enter I.

A list of programs that can be installed appears.

6. Select the Performance Management programs you wish to install, and enter I.

The selected programs are installed. To select a program, move the cursor and press the space bar.

7. After installation is correctly finished, enter Q.

The initial window of Hitachi PP Installer reappears.

#

Before starting Hitachi PP Installer in an environment in which the auto mount function is disabled, specify the /usr/sbin/mount command as follows to mount the CD-ROM device:

/usr/sbin/mount -F cdfs -r device-special-file-name /cdrom/cdrom

The command you need to specify differs depending on the environment.

# (d) For AIX

To install Performance Management programs using the CD-ROM:

- 1. As the superuser, log on to the host on which Performance Management programs are to be installed, or use the su command to change the user to superuser.
- 2. Stop all Performance Management programs and services on the local host.

If Performance Management programs and services are active, stop them all.

- 3. Set the media for Performance Management programs.
- 4. Execute the mount command to mount the CD-ROM device.

For example, to mount the CD-ROM device to /cdrom, specify as follows to execute the command:

/usr/sbin/mount -r -v cdrfs /dev/cd0 /cdrom

5. Execute the following command to start Hitachi PP Installer:

/cdrom/AIX/SETUP /cdrom

Hitachi PP Installer starts and the initial window appears.

6. Enter I in the initial window.

A list of programs that can be installed appears.

7. Select the Performance Management programs you wish to install, and enter I.

The selected programs are installed. Note that you can move the cursor and use the space key to select programs.

8. After installation is correctly finished, enter Q.

The initial window of Hitachi PP Installer reappears.

# (e) For Linux (x86) or Linux (x64)

To install Performance Management programs using the CD-ROM:

- 1. Make sure that the installation directory for PFM Agent for Platform is the real directory.
- 2. As the superuser, log on to the host on which Performance Management programs are to be installed, or use the su command to change the user to superuser.
- 3. Stop all Performance Management programs and services on the local host.

If Performance Management programs and services are active, stop them all.

- 4. Set the media for Performance Management programs.
- 5. Execute the following command to start Hitachi PP Installer:<sup>#</sup> /media/cdrecorder/LINUX/SETUP /media/cdrecorder

The above underlined parts, which indicate the mount-point directory name for the CD-ROM file system, vary depending on the environment being used.

Hitachi PP Installer starts and the initial window appears.

6. Enter I in the initial window.

A list of programs that can be installed appears.

- Select the Performance Management programs you wish to install, and enter I. The selected programs are installed. Note that you can move the cursor and use the space key to select programs.
- 8. After installation is correctly finished, enter Q.

The initial window of Hitachi PP Installer reappears.

#

If automatic mounting has been disabled, execute the /bin/mount command in the following format to mount the CD-ROM drive before starting Hitachi PP Installer:

/bin/mount -r -o mode=0544 /dev/cdrom /media/cdrecorder

The above specified command name and the underlined parts, which indicate the device special file name and mount-point directory name for the CD-ROM file system, vary depending on the environment being used.

#### (f) For Linux (IPF)

To install Performance Management programs using the CD-ROM:

- 1. Make sure that the installation directory for PFM Agent for Platform is the real directory.
- 2. As the superuser, log on to the host on which Performance Management programs are to be installed, or use the su command to change the user to superuser.
- 3. Stop all Performance Management programs and services on the local host.

If Performance Management programs and services are active, stop them all.

- 4. Set the media for Performance Management programs.
- 5. Execute the following command to start Hitachi PP Installer.<sup>#</sup> /media/cdrecorder/IPLINUX/SETUP /media/cdrecorder/

The above underlined parts, which indicate the mount-point directory name for the CD-ROM file system, vary depending on the environment being used.

Hitachi PP Installer starts and the initial window appears.

6. Enter I in the initial window.

A list of programs that can be installed appears.

7. Select the Performance Management programs you wish to install, and enter I.

The selected programs are installed. Note that you can move the cursor and use the space key to select programs.

8. After installation is correctly finished, enter Q.

The initial window of Hitachi PP Installer reappears.

#

If automatic mounting has been disabled, execute the /bin/mount command in the following format to mount the CD-ROM drive before starting Hitachi PP

Installer:

/bin/mount -r -o mode=0544 /dev/cdrom /media/cdrecorder/

The above specified command name and the underlined parts, which indicate the device special file name and mount-point directory name for the CD-ROM file system, vary depending on the environment being used.

# 2.1.4 Setting up PFM - Agent for Platform

This section explains the set up procedure needed for using PFM - Agent for Platform.

Options indicates setup items that may be required depending on the usage environment or optional setup items that are used for changing the default settings.

# (1) Setting the LANG environment variable

The following table shows a LANG environment variable that can be used on PFM - Agent for Platform.

Before setting LANG environment variables, you must check that the language environment to be set is correctly installed and configured. If it is not correctly installed and configured, characters may be garbled or definition data may be rewritten inappropriately.

Note:

The language used for the common message log is determined by the LANG environment variable that is set when a service is started or a command is executed. For that reason, character strings of more than one language code may coexist.

Table	2-3:	LANG	environment	variable	used on	PFM	- Agent	for Platform
							4.2	

OS	Language type	LANG environment variable value
HP-UX, Solaris, AIX, Linux	English	с

# (2) Registering PFM - Agent for Platform

To use PFM - Manager and PFM - Web Console to centrally manage PFM - Agent, you need to register PFM - Agent for Platform in PFM - Manager and PFM - Web Console.

When the version of PFM - Manager is 09-00 or later, you do not need to perform the procedure explained here, because PFM - Agent is automatically registered. However, you must manually register the PFM - Agent instances whose data model version is not provided in the PFM - Manager *Release Notes*. For details about data model versions for PFM - Agent for Platform, see *I. Version Compatibility*.

The following figure shows the flow for registering PFM - Agent.



Figure 2-4: PFM - Agent registration flow

#### 2. Installation and Setup

Note:

- If you add the same version of PFM Agent for Platform to a Performance Management system on which PFM Agent for Platform information is already registered, you need not register PFM Agent.
- If the data model version of PFM Agent for Platform is 3.0 or 4.0, setup for updating the data model version is not necessary.
- When installing PFM Agent for Platform of differing versions on different hosts, set up the older version first and then the new version.
- When you install PFM Agent on the same host as PFM Manager, the jpcconf agent setup (jpcagtsetup) command is automatically executed. When the message KAVE05908-I New agent setup ended successfully. is output to the common message log, check the result. If the command was not executed correctly, re-execute it. For details about command execution, see the chapter on commands in the manual *Job Management Partner 1/Performance Management Reference*.

# (a) Copying the PFM - Agent for Platform setup files

Copy the setup files located at the host on which PFM - Agent for Platform was installed to the host on which PFM - Manager and PFM - Web Console are installed. To copy the setup files:

- 1. If PFM Web Console is active, stop it.
- 2. Copy the PFM Agent setup files in the binary mode.

The table below shows the file storage locations and copying destinations.

Copy destination			PFM - Agent setup files		
PFM program name	OS	Copy destination directory			
PFM - Manager	Windows	<pre>PFM-Manager-installation-f older\setup\</pre>	/opt/jplpc/setup/jpcagtuw.EXE		
	UNIX	/opt/jp1pc/setup/	/opt/jp1pc/setup/jpcagtuu.Z		
PFM - Web Console	Windows	<i>PFM-Web-Console-installati on-folder</i> \setup\	/opt/jplpc/setup/jpcagtuw.EXE		
	UNIX	/opt/jp1pcwebcon/ setup/	/opt/jp1pc/setup/jpcagttu.Z		

*Table 2-4:* Setup files to be copied

#### (b) Executing the setup command on the PFM - Manager host

In PFM - Manager, execute the following command to set up PFM - Agent for Platform:

jpcconf agent setup -key UNIX (jpcagtsetup agtu)

Note:

If you execute the jpcconf agent setup (jpcagtsetup) command when the Performance Management programs and services of the local host on which the command is being executed have not completely stopped, an error may occur. In this case, make sure the Performance Management programs and services have stopped completely, and then re-execute the jpcconf agent setup (jpcagtsetup) command.

After this operation is finished, you may delete the PFM - Agent setup files located on the PFM - Manager host.

#### (c) Executing the setup command on the PFM - Web Console host

In PFM - Web Console, execute the following command to set up PFM - Agent for Platform:

jpcwagtsetup

After this operation is finished, you may delete the PFM - Agent for Platform setup files located on the PFM - Web Console host.

# (3) Network setup Options

This is necessary only when you need to change the settings according to the network configuration that uses Performance Management.

In network setup, you can specify the following two items:

IP addresses

Specify IP addresses when Performance Management is to be used in a network connected to multiple LANs. To specify multiple IP addresses, define host names and IP addresses in the jpchosts file. The same jpchosts file that is set up must be used throughout the entire Performance Management system.

For details, see the chapter explaining installation and setup in the manual *Job Management Partner 1/Performance Management Planning and Configuration Guide*.

Port number

You can specify the port number to be used by Performance Management. To avoid operational confusion, use the same port number and service name throughout the entire Performance Management system.

For details about port number setup, see the chapter explaining installation and setup in the manual *Job Management Partner 1/Performance Management Planning and Configuration Guide*.

# (4) Changing the log file size Options

The operational status of Performance Management is output to Performance Management's own log file. This log file is called the *common message log*. For the common message log, two files, each with 2,048 KB capacity by default, are used. You can change the file size if necessary.

For details, see the chapter explaining installation and setup in the manual *Job Management Partner 1/Performance Management Planning and Configuration Guide*.

# (5) Changing the performance data storage destination Options

This is necessary only if you want to change the storage destination for the database for storing the performance data managed by PFM - Agent for Platform, the backup destination, or the export destination directory.

By default, performance data is stored in the following locations:

- Storage destination: /opt/jplpc/agtu/store/
- Backup destination: /opt/jp1pc/agtu/store/backup/
- Partial backup destination: /opt/jp1pc/agtu/store/partial/
- Export destination: /opt/jp1pc/agtu/store/dump/
- Import destination: /opt/jp1pc/agtu/store/import/

For details, see 2.4.1 Changing the storage location of performance data.

# (6) Setting up PFM - Manager for the connection destination of PFM - Agent for Platform

On the host on which PFM - Agent is installed, set up the PFM - Manager that manages that PFM - Agent. To set up PFM - Manager for the connection destination, use the jpcconf mgrhost define (jpcnshostname) command.

#### Note:

- Even when multiple copies of PFM Agent are installed on the same host, you can specify only a single PFM Manager as the connection destination. You cannot specify a different PFM Manager for each PFM Agent.
- When PFM Agent and PFM Manager are installed on the same host, PFM - Manager for the connection destination becomes the PFM -Manager of the local host. In this case, you cannot change the PFM -Manager for the connection destination to another PFM - Manager.

To set up PFM - Manager for the connection destination:

1. Stop Performance Management programs and services.

Before executing a setup operation, stop all Performance Management programs and services on the local host if they are active. For details about how to stop services, see the chapter explaining how to start and stop Performance Management in the manual *Job Management Partner 1/Performance Management User's Guide*.

If Performance Management programs and services are active when you attempt to execute the jpcconf mgrhost define (jpcnshostname) command, a message is displayed asking the user whether to stop those programs and services.

2. Specify the host name of the PFM - Manager host at the connection destination and execute the jpcconf mgrhost define (jpcnshostname) command.

For example, if the PFM - Manager host at the connection destination is on host01, specify the following: jpcconf mgrhost define -host host01 (jpcnshostname -s host01)

# (7) Setting up the action log Options

You can log information in the action log when, for example, PFM services start and stop, and the status of the connection to PFM - Manager changes. The action log stores history information that is output in conjunction with the alarms for thresholds related to system load and other conditions.

For details about how to set up the action log, see J. Outputting Action Log Data.

# 2.2 Uninstallation and unsetup

The following explains how to perform uninstallation and unsetup for PFM - Agent for Platform.

# 2.2.1 Before uninstalling PFM - Agent for Platform

Note the following points when uninstalling PFM - Agent for Platform.

# (1) Notes on the OS user permission required for uninstallation

• To uninstall PFM - Agent for Platform, you must do so from an account that has the superuser permission.

# (2) Notes on the network

• Even when you uninstall Performance Management programs, the port numbers defined in the services file are not deleted.

# (3) Notes on programs

- If you uninstall PFM Agent for Platform while another Performance Management program or service is running, or while another program that might reference Performance Management files is running, files and directories of PFM
   Agent may still remain. In this case, manually delete all files and directories under the installation directory.
- If PFM Base and PFM Agent are both installed on a host, you cannot uninstall PFM - Base until you uninstall PFM - Agent. In this case, first uninstall PFM -Agent and then PFM - Base. Likewise, if PFM - Manager and PFM - Agent are both installed on a host, you must first uninstall PFM - Agent and then PFM -Manager.

# (4) Notes on services

• If you uninstall only PFM - Agent, the information on the services that can be displayed using the jpctool service list (jpcctrl list) command is not deleted. For details about how to delete service information, see the section on service deletion in the chapter explaining installation and setup in the manual *Job Management Partner 1/Performance Management Planning and Configuration Guide*.

# (5) Other notes

• To uninstall Performance Management programs from a host on which PFM -Web Console is installed, close all browser windows before executing uninstallation.

# 2.2.2 Unsetup procedures

# (1) Deleting settings for PFM - Manager

Log in to PFM - Manager in the PFM - Web Console, and delete the definitions related to the instance of PFM - Agent for Platform for which unsetup is to be performed.

To delete the settings:

- 1. Delete the agent from PFM Web Console.
- 2. Delete agent information for PFM Manager.

For example, if you want to delete service information for PFM - Agent for Platform (UNIX) on the host host0, execute a command as follows: jpctool service delete -id *service-id* -host host01 (jpcctrl delete *service-id* host=host01)

For service-id, specify the service ID of the agent to be deleted.

3. Restart the PFM - Manager service.

For details about how to start the service, see the chapter explaining how to start and stop Performance Management in the manual *Job Management Partner 1/ Performance Management Planning and Configuration Guide.* 

4. Restart PFM - Web Console.

To enable service information deletion in PFM - Web Console, restart the PFM - Manager service, and then restart PFM - Web Console.

# 2.2.3 Uninstallation procedure

To uninstall PFM - Agent for Platform:

- 1. As the superuser, log on to the host from which Performance Management programs are to be uninstalled or use the su command to change the user to superuser.
- 2. Stop Performance Management programs and services on the local host.

Display service information to check whether any service is active.

If any Performance Management programs and services are active on the local host, stop them all. For details about how to display service information and to stop services, see the chapter explaining how to start and stop Performance Management in the manual *Job Management Partner 1/Performance Management User's Guide*.

3. Execute the following command to start Hitachi PP Installer:

/etc/hitachi\_setup

Hitachi PP Installer starts and the initial window appears.

4. Enter D in the initial window.

A list of programs that can be uninstalled appears.

- 5. Select the Performance Management programs you wish to uninstall and enter D. The selected programs are uninstalled. Note that you can move the cursor and use the space key to select programs.
- 6. When uninstallation is correctly finished, enter Q.

The initial window of Hitachi PP Installer reappears.

# 2.3 Changing the system configuration of PFM - Agent for Platform

When the network configuration or host name of the monitoring target system changes, it is sometimes necessary to change the PFM - Agent for Platform system configuration as a result. This section explains how to change the PFM - Agent for Platform system configuration.

When changing the PFM - Agent for Platform system configuration, you also need to change the settings for PFM - Manager and PFM - Web Console. For details about how to change the Performance Management system configuration, see the chapter explaining installation and setup in the manual *Job Management Partner 1/ Performance Management Planning and Configuration Guide*. Note that when a physical host name or alias name is changed, some instances of PFM - Agent will require specific addition operations, but PFM - Agent for Platform will not.

# 2.4 Changing the operation of PFM - Agent for Platform

A change in the way collected operation monitoring data is used may sometimes change the PFM - Agent for Platform operation method. This section explains how to change the PFM - Agent for Platform operation method. For details about how to change the operation method for the entire Performance Management system, see the chapter explaining installation and setup in the manual *Job Management Partner 1/ Performance Management Planning and Configuration Guide.* 

# 2.4.1 Changing the storage location of performance data

Performance data collected by PFM - Agent for Platform is managed in the Store database of the Agent Store service of PFM - Agent for Platform. The following explains how to change the storage location for performance data.

#### (1) Using the jpcconf db define (jpcdbctrl config) command to change settings

The Store database uses the following directories to manage the collected performance data. These folders can be changed by using the jpcconf db define (jpcdbctrl config) command. If you need the performance data collected before the Store database storage location is changed, execute the jpcconf db define (jpcdbctrl config) command with the -move option specified. For details about the jpcconf db define (jpcdbctrl config) command, see the manual *Job Management Partner 1/Performance Management Reference*.

- Save destination directory
- Backup destination directory
- Partial backup destination directory<sup>#</sup>
- Export destination directory
- Import destination directory<sup>#</sup>

#: This directory can be set only when the Store version is 2.0.

The following table describes the options of the jpcconf db define (jpcdbctrl config) command, including the values that can be specified.

*Table 2-5:* Options of the command that changes the performance data storage location

ltem	Option	Specifiable value (Store 1.0) <sup>#</sup>	Specifiable value (Store 2.0) <sup>#</sup>	Default
Save destination	sd	Directory name of	Directory name of	/opt/jp1pc/agtu/
directory		1-127 bytes	1-214 bytes	store

ltem	Option	Specifiable value (Store 1.0) <sup>#</sup>	Specifiable value (Store 2.0) <sup>#</sup>	Default
Backup destination directory	bd	Directory name of 1-127 bytes	Directory name of 1-211 bytes	/opt/jp1pc/agtu/ store/backup
Partial backup destination directory	pbd		Directory name of 1-214 bytes	/opt/jp1pc/agtu/ store/partial
Maximum backup generation number	bs	1 to 9	1 to 9	5
Export destination directory	dd	Directory name of 1-127 bytes	Directory name of 1-127 bytes	/opt/jp1pc/agtu/ store/dump
Import destination folder	id		Directory name of 1-222 bytes	/opt/jp1pc/agtu/ store/import

Legend:

--: This item cannot be set.

#

The directory name must be an absolute path name or a relative path name from the default Store database directory (/opt/jplpc/agtu/store).

# (2) Editing the jpcsto.ini file to change settings (for Store version 1.0 only)

If the Store version is 1.0, you can directly edit the jpcsto.ini file to change the settings of the above items.

#### (a) Items to be set in the jpcsto.ini file

The table below shows the label names and setting ranges that can be edited in the jpcsto.ini file.

*Table 2-6:* Setting items in the performance data storage destination ([Data Section] section of jpcsto.ini)

ltem	Label name	Specifiable value (Store 1.0) <sup>#1</sup>	Default
Save destination directory	Store Dir <sup>#2</sup>	Directory name of 1-127 bytes	/opt/jp1pc/agtu/store
Backup destination directory	Backup Dir <sup>#2</sup>	Directory name of 1-127 bytes	/opt/jplpc/agtu/store/backup
Maximum backup generation number	Backup Save	1 to 9	5

ltem	Label name	Specifiable value (Store 1.0) <sup>#1</sup>	Default
Export destination directory	Dump Dir <sup>#2</sup>	Directory name of 1-127 bytes	/opt/jp1pc/agtu/store/dump

#1

- The directory name must be an absolute path name or a relative path name from the default Store database directory (/opt/jplpc/agtu/store).
- Characters that can be specified are alphanumeric characters, symbols, and spaces, excluding the characters listed below:

;,,,\*,?,',",<,>,

• If the specified value is invalid, the Agent Store service cannot start.

#2

You cannot specify the same directories for Store Dir, Backup Dir, and Dump Dir.

# (b) Before editing the jpcsto.ini file

- When changing the Store database directory, make sure that the directory after the change has already been created.
- When the Store database directory is changed, performance data collected before the change can no longer be used. If the performance data collected before the change is needed, inherit the data over as follows:
  - 1. Use the jpctool db backup (jpcctrl backup) command to back up the performance data stored in the Store database.
  - 2. Change the Store database directory as described in *(c) Editing the jpcsto.ini file.*
  - 3. Use the jpctool db restore (jpcresto) command to restore the backed up data into the new directory.

# (c) Editing the jpcsto.ini file

To edit the jpcsto.ini file:

1. Stop the PFM - Agent service.

If PFM - Agent programs and services are active on the local host, stop them all.

- 2. Use a text editor, for example, to open the jpcsto.ini file.
- 3. Change the storage destination directory for performance data, for example.

Modify the shaded areas below as needed.

•••
[Data Section]
Store Dir=.
Backup Dir=.\backup
Backup Save=5
Dump Dir=.\dump

#### Note:

- Do not insert a space at the beginning of the line or before or after the equal sign (=).
- (.) in each label value indicates the default storage destination directory (/ opt/jplpc/agtu/store) for the Store database of the Agent Store service. To change the storage destination, specify a relative path from the storage destination directory, or specify an absolute path.
- The jpcsto.ini file also describes definition information in addition to the database storage destination directory. Therefore, do not change values other than those in the [Data Section] section. If you change values other than those in the [Data Section] section, Performance Management may not operate normally.
- 4. Save and close the jpcsto.ini file.
- 5. Start the Performance Management programs and services.

#### Note:

When you use this procedure to change the Store database directory, the performance data files are not deleted from the previous directory. If these files are no longer necessary, delete only the following files:

- All files with the .DB extension
- All files with the .IDX extension

# 2.4.2 Updating the Store version to 2.0

The Store database comes in two versions, 1.0 and 2.0. The difference between the two versions is the saving format. For details about Store 2.0, see the manual *Job* 

# Management Partner 1/Performance Management Planning and Configuration Guide.

Version 2.0 of the Store database is set up by default only in the following case: PFM - Agent for Platform 08-11 or a later version is installed as a new installation in an environment in which PFM - Base or PFM - Manager whose version is 08-11 or later is installed. In other cases, the Store version remains 1.0. If you want to use Store 2.0, you must use a setup command to update the version to 2.0.

If you have to restore Store 1.0 from Store 2.0, perform unsetup of Store 2.0.

The following table shows the installation conditions, whether Store 2.0 is available for the given conditions, and the procedure for enabling Store 2.0.

Table	2-7:	Availability of Store 2.0 and the procedure for e	nabling it

Installation conditions		Whether Store 2.0 is available	Procedure for enabling Store 2.0
Version of installed PFM - Base or PFM - Manager	PFM - Agent installation type		
Earlier than 08-11	Overwrite installation	No	Update the version of PFM - Base or PFM - Manager to 08-11, and then execute the setup command.
	New installation		
08-11 or later	Overwrite installation	Available after setup	Execute the setup command.
	New installation	Yes	None

# (1) Setup of Store 2.0

The following shows the setup procedure required when the Store version is updated to 2.0.

1. Estimate the system resources and determine the retention period.

Check whether the system resources that Store 2.0 requires are suitable for the execution environment. The system resources to be considered are the following:

- Disk capacity
- Number of files
- Number of files opened by one process

These can be adjusted by the retention period settings. When you specify the retention period, take into account the resources available in the execution environment. For details about estimating the system resources, see *A. Estimating* 

System Requirements.

2. Review the directory settings.

When the Store version is updated to 2.0, the Agent Store service might fail to start with the same directory settings that were available in Store 1.0. For this reason, you must review the settings of the directories used by the Agent Store service. You can use the jpcconf db define (jpcdbctrl config) command to view and change the settings of these directories.

The maximum length of the names of the save destination directory, backup destination directory, and other directories used by the Store database in Store 2.0 differs from the maximum length in Store 1.0. In particular, be careful when the directory settings have been changed to use a relative path name in Store 1.0. If the settings have been changed, confirm that the length of the absolute path name for the relative path name is no more than 214 bytes, which is the maximum length for directory names in Store 2.0. If the absolute path name is longer than the maximum, change the settings of each directory used by the Agent Store service before proceeding to the next step.

3. Execute the setup command.

Execute the following command to update the Store version to 2.0:

jpcconf db vrset -ver 2.0 -key UNIX (jpcdbctrl setup -key
agtu)

For details about the jpcconf db vrset (jpcdbctrl setup) command, see the manual *Job Management Partner 1/Performance Management Reference*.

4. Set the retention period.

Specify the retention period that you determined in step 1. Start the Agent Store service, and then specify the retention period in PFM - Web Console.

# (2) Unsetup of Store 2.0

Use the jpcconf db vrset -ver 1.0 (jpcdbctrl unsetup) command to perform unsetup of Store 2.0. When unsetup is performed, the entire Store database is initialized and the Store version reverts to 1.0.

For details about the jpcconf db vrset (jpcdbctrl unsetup) command, see the manual *Job Management Partner 1/Performance Management Reference*.

#### (3) Precautions

The following explains precautions regarding migration.

#### (a) When migrating from Store version 1.0 to Store version 2.0

When the Store database is migrated from Store version 1.0 to Store version 2.0, retention period settings for records of the PI record type are carried over. For records

2. Installation and Setup

of the PD record type, however, the default number of retention days is set for each record regardless of the previously set value (number of retained records), and data collected before the number of retention days is deleted.

For example, in Store version 1.0, when the number of retained records is set to 1,000 for PD records for which **Collection Interval** is set to 3,600 seconds, 24 PD records are retained in a day. As a result, data for 1,000 / 24 (roughly 42) days is retained. After this Store database has been migrated to Store version 2.0, if the default number of retention days is set to 10, data from 11 or more days before is deleted and can no longer be viewed.

Before migrating to Store version 2.0, check the settings for the number of retained records for records of the PD record type. If data is set to be retained for the default number of retention days or more for Store version 2.0, use the jpctool db dump (jpcctrl dump) command to output the data in the database. For details about the default period (days) in Store version 2.0, see A.2(3)(a) Formula for estimating disk space requirements, number of files, and number of directories.

# (b) When returning from Store version 2.0 to Store version 1.0

When unsetup is performed for Store version 2.0, data is initialized. Therefore, before changing the version to Store version 1.0, use the jpctool db dump (jpcctrl dump) command to output Store version 2.0 information.

# 2.5 Backup and restoration

The following explains how to back up and restore PFM - Agent for Platform.

Back up the settings information for PFM - Agent for Platform, in case the system is corrupted due to a failure. Also perform backup when changing the system, such as when setting up PFM - Agent for Platform.

For details about backup and restoration for an entire Performance Management system, see the chapter explaining backup and restoration in the manual *Job Management Partner 1/Performance Management User's Guide.* 

# 2.5.1 Backup

Perform backup in any way desired, such as by copying files. When obtaining a backup, first stop all PFM - Agent for Platform services.

The following table lists the files to be backed up for PFM - Agent for Platform settings information.

File name	Description
/opt/jplpc/agtu/agent/*.ini	Settings files for the Agent Collector service
/opt/jplpc/agtu/store/*.ini	Settings files for the Agent Store service
/opt/jp1pc/agtu/agent/evfile <sup>#1</sup>	Event file
/opt/jp1pc/agtu/agent/jpcapp <sup>#2</sup>	Application definition file
/opt/jp1pc/agtu/agent/wgfile <sup>#3</sup>	Workgroup file
/opt/jplpc/agtu/agent/jpcuser/*.ini	JPCUSER definition file

*Table 2-8:* Files to be backed up for PFM - Agent for Platform

#1

This file is backed up when log information collection is set. For Linux, however, this file is not installed.

#2

This file does not exist when application monitoring is not set.

#3

This file is backed up when workgroup information is set.

#### 2. Installation and Setup

Note:

When creating a backup for PFM - Agent for Platform, make sure that the product version number of the environment in which the backup was created is managed. For details about product version numbers, see the *Release Notes*.

# 2.5.2 Restoration

When restoring settings information for PFM - Agent for Platform, check the following prerequisites, and then copy the backed up files to their original locations. The backed up settings information files will overwrite the settings information files on the host.

Prerequisites

- PFM Agent for Platform is installed.
- PFM Agent for Platform services are stopped.

Note:

When settings information for PFM - Agent for Platform is restored, the product version number of the backed up environment and restored environment must be identical. For details about product version numbers, see the *Release Notes*. The following gives examples for whether restoration is possible.

Cases for which restoration can be performed:

Settings information backed up from PFM - Agent for Platform 09-00 is restored to PFM - Agent for Platform 09-00.

Cases for which restoration cannot be performed:

- Settings information backed up from PFM - Agent for Platform 08-00 is restored to PFM - Agent for Platform 09-00.

- Settings information backed up from PFM - Agent for Platform 09-00 is restored to PFM - Agent for Platform 09-00-04.

# 2.6 Settings for browsing manuals in a Web browser

The manual for Performance Management can be viewed in a Web browser by copying the manual from the CD-ROM shipped with the program product, to the host on which PFM - Web Console is installed. When running PFM - Web Console on a cluster, copy the manuals to each physical host on the active node and standby node.

# 2.6.1 Setup procedures

#### (1) When browsing the manual from the help section of PFM - Web Console

- 1. Follow the setup procedures for PFM Web Console to register PFM Agent with PFM Web Console (perform additional setup for PFM Agent).
- 2. On the host on which PFM Web Console is installed, create the directory into which the manual will be copied.
  - In Windows: Web-Console-installation-folder\doc\en\PFM-Agent-help-id
  - In UNIX: /opt/jp1pcwebcon/doc/en/PFM-Agent-help-id

For details about the PFM - Agent help ID specified for *PFM-Agent-help-id*, see the list of IDs given in the appendix of this manual.

3. Copy the following files and directories from the manual CD-ROM to the directory created above.

#### For HTML manuals

In Windows: All .htm files and the FIGURE folder in *cd-rom-drive*\MAN\3020\*materials-number* (such as 03004A0D)

In UNIX: All .htm files and the FIGURE directory, in / *cd-rom-mount-point*/MAN/3020/*materials-number* (such as 03004A0D)

For PDF manuals

In Windows: PDF files in *cd-rom-drive*\MAN\3020\*materials-number* (such as 03004A0D)

In UNIX: PDF files in /*cd-rom-mount-point*/MAN/3020/*materials-number* (such as 03004A0D)

When copying, make sure that the index.htm file for the HTML manual, or the PDF files for the PDF manual, is placed directly within the created directory. For details about how to copy manual files, see readme.txt on the manual CD-ROM.

4. Restart PFM - Web Console.

# (2) When browsing the manual from the hard disk drive on the local machine

Perform installation by using setup.exe on the CD-ROM, or by directly copying the .htm files, PDF files, and GIF files to the desired directory. For the HTML manual, use the following directory configuration:

html (.htm files and PDF files)

∟ FIGURE (GIF files)

# 2.6.2 Browsing procedures

To browse the manual:

- 1. From the menu bar frame of the Main window for PFM Web Console, click the **Help** menu to display a help selection window.
- 2. Click the manual name, or **PDF** next to the manual name.

When the manual name is clicked, the HTML manual is displayed. When **PDF** is clicked, the PDF manual is displayed.

Precautions regarding character display in Web browsers

In Windows, when the online manual is displayed from the **Start** menu, the HTML manual may be displayed in a Web browser window that is already open.



# Chapter 3. Collecting Log Information

This chapter explains methods for using PFM - Agent for Platform to collect log information and PFM - Web Console to monitor log information.

- 3.1 Overview of collecting log information
- 3.2 Setup procedure for collecting log information

# 3.1 Overview of collecting log information

PFM - Agent for Platform can collect the following log information<sup>#</sup>:

- UNIX log information
- Log information for applications that run on UNIX
- Log information for databases that run on UNIX

#

PFM - Agent for Platform can collect log information from a monotone increasing log file in text format. However, it can only collect single-byte characters.

Note:

In Linux, log information cannot be collected because the Logged Messages (PL\_MESS) record is unavailable.

In PFM - Web Console, if you set specific log information such as an error message as a threshold value in an alarm, the user can be notified when the set message is output.

The PFM - Agent for Platform log information collection program collects log information from log files based on log file names or filter conditions set in the event file. The Agent Collector service collects the log information and manages it using the Logged Messages (PL\_MESS) record, which is a PL record. Like other records, the Logged Messages (PL\_MESS) record can be used for report display and alarm monitoring.

The figure below shows the flow of log information monitoring.





# 3.2 Setup procedure for collecting log information

To use PFM - Agent for Platform to collect log information and PFM - Web Console to monitor log information:

- 1. Specify the event file.
- 2. On PFM Web Console, specify that the performance data of the Logged Messages (PL\_MESS) record is stored in the Store database.

You need this setting to display historical reports on PFM - Web Console.

3. Re-start PFM - Agent for Platform.

For details about each procedure, see the following section.

# 3.2.1 Setting up the event file

To collect log information, you need to set up the event file. The event file is used to specify information such as the name of log files, where collected log information is stored, and filter conditions.

You can use only one event file.

The event file name is: /opt/jplpc/agtu/agent/evfile

This event file includes only a comment line (a hash mark (#) is placed at the beginning of the line). To specify information, directly edit this event file or copy an event file to the directory and then edit it.

# (1) Setting up the event file

To specify the event file:

- 1. Use a text editor to open the event file.
- 2. Add the following parameters to the event file: logfile=file-name [id=identifier] [regexp=filter-condition]

The following explains each parameter.

logfile=file-name

Use the absolute path name to specify the name of a log file that stores collected log information. You can use alphanumeric characters to specify the log file name. For the number of bytes that can be specified, see the manual of each OS.


## id=*identifier*

Specify text displayed as the identifier for log information. Identifiers can contain a maximum of 1,023 bytes of alphanumeric characters and symbols, except asterisks (\*). The value specified by this parameter is the character string after the character string jpcagtu in the Message Text (MESSAGE\_TEXT) field of the Logged Messages (PL\_MESS) record. If you omit this parameter, the log file name without the directory name is displayed.

regexp=filter-condition

Specify the filter condition for log information collected in the Logged Messages (PL\_MESS) record. Filter conditions can contain a maximum of 2,040 bytes of alphanumeric characters and symbols, including the linefeed character. To define condition expressions, use extended normal expressions. For details of extended normal expressions, see the manual of each OS. If you specify multiple expressions, it is assumed to be an OR statement (logical sum).

You can use Portable Operating System Interface for UNIX (POSIX) to specify the filter conditions. Using suffix /i stores log information in the Logged Messages (PL\_MESS) record without differentiating between upper and lower case characters.

*Notes:* 

- The system does not differentiate between upper and lower case characters for each parameter.
- When you add parameters, do not insert a blank character or tab character before or after the equal sign (=).
- To insert a comment line, place a hash mark (#) at the beginning of the line.
- 3. To collect information from multiple log files, specify the parameter for each log file.
- 4. Save the event file.

Always save the event file under the default event file name evfile.

To return the setting content of the evfile file to the status that was effective at the time of installation, copy evfile.model, which is the model file of the evfile file, to evfile.

## (2) Example of event file specification

When you collect the log information for Sample Application stored in /opt/ sampleapp/log, to store only the *warning*, *error*, and *fatal* status log information in the Logged Messages (PL\_MESS) record without differentiating between upper and lower case characters, specify as follows:

```
logfile=/opt/sampleapp/log
id=SAMPLE
regexp=warning/i
regexp=error/i
regexp=fatal/i
```

## 3.2.2 Setting up PFM - Web Console

To display a historical report, you use PFM - Web Console to specify the performance data of the Logged Messages (PL\_MESS) record stored in the Store database.

For details about the setup method, see the chapter explaining operation monitoring data management in the manual *Job Management Partner 1/Performance Management User's Guide*.

## 3.2.3 Notes on collecting log information

Note the following points when monitoring messages using the Logged Messages (PL\_MESS) record:

- When a message occurs that satisfies the condition expression set when the alarm is defined, the alarm status changes to error. After that, when a message occurs that does not satisfy the condition expression, the alarm status returns to normal. If you set the alarm monitoring using messages, check the messages on the Event Monitor or Event History window of PFM Web Console.
- Character strings that can be monitored by the condition expression of the alarm definition consist of a maximum of 511 bytes that can be stored in the Logged Messages (PL\_MESS) record. Because character strings stored in the Logged Messages (PL\_MESS) record include header information such as the identifier (id), the length of messages that can be monitored is shorter than the 511 bytes for the header information portion.
- To monitor a character string of 512 bytes or more, use the event file setting of PFM Agent for Platform to set the character string you wish to monitor as a filter condition. At this time, set an identifier (id) for the message as well. By setting this identifier (id) in the condition expression of the alarm definition, you can monitor messages that include the character string set as the filter condition.

For example, if you want to monitor messages that include character string ABC, use the event file of PFM - Agent for Platform to set Console for the identifier (id) and set ABC for the filter condition: logfile=/tmp/console log

```
id=Console
regexp=ABC
```

After that, in the New Alarm Table > Alarm Conditions window of PFM - Web Console, set Console as the error value or warning threshold value.

This setting sets the identifier (id) Console as the header information for messages that include the character string ABC. PFM - Web Console issues an alarm when a message occurs that includes the Console character string.

This chapter explains how to specify settings for using PFM - Agent for Platform to collect user-defined records.

- 4.1 Overview of user-defined record collection
- 4.2 Setting up user-defined record collection

## 4.1 Overview of user-defined record collection

PFM - Agent for Platform can collect performance data not provided by default and store it in a record. This record for storing performance data is called a *user-defined record*.

The following table shows the information for which user-defined records can be set and the records corresponding to type of information.

*Table 4-1:* Information that can be set for user records, the corresponding records, and how user records are set

Information supporting user-defined record collection	Records
Workgroup information	PI_WGRP record
Application operating status information	PD_APP record
User-specific performance data	PD_UPD record
	PD_UPDB record
	PI_UPI record
	PI_UPIB record

Like other records, user-defined records specified on each host can be used for displaying reports on PFM - Web Console and issuing alarms based on monitoring.

When multiple pieces of performance data are collected into each record, a new line is added for each field in the user-defined record as each piece of performance data is collected. As a result, each user-defined record becomes a multi-line record. A multi-line record is a multi-instance record.

## 4.1.1 Information that can be defined as user-defined records

This section explains the information that can be defined as user-defined records.

## (1) Workgroup information

When multiple users use UNIX system resources or operate a UNIX group, PFM - Agent for Platform allows you to set those multiple UNIX users or the UNIX group as a workgroup and collect process information related to the workgroup.

You can set a workgroup in the following units:

- UNIX user
- UNIX group
- Program executed by process

The PFM - Agent for Platform workgroup information collection program summarizes workgroup-related data of performance data of the Process Detail (PD) record based on the workgroup name set in the workgroup file. Summarized performance data is managed as the Workgroup Summary (PI\_WGRP) record. As with other records, you can use the Workgroup Summary (PI\_WGRP) record to display reports and monitor alarm usage.

The figure below shows the flow of workgroup information monitoring.





## (2) Information about the application operating status

PFM - Agent for Platform can collect information about whether processes are operating under specified conditions and whether the number of processes is the expected number or less. PFM - Agent for Platform can then manage the collected information as the Application Summary (PD\_APP) record. The processes to be monitored can be specified in PFM - Web Console.

## (3) User-specific performance data

PFM - Agent for Platform can collect user-specific performance data such as information that is not provided by PFM - Agent for Platform and information specific to a machine or environment. To collect user-specific performance data, you need to create scripts called *user commands*.

There are two kinds of records that store user-specific performance data for each of the record types, PI and PD.

- User Data Detail (PD\_UPD)
- User Data Detail Extended (PD\_UPDB)
- User Data Interval (PI\_UPI)
- User Data Interval Extended (PI\_UPIB)

## 4.2 Setting up user-defined record collection

This section describes how to collect user-defined records.

## 4.2.1 Settings for collecting workgroup information

This section explains the settings for collecting workgroup information.

#### (1) Setup procedure for collecting workgroup information

To use PFM - Agent for Platform to collect workgroup information and PFM - Web console to monitor workgroup information:

- 1. Specify a workgroup file.
- 2. On PFM Web Console, specify that the performance data of the Workgroup Summary (PI\_WGRP) record be stored in the Store database.

You need this setting to display historical reports on PFM - Web Console.

3. Restart PFM - Agent for Platform.

To validate the corrected definition, you need to stop and then restart PFM - Agent for Platform.

## (2) Setting up the workgroup file

To collect workgroup information, you need to specify a workgroup file. The workgroup file is used to specify information such as the workgroup name.

You can use only one workgroup file. Changing the file name invalidates the file.

The workgroup file name is: /opt/jplpc/agtu/agent/wgfile

This workgroup file includes only a comment line (a hash mark (#) is placed at the beginning of the line). To specify information, directly edit this event file or copy this file and then edit it.

#### (a) Setting up the workgroup file

To specify the workgroup file:

- 1. Use a text editor to open the workgroup file.
- 2. Add the parameters given in the following subsection to the workgroup file.

For details about how to specify parameters, see (b) Specifying the workgroup file.

- 3. To collect information from multiple workgroups, specify the parameters for each workgroup.
- 4. Save the workgroup file.

Always save the file under the default workgroup file name wgfile.

To return the setting content of the wgfile file to the status that was effective at the time of installation, copy wgfile.model, which is the model file of the wgfile file, to wgfile.

*Note:* 

When you specify multiple parameters, if at least one of the specified parameter values matches the value of a field of the Process Detail (PD) record, performance data is stored in the Workgroup Summary (PI WGRP) record.

## (b) Specifying the workgroup file

## Parameter specification format

The following describes the format used to specify parameters: workgroup=workgroup-name [users=UNIX-user-name] or [users\_02=UNIX-user-name] [groups=UNIX-group-name] or [groups\_02=UNIX-group-name] [programs=program-name] or [programs\_02=program-name] [arguments\_02=argument-of-monitoring-program] [regexp=monitoring-conditions]

Notes:

- The end of each file parameter is the linefeed.
- Always specify the workgroup parameter at the beginning. The order of other parameters is as you like.
- You can omit parameters enclosed by []. However, in addition to the workgroup parameter, you must specify at least one parameter.
- The system does not differentiate between upper and lower case characters in each parameter.
- Do not insert a blank character or tab character before or after the equal sign (=).
- When one parameter is extended to multiple lines, insert a comma (, ) at the end of the line.
- To insert a comment line, place a hash mark (#) at the beginning of the line.
- You can use a regular expression to specify parameters. For details about regular expressions, see the manual for each OS. Also, for examples using regular expressions, see (c) Workgroup file specification example.
- You can specify multiple values for parameters other than the workgroup parameter. Use a delimiter character to separate specification values.

Usually, you use a comma or blank character as the delimiter; however, when you specify a double quotation mark (") at the beginning of the specification value in the arguments\_02, groups\_02, programs\_02 or users\_02 parameter to specify the monitoring target, use a double quotation mark (") as the delimiter and a linefeed ("\n) as the termination character. For details, see *Parameter details* below.

- When you specify a double quotation mark (") at the beginning of a specification value in the arguments\_02, groups\_02, programs\_02 or users\_02 parameter, if there is no corresponding delimiter character, the value is not recognized as the monitoring target because the range of the character string is not specified.
- When you specify a double quotation mark (") at the beginning of the specification value in the arguments\_02, groups\_02, programs\_02 or users\_02 parameter, a double quotation mark (") that exists alone before the corresponding delimiter character is ignored. If you want to include a double quotation mark (") in the monitoring target, enter two double quotation marks ("").
- For the arguments\_02, groups\_02, programs\_02 and users\_02 parameters, you can mix specification values that do and do not include a double quotation mark (") at the beginning.

## Parameter details

The following explains each parameter. For parameter setting examples, see (c) *Workgroup file specification example.* 

#### workgroup=workgroup-name

Use alphanumeric characters to specify the name of the workgroup to be monitored. The character string for the name can contain a maximum of 2,037 bytes, including linefeeds; however, the Store database stores a maximum of 29 bytes. If you specify more than one workgroup name, the latest one is used (the workgroup condition having the highest line number).

You must specify the workgroup name.

#### users=UNIX-user-name

Specify the names of UNIX users from which to collect information as a workgroup. UNIX user names can contain a maximum of 2,041 bytes of alphanumeric characters, including linefeeds. However, the Store database stores a maximum of 29 bytes, and the last character becomes >.

To specify more than one UNIX user name, use at least one comma or blank character to separate the names. All specified users become the target of monitoring.

The values specified in this parameter are displayed in the Users (USERS) field of the Workgroup Summary (PI\_WGRP) record.

You specify the value to be stored in the Real User (REAL\_USER\_NAME) field of the Process Detail (PD) record.

users\_02=*UNIX-user-name* 

Specify the names of UNIX users from which to collect information as a workgroup. This parameter is used to extend the users parameter to specify user names.

If you add a double quotation mark (") at the beginning of the specification value, characters up to the next delimiter character (" or "\n) are recognized as the specification value. For example, the specification value can include blank characters and commas, which are the delimiter characters in the users parameter. If you do not add a double quotation mark ("), the same operation as with the users parameter takes place. If you use the extended specification method, the double quotation mark (") is treated as the parameter delimiter character and "\n is treated as the termination character. To use the extended specification value, enter two double quotation marks (""). UNIX user names can contain a maximum of 2,038 bytes of alphanumeric characters, including linefeeds. However, the Store database stores a maximum of 29 bytes, and the last character becomes >.

The values specified in this parameter are displayed in the Users (USERS) field of the Workgroup Summary (PI\_WGRP) record.

You specify the value to be stored in the Real User (REAL\_USER\_NAME) field of the Process Detail (PD) record.

groups=UNIX-group-name

Specify the names of UNIX groups from which to collect information as a workgroup. UNIX group names can contain a maximum of 2,040 bytes of alphanumeric characters, including linefeeds. However, the Store database stores a maximum of 29 bytes, and the last character becomes >.

To specify more than one UNIX group name, use at least one comma or blank character to separate the names. All specified users become the target of monitoring.

The values specified in this parameter are displayed in the Groups (GROUPS) field of the Workgroup Summary (PI\_WGRP) record.

You specify the value to be stored in the Real Group (REAL\_GROUP\_NAME) field of the Process Detail (PD) record.

groups\_02=UNIX-group-name

Specify the names of UNIX groups from which to collect information as a workgroup. This parameter is used to extend the groups parameter to specify group names.

If you add a double quotation mark (") at the beginning of the specification value, characters up to the next delimiter character (" or "\n) are recognized as the specification value. For example, the specification value can include blank characters and commas, which are the delimiter characters in the groups parameter. If you do not add a double quotation mark ("), the same operation as with the groups parameter takes place. If you use the extended specification method, the double quotation mark (") is treated as the parameter delimiter character and "\n is treated as the termination character. To use the extended specification value, enter two double quotation marks (""). UNIX group names can contain a maximum of 2,037 bytes of alphanumeric characters, including linefeeds. However, the Store database stores a maximum of 29 bytes, and the last character becomes >.

The values specified in this parameter are displayed in the Groups (GROUPS) field of the Workgroup Summary (PI WGRP) record.

You specify the value to be stored in the Real Group (REAL\_GROUP\_NAME) field of the Process Detail (PD) record.

programs=program-name

Specify the name of programs to be executed by processes that collect information for a workgroup. The program name can contain a maximum of 2,038 bytes of alphanumeric characters, including linefeeds. However, the Store database stores a maximum of 29 bytes, and the last character becomes >.

To specify more than one program name, use at least one comma or blank character to separate the names. All specified programs become the target of monitoring.

The values specified in this parameter are displayed in the Programs (PROGRAMS) field of the Workgroup Summary (PI\_WGRP) record.

You specify the value to be stored in the Program (PROGRAM\_NAME) field of the Process Detail (PD) record.

#### programs\_02=program-name

Specify the name of programs executed by processes that collect information for a workgroup. This parameter is used to extend the programs parameter to specify program names.

If you add a double quotation mark (") at the beginning of the specification value, characters up to the next delimiter character  $(" \text{ or } "\n)$  are recognized as the specification value. For example, the specification value can include blank

characters and commas, which are the delimiter characters in the programs parameter. If you do not add a double quotation mark ("), the same operation as with the programs parameter takes place. If you use the extended specification method, the double quotation mark (") is treated as the parameter delimiter character and "\n is treated as the termination character. To use the extended specification method to specify a double quotation mark (") for the specification value, enter two double quotation marks (""). Program names can contain a maximum of 2,035 bytes of alphanumeric characters, including linefeeds. However, the Store database stores a maximum of 29 bytes, and the last character becomes >.

The values specified in this parameter are displayed in the Programs (PROGRAMS) field of the Workgroup Summary (PI\_WGRP) record.

You specify the value to be stored in the Program (PROGRAM\_NAME) field of the Process Detail (PD) record.

arguments\_02=argument-of-monitoring-program

Specify the arguments of programs being monitored as part of this workgroup. Arguments can contain a maximum of 2,034 bytes of alphanumeric characters, including linefeeds. However, the Store database stores a maximum of 29 bytes, and the last character becomes >. To specify more than one argument, use at least one comma or blank character to separate the arguments. All specified arguments become the target of monitoring.

You can expand this parameter to specify arguments. If you add a double quotation mark (") at the beginning of a specification value, characters up to the next delimiter character (" or "n) are recognized as the specification value. For example, a specification value can include a blank character or comma, which is the delimiter character.

If you do not add a double quotation mark (") at the beginning of a specification value, the same operation as with usual parameters takes place. If you use the extended specification method, the double quotation mark (") is treated as the parameter delimiter character and "n is treated as the termination character. To use the extended specification method to specify a double quotation mark (") for the specification value, enter two double quotation marks ("").

The values specified in this parameter are displayed in the Argument Lists (PI\_ARGUMENT\_LISTS) field of the Workgroup Summary (PI\_WGRP) record. You specify the value to be stored in the Argument List (ARGUMENT\_LIST) field of the Process Detail (PD) record.

#### regexp=monitoring-conditions

Use the arguments\_02, groups, groups\_02, programs, programs\_02, users, and users\_02 conditions to specify the process monitored as part of this workgroup. You can use a regular expression to specify the process. Processes

that partially match this condition are monitored.

If you specify multiple expressions, it is assumed to be an OR statement (logical sum).

Expressions can contain a maximum of 2,040 bytes of alphanumeric characters, including linefeeds. If you specify 30 bytes or more of characters for the condition expression of arguments\_02, groups, groups\_02, programs, programs\_02, users, or users\_02, the Store database stores a maximum of 29 bytes, and the last character becomes >.

For details about extended regular expressions, see the manual for each OS.

You can use Portable Operating System Interface for UNIX (POSIX) to specify monitoring conditions. If you use the suffix /i, definition information is stored in the Workgroup Summary (PI\_WGRP) record without differentiating between upper and lower case characters.

For specification examples, see (c) Workgroup file specification example.

#### (c) Workgroup file specification example

The following examples show workgroup specification files.

## Example 1:

This example specifies the following information:

- Workgroup name: sysadmin
- Program names: netscape, turkey

#### Setting example

```
workgroup=sysadmin
programs=netscape,turkey
```

#### Result

Process information whose program names is netscape or turkey is collected.

## Example 2:

This example specifies the following information:

- Workgroup name: argument
- Argument: data.ini

#### Setting example

```
workgroup=argument
argument 02=data.ini
```

Result

Process information for programs executed with the command line argument data.ini is collected.

#### Example 3

This example specifies the following information:

- Workgroup name: programs
- Program name: space  $\Delta$  key, emacs ( $\Delta$  is a blank character)

#### Setting example

```
workgroup=programs
programs_02="space key"
```

## Result

Process information whose program name is space  $\Delta$  key is collected.

## Example 4

This example defines a process that completely matches the following argument:

- Workgroup name: development
- Argument: jpcagtu Δ -d Δ /opt/jplpc/agtu/agent (Δ is a blank character)

#### Setting example

```
workgroup=development
arguments_02="jpcagtu -d /opt/jp1pc/agtu/agent"
```

#### Result

Process information for programs executed with the command line argument jpcagtu -d /opt/jplpc/agtu/agent is collected.

## Example 5

This example specifies the following information:

- Workgroup name: development
- Argument: quota\_"\_middle

#### Setting example

```
workgroup=development
arguments_02="quota_""_middle"
```

## Result

Process information for programs executed with the command line argument quota\_"\_middle is collected.

## Example 6

This example uses regular expressions to specify the user name, group name and program name.

In the regular expression, you can enclose each parameter and its value using  $\{$  and  $\}$ . Also, you can specify multiple regular expressions using commas (, ) to separate them.

This example uses regular expressions to specify the following information:

- Workgroup name: Regexp
- UNIX user name: .\*adm.?
- UNIX group name: .\*adm.\*
- Program name: jpcagt.\*, .\*grd
- Argument:  $ex \Delta process (\Delta is a blank character)$

## Setting example

```
workgroup=Regexp
regexp={users=.*adm.?}, {groups=.*adm.*}, {programs=jpcag
t.*/i,.*grd}, {arguments_02="ex process"}
```

## Result

Process information for the executed process that matches the following condition is collected.

Each condition is assumed to be a logical OR statement.

- Process information whose UNIX user name contains adm and consists of four or more characters.
- · Process information whose UNIX group name contains adm
- Process information whose program name is not case sensitive and begins with jpcagt or end with grd.
- Process information for programs executed with the command line argument ex process

## (3) Examples of alarm operation

The following gives examples of alarm operation using functionality to collect workgroup information. Here, the contents are set to issue an alarm when multiple running processes with the same process name are monitored, and the number of process startup statuses falls below n.

The following shows the specification of the work group file and alarm conditions.

Specification of the work group file

workgroup=workgroup-name

programs=*name-of-program-to-be-monitored* (specify the value stored in the Program (PROGRAM\_NAME) field of the Process Detail (PD) record)

Conditions set for the alarm

Define an alarm that reports an abnormality for the following conditions, for the Workgroup Summary (PI\_WGRP) Record:

workgroup=workgroup-name

AND Process Count <= n

Note

*n* indicates the number of processes.

#### (4) Setting up PFM - Web Console

To display historical reports, you use PFM - Web Console to specify collection of Workgroup Summary (PI\_WGRP) record information.

For details about the set up method, see the chapter explaining operation monitoring data management in the manual *Job Management Partner 1/Performance Management User's Guide*.

## 4.2.2 Settings for collecting information about the application operating status

The following explains how to set, confirm, change, and delete user records for collecting information about the application operating status, and provides an example of alarm operation.

## (1) Specifying the user-defined record settings

The following explains how to specify the user-defined record settings for collecting information about the application operating status.

To perform setup, first create an instance, and then set the instance properties (such as the monitored application name and threshold).

To create an instance:

1. From the monitoring console browser, log in to PFM - Web Console.

The Main window appears.

2. In the navigation frame of the Main window, click the Services tab.

The Services page appears.

3. From the navigation frame, expand the contents of the Machines folder.

A folder that has the name of the host on which the Performance Management service is installed appears. Expand this folder to display the services installed on

the host.

The name of each service is displayed by service ID. For details about service IDs, see *C. List of Identifiers*, and the section explaining the service naming conventions in the appendix in the manual *Job Management Partner 1/ Performance Management Planning and Configuration Guide*.

The format of the service ID differs depending on whether the product name display functionality is enabled. For details about the product name display functionality, see the chapter explaining Performance Management functionality in the manual *Job Management Partner 1/Performance Management Planning and Configuration Guide*.

4. Expand the contents of the monitoring agent host folder, and select the Agent Collector service.

Select *host-name*<**UNIX**> (Agent Collector service). A check mark is displayed next to the Agent Collector service.

5. Select the **Properties** method in the method frame.

The Properties page appears.

- 6. Select the **ADDITION OR DELETION A SETTING** tree.
- 7. Enter an instance name for ADD AN APPLICATION MONITORING SETTING at the bottom of the information frame, and click the OK button.

An instance name tree is generated in the **Application monitoring settings** tree of the Properties window.

Note:

- The instance name entered for ADD AN APPLICATION MONITORING SETTING can be specified by the user. The instance name specified here is stored in the Application Name field of the PD APP record, and is used to identify the application.
- In ADD AN APPLICATION MONITORING SETTING, you can specify a character string of 1-63 bytes. The character string can consist of alphanumeric characters and symbols except the following characters:

Tab (\t)  $\hfill \ : \ ; \ , \ \star \ ? \ " \ ' \ < \ > \ |$ 

• You can set a maximum of 64 instances.

To set instance properties:

1. After finishing the above step for setting the instance properties, display the Properties window again and select the instance name tree generated in the **Application monitoring settings** tree.

The property information entry window appears at the bottom of the information frame.

2. Set properties.

Set the process type, process name, and minimum and maximum values for the process count. You can set information for multiple processes. The following table lists the properties you can set.

ltem	Parameter name	Explanation	Corresponding field in the PD_APP record
Process type	ProcessXX Kind	<ul> <li>Select Execute or Command Line. Note that evaluation is not performed when None is selected.</li> <li>When Execute is selected, the value of the Program field in the PD record is used for evaluation.</li> <li>When Command Line is selected, the value of the Argument List field in the PD record is used for evaluation.</li> </ul>	Process <i>XX</i> Kind
Process name	ProcessXX Name	Specify a process name of no more than 127 bytes.	Process $XX$ Name
Minimum and maximum thresholds for the number of processes	ProcessXX Range	Specify the minimum and maximum thresholds for the number of processes in the format $m-n$ (for example, 1-2). Only one value can be specified without a hyphen to set the minimum value and maximum value to the same value. For example, when 10 is specified, 10-10 is set. You can specify values in the range from 0 to 65535.	Process <i>XX</i> Range

Table 4-2: Monitoring field properties

Legend:

XX: A two-digit numeric value in the range from 01 to 15

Note:

- The value specified for the ProcessXX Name property is used to evaluate whether the application is running. Note that when the ProcessXX Name field in the PD\_APP record is displayed in a report in PFM Web Console, only the first 31 bytes are displayed.
- If there are multiple processes for which the first 31 bytes of each name are the same, set up an instance for each process so that the process can be monitored, and set the evaluation results (the value of the ProcessXX Name field in the PD\_APP record) to be reported by alarm. Note that because the value of the ProcessXX Name field in the PD\_APP record is the same for all instances, alarms will not be reported properly. Accordingly, instead of using the ProcessXX Name field in the PD\_APP record, use the value of the ProcessXX Status field for setting alarm notification. For example settings, see (4)(d) Monitoring whether a given process is running when there are multiple processes for which the first 31 bytes of the names are the same.
- Alphanumeric characters and symbols can be specified for the ProcessXX Name property.
- Wildcard characters \* and ? can also be specified for the ProcessXX Name property. \* represents at least one character, while ? represents one character.
- When you select Execute for the ProcessXX Kind property, a value equivalent to the Program field of the PD record must be specified for the ProcessXX Name property. The value of the Program field of the PD record is almost equal to the value displayed when the ps -e command is executed. (This value might be different from the command execution result depending on the type and version of the OS.)
- When you select Command Line for the ProcessXX Kind property, a value equivalent to the Argument List field of the PD record must be specified for the ProcessXX Name property. The value of the Argument List field of the PD record is almost equal to the value displayed when the ps -ef command is executed. (This value might be different from the command execution result depending on the type and version of the OS.)
- 3. Click the **OK** button.

The specified settings are applied.

Setting the range of data for collecting information about the application operating status

When PFM - Agent for Platform is running on a virtualized system, you can set the ADD AN APPLICATION MONITORING SETTING FOR VIRTUAL ENVIRONMENT

property to restrict the environment from which process information is to be collected.

1. After creating the instance, display the Properties window again and select the ADD AN APPLICATION MONITORING SETTING FOR VIRTUAL ENVIRONMENT tree in the ADDITION OR DELETION A SETTING tree.

The property information entry window appears at the bottom of the information frame.

#### Reference note:

When creating an instance, you can concurrently set ADD AN APPLICATION MONITORING SETTING and ADD AN APPLICATION MONITORING SETTING FOR VIRTUAL ENVIRONMENT.

2. Set properties.

For details about the properties, see 1.3.4(7) Identifying processes that have the same name in a virtualized system.

Note:

- The virtual environment ID entered for ADD AN APPLICATION MONITORING SETTING FOR VIRTUAL ENVIRONMENT can be specified by the user. The ID specified here is stored in the Virtual Env ID field of the PD APP record.
- In ADD AN APPLICATION MONITORING SETTING FOR VIRTUAL ENVIRONMENT, you can specify a value from 0 to 2147483647. You cannot specify characters.
- As in the case of ADD AN APPLICATION MONITORING SETTING, a maximum of 64 instances can be created with ADD AN APPLICATION MONITORING SETTING FOR VIRTUAL ENVIRONMENT.

## (2) Checking or changing user record settings

To check or change the user record settings for collecting information about the application operating status:

1. From the monitoring console browser, log in to PFM - Web Console.

The Main window appears.

2. In the navigation frame of the Main window, click the Services tab.

The Services page appears.

3. From the navigation frame, expand the contents of the Machines folder.

A folder that has the name of the host on which the Performance Management service is installed appears. Expand this folder to display the services installed on the host.

The name of each service is displayed by service ID. For details about service IDs, see *C. List of Identifiers* and the section explaining the service naming conventions in the appendix in the manual *Job Management Partner 1/ Performance Management Planning and Configuration Guide.* 

The format of the service ID differs depending on whether the product name display functionality is enabled. For details about the product name display functionality, see the chapter explaining Performance Management functionality in the manual *Job Management Partner 1/Performance Management Planning and Configuration Guide*.

4. Expand the contents of the monitoring agent host folder, and select the Agent Collector service.

Select *host-name*<**UNIX**> (Agent Collector service). A check mark is displayed next to the Agent Collector service.

5. Select the **Properties** method in the method frame.

The **Properties** page appears.

6. Expand the **Application monitoring settings** tree, and select the tree for the instance name to be checked.

The properties are displayed.

7. Check the property settings, and click the OK button.

## (3) Deleting the user-defined record settings

To delete the user-defined record settings for collecting information about the application operating status:

1. From the monitoring console browser, log in to PFM - Web Console.

The Main window appears.

2. In the navigation frame of the Main window, click the Services tab.

The Services page appears.

3. From the navigation frame, expand the contents of the Machines folder.

A folder that has the name of the host on which the Performance Management service is installed appears. Expand this folder to display the services installed on the host.

The name of each service is displayed by service ID. For details about service IDs, see *C. List of Identifiers* and the section explaining the service naming



conventions in the appendix in the manual *Job Management Partner 1/ Performance Management Planning and Configuration Guide.* 

The format of the service ID differs depending on whether the product name display functionality is enabled. For details about the product name display functionality, see the chapter explaining Performance Management functionality in the manual *Job Management Partner 1/Performance Management Planning and Configuration Guide*.

4. Expand the contents of the monitoring agent host folder, and select the Agent Collector service.

Select *host-name*<**UNIX**> (Agent Collector service). A check mark is displayed next to the Agent Collector service.

5. Select the **Properties** method in the method frame.

The **Properties** page appears.

- 6. Select the ADDITION OR DELETION A SETTING tree.
- 7. Select the name of the instance to be deleted from **DELETE AN APPLICATION MONITORING SETTING** at the bottom of the information frame, and click the **OK** button.

The settings are deleted.

## (4) Example of using an alarm

This subsection provides an example of using an alarm with the function that collects information about the application operating status.

#### (a) Monitoring the startup status of a specific process

The following explains settings for monitoring whether a specific process is running, from several monitoring targets.

For environments in which only one of the following processes is normally running, the following procedure sets an abnormal alarm to be reported when multiple processes (two or more) are started or stopped.

Table 4-3: Example of specific process start

Program name	Process name
GyoumuProcess.exe	GyoumuProcess

To monitor the startup status of a specific process:

1. Set the instance name for ADD AN APPLICATION MONITORING SETTING in the ADDITION OR DELETION A SETTING tree as follows:

GyoumuProcess Monitor

 Set the GyoumuProcess Monitor property generated in the Application monitoring settings tree as follows: Process01 Kind: Select Execute. Process01 Name: Enter GyoumuProcess (do not specify the .exe extension). Process01 Range: Specify 1-1.

As a result of the above settings, when the process is running, the values of the Process01 Count, Process01 Status, and Application Status fields in the PD\_APP record are displayed as follows in the report.

 Field name
 Value

 Process01 Count
 1<sup>#1</sup>

 Process01 Status
 NORMAL<sup>#2</sup>

 Application Status
 NORMAL<sup>#2</sup>

Table 4-4: Results for the values of each field in the PD\_APP record

#1

This indicates the number of corresponding processes running.

#2

This indicates that there is no issue.

3. Specify alarm settings as follows:

```
Record: Select Application Summary (PD_APP).
Monitored field: Select Application Name.
Condition: Select =.
Abnormal value: Enter GyoumuProcess Monitor.
Warning value: Enter GyoumuProcess Monitor.
```

After specifying the above settings and clicking the **Add** button, specify these additional settings:

Record: Select Application Summary (PD\_APP). Monitored field: Select Application Status. Condition: Select <>. Abnormal value: Enter NORMAL. Warning value: Enter NORMAL.

Alarm conditions are evaluated using AND. To monitor only the results for

**Application Status** without specifying an instance, specify only **Application Status**, ↔, and NORMAL.

#### (b) Monitoring the startup status of a process containing arguments

The following explains settings for monitoring whether a process containing arguments is running.

The following procedure sets an abnormal alarm to be reported when the following process containing arguments stops.

Table 4-5: Example of starting the process with arguments

Program name	Process name
GyoumuProcess.exe	GyoumuProcess -a 1

To monitor the startup status of a process containing arguments:

1. Set the instance name for ADD AN APPLICATION MONITORING SETTING in the ADDITION OR DELETION A SETTING tree as follows:

AudioSrv Monitor

2. Set the GyoumuProcess Monitor property generated in the Application monitoring settings tree as follows:

```
Process01 Kind: Select Command Line.
Process01 Name: Enter AudioSrv (the service name).
Process01 Range: Enter 1-1.
```

As a result of the above settings, when the process is running, the values of the Process01 Count, Process01 Status, and Application Status fields in the PD\_APP record are displayed as follows in the report.

Field name	Value
Process01 Count	1#1
Process01 Status	NORMAL <sup>#2</sup>
Application Status	NORMAL <sup>#2</sup>

#1

This indicates the number of corresponding processes running.

#2

This indicates that there is no issue.

3. Specify alarm settings as follows: Record: Select Application Summary (PD\_APP). Monitored field: Select Application Name. Condition: Select =. Abnormal value: Enter AudioSrv Monitor (the instance name set in step 1). Warning value: Enter AudioSrv Monitor (the instance name set in step 1).

After specifying the above settings and clicking the **Add** button, specify these additional settings:

```
Record: Select Application Summary (PD_APP).
Monitored field: Select Application Status.
Condition: Select <>.
Abnormal value: Enter NORMAL.
Warning value: Enter NORMAL.
```

Alarm conditions are evaluated using AND. To monitor only the results for **Application Status** without specifying an instance, specify only **Application Status**,  $\Leftrightarrow$ , and NORMAL.

## (c) Monitoring whether multiple processes are all running

The following explains settings for monitoring whether monitored processes are all running.

The following procedure sets an abnormal alarm to be reported when at least one of the following five processes has stopped, but not to be reported when they are all running.

Program name	Process name
GyoumuProcess1.exe	GyoumuProcess1
GyoumuProcess2.exe	GyoumuProcess2
GyoumuProcess3.exe	GyoumuProcess3
GyoumuProcess4.exe	GyoumuProcess4
GyoumuProcess5.exe	GyoumuProcess5

Table 4-7: Example of startup for five processes

To monitor whether multiple processes are all running:

1. Set the instance name for ADD AN APPLICATION MONITORING SETTING in the ADDITION OR DELETION A SETTING tree as follows:

GyoumuProcess Monitor

2. Set the GyoumuProcess Monitor property generated in the **Application monitoring settings** tree as follows:

Process01 Kind: Select Execute. Process01 Name: Enter GyoumuProcess\*.<sup>#</sup> Process01 Range: Enter 1-5.

#

The wildcard character \* is used for the process number. The wildcard character ? can also be used, in place of a single character.

As a result of the above settings, when the five processes are running, the values of the Process01 Count, Process01 Status, and Application Status fields in the PD\_APP record are displayed as follows in the report.

Table 4-8: Results for the values of each field in the PD APP record

Field name	Value
Process01 Count	5 <sup>#1</sup>
Process01 Status	NORMAL <sup>#2</sup>
Application Status	NORMAL <sup>#2</sup>

#1

This indicates the number of corresponding processes running.

#2

This indicates that there is no issue.

3. Specify alarm settings as follows:

```
Record: Select Application Summary (PD_APP).
Monitored field: Select Process01 Count.
Condition: Select <.
Abnormal value: Enter 5.
Warning value: Enter 5.
```

If all five processes are running, no alarm is reported. An alarm is reported when at least one process stops. Since alarm conditions are evaluated using AND, an abnormal

alarm cannot be set to report for a running process count other than from 1 to 5.

## (d) Monitoring whether a given process is running when there are multiple processes for which the first 31 bytes of the names are the same

The following explains settings for monitoring whether a given process is running when there are multiple processes for which the first 31 bytes of the names are the same.

The following procedure sets an abnormal alarm to be reported when either of the following two processes is running and multiple

1234567890123456789012345678901A processes are started or stopped.

*Table 4-9:* Example of processes running for which the first 31 bytes of the names are the same

Program name	Process name
1234567890123456789012345678901A.exe	1234567890123456789012345678901A
1234567890123456789012345678901B.exe	1234567890123456789012345678901B

To monitor whether a given process is running:

1. Set the instance name for ADD AN APPLICATION MONITORING SETTING in the ADDITION OR DELETION A SETTING tree as follows:

Long Name Process Monitor

2. Set the Long Name Process Monitor property generated in the Application monitoring settings tree as follows:

```
Process01 Kind: Select Execute.
Process01 Name: Enter 1234567890123456789012345678901A.
Process01 Range: Enter 1-1.
```

As a result of the above settings, when only one

1234567890123456789012345678901A process is running, the values of the Process01 Count, Process01 Status, and Application Status fields in the PD APP record are displayed as follows in the report.

Field name	Value
Process01 Count	1 <sup>#1</sup>
Process01 Status	NORMAL <sup>#2</sup>
Application Status	NORMAL <sup>#2</sup>

Table 4-10: Results for the values of each field in the PD\_APP record

#1

This indicates the number of corresponding processes running.

#2

This indicates that there is no issue.

3. Specify alarm settings as follows:

```
Record: Select Application Summary (PD_APP).
Monitored field: Select Application Name.
Condition: Select =.
Abnormal value: Enter Long Name Process Monitor (the instance
name set in step 1).
Warning value: Enter Long Name Process Monitor (the instance
name set in step 1).
```

After specifying the above settings and clicking the **Add** button, specify these additional settings:

Record: Select Application Summary (PD\_APP). Monitored field: Select Application Status. Condition: Select <>. Abnormal value: Enter NORMAL. Warning value: Enter NORMAL.

In addition to the above monitoring, to monitor the

1234567890123456789012345678901B process using a monitoring method other than what has already been used, use an instance name different than the one above, and add the instance name to the condition in the Application Name field of the alarm setting.

### (e) Monitoring whether a process in the global zone environment is running when PFM - Agent for Platform is installed in a Solaris global zone environment

The following explains settings for monitoring whether a process is running in a monitored global zone.

When the following process is running in both of the global zone environment and a non-global zone environment, the following procedure sets an abnormal alarm to be reported when multiple processes are running or stopped in the global zone.

Table 4-11: Example of the process running in the global zone environment

Program name	Process name
GyoumuProcess.exe	GyoumuProcess

To monitor whether a process in the global zone environment is running:

- Set the following for ALL Zone Collection for Process in the Agent Configuration tree. Yes
- 2. Set the instance name for ADD AN APPLICATION MONITORING SETTING in the ADDITION OR DELETION A SETTING tree. Then, specify as follows for ADD AN APPLICATION MONITORING SETTING FOR VIRTUAL ENVIRONMENT:

ADD AN APPLICATION MONITORING SETTING:Global Zone Process Monitor ADD AN APPLICATION MONITORING SETTING FOR VIRTUAL ENVIRONMENT:0

- 3. Click the **OK** button.
- 4. Set the Global Zone Process Monitor, Virt ID = 0 property generated in the **Application monitoring setting** tree as follows:

```
Process01 Kind: Select Execute.
Process01 Name: Enter GyoumuProcess.
Process01 Range: Enter 1-1.
```

As a result of the above settings, when only one GyoumuProcess process is running, the values of the Process01 Count, Process01 Status, and Application Status fields in the PD APP record are displayed as follows.

Field name	Value
Process01 Count	1 <sup>#1</sup>
Process01 Status	NORMAL <sup>#2</sup>
Application Status	NORMAL <sup>#2</sup>

#1

This indicates the number of corresponding processes running.

#2

This indicates that there is no issue.

5. In the navigation frame of the Main window, click the Alarms tab.

The Alarm Tree window appears.

- 6. Expand the contents of the UNIX folder to display the existing alarm tables.
- 7. Select **New Alarm Table** in the method frame, and create an alarm table. Set the following basic information in the new alarm table:

```
Product: Select UNIX(7.6).
Alarm table name: Enter AlarmTable1.
Alarm name: Enter GyoumuProcess Alarm.
```

- 8. Click the Next button.
- 9. Specify alarm settings as follows:

```
Record: Select Application Summary (PD_APP).
Monitored field: Select Application Name.
Condition: Select =.
Abnormal value: Enter Global Zone Process Monitor (the
instance name set in step 2).
Warning value: Enter Global Zone Process Monitor (the
instance name set in step 2).
```

After specifying the above settings and clicking the **Add** button, specify these additional settings:

Record: Select Application Summary (PD\_APP). Monitored field: Select Application Status. Condition: Select <>. Abnormal value: Enter NORMAL. Warning value: Enter NORMAL.

## 4.2.3 Settings for collecting user-specific performance data

This section provides an overview of the function that collects user-specific performance data, and explains how to set up the function.

## (1) Function overview

The following explains functionality for collecting user-specific performance data and functionality for periodically executing user commands.

## (a) Functionality for collecting user-specific performance data

This functionality uses the jpcuser command to convert custom performance data output by users to a text file, into a format that can be stored in records provided by PFM - Agent for Platform (PD\_UPD, PD\_UPDB, PI\_UPI, and PI\_UPIB). To use this functionality for collecting user-specific performance data, a command must be created to output performance data to text files ahead of time.

The following figure shows how user-specific performance data is collected.

Figure 4-2: Mechanism for collecting user-specific performance data



The following describes the processing corresponding to the numbers in the figure.

1. User commands are executed to create user-defined data.

The *user commands* collect performance data, such as process name, process ID, and number of processes, and output the collected data to a text file. The data in the text file is called *user-created data*.

The user commands must be created as scripts beforehand.

2. The jpcuser command is executed to convert the user-created data.

The jpcuser command converts the user-created data into a file in a format that can be managed by PFM - Agent for Platform. The file resulting from the conversion is called a *user data file*.

3. The contents of the user data file are saved in user-defined records every time PFM - Agent for Platform performs record collection.

PFM - Web Console must be set beforehand so that PFM - Agent for Platform collects the records from the user data file.

To collect performance data periodically, use the functionality for periodically executing user commands to set a user command, and the jpcuser command, to execute automatically.

Note:

When outputting a file specified for the jpcuser command argument, or file in a batch file or script that executes the jpcuser command, specify a directory other than the installation directory.

#### (b) Functionality for periodically executing user commands

This functionality executes a user command from PFM - Agent for Platform at a fixed interval without using a schedule functionality such as the cron command. The method for creating user data files from user commands is the same as described in (a) *Functionality for collecting user-specific performance data*.

Functionality for periodically executing user commands is executed using the same timing as record collection in PFM - Agent for Platform. Once record collection processing is completed, a user data file is created by a user command, so that user data file collection processing and creation processing do not cause a race condition. Note that since functionality for periodically executing user commands is executed according to Collection Interval as set for the user record, it is executed for historical collection and alarm collection, but not for real-time collection. The following figure shows the flow of processing for functionality for periodically executing user commands.

*Figure 4-3:* Flow of processing for functionality for periodically executing user commands


Functionality for periodically executing user commands determines whether the previously started user command has terminated, and skips user command processing if it is executing.

Reference note:

For versions of PFM - Web Console earlier than 09-00, functionality for periodically executing user commands cannot batch distribute properties to more than one PFM - Agent.

# (c) Precautions regarding functionality for periodically executing user commands

The following gives precautions about functionality for periodically executing user commands.

#### Executable files

The file formats that can be executed by functionality for periodically executing user commands are as follows:

- Executable file<sup>#</sup>
- Shell script file<sup>#</sup>

#

The execution attribute must be added.

#### Accounts

Use the root user permission account to execute functionality for periodically executing user commands. Make sure that the root user permission account can access the following files and resources:

- Files (user commands) specified for functionality for periodically executing user commands
- Resources referenced or updated from those files (user commands)

To execute a file in the NFS mount directory, make sure that the root user permission for the host account can access the file.

Environment variables

The environment variables valid for executing functionality for periodically executing user commands are the root-user permission environment variables defined when the Performance Management program service starts up. Profile information is not loaded when functionality for periodically executing user commands is executed.

Current directory

#### 4. User-Defined Record Collection

The PFM - Agent for Platform service directory (/opt/jplpc/agtu/agent) is used as the current directory for executing functionality for periodically executing user commands.

#### File umask

The umask value for using functionality for periodically executing user commands is set to 000 (file permission is set to 777). To change the umask value , set umask again in the script file or program to be executed.

#### Other precautions

- Programs that require interactivity cannot be executed.
- Programs containing the stty, tty, tset, or script command that requires an interactive environment cannot be executed.
- Resident programs (programs that do not terminate) cannot be executed.
- Programs without the execution attribute added cannot be executed.
- Do not set up programs on removable disks or other disks that cannot be set up.
- The contents of the standard output and standard error output cannot be obtained for executed programs.
- When performing file output from an executed program, use an absolute path to specify the output destination file. If an absolute path is not specified, the directory for the PFM Agent for Platform service (/opt/jplpc/agtu/agent) is used as the current directory.

## (2) Setting procedure

To collect user-specific performance data:

- 1. Determine the information to be stored in fields.
- 2. Create user commands.
- 3. Set the scheduler to collect user-specific performance data periodically.
- 4. Specify the settings for collecting information from the user data file.

The following subsections describe the steps in this procedure.

#### (a) Determining the information to be stored in fields

The fields of a user-defined record store two types of information, key information and data information. You will need to consider what to store as key information and what to store as data information.

#### Key information

A user-defined record for storing user-specific performance data is a multi-instance



record in which one or more rows can be stored by one collection run. To identify each record instance in one user-defined record, key information must be set. If you specify multiple user-created data files in the jpcuser command, you must set key information that uniquely identifies each record instance across all of the specified files. The following table shows the types of key information.

Туре	Field name	Explanation
Transaction type	Trans Type	Identifies the instance type.
Transaction key	Trans Data Key (numeric type)	Identifies each of the instances that have the same transaction type.
	Trans String Key (string type)	

Table 4-13: Types of key information

The transaction type is used to identify the type of the performance data. For example, assume that information about a database is stored in one record and information about a Web server is stored in another record. In this case, you can use DATABASE and WEB as transaction types to indicate which type of information (information about a database or information about a Web server) is stored.

When there are multiple instances that have the same transaction type, the transaction key is used to identify each instance. If neither the Trans Data Key field nor the Trans String Key field is set, or the same value is set for multiple transaction keys, the record instances cannot be identified uniquely. As a result, the first record instance is used.

## Data information

As data information, user-defined records can store three types of numeric data (double, long, and ulong types), three lengths of string data, and time data. The number of data items that can be stored differs depending on the user-defined record. For numeric data of the PI record type, either *average* or *cumulative* can be selected as the consolidation rule.

Select the user-defined record to be used based on the performance data to be collected. Note that a user-defined record that can store a larger amount of information consumes a larger amount of memory and other resources. We recommend that you select the user-defined record whose size is the minimum necessary.

The following table shows the number of fields for each type of user-defined record.

Record type	User-defined record type	Number of fields			
		Numeric data	String data	Time data	
PD record type	User Data Detail (PD_UPD)	$2 \times 3 = 6$	1 + 2 + 4 = 7	1	
	User Data Detail - Extended (PD_UPDB)	5 x 3 = 15	5 + 5 + 5 = 15	1	
PI record type	User Data Interval (PI_UPI)	4 x 3 = 12	1 + 2 + 4 = 7	1	
	User Data Interval - Extended (PI_UPIB)	$10 \times 3 = 30$	5 + 5 + 5 = 15	1	

*Table 4-14:* Number of fields for each type of user-defined record

The following table shows the criteria for selecting the recommended user-defined record.

Will cumulative data be stored as the performance data?	Will many types of performance data be stored?	Recommended user-defined record	
Yes	No	PI_UPI	
Yes	Yes	PI_UPIB	
No	No	PD_UPD	
No	Yes	PD_UPDB	

*Table 4-15:* Criteria for selecting the recommended user-defined record

#### (b) Creating user commands

User commands are scripts that are used to collect performance data to generate user-created data. You must code the scripts so that performance data is output in the format used for user-created data files.

For details about the format of user-created data files, see (5) Format of user-created data files.

To verify the user-created data output by the user commands, execute the jpcuser command in the following format:

/opt/jp1pc/agtu/agent/jpcuser/jpcuser PI\_UPI -file
user-created-data -debug 1

When the command is executed, the following debug log file is generated: /opt/jplpc/agtu/agent/jpcuser/debug/jpcuser\_dbg\_01.log

Use the debug log file to check for errors.

For details about the jpcuser command, see (4) Format of the jpcuser command.

## (c) Setting a scheduler to collect user-defined performance data periodically

The following explains how to set up the functionality for periodically executing user commands, to periodically collect user-specific performance data.

To periodically collect user-specific performance data.

1. Set up user record collection in PFM - Web Console.

The execution interval for functionality for periodically executing user commands depends on the Collection Interval setting for each user record.

2. Set the properties for functionality for periodically executing user commands in PFM - Web Console.

In PFM - Web Console, set the following properties for each user record to run functionality for periodically executing user commands. The method for setting these properties is the same for PD\_UPD, PD\_UPDB, PI\_UPI, and PI\_UPIB records.

*Figure 4-4:* Properties for functionality for periodically executing user commands

### Service propertyes

PFM-Agent
- General
- System
- Network Services
- Detail Records
- Interval Records
- Log Records
- Agent Configuration
- Application monitoring setting
- ADDITION OR DELETION A SETTING
- User Command Setting/
- PD_UPD
- PD_UPDB
- PI_UPI
- PI_UPIB

Property	Value	Description	Default value
Execute	Yes/No	<ul> <li>Specify whether to use functionality for periodically executing user commands.</li> <li>Yes: Use the functionality</li> <li>No: Do not use the functionality</li> </ul>	No
UserCommand	Absolute path	Specify the absolute path for user commands. The maximum length of the string that can be specified for an absolute path is 255 bytes. Alphanumeric characters and symbols except for the following characters can be specified:	Blank

Table 4-16: Setting properties for user records

#### #1

When the Execute property is set to Yes and the UserCommand property is blank, the KAVF10203-W message is output, and the user command is not executed.

#2

If the specified user command does not exist, or the user command does not have execution permissions, the KAVF10013-W message is output.

#### Reference note:

The UNIX cron command can be used to periodically collect user-specific performance data. UNIX provides the cron command, which can automatically execute a batch file or program at the specified time and interval. After creating a shell script that executes the user commands and then the jpcuser command, set the cron command so that the shell script is executed periodically.

#### (d) Specifying the settings for collecting information from the user data file

The user data file contains data that the jpcuser command has converted from user-created data into a record format that can be managed by PFM - Agent for Platform. The data in the user data file is stored in user-defined records every time PFM - Agent for Platform collects records. Make sure that PFM - Web Console is set so that PFM - Agent for Platform will collect user-defined records.

For details about how to collect records, see the chapter on Performance Management functionality in the manual *Job Management Partner 1/Performance Management Planning and Configuration Guide*.

#### (3) Example of collecting user-specific performance data

This subsection provides an example of collecting process information under the conditions shown in the following table.

Option	Explanation	Corresponding field	Value
tt	Transaction type	Trans Type	TotalMemory
ki	Transaction key (numeric type)	Trans Data Key	Process ID
SS	Short string	User String 1	Process name
u	Unsigned long type	User Unsigned Long 1	Amount of memory in use

*Table 4-17*: Conditions for collecting performance data in the example

#### (a) Examples of user commands

The following are examples of user commands (userapplication\_script and userdata\_script) that acquire process information from UNIX and output user-created data.

```
userapplication_script:
#!/bin/ksh
echo "Product Name=PFM-Agent for Platform (UNIX)"
echo "FormVer=0001"
echo "tt ki ss u"
ps -eo pid,comm,vsz,rss | grep jpcagtu | awk '{
printf("TotalMemory %d %s %d\n",$1,$2,$3+$4);}'
```

userdata\_script: #!/bin/ksh echo "Product Name=PFM-Agent for Platform (UNIX)" echo "FormVer=0001 "echo "tt ks u u" df -k |grep pshp02 |awk '{ printf("RemoteDisk %s %d %d\n",\$6,\$3,\$4);}'

The following are examples of user-created data output by the user commands above.

```
Example of user-created data output by userapplication_script:

Product Name=PFM-Agent for Platform (UNIX)

FormVer=0001

tt ki ss u

TotalMemory 0 COMMAND 0

TotalMemory 0 sched 0

TotalMemory 1 /etc/init 1584

TotalMemory 2 pageout 0

TotalMemory 3 fsflush 0
```

```
TotalMemory 442 /usr/lib/saf/sac 2808
...
Example of user-created data output by userdata_script:
Product Name=PFM-Agent for Platform (UNIX)
FormVer=0001
tt ks u u
RemoteDisk /home1/jp1ps 67318256 4473056
RemoteDisk /home2/jp1ps 43867064 27738672
...
```

#### Reference note:

- For an example of collecting information about used ports, see 1.3.2(6) *Example of collecting information about used ports*.
- For an example of collecting performance data from multiple hosts for which PFM product is not installed, see 1.3.2(7) Example of collecting performance data from multiple hosts on which PFM products are not installed.

## (b) Example of a shell script used to perform periodic collection

The following gives an example of a shell script (UserDefinedData.sh) for using functionality for periodically executing user commands.

```
# Delete old user-created data.
rm -Rf /opt/perfdata.txt /opt/userdata.txt
# Generate user-created data.
/opt/userapplication_script >> /opt/perfdata.txt
/opt/userdata_script >> /opt/userdata.txt
# Use the jpcuser command to convert the data.
/opt/jplpc/agtu/agent/jpcuser/jpcuser PD_UPD -file /opt/
perfdata.txt -file /opt/userdata.txt<sup>#</sup>
```

#: If -debug 2 is specified, debug log information is output to the following directory: /opt/jplpc/agtu/agent/jpcuser/debug/

#### Reference note:

The following example sets the shell script to be executed at every one minute using the UNIX cron command.

```
* * * * * /opt/UserDefinedData.sh
```

#### (4) Format of the jpcuser command

The following describes the format of the jpcuser command.

Format:

jpcuser record-name

-file user-created-data-file-name
[-file user-created-data-file-name]...
[-debug [0|1|2]]

*Note:* Square brackets ([]) indicate optional items. A vertical bar (|) has the same meaning as OR. Accordingly, only one of the options separated by a vertical bar can be used at a time.

Description:

The jpcuser command converts user-created data (user-specific performance data output by user commands) into data in a format that PFM - Agent for Platform can use (user data file).

The command can also output debug log information that can be used for checking whether the user-created data is correct. For details about the debug log, see (6) Debug log.

If an error occurs during execution of this command, an error message is output to the following folder: /opt/jplpc/agtu/agent/jpcuser/log/public/.

Users who can execute the command:

Users logged in as root

Location of the command:

/opt/jp1pc/agtu/agent/jpcuser/

#### Arguments:

The first argument in the command line must be *record-name*. The -debug option can be specified before or after -file options. The arguments that are always required on the command line are *record-name* and a -file option. The -debug option can be omitted.

#### record-name

Specify the name of the user-defined record in which performance data is to be stored. You can specify only one of the following names:

- PD\_UPD
- PD\_UPDB
- PI\_UPI
- PI\_UPIB
- -file user-created-data-file-name

Specify the name of a user-created data file whose length is no more than

1023 bytes. Use multiple -file options to specify multiple user-created data files. When multiple user-created data files are specified, the command creates one user data file from the user-created data files.

Wildcard characters cannot be used in the file name specified in the -file option.

You can specify a file name by using a relative path name from the current directory, which is the directory in which the command is executed.

If a warning occurs in one or more files when multiple user-created data files are specified, the command returns a value that indicates normal termination with a warning. If an error occurs in at least one file, the command returns a value that indicates abnormal termination or the occurrence of an error.

-debug [0|1|2]

Use this option to specify whether to output only the user data file, only the output debug log information, or both. You can use this option to check whether the user-created data was correct. You can specify only one -debug option in the command.

When -debug 1 is specified, the command performs only debugging. If you want to create user-defined records, specify the -debug option with a value other than 1.

If an error message is output to the debug log, an error might exist in the user command scripts.

If this option is not specified, the command does not output debug log information.

The following table explains the values that can be specified in the -debug option.

Value	User data file output?	Debug log file output?	
0	Yes	No	
1	No	Yes	
2	Yes	Yes	
Other values	Yes	No	
No value specified	Yes	No	

Table 4-18: Values specified for the debug option

Legend:

Yes: The file is output.

No: The file is not output.

The user data file is created with the name jpcuser\_XXX in the /opt/jplpc/agtu/agent/jpcuser/userdata directory. The XXX part represents the record type (UPD, UPDB, UPI, or UPIB).

The debug log is created with the name jpcuser\_dbg\_XX.log in the / opt/jplpc/agtu/agent/jpcuser/debug directory. The XX part is a two-digit number that indicates how new the log file is. The following table explains the naming rule for debug log files.

Table 4-19: Example of debug log output

Debug log file name	Explanation
jpcuser_dbg_01.log	The latest debug log file
jpcuser_dbg_02.log	The second latest debug log file
jpcuser_dbg_03.log	The third latest debug log file

Return value:

0	Normal termination
1 to 100	Normal termination with a warning
101 to 255	Abnormal termination or the occurrence of an error

#### (5) Format of user-created data files

This subsection describes the format of user-created data files. For user commands collecting performance data, output text according to this format.

Information output to a user-created data file consists of a product information section and a data section. Both of these sections must be present in each user-created data file. The following figure gives an example configuration of user-created data. Figure 4-5: Example configuration of user-created data



#### (a) Product information section

The product information section contains the constants that indicate the product name and the version of the user-created data file. The information set in this section is used only by internal functions and is not stored in records.

The following is an example of information set in this section: Product Name=PFM-Agent for Platform (UNIX) FormVer=0001

Note:

In the above specification method, an error will occur if there is a space before or after the equal sign (=). Note that the specified characters are case sensitive.

#### (b) Data section

This section sets performance data information. This information is specified below the product information section. The data section consists of the option header and a data part.

#### Option header

The first line is the option header line, which contains the specified field options. Each option must be separated by using one or more space characters or tabs. The field options correspond to user record fields.

tt ks ki l ...

The following table lists option names and corresponding record field names. Each of the columns for number of fields indicates the maximum number of options that can be specified. For example, if ss is specified multiple times for the field option in a PI\_UPI record, note that the PI\_UPI column (No. 10) indicates 4. Accordingly, you can specify ss a maximum of four times, such as ss ss ss, for the PI\_UPI record.

Table	<i>4-20</i> :	Options that	can be specifie	d in the dat	ta section and the	
corres	pondin	g fields				

No.	Option name	Field name	Value explanation	Nu	Imber of	fields (to	tal)
				PD_U PD (17)	PD_U PDB (34)	PI_U PI (23)	PI_U PIB (49)
1	tt	Trans Type	Transaction type. This option is a required item. <sup>#1</sup> Size: 1 to 19 bytes	1	1	1	1
2	ki	Trans Data Key	Numeric-type transaction key. Either ki or ks, or both, must be specified. Type: ulong Specifiable characters: Numeric values and a plus sign (+)	1	1	1	1
3	ks	Trans String Key	String-type transaction key. Either ki or ks, or both, must be specified. <sup>#1</sup> Size: 1 to 19 bytes	1	1	1	1
4	f	User Float	Floating point number. <sup>#2</sup> Type: double	2	5	2	5
5	fr#3	User Float Roll	Floating point number for a cumulative value <sup>#2</sup> Type: double			2	5
6	1	User Long	Signed long data. Type: long Specifiable characters: Numeric values and signs (+, -)	2	5	2	5
7	lr <sup>#3</sup>	User Long Roll	Signed long data for a cumulative value. Type: long Specifiable characters: Numeric values and signs (+, -)			2	5
8	sl	User String(64 )	Long string. <sup>#1</sup> Size: 1 to 63 bytes + NULL	1	5	1	5
9	sm	User String(32 )	Medium string. <sup>#1</sup> Size: 1 to 31 bytes + NULL	2	5	2	5

No.	Option name	Field name	Value explanation	Nu	Number of fields (total)		al)
				PD_U PD (17)	PD_U PDB (34)	PI_U PI (23)	PI_U PIB (49)
10	55	User String(16 )	Short string. <sup>#1</sup> Size: 1 to 15 bytes + NULL	4	5	4	5
11	t	User Time	Time data (time_t type) in the following format: <i>YYYY/MM/DD</i> , <i>hh</i> : <i>mm</i> : <i>ss</i> The time must be the local time of the machine on which the jpcuser command is executed.	1	1	1	1
12	u	User Unsigned Long	Unsigned long data. Type: ulong Specifiable characters: Numeric values and a plus sign (+)	2	5	2	5
13	ur <sup>#3</sup>	User Unsigned Long Roll	Unsigned long data for a cumulative value. Type: ulong Specifiable characters: Numeric values and a plus sign (+)			2	5

#### Legend:

--: Not specifiable.

#### #1

The characters that can be specified are upper-case and lower-case alphabetic characters, numeric characters, space characters, and the following symbols:

`~!@#\$%^&\*()\_+-={}:;<>,.?/|\[]

#### #2

The characters that can be specified are numeric values and the following symbols:

- + .

#3

When history data collected by specifying the fr, lr, or ur option is displayed in consolidation mode, the cumulative value is displayed. When a numeric-value option other than these options or the ki option is specified, the average value is displayed.

Note that if multiple field options are specified for user-created data, they are allocated sequentially to the target field of the user record.

For example, if lr is specified 3 times for the field option of the PI\_UPIB record, this is specified as lr lr lr. In this case, each lr is allocated to its field as follows:

- First lr: User Long Roll 1
- Second lr: User Long Roll 2
- Third lr: User Long Roll 3

If sllr sllr lr is specified, it is allocated to the following fields:

- First s1: User String 11
- Second lr: User Long Roll 1
- Third s1: User String 12
- Fourth 1r: User Long Roll 2
- Fifth 1r: User Long Roll 3

## Data

The second and subsequent lines are for data. Data lines specify the performance data, corresponding to the field options specified in the optional header. Each column is separated by 1 or more bytes of spaces or tabs.

Make sure that the order of the data matches the field option type.

For example, if tt ks lr lr ss ss is specified for the field option, an error will occur for all lines for the following data order:

```
TCP jplhost "ESTABLISHD COUNT=" 5 "LISTENING COUNT=" 2
TCP jplhost "ESTABLISHD COUNT=" 3 "LISTENING COUNT=" 1
TCP jplhost "ESTABLISHD COUNT=" 3 "LISTENING COUNT=" 2
```

The reason this error occurs is because the field options for the third and sixth columns do not match the data types.

• Third column

The string "ESTABLISHD COUNT=" is specified for the lr field option, even though a cumulative long integer value should be specified.

• Sixth column

The integer values 2, 1, 2 are specified for the ss field option, even though a string of size 16 should be specified.

## (c) Precautions

• Create user-created data files in ASCII.

- Each data line in this file must be terminated with a carriage return character and line feed character (CR+LF).
- Comments cannot be specified in user-created data files.
- An error will occur if any of the first three lines of a user-created data file are empty or contain a space character.
- Any empty lines or lines that contain a space character are disregarded for the fourth and subsequent lines of a user-created data file.
- When entering a string with a space character, enclose the string in double quotation marks (").
- For the string type, set a single-byte string of printable alphanumeric characters. Special single-byte characters such as " cannot be set.
- One field option can be specified for definition in the optional header line for each user-created data file. To define a different field option, create another user-created data file.

#### (6) Debug log

The debug log is used to check whether the user-created data is correct. If you want to output debug log information, specify the -debug 1 or -debug 2 option in the jpcuser command.

In the debug log, a check result code, such as OK (success), NG (failure), or WG (warning), is output for each data line in the user-created data. If NG or WG is output in the debug log, the user-created data might be invalid. If NG or WG has been output, check the user commands by which the user-created data was created, and make any necessary corrections for outputting the data in the correct format. For the correct format, see (5) Format of user-created data files.

The following shows the location and name of a debug log file: /opt/jplpc/agtu/agent/jpcuser/debug/ jpcuser\_dbg\_{01|02|03|04|05}.log

The following describes the debug log file format.

#### (a) Debug log file format

A debug log file consists of four sections:

- Product information
- The execution time and process ID of the jpcuser command
- Header line
- Check results

A check result is output for each data line in the user-created data. A comma is used to

# separate items.

# The following table explains the items that are output to a debug log file.

No.	Section	Item	Value	Explanation
1	Product information	Product name	Product Name=PFM-Agent for Platform (UNIX)	The PFM-Agent product name.
2		Format version	FormVer=0001	The version of the user-created data format.
3	Execution time and process ID of the jpcuser command	Execution time	YYYY/MM/DD hh:mm:ss	YYYY: Year MM: Month DD: Day hh: Hour mm: Minute ss: Second
4		Process ID	PID=XXXX	The process ID of the jpcuser command.
5	Header line	Header	Example (for the PD_UPD record): LineNumber, Result, APITime, Recordtype, Transactiontype, t, ks, ki, L1, L2, UL1, UL2, F1, F2, SS1, SS2, SS3, SS4, SM1, SM2, SL1	The debug log header. The header names correspond to the field options and field names specified on the option header line in a user-created data file. For the correspondence, see Table 4-12. Note that the header items differ depending on the user-defined records that are to be stored.
6	Check result	User-created data file name	Example: File=/opt/jp1pc/agtu/agent/ jpcuser/sample_01.txt	The user-specified path name of a user-created data file that is read is output.
7		Error or warning message	KAVF <i>xxxxx-x</i>	If an error or other problem that the user should be made aware of occurs on a line in the user-created data, the applicable error and warning messages are output at the beginning of the line.
8		Line number	Numeric value	The number of a line in the user-created data.

# Table 4-21: Items that are output to a debug log file

No.	Section	ltem	Value	Explanation
9		Result code	ок	Success. The line in the user-created data was free of problems and was converted successfully.
10			WG	Warning. The line in the user-created data contained a problem but was converted nevertheless. When wg is output, a warning message is also output.
11			NG	Failure. The line in the user-created data contained a problem and was not converted. When NG is output, a warning message or error message, depending on the cause of the problem, is also output. If a warning message is output, processing continues. If an error message is output, processing stops.
12			BL	Null line. The line in the user-created data is empty and is ignored.
13		Data	Data	The contents of the line in the user-created data. For an empty numeric field, 0 is output. For an empty string field, two quotation marks ("") are output.

The following table lists the items output on the header line in a debug log file and their corresponding field options and field names specified on the option header line in a user-created data file.

No.	Item on the header line in a debug log file	Field option specified on the option header line in a user-created data file	Field name (PFM - View name)	Explanation
1	Line Number			Number of the line on which the relevant data exists
2	Result			Check result of the relevant data
3	API Time		Collect Time	Time that the relevant data was converted
4	Record type		Record Type	Record type
5	Transaction type	tt	Trans Type	Transaction type
6	t	t	User Time 1	Time value
7	ks	ks	Trans String Key	String-type transaction key
8	ki	ki	Trans Data Key	Numeric-type transaction key
9	L1	1	User Long 1	Integer value of type
10	L2	1	User Long 2	Integer value of type
11	L3	1	User Long 3	Integer value of type
12	L4	1	User Long 4	Integer value of type
13	L5	1	User Long 5	Integer value of type
14	L1R	lr	User Long Roll 1	Cumulative integer value of type long
15	L2R	lr	User Long Roll 2	Cumulative integer value of type long

*Table 4-22:* Header line items in a debug log file and their corresponding field options and field names

No.	Item on the header line in a debug log file	Field option specified on the option header line in a user-created data file	Field name (PFM - View name)	Explanation
16	L3R	lr	User Long Roll 3	Cumulative integer value of type long
17	L4R	lr	User Long Roll 4	Cumulative integer value of type long
18	L5R	lr	User Long Roll 5	Cumulative integer value of type long
19	UL1	u	User Unsigned Long 1	Integer value of type unsigned long
20	UL2	u	User Unsigned Long 2	Integer value of type unsigned long
21	UL3	u	User Unsigned Long 3	Integer value of type unsigned long
22	UL4	u	User Unsigned Long 4	Integer value of type unsigned long
23	UL5	u	User Unsigned Long 5	Integer value of type unsigned long
24	UL1R	ur	User Unsigned Long Roll 1	Cumulative integer value of type unsigned long
25	UL2R	ur	User Unsigned Long Roll 2	Cumulative integer value of type unsigned long
26	UL3R	ur	User Unsigned Long Roll 3	Cumulative integer value of type unsigned long
27	UL4R	ur	User Unsigned Long Roll 4	Cumulative integer value of type unsigned long
28	UL5R	ur	User Unsigned Long Roll 5	Cumulative integer value of type unsigned long
29	Fl	f	User Float 1	Floating point number value

No.	Item on the header line in a debug log file	Field option specified on the option header line in a user-created data file	Field name (PFM - View name)	Explanation
30	F2	f	User Float 2	Floating point number value
31	F3	f	User Float 3	Floating point number value
32	F4	f	User Float 4	Floating point number value
33	F5	f	User Float 5	Floating point number value
34	F1R	fr	User Float Roll 1	Cumulative floating point number value
35	F2R	fr	User Float Roll 2	Cumulative floating point number value
36	F3R	fr	User Float Roll 3	Cumulative floating point number value
37	F4R	fr	User Float Roll 4	Cumulative floating point number value
38	F5R	fr	User Float Roll 5	Cumulative floating point number value
39	SS1	SS	User String 1	16-byte character string
40	SS2	SS	User String 2	16-byte character string
41	SS3	SS	User String 3	16-byte character string
42	SS4	SS	User String 4	16-byte character string
43	SS5	SS	User String 5	16-byte character string
44	SM1	sm	User String 5 (for the PD_UPD or PI_UPI record) User String 6 (for the PD_UPDB or PI_UPIB record)	32-byte character string

No.	ltem on the header line in a debug log file	Field option specified on the option header line in a user-created data file	Field name (PFM - View name)	Explanation
45	SM2	sm	User String 6 (for the PD_UPD or PI_UPI record) User String 7 for the (PD_UPDB or PI_UPIB record)	32-byte character string
46	SM3	sm	User String 8	32-byte character string
47	SM4	sm	User String 9	32-byte character string
48	SM5	sm	User String 10	32-byte character string
49	SL1	sl	User String 7 (for the PD_UPD or PI_UPI record) User String 11 (for the PD_UPDB or PI_UPIB record)	64-byte character string
50	SL2	sl	User String 12	64-byte character string
51	SL3	sl	User String 13	64-byte character string
52	SL4	sl	User String 14	64-byte character string
53	SL5	sl	User String 15	64-byte character string

Legend:

--: Not applicable

# (b) Example of information output to a debug log file

The following figure shows an example of information output to a debug log file.

```
Figure 4-6: Example of information output to a debug log file
```

```
#Date=Sat Feb 24 16:00:41 2007
#PID=29714
                  ****
               Line Number, Result, API Time, Record type, Transaction type,
t, ks, ki, L1, L2, L3, L4, L5, L1R, L2R, L3R, L4R, L5R, UL1,
UL2, UL3, UL4, UL5, UL1R, UL2R, UL3R, UL4R, UL5R, F1, F2, F3,
F4, F5, F1R, F2R, F3R, F4R, F5R, S1, S52, S53, S54, S55, SM1,
                                                                                               (1) Header line
               SM2, SM3, SM4, SM5, SL1, SL2, SL3, SL4, SL5
               File=/opt/jp1pc/agtu/agent/jpcuser/sample_01.txt
                                                                                               (2) File name 1
Check result
                 •
               •4,0K,Sat Feb 24 16:00:41 2007,PI_UPIB,TT,Sat Feb 24 10:09:56
 Line No.
               (3) Check result for line
                                                                                                   4 in file name 1 (OK)
               File=./sample_02.txt
                                                                                               (4) File name 2
               KAVF10908-W Warning: The specified value (2007/02/24,10:10:010)
for the option (t) is invalid. (filename = ./sample_02.txt)
                                                                                               (5) Warning 1 for line 4
                                                                                                   in file name 2
               KAVF10907-W Warning:
The specified value for the option is too
                                                                                               (6) Warning 2 for line 4
               long (ss = abcdefghijklmnop, filename = ./sample_02.txt)□@
                                                                                                  in file name 2
               4,WG,Sat Feb 24 16:00:41 2007,PI_UPIB,TT,n/a,
               (7) Check result for line
                                                                                                   4 in file name 2
               0,0.000000,abcdefghijklmno,,,,,,,,,,,,,
                                                                                                   (WG)
               5,BL
                                                                                               (8) Check result for
                                                                                                  lines 5 and 6 (BL)
               6,BL
               KAVF10902-W Warning: The specified value (abcdefghijklmnopqrst)
for the option (ks) is too long. (filename = ./sample 02.txt)
                                                                                               (9) Warning for line 7
                7,NG
                                                                                               (10) Check result for
               . . .
                                                                                                     line 7 (NG)
               Legend:
```

Location generating a warning

The following explanations are keyed to the numbers in parentheses in the figure.

- 1. This line is the header line.
- 2. The user-specified path name of a user-created data file loaded into the command is output.
- 3. Output of the check result for the user-created data file begins with this line. The number (4) at the beginning indicates the number of the line in the user-created

data file. In a user-created data file, the first line contains product information, the second line contains version information, and the third line is the option header line. Therefore, checking normally begins with line 4. If the line contains no problems, OK is output for Result.

- 4. The user-specified path name of another user-created data file that is read is output.
- 5. This line warns the user of a problem on line 4 in the sample\_02.txt file. Because the t value (2007/02/24,10:10:010) did not have the expected format, n/a has been output for the element corresponding to t (see (7) in the figure).
- 6. This line also warns the user of a problem on line 4 in the sample\_02.txt file. Because the specified ss value (abcdefghijklmnop) exceeded the predefined maximum of 15 bytes, a warning message has been output. and a truncated value (abcdefghijklmno) has been output for the element corresponding to SS1 (see (7) in the figure).
- 7. Because the warnings indicated by (5) and (6) have been issued, the check result code WG has been output for Result for line 4.
- 8. The check result code BL indicates that the line is a null line.
- 9. This line warns the user of a problem on line 7. A warning message has been output because the specified ks value exceeded the predefined maximum of 19 bytes.
- 10. Because the value of the ks unique key on line 7 in the user-created data file was incorrect, the value could not be used. Accordingly, NG has been output for Result. If the value of Transaction type, ks, or ki, which is a unique key, is incorrect, the line is not processed.

# Chapter 5. Monitoring Templates

This chapter explains the monitoring templates for PFM - Agent for Platform.

Overview of monitoring templates Format of alarm explanations List of alarms Format of report explanations Organization of report folders List of reports

## **Overview of monitoring templates**

In Performance Management, you can use the following methods to define alarms and reports:

- Using the alarms and reports defined in PFM Agent without any modification
- Copying and customizing the alarms and reports defined in PFM Agent
- Using the wizard to define new alarms and reports

A collection of alarms and reports provided by PFM - Agent is called a *monitoring template*. Because the necessary information is predefined for the alarms and reports in the monitoring templates, you can copy and use them without modification, or you can customize them according to the user environment. Therefore, you can easily carry out the preparation necessary for monitoring the operation status of the monitoring target without having to use the wizard to create new alarms and reports.

This chapter explains the settings of alarms and reports in the monitoring templates defined in PFM - Agent for Platform.

For details about how to use the monitoring templates, see the chapter that explains operation monitoring that uses alarms and creates reports for operation analysis in the manual *Job Management Partner 1/Performance Management User's Guide*.

### Format of alarm explanations

This section explains alarm formats. Alarms are listed in alphabetical order.

#### Alarm name

Indicates the alarm name in the monitoring template.

### Overview

Provides an overview of the target that can be monitored with this alarm.

## **Primary settings**

Explains the primary settings of this alarm using a table. This table shows the correspondence between alarm settings and the setting items in the Properties window, which is displayed by clicking the alarm icon in the Alarms window in PFM - Web Console and then clicking the **Properties** method. To check the details of each alarm setting, use the Properties window of the alarm in PFM - Web Console.

If - is set, it means that the setting is always invalid.

If an error condition and a warning condition are the same in a conditional expression, an alarm event is issued for the error condition only.

#### Alarm tables

Indicates the alarm tables in which this alarm is stored.

#### **Related report**

Indicates the monitoring template reports that are related to this alarm. To display this report, in the Agents window in PFM - Web Console, click the agent icon and then

click the sicon, which is displayed in the **Display Alarm Status** method.

## List of alarms

A table containing one or more alarms is called an *alarm table*. The alarms defined in the monitoring template of PFM - Agent for Platform are stored in the alarm tables in the UNIX folder, which is displayed on the **Alarms** tab in PFM - Web Console.

The following lists the alarm table names.

- PFM UNIX Template Alarms 09.00
- PFM UNIX Template Alarms [CPU] 09.00
- PFM UNIX Template Alarms [MEM] 09.00
- PFM UNIX Template Alarms [DSK] 09.00
- PFM UNIX Template Alarms [NET] 09.00
- PFM UNIX Template Alarms [PS] 09.00

Square brackets ([]) in an alarm table name:

The monitoring item applicable to the alarm table is enclosed in square brackets ([]). The alarm table without a square-bracket suffix consists of basic alarms.

"09.00" following the alarm table name:

This value indicates the alarm table version.

For PFM - Agent for Platform, the Alarms tree might display an alarm table of a version that is not available in the Performance Management system being used. When using an alarm table defined in the monitoring template, check the alarm table version being used by the Performance Management system and version compatibility. For details about the alarm table version and version compatibility, see *I. Version Compatibility*.

The table below shows the alarms defined in the monitoring template of PFM - Agent for Platform.

Alarm table name	Alarm name	Monitoring target
PFM UNIX Template Alarms 09.00	Disk Service Time	Average I/O operation time for a device (seconds)
	I/O Wait Time	Percentage of time during which the processor for the overall host is waiting for I/O (%).

*Table 5-1*: Alarm list

Alarm table name	Alarm name	Monitoring target
	Kernel CPU	Percentage of time during which the processor for the overall host operates in kernel mode (%).
	Pagescans	Number of page scans that occurred per second. This alarm cannot be used on Linux.
	Run Queue	Average number of threads waiting in the run queue in the past five minutes
	Swap Outs	Number of pages taken out per second by swap-out processing
	User CPU	Percentage of time during which the processor for the overall host operates in user mode (%)
PFM UNIX Template Alarms [CPU] 09.00	Kernel CPU	Percentage of time during which the processor for the overall host operates in kernel mode (%)
	User CPU	Percentage of time during which the processor for the overall host operates in user mode (%)
	Run Queue	Average number of threads waiting in the run queue in the past five minutes
	CPU Per Processor(K)	CPU usage for a processor executed in kernel mode (%)
	CPU Per Processor(U)	CPU usage for a processor executed in user mode (%)
PFM UNIX Template Alarms [MEM] 09.00	Pagescans	Number of page scans that occurred per second. This alarm cannot be used on Linux.
	Swap Outs	Number of pages taken out per second by swap-out processing
	Alloc Mem Mbytes	Amount of used virtual memory (MB)
PFM UNIX Template Alarms [DSK] 09.00	I/O Wait Time	Percentage of time during which the processor for the overall host is waiting for I/O (average value for each processor)
	Disk Service Time	Average I/O operation time for a device (seconds)
	File System Free(L)	Unused area (MB) in the local file system

Alarm table name	Alarm name	Monitoring target
	File System Free(R)	Unused area (MB) in the remote file system
	Disk Busy %	Disk busy rate (%)
	Disk Queue	Queue length of devices for which the amount of I/O processing per second is 1
PFM UNIX Template Alarms [NET] 09.00	Network Rcvd/sec	Number of packets received per second
PFM UNIX Template Alarms [PS] 09.00	Process End	Process name
	Process Alive	Number of processes being executed by the workgroup

# **Disk Service Time**

#### Overview

The Disk Service Time alarm monitors the average I/O operation time for a device. If the average operation time is greater than the threshold, the amount of information being input or output might be very large.

## **Primary settings**

PFM - Web	Console alarm property	
ltem	Detailed item	Settings
Basic information	Report alarm when the following damping condition is reached.	Yes
	interval(s)	3
	occurrence(s) during	2
Action	SNMP	Error, Warning, Normal
Condition	Record	Device Detail (PI_DEVD)
expression	Field	Avg Service Time
	Error condition	Avg Service Time > 0.1
	Warning condition	Avg Service Time > 0.06

## Alarm tables

PFM UNIX Template Alarms 09.00

PFM UNIX Template Alarms [DSK] 09.00

## **Related reports**

Reports/UNIX/Troubleshooting/Real-Time/Avg Service Time - Top 10 Devices

# I/O Wait Time

#### Overview

The I/O Wait Time alarm monitors the percentage of time during which the processor was waiting for I/O (average value for each processor). If the percentage of time during which the processor is waiting for I/O is greater than the threshold, I/O operations, such as updating a database, might be delayed.

## **Primary settings**

PFM - Web	Console alarm property	
ltem	Detailed item	Settings
Basic information	Report alarm when the following damping condition is reached.	Yes
	interval(s)	3
	occurrence(s) during	2
Action	SNMP	Error, Warning, Normal
Condition	Record	System Summary Overview (PI)
expression	Field	Wait %
	Error condition	Wait % > 80
	Warning condition	Wait % > 60

## Alarm tables

PFM UNIX Template Alarms 09.00

PFM UNIX Template Alarms [DSK] 09.00

## **Related reports**

Reports/UNIX/Troubleshooting/Real-Time/I/O Activity - Top 10 Processes

# Kernel CPU

### Overview

The Kernel CPU alarm monitors the percentage of time during which the processor for the overall host was running in kernel mode (average value for each processor). If this percentage of time continues to be greater than the threshold, there might be a problem with the OS or the operation method.

## **Primary settings**

PFM - Web	Console alarm property	
ltem	Detailed item	Settings
Basic information	Report alarm when the following damping condition is reached.	Yes
	interval(s)	3
	occurrence(s) during	2
Action	SNMP	Error, Warning, Normal
Condition	Record	System Summary Overview (PI)
expression	Field	Kernel CPU %
	Error condition	Kernel CPU % > 75
	Warning condition	Kernel CPU % > 50

## Alarm tables

PFM UNIX Template Alarms 09.00

PFM UNIX Template Alarms [CPU] 09.00

## **Related reports**

Reports/UNIX/Troubleshooting/Real-Time/System Overview

# Pagescans

#### **Overview**

The Pagescans alarm monitors the number of page scans that occurred per second. If the number of page scans is greater than the threshold, memory might be insufficient. *Note:* 

This alarm cannot be used on Linux.

## **Primary settings**

PFM - Web Console alarm property		
ltem	Detailed item	Settings
Basic information	Report alarm when the following damping condition is reached.	Yes
	interval(s)	3
	occurrence(s) during	2
Action	SNMP	Error, Warning, Normal
Condition expression	Record	System Summary Overview (PI)
	Field	Page Scans/sec
	Error condition	Page Scans/sec > 150
	Warning condition	Page Scans/sec > 100

## Alarm tables

PFM UNIX Template Alarms 09.00

PFM UNIX Template Alarms [MEM] 09.00

# **Related reports**

Reports/UNIX/Troubleshooting/Real-Time/Major Page Faults - Top 10 Processes



# Run Queue

## Overview

The Run Queue alarm monitors the average number of threads waiting in the run queue in the past five minutes. If the average number of threads is greater than the threshold, there might be a problem with the OS, operation method, or a specific application.

## **Primary settings**

PFM - Web Console alarm property		
ltem	Detailed item	Settings
Basic information	Report alarm when the following damping condition is reached.	No
	interval(s)	0
	occurrence(s) during	0
Action	SNMP	Error, Warning, Normal
Condition expression	Record	System Summary Overview (PI)
	Field	5-Minute Run Queue Avg
	Error condition	5-Minute Run Queue Avg > 8
	Warning condition	5-Minute Run Queue Avg > 4

## Alarm tables

PFM UNIX Template Alarms 09.00

PFM UNIX Template Alarms [CPU] 09.00

# **Related reports**

Reports/UNIX/Troubleshooting/Real-Time/CPU Usage - Top 10 Processes

# **Swap Outs**

#### Overview

The Swap Outs alarm monitors the number of pages taken out per second by swap-out processing. If the number of pages is greater than the threshold, memory might be insufficient.

# **Primary settings**

PFM - Web Console alarm property		
ltem	Detailed item	Settings
Basic information	Report alarm when the following damping condition is reached.	No
	interval(s)	0
	occurrence(s) during	0
Action	SNMP	Error, Warning, Normal
Condition expression	Record	System Summary Overview (PI)
	Field	Swapped-Out Pages/sec
	Error condition	Swapped-Out Pages/sec > 200
	Warning condition	Swapped-Out Pages/sec > 100

# Alarm tables

PFM UNIX Template Alarms 09.00

PFM UNIX Template Alarms [MEM] 09.00

# **Related reports**

Reports/UNIX/Troubleshooting/Real-Time/Major Page Faults - Top 10 Processes


## User CPU

### Overview

The User CPU alarm monitors the percentage of time during which the processor for the overall host was running in user mode (average value for each processor). If this percentage of time continues to be greater than the threshold, there might be a problem with a specific application.

### **Primary settings**

PFM - Web	Console alarm property	
Item	Detailed item	Settings
Basic information	Report alarm when the following damping condition is reached.	Yes
	interval(s)	3
	occurrence(s) during	2
Action	SNMP	Error, Warning, Normal
Condition	Record	System Summary Overview (PI)
expression	Field	User CPU %
	Error condition	User CPU % > 85
	Warning condition	User CPU % > 65

### **Alarm tables**

PFM UNIX Template Alarms 09.00

PFM UNIX Template Alarms [CPU] 09.00

### **Related reports**

Reports/UNIX/Troubleshooting/Real-Time/System Overview

## **CPU Per Processor(K)**

#### Overview

The CPU Per Processor(K) alarm monitors the CPU usage (%) for a processor executed in kernel mode. If the CPU usage continues to be at or above the threshold, there might be a problem with the OS or operation method.

Reference note:

To monitor a specific processor, copy this alarm and create an alarm by changing the condition expression in the Processor ID field to Processor ID = *identifier-of-monitored-processor*.

## **Primary settings**

PFM - Web Console alarm property			
ltem	Detailed item	Settings	
Basic information	Report alarm when the following damping condition is reached.	Yes	
	interval(s)	3	
	occurrence(s) during	2	
Action	SNMP	Error, Warning, Normal	
Condition expression 1	Record	CPU - Per Processor Detail (PI_CPUP)	
	Field	Processor ID	
	Error condition	Processor ID $\geq 0^{\#}$	
	Warning condition	Processor ID $\geq 0^{\#}$	
Condition expression 2	Record	CPU - Per Processor Detail (PI_CPUP)	
	Field	System %	
	Error condition	System % > 75	
	Warning condition	System % > 50	

#

Set the identifier of the processor to be monitored. The value used in the table

shows an example of setting a condition value that satisfies the  $\tt Processor ID$  field.

### Alarm tables

PFM UNIX Template Alarms [CPU] 09.00

## **Related reports**

Reports/UNIX/Troubleshooting/Real-Time/CPU Per Processor Usage

## **CPU Per Processor(U)**

#### Overview

The CPU Per Processor(U) alarm monitors the CPU usage (%) for a processor executed in user mode. If the CPU usage continues to be at or above the threshold, there might be a problem with a specific application.

Reference note:

To monitor a specific processor, copy this alarm and create an alarm by changing the condition expression in the Processor ID field to Processor ID = *identifier-of-monitored-processor*.

## **Primary settings**

PFM - Web Console alarm property			
ltem	Detailed item	Settings	
Basic information	Report alarm when the following damping condition is reached.	Yes	
	interval(s)	3	
	occurrence(s) during	2	
Action	SNMP	Error, Warning, Normal	
Condition expression 1	Record	CPU - Per Processor Detail (PI_CPUP)	
	Field	Processor ID	
	Error condition	Processor ID $\geq 0^{\#}$	
	Warning condition	Processor ID $\geq 0^{\#}$	
Condition expression 2	Record	CPU - Per Processor Detail (PI_CPUP)	
	Field	User %	
	Error condition	User % > 85	
	Warning condition	User % > 65	

#

Set the identifier of the processor to be monitored. The value used in the table

shows an example of setting a condition value that satisfies the  $\tt Processor ID$  field.

### Alarm tables

PFM UNIX Template Alarms [CPU] 09.00

## **Related reports**

Reports/UNIX/Troubleshooting/Real-Time/CPU Per Processor Usage

## Alloc Mem Mbytes

#### **Overview**

The Alloc Mem Mbytes alarm monitors the amount of used virtual memory area (MB). If the amount of used memory continues to be at or above the threshold (the Total Physical Mem Mbytes field value of the PI record), physical memory might be insufficient.

#### **Primary settings**

PFM - Web Console alarm property			
ltem	Detailed item	Settings	
Basic information	Report alarm when the following damping condition is reached.	Yes	
	interval(s) 3		
	occurrence(s) during	2	
Action	SNMP	Error, Warning, Normal	
Condition expression	Record	System Summary Overview (PI)	
	Field	Alloc Swap Mbytes	
	Error condition	Alloc Swap Mbytes >= 1800 <sup>#1</sup>	
	Warning condition	Alloc Swap Mbytes $\geq 1024^{\#2}$	

### #1

Depending on the environment, set a value that is about 90% of the value of the Total Swap Mbytes field of the PI record (except when the Solaris zone functionality is being used).

#### #2

Depending on the environment, set the value of the Total Physical Mem Mbyte field of the PI record (except when the Solaris zone functionality is being used).

#### Alarm tables

PFM UNIX Template Alarms [MEM] 09.00

#### **Related reports**

None

## File System Free(L)

### Overview

The File System Free(L) alarm monitors the unused area (MB) in the local file system. If there is little unused area, disk space is insufficient.

Reference note:

To monitor a specific file system, copy this alarm to create an alarm by changing the condition expression in the File System field to File System = *mount-point-of-monitored-file-system*.

### **Primary settings**

PFM - Web Console alarm property			
ltem	Detailed item	Settings	
Basic information	Report alarm when the following damping condition is reached.	No	
	interval(s)	0	
	occurrence(s) during	0	
Action	SNMP	Error, Warning, Normal	
Condition expression 1	Record	File System Detail - Local (PD_FSL)	
	Field	File System	
	Error condition	File System ↔ dummy <sup>#1</sup>	
	Warning condition	File System $\diamond$ dummy <sup>#1</sup>	
Condition expression 2	Record	File System Detail - Local (PD_FSL)	
	Field	Mbytes Free	
	Error condition	Mbytes Free < 5120 <sup>#2</sup>	
	Warning condition	Mbytes Free < 10240 <sup>#2</sup>	

#1

Set the mount point of the file system to be monitored. The value used in the table

shows an example of setting a condition value that satisfies the  ${\tt File}$   ${\tt System}$  field.

#2

Change the value as necessary for the environment.

## Alarm tables

PFM UNIX Template Alarms [DSK] 09.00

## **Related reports**

Reports/UNIX/Troubleshooting/Real-Time/Drilldown Only/Local File System Detail

## File System Free(R)

### Overview

The File System Free(R) alarm monitors the unused area (MB) in the remote file system. If there is little unused area, disk space is insufficient.

Reference note:

To monitor a specific file system, copy this alarm to create an alarm by changing the condition expression in the File System field to File System = mount-point-of-monitored-file-system.

### **Primary settings**

PFM - Web Console alarm property			
ltem	Detailed item	Settings	
Basic information	Report alarm when the following damping condition is reached.	No	
	interval(s)	0	
	occurrence(s) during	0	
Action	SNMP	Error, Warning, Normal	
Condition expression 1	Record	File System Detail - Remote (PD_FSR)	
	Field	File System	
	Error condition	File System $\diamondsuit$ dummy <sup>#1</sup>	
	Warning condition	File System $>$ dummy <sup>#1</sup>	
Condition expression 2	Record	File System Detail - Remote (PD_FSR)	
	Field	Mbytes Free	
	Error condition	Mbytes Free < 5120 <sup>#2</sup>	
	Warning condition	Mbytes Free < 10240 <sup>#2</sup>	

#1

Set the mount point of the file system to be monitored. The value used in the table

shows an example of setting a condition value that satisfies the  ${\tt File}$   ${\tt System}$  field.

#2

Change the value as necessary for the environment.

## Alarm tables

PFM UNIX Template Alarms [DSK] 09.00

## **Related reports**

Reports/UNIX/Troubleshooting/Real-Time/Drilldown Only/Remote File System Detail

## **Disk Busy %**

### Overview

The Disk Busy % alarm monitors the disk busy rate (%). If the disk busy rate continues to be at or above the threshold, I/O operations might be concentrated on a specific disk.

Reference note:

To monitor a specific device, copy this alarm to create an alarm by changing the condition expression in the Device Name field to Device Name = *name-of-monitored-device*.

### **Primary settings**

PFM - Web Console alarm property		
ltem	Detailed item	Settings
Basic information	Report alarm when the following damping condition is reached.	Yes
	interval(s)	5
	occurrence(s) during	4
Action	SNMP	Error, Warning, Normal
Condition expression 1	Record	Device Detail (PI_DEVD)
	Field	Device Name
	Error condition	Device Name <> dummy <sup>#</sup>
	Warning condition	Device Name <> dummy <sup>#</sup>
Condition expression 2	Record	Device Detail (PI_DEVD)
	Field	Busy %
	Error condition	Busy % >= 90
	Warning condition	Busy % >= 80

#

Set the name of the device to be monitored. The value used in the table shows an example of setting a condition value that satisfies the Device Name field.

Disk Busy %

## Alarm tables

PFM UNIX Template Alarms [DSK] 09.00

# **Related reports**

None

## **Disk Queue**

### Overview

The Disk Queue alarm monitors the queue length for devices for which the amount of I/O processing per second is 1. If the queue length continues to be at or above the threshold, the device is congested.

## **Primary settings**

PFM - Web Console alarm property			
Item	Detailed item	Settings	
Basic information	Report alarm when the following damping condition is reached.	Yes	
	interval(s)	5	
	occurrence(s) during	4	
Action	SNMP	Error, Warning, Normal	
Condition expression 1	Record	Device Detail (PI_DEVD)	
	Field	Device Name	
	Error condition	Device Name <> dummy <sup>#1</sup>	
	Warning condition	Device Name <> dummy <sup>#1</sup>	
Condition expression 2	Record	Device Detail (PI_DEVD)	
	Field	Queue Length	
	Error condition	Queue Length >= 5 <sup>#2</sup>	
	Warning condition	Queue Length $>= 3^{\#2}$	

### #1

Set the name of the device to be monitored. The value used in the table shows an example of setting a condition value that satisfies the Device Name field.

#2

Change the value as necessary for the environment.

## Alarm tables

PFM UNIX Template Alarms [DSK] 09.00

# **Related reports**

Reports/UNIX/Troubleshooting/Real-Time/Drilldown Only/Device Detail

### **Network Rcvd/sec**

#### **Overview**

The Network Rcvd/sec alarm monitors the number of packets received per second. If the number of packets is large, many packets have been received successfully.

### **Primary settings**

PFM - Web	Console alarm property		
ltem	Detailed item	Settings	
Basic information	Report alarm when the following damping condition is reached.	Yes	
	interval(s)	5	
	occurrence(s) during	4	
Action	SNMP	Error, Warning, Normal	
Condition expression	Record	Network Interface Summary (PI_NINS)	
	Field	Pkts Rcvd/sec	
	Error condition	Pkts Rcvd/sec $\ge 9^{\#1}$	
	Warning condition	Pkts Rcvd/sec $\geq 8^{\#2}$	

### #1

Depending on the environment, set a value that is around 90% of the NIC bandwidth.

#### #2

Depending on the environment, set a value that is around 80% of the NIC bandwidth.

### Alarm tables

PFM UNIX Template Alarms [NET] 09.00

#### **Related reports**

Reports/UNIX/Troubleshooting/Real-Time/Network Interface Summary

### **Process End**

#### Overview

The Process End alarm monitors process disappearance. If performance data is not collected, the process has stopped.

### **Primary settings**

PFM - Web Console alarm property			
ltem	Detailed item	Settings	
Basic information	Report alarm when the following damping condition is reached.	No	
	interval(s)	0	
	occurrence(s) during	0	
Action	SNMP	Error, Normal	
Condition expression	Record	Process Detail Interval (PD_PDI)	
	Field	Program	
	Error condition	Program = jpcsto <sup>#</sup>	
	Warning condition	Program = jpcsto <sup>#</sup>	

#

Set the name of the process to be monitored. The value used in the table shows an example of setting the process name for the Agent Store service. Note that there is no abnormal condition or warning condition because this alarm only monitors a value.

## Alarm tables

PFM UNIX Template Alarms [PS] 09.00

#### **Related reports**

Reports/UNIX/Troubleshooting/Real-Time/Drilldown Only/Process Detail

## **Process Alive**

#### Overview

The Process Alive alarm monitors the generation of processes that belong to the workgroup. Set /opt/jplpc/agtu/agent/wgfile<sup>#</sup> as follows for monitoring.

```
Setting example
```

```
workgroup=workgroup
programs=jpcsto
```

```
#
```

Set the wgfile file in an environment in which PFM - Agent for Platform is installed. For details about how to set the wgfile file, see 4.2.1 Settings for collecting workgroup information.

## **Primary settings**

PFM - Web Console alarm property		
ltem	Detailed item	Settings
Basic information	Report alarm when the following damping condition is reached.	No
	interval(s)	0
	occurrence(s) during	0
Action	SNMP	Error, Warning, Normal
Condition expression 1	Record	Workgroup Summary (PI_WGRP)
	Field	Process Count
	Error condition	Process Count > 0
	Warning condition	Process Count > 0
Condition expression 2	Record	Workgroup Summary (PI_WGRP)
	Field	Workgroup
	Error condition	Workgroup = workgroup <sup>#</sup>
	Warning condition	Workgroup = workgroup <sup>#</sup>

#

Set the name of the workgroup to be monitored. The /opt/jplpc/agtu/ agent/wgfile file must be defined.

## Alarm tables

PFM UNIX Template Alarms [PS] 09.00

## **Related reports**

Reports/UNIX/Troubleshooting/Real-Time/Drilldown Only/Process Detail

#### Format of report explanations

This section explains report formats. Reports are listed in alphabetical order.

#### Report name

Indicates the report name of the monitoring template.

A report whose name contains (Multi-Agent) is a report that shows information on multiple instances.

A report whose name does not contain (Multi-Agent) is a report that shows information on a single instance.

#### Overview

Provides an overview of the information that can be displayed in this report.

#### Storage destination

Indicates the storage destination of this report.

#### Record

Indicates the record that stores the performance data used by this report. To display a historical report, you must specify in advance that the record shown in this column be collected. Before displaying a report, use the Agents window in PFM - Web Console to display the agent properties, and make sure that Log = Yes is set for this record. This setting is not required for a real-time report.

#### **Fields**

The record fields used by this report are explained using a table.

#### Drilldown report (report level)

The monitoring template report associated with this report is explained with the use of a table. To display this drilldown report, from the Drilldown Report pull-down menu in PFM - Web Console's Report window, select the applicable drilldown report name and click **Display Reports**. Note that some reports do not have a drilldown report.

#### Drilldown report (field level)

The monitoring template report associated with the fields of this report is explained with the use of a table. To display this drilldown report, click a graph, list, or table in PFM - Web Console's Report window. For a historical report, you can display a report with finer time intervals by displaying a drilldown report from a time item. Note that some reports do not have a drilldown report.

For details about a drilldown report, see the chapter explaining creation of reports for

operation analysis in the manual Job Management Partner 1/Performance Management User's Guide.

### Organization of report folders

The organization of PFM - Agent for Platform's report folders is described below. < > indicates a folder name. <UNIX>

```
+-- <Monthly Trend>
     +-- CPU Trend
     +-- CPU Trend (Multi-Agent)
     +-- NFS Load Trend<sup>#1</sup>
     +-- Paging Trend (Multi-Agent)<sup>#1</sup>
     +-- Process Trend
+-- <Status Reporting>
     +-- <Daily Trend>
          +-- CPU Status (Multi-Agent)
          +-- Memory Paging Status (Multi-Agent)<sup>#1</sup>
          +-- Network Status (Multi-Agent)
          +-- NFS Usage Status (Multi-Agent)<sup>#1</sup>
          +-- Workload Status (Multi-Agent)
          +-- <Advanced>
                +-- Device Usage Status (Multi-Agent)
     +-- <Real-Time>
          +-- Avg Service Time Status - Top 10 Devices
          +-- CPU Per Processor Status
          +-- CPU Status
          +-- Device Usage Status
          +-- Free Space Mbytes - Top 10 Local File Systems
          +-- Memory Paging Status<sup>#1</sup>
          +-- Network Status
          +-- NFS Usage Status<sup>#1</sup>
          +-- Process Summary Status
          +-- System Utilization Status
          +-- Workload Status
+-- <Troubleshooting>
     +-- <Real-Time>
          +-- Avg Service Time - Top 10 Devices
          +-- CPU Per Processor Usage
          +-- CPU Usage - Top 10 Processes
          +-- I/O Activity - Top 10 Processes<sup>#2</sup>
          +-- Major Page Faults - Top 10 Processes
          +-- Network Interface Summary
          +-- Space Usage - Top 10 Local File Systems
          +-- Space Usage - Top 10 Remote File Systems
          +-- System Overview
```

+-- <Drilldown Only>

```
+-- Device Detail
           +-- Local File System Detail
           +-- Network Interface Detail
           +-- NFS Client Detail<sup>#3</sup>
           +-- NFS Server Detail<sup>#3</sup>
           +-- Process Detail
           +-- Remote File System Detail
+-- <Recent Past>
     +-- CPU Usage Summary
     +-- I/O Overview<sup>#1</sup>
     +-- Memory Paging<sup>#1</sup>
     +-- Network Overview
     +-- NFS Activity Overview<sup>#1</sup>
     +-- System Overview
     +-- <Advanced>
           +-- Console Messages<sup>#1</sup>
           +-- Network Interface Summary
           +-- Process Overview
```

#1

Cannot be used on Linux.

#2

Cannot be used on HP-UX, AIX, and Linux.

#3

Reserved report that cannot be used.

The individual folders are explained below.

Monthly Trend folder

This folder stores a historical report that shows information that is summarized on a daily basis for the last month. It is used for analyzing system trends for the month.

■ Status Reporting folder

This folder stores reports that show information that is summarized on a daily or weekly basis. It is used for checking the system's overall status. In addition to displaying historical reports, it can also be used to display real-time reports.

• Daily Trend folder

This folder stores a historical report that shows information that is summarized on an hourly basis over the last 24 hours. It is used for checking the daily system status.

Real-Time folder

This folder stores the real-time report for checking the system status.

Troubleshooting folder

This folder stores reports that show information that is useful for troubleshooting. It is used for investigating a problem cause when a problem occurs in the system.

Real-Time folder

This folder stores the real-time report for checking the current system status.

Recent Past folder

This folder stores the historical report that shows information that is summarized on a minute-by-minute basis for the last hour.

Additionally, the folders described below are located below the folders previously described. Which of the following folders is provided depends on the higher-order folder:

Advanced folder

This folder stores reports that use records that are set to Log = No by default. To display the reports in this folder, you must use PFM - Web Console to specify the setting for the record being used to Log = Yes.

■ Drilldown Only folder

This folder stores reports that are displayed as drilldown reports (field level). It is used for displaying detailed information related to the fields of the report.

# List of reports

The table below	lists the reno	rts defined in	the monitoring	tomplato bi	1 category
The table below	insts the repo	nts defined in	i the monitoring	template by	/ category.

Category	Report name	Information displayed
NFS	NFS Activity Overview	Historical information about NFS client and NFS server operation status over the last hour (on a minute-by-minute basis). This report cannot be used on Linux.
	NFS Load Trend	Historical information about NFS client and NFS server operation status over the last month (on a daily basis). This report cannot be used on Linux.
	NFS Usage Status	Real-time information about NFS client and NFS server operation status. This report cannot be used on Linux.
	NFS Usage Status (Multi-Agent)	Historical information about NFS client and NFS server multiple host operation status over the last 24 hours (on an hourly basis). This report cannot be used on Linux.
System	I/O Overview	Historical information about the number of I/O operations over the last hour (on a minute-by-minute basis). This report cannot be used on Linux.
	Process Trend	Historical information about the number of processes over the last month (on a daily basis).
	<i>System Overview</i> (real-time report indicating system operation status)	Real-time information about system operation status.
	<i>System Overview</i> (historical report indicating system operation status)	Historical information about system operation status over the last hour (on a minute-by-minute basis).
	System Utilization Status	Real-time information about system utilization status.
	Workload Status	Real-time information about system workload.
	Workload Status (Multi-Agent)	Historical information about multiple host system workload over the last 24 hours (on an hourly basis).
Disk	Avg Service Time - Top 10 Devices	Real-time information about the top 10 devices with the longest average operating hours.
	Avg Service Time Status - Top 10 Devices	Real-time information about the 10 devices with the longest average operating hours.
	Device Detail	Real-time information about the selected device.

able	5-2:	List	of re	ports
			· · · ·	

Category	Report name	Information displayed
	Device Usage Status	Real-time information about device usage status.
	Device Usage Status (Multi-Agent)	Historical information about the usage status of devices used by multiple hosts over the last 24 hours (on an hourly basis).
	Free Space Mbytes - Top 10 Local File Systems	Real-time information about the top 10 local file systems with the largest amount of free space.
	Local File System Detail	Real-time information about the selected local file system.
	Remote File System Detail	Real-time information about the selected remote file system.
	Space Usage - Top 10 Local File Systems	Real-time information about the top 10 local file systems with the highest usage rates.
	Space Usage - Top 10 Remote File Systems	Real-time information about the top 10 remote file systems with the highest usage rates.
Network	Network Interface Detail	Real-time information about the network usage status of the selected system.
	Network Interface Summary (real-time report indicating network usage status)	Real-time information about the network usage status.
	Network Interface Summary (historical report indicating network usage status)	Historical information about the network usage status over the last hour (on a minute-by-minute basis).
Process	CPU Usage - Top 10 Processes	Real-time information about the top 10 processes in terms of CPU usage.
	I/O Activity - Top 10 Processes	Real-time information about the top 10 processes in terms of the number of I/O processing operations. This report cannot be used on HP-UX, AIX, and Linux.
	Major Page Faults - Top 10 Processes	Real-time information about the top 10 page fault processes that invoke physical I/O.
	Process Detail	Real-time information about processes on the selected host.
	Process Overview	Historical information about the operation status of processes over the last hour (on a minute-by-minute basis).
	Process Summary Status	Real-time information about the operation status of a process.
Processor	CPU Per Processor Status	Real-time information about processor status.
	CPU Per Processor Usage	Real-time information about CPU usage for each processor.
	CPU Status	Real-time information about CPU usage.

Category	Report name	Information displayed
	CPU Status (Multi-Agent)	Historical information about CPU usage of multiple hosts over the last 24 hours (on an hourly basis).
	CPU Trend	Historical information about CPU usage of a specific host over the last month (on a daily basis).
	CPU Trend (Multi-Agent)	Historical information about CPU usage of multiple hosts over the last month (on a daily basis).
	CPU Usage Summary	Historical information about CPU usage over the last hour (on a minute-by-minute basis).
Protocol	Network Overview	Historical information about the network usage status over the last hour (on a minute-by-minute basis).
	Network Status (Multi-Agent)	Historical information about the network usage status of multiple hosts over the last 24 hours (on an hourly basis).
	Network Status	Real-time information about network usage status.
Message	Console Messages	Historical information about console messages over the last hour (on a minute-by-minute basis). This report cannot be used on Linux.
Memory	Memory Paging	Historical information about the memory usage status over the last hour (on a minute-by-minute basis). This report cannot be used on Linux.
	Memory Paging Status	Real-time information about memory and paging. This report cannot be used on Linux.
	Memory Paging Status (Multi-Agent)	Historical information about the memory usage status of multiple hosts over the last 24 hours (on an hourly basis). This report cannot be used on Linux.
	Paging Trend (Multi-Agent)	Historical information about page scans of multiple hosts over the last month (on a daily basis). This report cannot be used on Linux.
Reserved report	NFS Client Detail	Reserved reports that cannot be used.
	NFS Server Detail	*

## Avg Service Time - Top 10 Devices

#### Overview

The Avg Service Time - Top 10 Devices report displays real-time information about the top 10 devices with the longest average operation hours. It is displayed as an aggregated bar graph.

### Storage destination

Reports/UNIX/Troubleshooting/Real-Time/

#### Record

Device Detail (PI\_DEVD)

### **Fields**

Field name	Explanation
Avg Service Time	The average I/O operation time for a device (seconds). To display this report, click the <b>Device Detail</b> report.
Device Name	Device name.

## **Drilldown report (report level)**

Report name	Explanation
I/O Activity - Top 10	Displays real-time information about the top 10 I/O processes.
Processes	This report cannot be used on HP-UX, AIX, and Linux.

## Drilldown report (field level)

Report name	Explanation
Device Detail	Displays real-time information about the selected device. To display this report, click the <b>Avg Service Time</b> field.

## Avg Service Time Status - Top 10 Devices

### **Overview**

The Avg Service Time Status - Top 10 Devices report displays real-time information about the top 10 devices with the longest average operation hours. It is displayed as a table and an aggregated bar graph.

# Storage destination

Reports/UNIX/Status Reporting/Real-Time/

#### Record

Device Detail (PI\_DEVD)

## Fields

Field name	Explanation
Avg Service Time	Average I/O operation time for the device (seconds).
Device Name	Device name.
I/O Mbytes	Total transfer size of I/O processing (megabytes).
Mbytes Xferd/sec	Average I/O speed (megabytes per second).
Total I/O Ops/sec	Frequency of I/O processing (number of times per second).

## **Console Messages**

#### Overview

The Console Messages report displays historical information about console messages displayed over the last hour. Japanese data cannot be displayed. The information is displayed as a table.

Note:

This report cannot be used on Linux.

### Storage destination

Reports/UNIX/Troubleshooting/Recent Past/Advanced/

### Record

Logged Messages (PL\_MESS)

For details about this record, see 3. *Collecting Log Information*. Note that Japanese data cannot be used in the messages in this record.

## Fields

Field name	Explanation
Message Text	Message text that consists of one line of information extracted from a log file.

## **CPU Per Processor Status**

### **Overview**

The CPU Per Processor Status report displays real-time information about the processor status. The information is displayed as a stacked bar graph.

## Storage destination

Reports/UNIX/Status Reporting/Real-Time/

#### Record

CPU - Per Processor Detail (PI\_CPUP)

## Fields

Field name	Explanation
Idle %	Percentage of time in idle status (%).
Processor ID	Processor identifier.
System %	Percentage of operation time in kernel mode (%).
User %	Percentage of operation time in user mode (%).
Wait %	Percentage of time in I/O waiting status (%).

# **CPU Per Processor Usage**

### **Overview**

The CPU Per Processor Usage report displays real-time CPU usage information for each processor. The information is displayed as a stacked bar graph.

## Storage destination

Reports/UNIX/Troubleshooting/Real-Time/

#### Record

CPU - Per Processor Detail (PI\_CPUP)

## Fields

Field name	Explanation
Idle %	Percentage of time in idle status (%).
Processor ID	Processor identifier.
System %	Percentage of operation time in kernel mode (%).
User %	Percentage of operation time in user mode (%).
Wait %	Percentage of time in I/O waiting status (%).

## **CPU Status**

### **Overview**

The CPU Status report displays real-time information about CPU usage. The information is displayed as a list and a line graph.

## Storage destination

Reports/UNIX/Status Reporting/Real-Time/

### Record

System Summary Overview (PI)

## Fields

Field name	Explanation
1-Minute Run Queue Avg	Average number of threads that were waiting in the run queue in the past one minute. On HP-UX, Solaris, and AIX, this value does not include the number of threads waiting for I/O. On Linux, this value includes the number of threads waiting for I/O.
15-Minute Run Queue Avg	Average number of threads that were waiting in the run queue in the past 15 minutes. On HP-UX, Solaris, and AIX, this value does not include the number of threads waiting for I/O. On Linux, this value includes the number of threads waiting for I/O.
5-Minute Run Queue Avg	Average number of threads that were waiting in the run queue in the past five minutes. On HP-UX, Solaris, and AIX, this value does not include the number of threads waiting for I/O. On Linux, this value includes the number of threads waiting for I/O.
CPU %	CPU usage (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function). To display a CPU Per Processor Status report, click this field.
Context Switches	Number of times the context switch is executed.
Idle %	Percentage of time in idle status (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function).

Field name	Explanation
Kernel CPU %	Percentage of operation time in kernel mode (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function).
Record Time	Time when the record was created (Greenwich Mean Time).
System Calls	Number of times a system call was issued.
User CPU %	Percentage of operation time in user mode (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function).
Wait %	Percentage of time in I/O waiting status (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function).

# Drilldown report (field level)

Report name	Explanation
CPU Per Processor Status	Displays real-time information about the processor status. To display this report, click the <b>CPU %</b> field.

## **CPU Status (Multi-Agent)**

### **Overview**

The CPU Status (Multi-Agent) report displays hourly historical information about CPU usage for multiple hosts over the last 24 hours. The information is displayed as a table and a line graph.

## Storage destination

Reports/UNIX/Status Reporting/Daily Trend/

#### Record

System Summary Overview (PI)

## Fields

Field name	Explanation
1-Minute Run Queue Avg	Average number of threads that were waiting in the run queue in the past one minute. On HP-UX, Solaris, and AIX, this value does not include the number of threads waiting for I/O. On Linux, this value includes the number of threads waiting for I/O.
Agent Instance <sup>#</sup>	Name of host on which PFM - Agent for Platform is operating.
CPU %	CPU usage (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function).
Context Switches	Number of times the context switch was executed.
Kernel CPU %	Percentage of operation time in kernel mode (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function).
System Calls	Number of times a system call was issued.
User CPU %	Percentage of operation time in user mode (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function).
Wait %	Percentage of time in I/O waiting status (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function).

#

This field is added only when data is recorded in the Store database. For details about adding fields only when data is recorded in the Store database, see *6*. *Records*.

## **CPU Trend**

### **Overview**

The CPU Trend report displays historical information about CPU usage for a specific host over the last month that is summarized on a daily basis. This information is displayed as a line graph.

## Storage destination

Reports/UNIX/Monthly Trend/

### Record

System Summary Overview (PI)

## Fields

Field name	Explanation
CPU %	CPU usage (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function).
Kernel CPU %	Percentage of operation time in kernel mode (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function).
User CPU %	Percentage of operation time in user mode (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function).
# **CPU Trend (Multi-Agent)**

#### Overview

The CPU Trend (Multi-Agent) report displays daily historical information about CPU usage for multiple hosts over the last month. The information is displayed as a line graph.

# **Storage destination**

Reports/UNIX/Monthly Trend/

#### Record

System Summary Overview (PI)

## **Fields**

Field name	Explanation
Agent Instance <sup>#</sup>	Name of the host on which PFM - Agent for Platform is operating.
CPU %	CPU usage (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function). To display a CPU Trend report, click this field.

#

This field is added only when data is recorded in the Store database. For details about adding fields only when data is recorded in the Store database, see *6*. *Records*.

# **Drilldown report (report level)**

Report name	Explanation
CPU Trend	Displays historical information about CPU usage of a specific host over the last month (on a daily basis). To display this report, click the <b>CPU %</b> field.

# **CPU Usage - Top 10 Processes**

#### Overview

The CPU Usage - Top 10 Processes report displays real-time information about the top 10 processes in terms of CPU usage. The information is displayed as an aggregated bar graph.

# Storage destination

Reports/UNIX/Troubleshooting/Real-Time/

#### Record

Process Detail Interval (PD\_PDI)

## Fields

Field name	Explanation
CPU %	Average value (%) obtained by dividing the CPU usage of processes by the number of processors (on AIX 5L V5.3 or later, the number of processors logically partitioned by the Micro-Partitioning function). To display a Process Detail report, click this field.
PID	Process ID.
Program	Running program name.

# **Drilldown report (report level)**

Report name	Explanation
CPU Per Processor Usage	Displays real-time CPU usage information for each processor.

# Drilldown report (field level)

Report name	Explanation
Process Detail	Displays real-time process information for the selected host. To display this report, click the <b>CPU %</b> field.



# **CPU Usage Summary**

#### Overview

The CPU Usage Summary report displays minute-by-minute historical information about CPU usage for the last hour. The information is displayed as a table and a line graph.

# Storage destination

Reports/UNIX/Troubleshooting/Recent Past/

#### Record

System Summary Overview (PI)

Field name	Explanation
15-Minute Run Queue Avg	Average number of threads that were waiting in the run queue in the past 15 minutes. On HP-UX, Solaris, and AIX, this value does not include the number of threads waiting for I/O. On Linux, this value includes the number of threads waiting for I/O.
CPU %	CPU usage (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function).
Context Switches	Number of times the context switch was executed.
Idle %	Percentage of time that the CPU is in idle status (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function).
Interrupts	Number of times interrupt occurred.
Kernel CPU %	Percentage of time that the CPU is operating in kernel mode (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function).
Run Queue	Number of processes waiting in the queue.
System Calls	Number of times a system call was issued.

Field name	Explanation
User CPU %	Percentage of time that the CPU is operating in user mode (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function).
Wait %	Percentage of time that the CPU is in I/O waiting status (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function).

# **Device Detail**

#### Overview

The Device Detail report displays real-time information about the selected device. The information is displayed as a list. This report is a drilldown report.

# Storage destination

Reports/UNIX/Troubleshooting/Real-Time/Drilldown Only/

#### Record

Device Detail (PI\_DEVD)

Field name	Explanation
Avg Service Time	Average I/O operation time for the device (seconds).
Avg Wait Time	Average I/O waiting time for the device (seconds).
Device Name	Device name.
I/O Mbytes	Total transfer size of I/O processing (megabytes).
Mbytes Xferd/sec	Average I/O speed (megabytes/second).
Queue Length	Queue length of devices for which the I/O processing amount per second is 1.
Read Mbytes	Transfer size of read processing (megabytes).
Reads/sec	Frequency of read processing (number of times per second).
Total I/O Ops	Number of times I/O processing occurred.
Total I/O Ops/sec	Frequency of I/O processing (number of times per second).
Total Service Time	Total operation time for processing for a device (seconds). This value includes the waiting time. On HP-UX, because this is the sum of the total operation time of all I/O, if processing for a device is executed continuously, the value may greatly exceed the Interval value. With other OSs, if processing for a device is executed continuously, the Interval value may be exceeded.
Write Mbytes	Write processing transfer size (megabytes).
Writes/sec	Frequency of write processing (number of times per second).

# **Device Usage Status**

#### **Overview**

The Device Usage Status report displays real-time usage status information for devices. It is displayed as a list and a line graph.

# Storage destination

Reports/UNIX/Status Reporting/Real-Time/

#### Record

Device Summary (PI\_DEVS)

# Fields

Field name	Explanation
Avg Service Time/op	Average I/O operation time for the device (seconds).
Devices	Number of devices.
I/O Mbytes	Total transfer size of I/O processing (megabytes).
Mbytes Xferd/sec	Average I/O processing speed (megabytes per second).
Read Ops %	Of I/O processing, the read processing Percentage (%).
Record Time	Time when the record was created (Greenwich Mean Time).
Total I/O Ops	Number of times I/O processing occurred.
Total I/O Ops/sec	Frequency of I/O processing (number of times per second).
Write Ops %	Of I/O processing, the write processing Percentage (%).

# **Device Usage Status (Multi-Agent)**

#### Overview

The Device Usage Status (Multi-Agent) report displays hourly historical information about the usage status of devices used by multiple hosts over the last 24 hours. The information is displayed as a table.

## Storage destination

Reports/UNIX/Status Reporting/Daily Trend/Advanced/

#### Record

Device Summary (PI\_DEVS)

## **Fields**

Field name	Explanation
Agent Instance <sup>#</sup>	Name of host on which PFM - Agent for Platform is operating.
Avg Service Time/op	Average I/O operation time for the device (seconds).
Devices	Number of devices.
I/O Mbytes	Total transfer size of I/O processing (megabytes).
Mbytes Xferd/sec	Average I/O processing speed (megabytes per second).
Total I/O Ops	Number of times I/O processing occurred.
Total I/O Ops/sec	Frequency of I/O processing (number of times per second).

#

This field is added only when data is recorded in the Store database. For details about adding fields only when data is recorded in the Store database, see *6*. *Records*.

# Free Space Mbytes - Top 10 Local File Systems

#### **Overview**

The Free Space Mbytes - Top 10 Local File Systems report displays real-time information about the top 10 local file systems with the largest amount of free space. The information is displayed as a table.

## Storage destination

Reports/UNIX/Status Reporting/Real-Time/

#### Record

File System Detail - Local (PD\_FSL)

## **Fields**

Field name	Explanation
File System	File system mount point.
Mbytes Free	Available size (megabytes).
Mbytes Rsvd	Reserved size for superuser (megabytes).
Mbytes in Use	Size being used by general user (megabytes).
Record Time	Time when the record was created (Greenwich Mean Time).
Total Inodes Available	Number of i nodes that can be used by general users.
Total Size Mbytes	File system size (megabytes).

# I/O Activity - Top 10 Processes

#### Overview

The I/O Activity - Top 10 Processes report displays real-time information about the top 10 processes in terms of the number of I/O processing operations performed. It is displayed as an aggregated bar graph.

Note:

This report cannot be used on HP-UX, AIX, and Linux.

# Storage destination

Reports/UNIX/Troubleshooting/Real-Time/

## Record

Process Detail (PD)

# Fields

Field name	Explanation
PID	Process ID.
Program	Program name, which is the same as the character string displayed in the COMMAND (CMD) row of the ps -e command. On AIX, this value is limited to a maximum of 32 bytes. On Linux, this value is limited to a maximum of 15 bytes. On HP-UX, this value is limited to a maximum of 14 bytes. On Solaris, this value is limited to a maximum of 15 bytes.
Total I/O Ops/sec	Frequency of I/O processing (number of times per second). To display a Process Detail report, click this field.

# **Drilldown report (field level)**

Report name	Explanation
Process Detail	Displays real-time process information for the selected host. To display this report, click the <b>Total I/O Ops/sec</b> field.

## I/O Overview

#### Overview

The I/O Overview report displays minute-by-minute historical information about the number of I/O operations performed over the last hour. The information is displayed as a table and a line graph.

Note:

This report cannot be used on Linux.

# Storage destination

Reports/UNIX/Troubleshooting/Recent Past/

# Record

System Summary Overview (PI)

## Fields

Field name	Explanation
Block Ops	Number of times block I/O processing occurred.
Block Reads	Number of times block read processing occurred.
Block Writes	Number of times block write processing occurred.
Logical I/O Ops	Number of times logical I/O processing occurred.
Logical Reads	Number of times logical read processing occurred.
Logical Writes	Number of times logical write processing occurred.
Physical I/O Ops	Number of times physical I/O processing occurred.
Physical Reads	Number of times physical read processing occurred.
Physical Writes	Number of times physical write processing occurred.

# Local File System Detail

#### Overview

The Local File System Detail report displays real-time information about the selected local file system. The information is displayed as a list. This report is a drilldown report.

# Storage destination

Reports/UNIX/Troubleshooting/Real-Time/Drilldown Only/

#### Record

File System Detail - Local (PD\_FSL)

Field name	Explanation
Available Space %	Percentage of size available to general users (megabytes) (%).
Available Space Blocks	Number of logical blocks available to general users.
Available Space Mbytes	Size available to general user (megabytes).
Block Size	Logical block size (preferred file system block size) (bytes).
Blocks in Use	Number of logical blocks in use.
File System	File system mount point.
Mbytes Free	Available size (megabytes).
Mbytes Rsvd	Reserved size for superusers (megabytes).
Mbytes in Use	Size used by general users (megabytes).
Mbytes in Use %	Percentage of size used by general users (megabytes) (%).
Total Inodes	Number of file system i nodes.
Total Inodes Available %	Percentage of number of i nodes available to general users (%).
Total Inodes Free %	Percentage of number of i nodes available (%).
Total Inodes Rsvd %	Percentage of number of reserved i nodes for superusers (%).
Total Inodes in Use %	Percentage of number of i nodes in use (%).
Total Size Blocks	Number of file system logical blocks.

# Major Page Faults - Top 10 Processes

#### **Overview**

The Major Page Faults - Top 10 Processes report displays real-time information about the top 10 processes of page faults that invoke physical I/O. The information is displayed as an aggregated bar graph.

## Storage destination

Reports/UNIX/Troubleshooting/Real-Time/

#### Record

Process Detail Interval (PD\_PDI)

## Fields

Field name	Explanation
Major Faults	Number of page faults that invoked physical I/O. To display a Process Detail report, click this field.
PID	Process ID.
Program	Name of running program.

# **Drilldown report (field level)**

Report name	Explanation
Process Detail	Displays real-time process information for the selected host. To display this report, click the <b>Major Faults</b> field.

# **Memory Paging**

#### Overview

The Memory Paging report displays minute-by-minute historical information about memory usage over the last hour. The information is displayed as a table and a line graph.

Note:

This report cannot be used on Linux.

# Storage destination

Reports/UNIX/Troubleshooting/Recent Past/

## Record

System Summary Overview (PI)

Field name	Explanation
Alloc Swap %	Percentage of number of megabytes in swap area in use (%).
Cache Read %	Percentage of cache read processing of read processing (%).
Cache Write %	Percentage of cache write processing of write processing (%).
Free Mem %	Percentage of available physical memory (%) (megabytes).
Major Faults	Number of page faults that invoked physical I/O.
Minor Faults	Number of page faults that did not invoke physical I/O.
Page Ops/sec	Frequency of page-in and page-out processing operations (number of times per second).
Swap-In Ops	Number of swap-in processing operations that occurred.
Swap-Out Ops	Number of swap-out processing operations that occurred.
Total Page Scans	Number of pages checked by page scans.
Total Swaps	Number of swap processing operations that occurred.

# **Memory Paging Status**

#### **Overview**

The Memory Paging Status report displays real-time information about memory and paging. This information is displayed as a list and a line graph.

Note:

This report cannot be used on Linux.

#### Storage destination

Reports/UNIX/Status Reporting/Real-Time/

# Record

System Summary Overview (PI)

## Fields

Field name	Explanation
Free Swap %	Percentage of available swap area size (megabytes) (%).
Free Swap Mbytes	Percentage of available swap area size (megabytes).
Major Faults/sec	Frequency of page faults that invoked physical I/O (number of times per second).
Minor Faults/sec	Frequency of page faults that did not invoke physical I/O (number of times per second).
Page Scans/sec	Frequency of page scans (number of times per second).
Pages In/sec	Frequency of page reads by page in processing (number of pages per second).
Pages Out/sec	Frequency of pages taken out by page out processing (number of pages per second).
Record Time	Time when the record was created (Greenwich Mean Time).

# Memory Paging Status (Multi-Agent)

#### Overview

The Memory Paging Status (Multi-Agent) report displays hourly historical information about memory usage for multiple hosts over the last 24 hours. The information is displayed as a table and a line graph.

Note:

This report cannot be used on Linux.

#### Storage destination

Reports/UNIX/Status Reporting/Daily Trend/

#### Record

System Summary Overview (PI)

#### Fields

Field name	Explanation
Agent Instance <sup>#</sup>	Name of host on which PFM - Agent for Platform is operating.
Free Swap %	Percentage of available swap area size (megabytes) (%).
Free Swap Mbytes	Available swap area size (megabytes).
Major Faults/sec	Frequency of the page faults that occurred that invoked physical I/ O (number of times per second).
Page Scans/sec	Frequency of page scans (number of times per second).
Pages In/sec	Frequency at which pages are read in by page in processing (number of pages per second).
Pages Out/sec	Frequency at which pages are taken out by page out processing (number of pages per second).

#

This field is added only when data is recorded in the Store database. For details about adding fields only when data is recorded in the Store database, see *6*. *Records*.

### **Network Interface Detail**

#### Overview

The Network Interface Detail report displays real-time information about network usage for the selected system. The information is displayed as a list. This report is a drilldown report.

Note:

The interface flags set in the Flags (FLAGS) field that can be evaluated are as follows:

• HP-UX

UP, LOOPBACK

• Solaris

UP, BROADCAST, DEBUG, LOOPBACK, POINTOPOINT, NOTRAILERS, RUNNING, NOARP, PROMISC, ALLMULTI, INTELLIGENT, MULTICAST, MULTI\_BCAST, UNNUMBERED, PRIVATE

• AIX

UP, BROADCAST, DEBUG, LOOPBACK, POINTOPOINT, NOTRAILERS, RUNNING, NOARP, PROMISC, ALLMULTI, OACTIVE, SIMPLEX, MULTICAST

• Linux

UP, BROADCAST, DEBUG, LOOPBACK, POINTOPOINT, NOTRAILERS, RUNNING, NOARP, PROMISC, ALLMULTI, MULTICAST, MASTER, SLAVE, PORTSEL, AUTOMEDIA, DYNAMIC

#### Storage destination

Reports/UNIX/Troubleshooting/Real-Time/Drilldown Only/

#### Record

Network Interface Detail (PI\_NIND)

#### **Fields**

Field name	Explanation
Flags	Sets the interface flag. When the number of bytes exceeds 80, the last character is >. For HP-UX, all flags that indicate the interface status are included in this field value (the ifconfig command only displays part of the flags).

Field name	Explanation
IP Address	IP address that was found first. This is displayed using the Internet address format.
Interface	Interface name.
Max Transmission Unit	Maximum packet size (bytes).
Network Mask	Subnet mask of the IP address that was found first. This is displayed using the Internet address format.
Network Name	Network name. Network names of 1,028 bytes or more cannot be handled. If a network name is 256 bytes or more, a maximum of 255 bytes is displayed. On HP-UX, AIX, and Linux, if NIS is operating and there are no entries in the NIS network address database, the result obtained by applying mask processing on the first IP address found is displayed.
Record Time	Time when the record was created (Greenwich Mean Time).
Туре	Interface type.

# Network Interface Summary (real-time report indicating network usage status)

#### **Overview**

The Network Interface Summary report displays real-time information about the network usage status. The information is displayed as a table and a line graph.

## **Storage destination**

Reports/UNIX/Troubleshooting/Real-Time/

## Record

Network Interface Summary (PI\_NINS)

## Fields

Field name	Explanation
Interface Count	Number of interfaces. To display a Network Interface Detail report, click this field.
Pkt Collisions	Number of packet collisions.
Pkt Receive Errors	Number of packet receive errors.
Pkt Xmit Errors	Number of packet transmission errors.
Pkts Rcvd	Number of packets received.
Pkts Rcvd/sec	Frequency at which packets were received (number of packets per second).
Pkts Xmitd	Number of packets sent.
Pkts Xmitd/sec	Frequency at which packets are sent (number of packets per second).

# **Drilldown report (field level)**

Report name	Explanation
Network Interface Detail	Displays real-time information about the network usage status for the selected system. To display this report, click the <b>Interface Count</b> field.

# Network Interface Summary (historical report indicating network usage status)

## **Overview**

The Network Interface Summary report displays minute-by-minute historical information about the network usage status over the last hour. The information is displayed as a table and a line graph.

#### Storage destination

Reports/UNIX/Troubleshooting/Recent Past/Advanced/

#### Record

Network Interface Summary (PI\_NINS)

Field name	Explanation
Interface Count	Number of interfaces.
Pkt Collisions	Number of packet collisions.
Pkt Receive Errors	Number of packet receive errors.
Pkt Xmit Errors	Number of packet transmission errors.
Pkts Rcvd	Number of packets received.
Pkts Rcvd/sec	Frequency at which packets were received (number of packets per second).
Pkts Xmitd	Number of packets sent.
Pkts Xmitd/sec	Frequency at which packets are sent (number of packets per second).

# **Network Overview**

#### **Overview**

The Network Overview report displays minute-by-minute historical information about the network usage status over the last hour. The information is displayed as a table and a line graph.

# Storage destination

Reports/UNIX/Troubleshooting/Recent Past/

## Record

System Summary Overview (PI)

## Fields

Field name	Explanation
ICMP Pkts In	Number of IPv4 ICMP packets received. The combined total of local packets, remote packets, and packets for which an error occurred.
ICMP Pkts Out	Number of IPv4 ICMP packets sent. The combined total of local packets, remote packets, and packets for which an error occurred.
IP Pkts In	Number of IPv4 IP packets received. The combined total of local and remote packets. This number does not include packets for which an error occurred.
IP Pkts Out	Number of IPv4 IP packets sent. The combined total of local and remote packets. This number does not include packets for which an error occurred.
TCP Pkts In	Number of IPv4 TCP packets received. The combined total of local packets, remote packets, and packets for which an error occurred. In 09-00 or later, the total number of packets for IPv4 or IPv6 is displayed.
TCP Pkts Out	Number of IPv4 TCP packets sent. The combined total of local packets, remote packets, and packets for which an error occurred. In 09-00 or later, the total number of packets for IPv4 or IPv6 is displayed.
Total Pkts In	The combined total of IPv4 TCP packets received, IPv4 UDP packets received, and IPv4 ICMP packets received. In 09-00 or later, the total number of packets for IPv4 or IPv6 is displayed.
UDP Pkts In	Number of IPv4 UDP packets received. The combined total of local packets, remote packets, and packets for which an error occurred. In 09-00 or later, the total number of packets for IPv4 or IPv6 is displayed.
UDP Pkts Out	Number of IPv4 UDP packets sent. The combined total of local packets, remote packets, and packets for which an error occurred. In 09-00 or later, the total number of packets for IPv4 or IPv6 is displayed.

# **Network Status**

## **Overview**

The Network Status report displays real-time information about the network usage status. The information is displayed as a list and a line graph.

# Storage destination

Reports/UNIX/Status Reporting/Real-Time/

#### Record

System Summary Overview (PI)

Field name	Explanation
ICMP Pkts In	Number of IPv4 ICMP packets received. The combined total of local packets, remote packets, and packets for which an error occurred.
ICMP Pkts Out	Number of IPv4 ICMP packets sent. The combined total of local packets, remote packets, and packets for which an error occurred.
IP Pkts In	Number of IPv4 IP packets received. The combined total of local and remote packets. This number does not include packets for which an error occurred.
IP Pkts Out	Number of IPv4 IP packets sent. The combined total of local and remote packets. This number does not include packets for which an error occurred.
Record Time	Time when the record was created (Greenwich Mean Time).
TCP Pkts In	Number of IPv4 TCP packets received. The combined total of local packets, remote packets, and packets for which an error occurred. In 09-00 or later, the total number of packets for IPv4 or IPv6 is displayed.
TCP Pkts Out	Number of IPv4 TCP packets sent. The combined total of local packets, remote packets, and packets for which an error occurred. In 09-00 or later, the total number of packets for IPv4 or IPv6 is displayed.
UDP Pkts In	Number of IPv4 UDP packets received. The combined total of local packets, remote packets, and packets for which an error occurred. In 09-00 or later, the total number of packets for IPv4 or IPv6 is displayed.
UDP Pkts Out	Number of IPv4 UDP packets sent. The combined total of local packets, remote packets, and packets for which an error occurred. In 09-00 or later, the total number of packets for IPv4 or IPv6 is displayed.

# **Network Status (Multi-Agent)**

#### **Overview**

The Network Status (Multi-Agent) report displays hourly historical information about the network usage status for multiple hosts over the last 24 hours. The information is displayed as a table and a line graph.

# Storage destination

Reports/UNIX/Status Reporting/Daily Trend/

#### Record

System Summary Overview (PI)

## Fields

Field name	Explanation
Agent Instance <sup>#</sup>	Name of host on which PFM - Agent for Platform is operating.
ICMP Pkts In	Number of IPv4 ICMP packets received. The combined total of local packets, remote packets, and packets for which an error occurred.
ICMP Pkts Out	Number of IPv4 ICMP packets sent. The combined total of local packets, remote packets, and packets for which an error occurred.
IP Pkts In	Number of IPv4 IP packets received. The combined total of local and remote packets. This number does not include packets for which an error occurred.
IP Pkts Out	Number of IPv4 IP packets sent. The combined total of local and remote packets. This number does not include packets for which an error occurred.
Kernel CPU %	Percentage of operation time in kernel mode (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function).
TCP Pkts In	Number of IPv4 TCP packets received. The combined total of local packets, remote packets, and packets for which an error occurred. In 09-00 or later, the total number of packets for IPv4 or IPv6 is displayed.
TCP Pkts Out	Number of IPv4 TCP packets sent. The combined total of local packets, remote packets, and packets for which an error occurred. In 09-00 or later, the total number of packets for IPv4 or IPv6 is displayed.

Field name	Explanation
UDP Pkts In	Number of IPv4 UDP packets received. The combined total of local packets, remote packets, and packets for which an error occurred. In 09-00 or later, the total number of packets for IPv4 or IPv6 is displayed.
UDP Pkts Out	Number of IPv4 UDP packets sent. The combined total of local packets, remote packets, and packets for which an error occurred. In 09-00 or later, the total number of packets for IPv4 or IPv6 is displayed.

#

This field is added only when data is recorded in the Store database. For details about adding fields only when data is recorded in the Store database, see *6*. *Records*.

# **NFS Activity Overview**

#### **Overview**

The NFS Activity Overview report displays minute-by-minute historical information about the operation status of the NFS client and NFS server over the last hour. The information is displayed as a table and a line graph.

Note:

This report cannot be used on Linux.

## Storage destination

Reports/UNIX/Troubleshooting/Recent Past/

## Record

System Summary Overview (PI)

## Fields

Field name	Explanation
NFS Client Lookup Ops	Number of times lookup processing occurred on the NFS client.
NFS Client Total Bad Ops	Total number of times processing failed on the NFS client.
NFS Client Total Ops	Total number of processing operations that occurred on the NFS client.
NFS Server Lookup Ops	Number of times lookup processing was performed on the NFS server.
NFS Server Total Bad Ops	Number of times processing failed on the NFS server.
NFS Server Total Ops	Number of times processing occurred on the NFS server.

# **NFS Load Trend**

#### Overview

The NFS Load Trend report displays daily historical information about the operation status of the NFS client and NFS server over the last month. The information is displayed as a line graph.

Note:

This report cannot be used on Linux.

# Storage destination

Reports/UNIX/Monthly Trend/

### Record

System Summary Overview (PI)

Field name	Explanation
NFS Client Ops/sec	Frequency at which processing occurred on the NFS client (number of times per second).
NFS Server Ops/sec	Frequency at which processing occurred on the NFS server (number of times per second).

# **NFS Usage Status**

#### **Overview**

The NFS Usage Status report displays real-time information about the operation status of the NFS client and NFS server. The information is displayed as a list and a line graph.

Note:

This report cannot be used on Linux.

# Storage destination

Reports/UNIX/Status Reporting/Real-Time/

# Record

System Summary Overview (PI)

## Fields

Field name	Explanation
NFS Client Lookup Ops	Number of times lookup processing occurred on the NFS client.
NFS Client Total Bad Ops	Total number of times processing failed on the NFS client.
NFS Client Total Ops	Total number of processing operations that occurred on the NFS client.
NFS Server Lookup Ops	Number of times lookup processing occurred on the NFS server.
NFS Server Total Bad Ops	Number of times processing failed on the NFS server.
NFS Server Total Ops	Number of times processing occurred on the NFS server.
Record Time	Time when the record was created (Greenwich Mean Time).

# NFS Usage Status (Multi-Agent)

#### Overview

The NFS Usage Status (Multi-Agent) report displays hourly historical information about the operation status of the NFS client and NFS server over the last 24 hours. The information is displayed as a table and a line graph.

Note:

This report cannot be used on Linux.

## Storage destination

Reports/UNIX/Status Reporting/Daily Trend/

#### Record

System Summary Overview (PI)

#### Fields

Field name	Explanation
Agent Instance <sup>#</sup>	Name of host on which PFM - Agent for Platform is operating.
NFS Client Lookup Ops	Number of times lookup processing occurred on the NFS client.
NFS Client Total Bad Ops	Total number of times processing failed on the NFS client.
NFS Client Total Ops	Total number of processing operations that occurred on the NFS client.
NFS Server Lookup Ops	Number of times lookup processing occurred on the NFS server.
NFS Server Total Bad Ops	Number of times processing failed on the NFS server.
NFS Server Total Ops	Number of times processing occurred on the NFS server.

#

This field is added only when data is recorded in the Store database. For details about adding fields only when data is recorded in the Store database, see *6*. *Records*.

# Paging Trend (Multi-Agent)

#### **Overview**

The Paging Trend (Multi-Agent) report displays daily historical information about page scans for multiple hosts over the last month. The information is displayed as a line graph.

*Note:* 

This report cannot be used on Linux.

# Storage destination

Reports/UNIX/Monthly Trend/

# Record

System Summary Overview (PI)

Field name	Explanation
Page Scans/sec	Frequency of page scans (number of times per second).

# **Process Detail**

## **Overview**

The Process Detail report displays real-time information about processes for the selected host. The information is displayed as a list. This report is a drilldown report.

# Storage destination

Reports/UNIX/Troubleshooting/Real-Time/Drilldown Only/

#### Record

Process Detail Interval (PD\_PDI)

Field name	Explanation
CPU %	Average value (%) obtained by dividing the CPU usage of processes by the number of processors (on AIX 5L V5.3 or later, the number of processors logically partitioned by the Micro-Partitioning function).
Executable Text Kbytes	Text size in use (kilobytes). You need to set the SAUNIXPMAP environment variable beforehand to collect this field on Solaris systems. Execute the following command from the command-line interface: # SAUNIXPMAP=1 # export SAUNIXPMAP
Major Faults	Number of page faults that invoked physical I/O.
Minor Faults	Number of page faults that did not invoke physical I/O.
Parent PID	Process ID of the parent process.
PID	Process ID.
Program	Name of running program.
Reads	AIX: Number of times RAW read processing occurred. Solaris: Number of times Block read processing occurred.
Real Mem Kbytes	Physical memory size in use (kilobytes).
Record Time	Time when the record was created (Greenwich Mean Time).
Shared Mem Kbytes	Shared memory size in use (kilobytes).
Stack Kbytes	Stack size in use (kilobytes).

Field name	Explanation
Start Time	Process start time.
Swaps	Number of times swap occurred.
System CPU	Period of time that the system was operating in kernel mode (seconds).
Total I/O Kbytes	Total transfer size of I/O processing (kilobytes).
Total I/O Ops	Number of I/O processing operations.
Total Process Kbytes	Process size (kilobytes). AIX: The value of this field is the same as the value that is displayed in the SZ row obtained using the ps -1 command. HP-UX and Solaris: This value is the same as the value obtained by multiplying the page size by the value displayed in the SZ row obtained using the ps -1 command. Linux: This value is the same as the value displayed in the SIZE row obtained by using the top command.
User	Process effective user name.
User CPU	Period of time that the system was operating in user mode (seconds).
Writes	AIX: The number of times RAW write processing occurred. Solaris: The number of times Block write processing occurred.

# **Process Overview**

## **Overview**

The Process Overview report displays minute-by-minute historical information about the operation status of processes performed over the last hour. The information is displayed as a table and a line graph.

# Storage destination

Reports/UNIX/Troubleshooting/Recent Past/Advanced/

## Record

Process Summary (PD\_PDS)

Field name	Explanation
Active System Processes	Number of active system processes. Displays 0 for the first real-time report.
Active User Processes	Number of active user processes. Displays 0 for the first real-time report. On AIX and Linux, the total number of active system processes and user processes is displayed.
Active Users	Number of users who are executing processes counted as active system processes or user processes. Displays 0 for the first real-time report.
New Processes	Number of processes started. To calculate the difference from the previous process information, displays 0 for the first real-time report.
Processes	Number of processes in the system.
Runnable Processes	Number of runnable processes.
Sleeping Processes	Number of sleeping processes.
Stopped Processes	Number of stopped processes.
Swapped Processes	Number of swapped processes. From the process table, checks the number of processes that are not in the core.
Terminated Processes	Number of terminated processes. To calculate the difference from the previous process information, displays 0 for the first real-time report.
Zombie Processes	Number of zombie processes.

# **Process Summary Status**

#### **Overview**

The Process Summary Status report displays real-time information about the operation status of processes. The information is displayed as a list and a line graph.

# Storage destination

Reports/UNIX/Status Reporting/Real-Time/

#### Record

Process Summary (PD\_PDS)

# Fields

Field name	Explanation
Active System Processes	Number of active system processes. Displays 0 for the first real-time report.
Active User Processes	Number of active user processes. Displays 0 for the first real-time report. On AIX and Linux, the total number of active system processes and user processes is displayed.
Processes	Number of processes in the system.
Record Time	Time when the record was created (Greenwich Mean Time).
Sleeping Processes	Number of sleeping processes.
Swapped Processes	Number of swapped processes. From the process table, checks the number of processes that are not in the core.
Users	Number of real users.
Zombie Processes	Number of zombie processes.

# **Process Trend**

## **Overview**

The Process Trend report displays daily historical information about the number of operating processes over the last month. This information is displayed as a line graph.

# Storage destination

Reports/UNIX/Monthly Trend/

#### Record

System Summary Overview (PI)

Field name	Explanation
Processes	Number of processes in the system.

# **Remote File System Detail**

#### **Overview**

The Remote File System Detail report displays real-time information about the selected remote file system. This information is displayed as a list. This report is a drilldown report.

# Storage destination

Reports/UNIX/Troubleshooting/Real-Time/Drilldown Only/

#### Record

File System Detail - Remote (PD\_FSR)

## Fields

Field name	Explanation
Available Blocks	Number of logical blocks available to general users.
Available Space %	Percentage of size available to general users (megabytes) (%).
Available Space Mbytes	Size available to general users (megabytes).
Block Size	Logical block size (preferred file system block size) (bytes).
Blocks in Use	Number of logical blocks in use.
File System	File system mount point.
Host	Name of the host on which the file system is placed.
Mbytes Free	Available size (megabytes).
Mbytes Rsvd	Reserved size for superuser (megabytes).
Mbytes in Use	Size used by general users (megabytes).
Mbytes in Use %	Percentage of size used by general users (megabytes) (%).
Remote File System	Remote file system name.
Total Size Blocks	Number of file system logical blocks.

# Space Usage - Top 10 Local File Systems

#### Overview

The Space Usage - Top 10 Local File Systems report displays real-time information about the top 10 most used local file systems. It is displayed as an aggregated bar graph.

# Storage destination

Reports/UNIX/Troubleshooting/Real-Time/

#### Record

File System Detail - Local (PD\_FSL)

#### **Fields**

Field name	Explanation
File System	File system mount point.
Mbytes in Use %	Size used by general users (megabytes) (%). To display a Local File System Detail report, click this field.
Total Size Mbytes	File system size (megabytes).

# Drilldown report (field level)

Report name	Explanation
Local File System Detail	Displays real-time information about the selected local file system. To display this report, click the <b>Mbytes in Use %</b> field.

# Space Usage - Top 10 Remote File Systems

#### Overview

The Space Usage - Top 10 Remote File Systems report displays real-time information about the top 10 most used remote file systems. It is displayed as an aggregated bar graph.

#### Storage destination

Reports/UNIX/Troubleshooting/Real-Time/

#### Record

File System Detail - Remote (PD\_FSR)

## **Fields**

Field name	Explanation
Mbytes in Use %	Size used by general users (megabytes) (%). To display a Remote File System Detail report, click this field.
Remote File System	Remote file system name.
Total Size Mbytes	File system size (megabytes).

# **Drilldown report (field level)**

Report name	Explanation
Remote File System Detail	Displays real-time information about the selected remote file system. To display this report, click the <b>Mbytes in Use %</b> field.
# System Overview (real-time report indicating system operation status)

### **Overview**

The System Overview report displays real-time information about the operation status of a system. This information is displayed as a list and a line graph.

### Storage destination

Reports/UNIX/Troubleshooting/Real-Time/

#### Record

System Summary Overview (PI)

#### Fields

Field name	Explanation
CPU %	CPU usage (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function). To display a CPU Usage - Top 10 Processes report, click this field.
Free Swap %	Percentage of available swap area size (megabytes) (%).
Kernel CPU %	Percentage of operation time in kernel mode (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function).
Logical I/O Ops	Number of times logical I/O processing occurred. To display an I/O Activity - Top 10 Processes report, click this field.
Major Faults/sec	Frequency of page faults that invoked physical I/O (number of times per second). To display a Major Page Faults - Top 10 Processes report, click this field.
Minor Faults/sec	Frequency of page faults that did not invoke physical I/O (number of times per second).
NFS Client Total Bad Ops	Total number of times processing failed on the NFS client.
NFS Server Total Bad Ops	Total number of times processing failed on the NFS server.

Field name	Explanation	
Physical I/O Ops	Number of times physical I/O processing occurred. To display an Avg Service Time - Top 10 Devices report, click this field.	
Record Time	Time when the record was created (Greenwich Mean Time).	
Run Queue	Number of processes waiting in the queue.	
Swapped-In Pages	Number of pages taken in by swap-in processing.	
Swapped-Out Pages	Number of pages taken out by swap-out processing.	
Total Page Scans	Number of pages checked by page scan.	
Total Pkts In	Total number of IPv4 TCP packets received, IPv4 UDP packets received, and IPv4 ICMP packets received. In 09-00 or later, the total number of packets for IPv4 or IPv6 is displayed. To display a Network Interface Summary report, click this field.	
User CPU %	Percentage of operation time in user mode (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function).	
Wait %	Percentage of time in I/O waiting status (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function).	

# Drilldown report (report level)

Report name	Explanation
Space Usage - Top 10 Local File Systems	Displays real-time information for the top 10 most used local file systems.
Space Usage - Top 10 Remote File Systems	Displays real-time information for the top 10 most used remote file systems.

# Drilldown report (field level)

Report name	Explanation
Avg Service Time - Top 10	Displays real-time information for the top 10 devices having the longest average operation time.
Devices	To display this report, click the <b>Physical I/O Ops</b> field.

Report name	Explanation
CPU Usage - Top 10 Processes	Displays real-time information for the top 10 processes with the highest CPU usage. To display this report, click the CPU % field.
I/O Activity - Top 10 Processes	Displays real-time information for the top 10 processes with the highest number of I/O operations. To display this report, click the <b>Logical I/O Ops</b> field. This report cannot be used on HP-UX, AIX, and Linux.
Major Page Faults - Top 10 Processes	Displays real-time information for the top 10 processes with the highest number of page faults that invoke physical I/O. To display this report, click the <b>Major Faults/sec</b> field.
Network Interface Summary	Displays network usage status information. To display this report, click the <b>Total Pkts In</b> field.
NFS Client Detail	Reserved report that cannot be used.
NFS Server Detail	Reserved report that cannot be used.

# System Overview (historical report indicating system operation status)

#### **Overview**

The System Overview report displays minute-by-minute historical information about the operation status for a system over the last hour. The information is displayed as a table and a line graph.

#### Storage destination

Reports/UNIX/Troubleshooting/Recent Past/

#### Record

System Summary Overview (PI)

#### Fields

Field name	Explanation
Block Reads	Number of times block read processing occurred. To display an I/O Overview report, click this field.
CPU %	CPU usage (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function). To display a CPU Usage Summary report, click this field.
Major Faults	Number of page faults that invoked physical I/O. To display a Memory Paging report, click this field.
NFS Client Total Bad Ops	The total number of times processing failed on the NFS client. To display an NFS Activity Overview report, click this field.
Swapped-In Pages/sec	Frequency at which pages were taken in by swap-in processing (number of pages per second). On AIX, the frequency at which paging area pages only were taken in by swap-in processing (number of pages per second).
Swapped-Out Pages/sec	Frequency at which pages were taken out by swap-out processing (number of pages per second). On AIX, the frequency at which paging area pages only were taken out by swap-out processing (number of pages per second).
Total Pkts In	The combined total of IPv4 TCP packets received, IPv4 UDP packets received, and IPv4 ICMP packets received. In 09-00 or later, the total number of packets for IPv4 or IPv6 is displayed. To display a Network Overview report, click this field.

Field name	Explanation
Wait %	Percentage of time in I/O waiting status (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function).

# Drilldown report (field level)

Report name	Explanation
CPU Usage Summary	Displays minute-by-minute historical information about the CPU usage over the last hour. To display this report, click the <b>CPU %</b> field.
I/O Overview	Displays minute-by-minute historical information about the number of I/Os over the last hour. To display this report, click the <b>Block Reads</b> field. This report cannot be used on Linux.
Memory Paging	Displays minute-by-minute historical information about the memory usage status over the last hour. To display this report, click the <b>Major Faults</b> field. This report cannot be used on Linux.
Network Overview	Displays minute-by-minute historical information about the network usage status over the last hour. To display this report, click the <b>Total Pkts In</b> field.
NFS Activity Overview	Displays minute-by-minute historical information about the operation status of the NFS client and NFS server over the last hour. To display this report, click the <b>NFS Client Total Bad Ops</b> field. This report cannot be used on Linux.

# **System Utilization Status**

#### **Overview**

The System Utilization Status report displays real-time information about the utilization status of a system. The information is displayed as a list and a line graph.

# Storage destination

Reports/UNIX/Status Reporting/Real-Time/

#### Record

System Summary Overview (PI)

## Fields

Field name	Explanation
15-Minute Run Queue Avg	Average number of threads that were waiting in the run queue in the past 15 minutes. On HP-UX, Solaris, and AIX, this value does not include the number of threads waiting for I/O. On Linux, this value includes the number of threads waiting for I/O.
Boot Time	Last boot time.
CPU %	CPU usage (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function).
Free Swap %	Percentage of available swap area size (megabytes) (%).
NFS Client Total Bad Ops	Total number of times processing failed on the NFS client.
NFS Server Total Bad Ops	Total number of times processing failed on the NFS server.
Page Scans/sec	Frequency of page scans (number of times per second).
Record Time	Time when the record was created (Greenwich Mean Time).
Total Pkts In	The combined total of IPv4 TCP packets received, IPv4 UDP packets received, and IPv4 ICMP packets received. In 09-00 or later, the total number of packets for IPv4 or IPv6 is displayed.

# **Workload Status**

#### **Overview**

The Workload Status report displays real-time information about the system workload. This information is displayed as a list and a line graph.

# Storage destination

Reports/UNIX/Status Reporting/Real-Time/

#### Record

System Summary Overview (PI)

# Fields

Field name	Explanation	
5-Minute Run Queue Avg	Average number of threads waiting in the run queue in the past 5 minutes. On HP-UX, Solaris, and AIX, this value does not include the number of threads waiting for I/O. On Linux, this value includes the number of threads waiting for I/O.	
CPU %	CPU usage (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function).	
Context Switches/sec	Frequency of context switches (number of times per second).	
NFS Client Total Bad Ops	Total number of times processing failed on the NFS client.	
NFS Server Total Bad Ops	Total number of times processing failed on the NFS server.	
Processes	Number of processes in the system.	
Record Time	Time when the record was created (Greenwich Mean Time).	
System Calls/sec	Frequency of system calls (number of times per second).	
Users	Number of real users.	

# Workload Status (Multi-Agent)

#### **Overview**

The Workload Status (Multi-Agent) report displays hourly historical information about the system workload for multiple hosts over the last 24 hours. The information is displayed as a table and a line graph.

#### Storage destination

Reports/UNIX/Status Reporting/Daily Trend/

#### Record

System Summary Overview (PI)

### Fields

Field name	Explanation
1-Minute Run Queue Avg	Average number of threads that were waiting in the run queue in the past one minute. On HP-UX, Solaris, and AIX, this value does not include the number of threads waiting for I/O. On Linux, this value includes the number of threads waiting for I/O.
Agent Instance <sup>#</sup>	Name of the host on which PFM - Agent for Platform is operating.
CPU %	CPU usage (%). This is also the average value of the percentage for each processor (for AIX 5L V5.3 or later, it includes processors after logical partitioning by the Micro-Partitioning function).
Context Switches/sec	Frequency of context switches (number of times per second).
Free Swap %	Percentage of available swap area size (megabytes) (%).
Page Scans/sec	Frequency of page scans (number of times per second).
Processes	Number of processes in the system.
System Calls/sec	Frequency of system calls (number of times per second).
Users	Number of real users.

#

This field is added only when data is recorded in the Store database. For details about adding fields only when data is recorded in the Store database, see *6*. *Records*.

# Chapter 6. Records

This chapter explains PFM - Agent for Platform records. For details about how to collect performance data for each record, see the chapter explaining the functions of Performance Management in the manual *Job Management Partner 1/Performance Management Planning and Configuration Guide*, or the chapter explaining the management of operation monitoring data in the manual *Job Management Partner 1/Performance Management User's Guide*.

Data model Format of record explanations List of ODBC key fields Summarization rules List of data types Field values Fields added only when data is stored in the Store database Fields that are output when data stored in the Store database is exported Notes on records List of records

#### Data model

The records and fields that each PFM - Agent has are summarily referred to as a *data model*. Each PFM - Agent and the data model it has are assigned unique version numbers. For details about data model versions of PFM - Agent for Platform, see *I. Version Compatibility*.

To check the data model version of each PFM - Agent, use the Agents window in PFM - Web Console to display the agent properties.

For details about data models, see the chapter explaining the functions of Performance Management in the manual *Job Management Partner 1/Performance Management Planning and Configuration Guide*.

#### Format of record explanations

This chapter describes PFM - Agent for Platform records in alphabetical order. The explanation of each record consists of the following items:

#### Function

Provides an overview and notes on the performance data stored in each record.

#### Default values and values that can be specified

The default values of the performance data collection conditions that are set in each record and the values that the user can specify in place of the default values are shown in a table. The table below explains the meaning of the items described in *Default values and values that can be specified*. For details about the items shown in this table, see the chapter explaining management of operation monitoring data in the manual *Job Management Partner 1/Performance Management User's Guide*.

Item	Meaning	Modifiable
Collection Interval	Performance data collection interval (seconds).	Yes: Can be modified
Collection Offset <sup>#1</sup>	Offset value for starting the collection of performance data (seconds). For details about the offset value, see the chapter explaining management of operation monitoring data in the manual <i>Job Management</i> <i>Partner 1/Performance Management User's Guide</i> . For details about the start time of performance data collection, see the chapter explaining the functions of Performance Management in the manual <i>Job</i> <i>Management Partner 1/Performance Management</i> <i>Planning and Configuration Guide</i> .	No: Cannot be modified
Log	Indicates whether to register the collected performance data in the Store database: Yes: Recorded. However, the data is not recorded if Collection Interval=0. No: Not recorded.	
LOGIF	Condition for determining whether to register the collected performance data in the Store database.	

*Table 6-1:* Default values and changeable values

ltem	Meaning	Modifiable
Sync Collection With <sup>#2</sup>	Indicates whether to collect performance data synchronously with the record displayed in the Description record property. For details, see the chapter explaining management of operation monitoring data in the manual <i>Job Management</i> <i>Partner 1/Performance Management User's Guide</i> .	

#1

A value of between 0 and 32,767 seconds (the value within the range specified for Collection Interval). Use this item to distribute the collection load, because executing data collection all at once results in processing load concentration. Note that the data collection duration to be recorded is the same as the Collection Interval, regardless of the value specified for Collection Offset.

When changing the value of Collection Offset, specify a value after taking the collection load into consideration.

#2

If Sync Collection With is displayed, neither Collection Interval nor Collection Offset is displayed.

#### **ODBC** key fields

Shows the ODBC key fields required to use an SQL statement in PFM - Manager or PFM - Base to utilize the record data stored in the Store database. Some ODBC key fields are common to all records while others are unique to some records. Only those ODBC key fields that are unique to each record are shown for each record. Only multi-instance records have unique ODBC key fields.

For details about the ODBC key fields common to all records, see *List of ODBC key fields* in this chapter. For details about how to use ODBC key fields, see the chapter explaining operation analysis linked with an ODBC-compatible application program in the manual *Job Management Partner 1/Performance Management User's Guide*.

#### Lifetime

Indicates the duration over which the consistency of the performance data collected into each record is guaranteed. For details about lifetime, see the chapter explaining the functions of Performance Management in the manual *Job Management Partner 1/ Performance Management Planning and Configuration Guide.* 

#### **Record size**

Indicates the size of performance data that is stored in each record in a single collection operation.

#### Fields

The fields in each record are explained in a table. The individual items in a table are explained below.

- PFM View name (PFM Manager name)
  - PFM View name

Indicates the field name (PFM - View name) that is displayed in PFM - Web Console.

• PFM - Manager name

Indicates the field name (PFM - Manager name) described in an SQL statement when PFM - Manager uses an SQL statement to utilize the field data stored in the Store database.

In an SQL statement, the Manager name is described with the record ID of each record added to the front. For example, for the Flags (FLAGS) field of the Process Detail (PD) record, PD\_FLAGS is used.

Explanation

Describes the performance data stored in each field.

Summary

Indicates the method (summarization rules) to be used by Agent Store when summarizing data. For details about summarization rules, see *Summarization rules* in this chapter.

Format

Indicates the data type of the value in each field, such as char and float types. For details about data types, see *List of data types* in this chapter.

Delta

When data is expressed as a changed amount relative to data collected as an accumulated value, it is called *delta*. For details about delta, see *Field values* in this chapter.

Unsupported

Indicates a platform or platform version that is not supported in each field:

- Two hyphens (--) indicate that the field can be used in all platforms that are supported by PFM Agent for Platform.
- Data source

Indicates the calculation method or collection destination for the value in the applicable field. For details about field values, see *Field values* in this chapter.

## List of ODBC key fields

Some ODBC key fields are common to all records while others are unique to some records. This section shows the ODBC key fields that are common to all records. ODBC key fields are required if you use an SQL statement in PFM - Manager or PFM - Base to utilize the record data stored in the Store database.

The table below shows a list of ODBC key fields common to all records. For details about the ODBC key fields unique to each record, see the explanation of each record.

**ODBC** key fields **ODBC** format Data Explanation Internal record-id DATE Record key indicating the date SQL INTEGER on which the record was created record-id DATETIME SQL INTEGER Internal Combination of the *record-id\_*DATE field and the *record-id*\_TIME field Name of the host on which PFM record-id DEVICEID Internal SQL VARCHAR - Agent is running record-id\_drawer\_type Internal Category. The following values SQL\_VARCHAR are valid: m: Minute H: Hour D: Day W: Week M: Month Y: Year record-id prod inst SQL VARCHAR Internal Name of the host on which PFM - Agent is running record-id prodid Internal PFM - Agent's product ID SQL VARCHAR record-id record type Internal Record type identifier (4 bytes) SQL VARCHAR *record-id\_*TIME SQL\_INTEGER Internal Time at which the record was created (Greenwich Mean Time)

Table 6-2: List of ODBC key fields common to all records

#### Summarization rules

For records of the PI record type, two types of data are stored in the Store database: the data collected at the interval set in Collection Interval, and the data summarized for a specific period of time (minute, hour, day, week, month, or year) according to a predefined rule. The type of summarization is defined for each field. This definition is called a *summarization rule*.

Depending on the summarization rule, intermediate data used during the summarization period must sometimes be retained. In this case, a field for holding the intermediate data is added to a record in the Store database. This field is called an *added field*.

Part of an added field is displayed as a record field in PFM - Web Console. The added fields displayed on PFM - Web Console can be used as the fields to be displayed in a historical report.

To differentiate them from the fields that are added through summarization, the fields described in the explanation of each record in this chapter are called *fixed fields*.

The following field names are used for added fields:

• Added field name stored in the Store database

A field name consisting of the PFM - Manager name in the fixed field and an added suffix

• Added field name displayed on PFM - Web Console

A field name consisting of the PFM - View name in the fixed field and an added suffix

The table below shows the suffixes to be added to the PFM - Manager name, the corresponding suffixes to be added to the PFM - View name, and the data stored in the fields.

PFM - Manager name	PFM - View name	Stored data
_TOTAL	(Total)	Total field value of the records within the summarization period
_TOTAL_SEC	(Total)	Total field value of the records within the summarization period (for a utime field)
_COUNT		Number of records collected within the summarization period
_HI	(Max)	Maximum field value of the records within the summarization period

Table 6-3: List of suffixes for added fields

PFM - Manager name	PFM - View name	Stored data
_ <sup>LO</sup>	(Min)	Minimum field value of the records within the summarization period

Legend:

--: No added field

The table below shows a list of summarization rules.

Table 6-4: List of summarization rules

Summarization rule name	Summarization rule
СОРҮ	Stores the field value of the latest record within the summarization period without any modification.
AVG	<pre>Stores the average field value within the summarization period. The computation formula follows: (total-field-value) / (number-of-collected-records) Added fields (Store database)  TOTAL  TOTAL_SEC (for a utime field)  COUNT Added field (PFM - Web Console)<sup>#1, #2</sup>   _ (Total)</pre>
8	Stores the average field value within the summarization period. Applied primarily to percentage fields. The computation formula follows: (total-field-value) / (number-of-collected-records) Added fields (Store database) • _TOTAL • _TOTAL_SEC (for a utime field) • _COUNT

Summarization rule name	Summarization rule
R	Stores the average field value within the summarization period. Applied primarily to percentage fields that indicate the amount per second. The computation formula follows: (total-field-value) / (number-of-collected-records) When delta is specified for a real-time report, the special computation method that divides the difference by an interval is used. Added fields (Store database) • _TOTAL • _TOTAL_SEC (for a utime field) • _COUNT Added field (PFM - Web Console) <sup>#1, #2</sup> • (Total)
	No summarization

#### #1

A utime field containing \_AVG in the PFM - Manager name cannot use a (Total) field added to PFM - Web Console in a historical report.

#### #2

A field containing any of the following character strings in the PFM - Manager name cannot use a (Total) field added to PFM - Web Console in a historical report:

\_per\_, pct, percent, \_avg, and \_rate\_total

# List of data types

The table below lists the data types for various field values along with the corresponding C and C++ data types. The field values shown under *Data type* in this table are shown in the *Format* column in the field table for each record.

Data type			
Field	C and C++	Bytes	Explanation
char(n)	char()	Number inside ( )	Character string having a length of <i>n</i> bytes
double	double	8	Numerical value (1.7E ± 308 (15 digits))
float	float	4	Numerical value (3.4E ± 38 (7 digits))
long	long	4	Numerical value (-2,147,483,648 to 2,147,483,647)
short	short	2	Numerical value (-32,768 to 32,767)
string(n)	char[]	Number inside ( )	Character string having <i>n</i> -byte length. The last character is null.
time_t	unsigned long	4	Numerical value (0 to 4,294,967,295)
timeval	struct	8	Numerical value (the first 4 bytes indicate seconds, and the next 4 bytes indicate microseconds.)
ulong	unsigned long	4	Numerical value (0 to 4,294,967,295)
utime	struct	8	Numerical value (the first 4 bytes indicate seconds, and the next 4 bytes indicate microseconds.)
word	unsigned short	2	Numerical value (0 to 65,535)
(Not applicable)	unsigned char	1	Numerical value (0 to 255)

*Table 6-5*: List of data types

#### **Field values**

This section explains the values stored in individual fields.

#### Data source

Each field stores a value acquired from Performance Management or monitoring target program, or a value computed from such a value based on a certain computation formula. The acquisition destination or computation method for each field value is shown under the *Data source* column.

If performance data acquired from UNIX is processed and set as a field value, the character string in PFM - Agent for Platform's *Data source* column shows the computation method for the value that is set in the field. For example, for the value of the Avg Wait Time (AVG\_WAIT\_TIME) field of the Device Detail (PI\_DEVD) record, the value obtained by dividing the value of the Total Wait Time (TOTAL\_WAIT\_TIME) field by the value of the Total I/O Ops (TOTAL\_OPS) field is stored.

Two hyphens (--) indicate that performance data is not processed and set as a field value.

#### Delta

Data expressed as an amount of change is called a *delta*. For example, if the performance data collected during the first interval is 3 and that collected during the second interval is 4, 1 is stored as the amount of change. Whether each field value is a delta is indicated under the *Delta* column in the field table.

The performance data collected by PFM - Agent for Platform varies as shown in the table below.

Real-time reports for which **Indicate delta value** is selected<sup>#</sup>, historical reports, and alarms

Record type	Delta	Data source	Is there any field that has delta = Yes in its data source column?	Value displayed or value evaluated through alarm monitoring
PI record type	Yes	No		Changed amount
		Yes	No	Changed amount in the result computed based on the value at the time of collection
			Yes	Result computed based on the changed amount
	No	No		Value at the time of collection

Record type	Delta	Data source	Is there any field that has delta = Yes in its data source column?	Value displayed or value evaluated through alarm monitoring
		Yes	No	Result computed based on the value at the time of collection
			Yes	Result computed based on the changed amount
PD record type	Yes	No		Changed amount. Accumulated value for a historical report or alarm of the Process Detail (PD) record
		Yes	No	
			Yes	Result computed based on the changed amount. Result computed based on the accumulated value for a historical report or alarm of the Process Detail (PD) record
	No	No		Value at the time of collection
		Yes	No	Result computed based on the value at the time of collection
			Yes	Result computed based on the changed amount. Result computed based on the accumulated value for the Process Detail (PD) record
PL record type	No	No		Differing-components information for each collection interval

Legend:

--: Not applicable

#

Indicates whether the following items in PFM - Web Console are selected:

- Indicate delta value in the Indication settings (Realtime) window, which opens when Edit is chosen in the Report wizard
- Indicate delta value under Indication settings (Realtime) under the Properties tab in the Report window

Real-time reports for which Indicate delta value is not selected  $^{\#}$ 

Record type	Delta	Data source	Is there any field that has delta = Yes in its data source column?	Displayed value
PI record type	Yes	No		Accumulated value
		Yes	No	Result computed based on the value at the time of collection
			Yes	Result computed based on the accumulated value
	No	No		Value at the time of collection
		Yes	No	Result computed based on the value at the time of collection
			Yes	Result computed based on the accumulated value
PD record type	Yes	No		Accumulated value
		Yes	No	
			Yes	Result computed based on the accumulated value
	No	No		Value at the time of collection
		Yes	No	Result computed based on the value at the time of collection
			Yes	Result computed based on the accumulated value
PL record type	No	No		Accumulated information since the service startup

Legend:

--: Not applicable

#

The following items in the dialog box in PFM - Web Console show whether **Indicate delta value** is selected:

- Indicate delta value in the Indication settings (Realtime) window, which opens when Edit is chosen in the Report wizard
- Indicate delta value under Indication settings (Realtime) under the

#### **Properties** tab in the Report window

#### Example:

The Idle % field of the CPU - Per Processor Detail (PI\_CPUP) record contains a PI-type record, and delta = No is set in this field. However, delta = Yes is set for the field indicated as the data source. Therefore, for real-time reports for which **Indicate delta value** is selected, historical reports, and alarms, a result computed based on the changed amount is displayed.

Note the following points about performance data collection:

• For a PI-type record to be saved, performance data must be collected at least twice.

In each collection interval specified in PFM - Web Console, performance data is collected into a PI-type record. However, storing of performance data in the Store database is not executed at the point in time when performance data collection is specified in PFM - Web Console.

• The historical data of a PI-type record contains data that requires the difference from the previously collected data (for example, a delta value), and thus data from two collection intervals is required. Therefore, it may take as long as twice the specified time before the first historical data is stored in the Store database.

For example, if the performance data collection interval is set to 300 seconds (5 minutes) at 18:32 in PFM - Web Console, the first data collection begins at 18:35. The next data collection begins at 18:40. Then, historical data is created based on the data collected at 18:35 and 18:40, and is stored in the Store database at 18:40.

- If **Indicate delta value** is selected for a real-time report, a value is displayed when the first data is collected. However, if the report needs the previous data, the first value is displayed as 0. When the second or subsequent data is collected, the collected data value is displayed.
- If the OS counter value wraps around because, for example, the system has been operating for a long time, the value of the Delta field might be extremely large.

#### Averages and percentages in individual fields

Some averages and percentages in individual fields are determined as values on a second-by-second basis, while others are determined according to the data collection interval. Unless otherwise specified, the values determined according to the data collection interval are used (if the interval is 60 seconds, data is collected every minute).

#### Interval field values

Interval field values vary according to the record type as shown in the table below.

2	ο	6
2	o	U

Tabl	e 6-6:	Interval	field	values

Record type	Explanation
PI record type	<ul> <li>Real-time reports         If Indicate delta value is selected for a real-time report, the first value is 0.         Thereafter, the value is the same as the refresh interval that is set in the report. The value is computed using the following formula:         <i>interval-field-value = record-time-field-value - record-time-field-value-obtained-during-previous-collection-interval</i>         If Indicate delta value is not selected for a real-time report, the value obtained by subtracting the system startup time from the current time is used. The value is computed using the following formula:         <i>interval-field-value = record-time-field-value - system-startup-time</i> </li> <li>Historical reports         The same value as the Collection Interval value. Computed using the following formula:         <i>interval-field-value = record-time-field-value - system-startup-time</i> </li> </ul>
PD record type	Always 0.
PL record type	Always 0.

# Fields added only when data is stored in the Store database

The table below shows the fields that are added only when data is stored in the Store database.

PFM - View name (PFM - Manager name)	Explanation	Format	Delta	Supported version	Data source
Agent Host (DEVICEID)	Name of the host on which PFM - Agent is running	string (256)	No	All	
Agent Instance (PROD_INST)	Name of the host on which PFM - Agent is running	string (256)	No	All	
Agent Type (PRODID)	Product ID of PFM - Agent indicated as a 1-byte identifier	char	No	All	
Date (DATE)	Date on which the record was created (Greenwich Mean Time) <sup>#1,</sup> #3	char (3)	No	All	
Date and Time (DATETIME)	Combination of the Date (DATE) field and the Time (TIME) field <sup>#3</sup>	char (6)	No	All	
Drawer Type (DRAWER_TYPE)	For records of the PI record type, the data summarization category is indicated. The displayed category differs depending on whether the report is displayed in PFM - Web Console or using the ODBC driver. <sup>#2</sup>	char	No	All	
GMT Offset (gmt_adjust)	Difference between the Greenwich Mean Time and the local time, in seconds	long	No	All	
Time (TIME)	Time at which the record was created (Greenwich Mean Time) <sup>#1,</sup> #3	char (3)	No	All	

*Table 6-7:* Fields that are added only when a record is recorded in the Store database

Legend:

--: Indicates that the performance data acquired from UNIX is not processed and set as a field.

#1

In records of the PI record type, data is summarized, and therefore the time used as the reference point for summarization is set. The table below shows the setting for each record category.

Category	Setting for each record category
Minute	0 seconds for the time at which the record is created
Hour	0 minutes and 0 seconds for the time at which the record is created
Day	0 hours, 0 minutes, and 0 seconds for the day on which the record is created
Week	0 hours, 0 minutes, and 0 seconds for the week in which the record is created
Month	0 hours, 0 minutes, and 0 seconds for the first day of the month in which the record is created
Year	0 hours, 0 minutes, and 0 seconds of January 1 of the year in which the record is created

Table 6-8: Setting for each record category

#2

The table below shows the differences in display depending on whether the report is displayed on PFM - Web Console or using the ODBC driver.

*Table 6-9:* Differences in data summarization category according to the display method

Category	PFM - Web Console	ODBC driver
Minute	Minute	m
Hour	Hour	Н
Day	Day	D
Week	Week	W
Month	Month	М
Year	Year	У

#3

When data is displayed in a report or by using the ODBC driver, the Date field uses the *YYYYMMDD* format, the Date and Time field uses the *YYYYMMDD hh:mm:ss* format, and the Time field uses the *hh:mm:ss* format.

# Fields that are output when data stored in the Store database is exported

When data stored in the Store database is exported by using the jpctool db dump (jpcctrl dump) command, the fields listed below are output. Although these fields are also added when a record is stored in the Store database, they are not displayed in PFM - Web Console and therefore cannot be used as fields displayed in a report. Do not use these fields for operations because they are used internally by PFM - Agent.

- record-ID\_DATE\_F
- *record-ID\_*DEVICEID\_F
- record-ID\_DRAWER\_TYPE\_F
- *record-ID*\_DRAWER\_COUNT
- record-ID\_DRAWER\_COUNT\_F
- record-ID\_INST\_SEQ
- record-ID\_PRODID\_F
- record-ID\_PROD\_INST\_F
- *record-ID*\_RECORD\_TYPE
- *record-ID*\_RECORD\_TYPE\_F
- record-ID\_SEVERITY
- record-ID\_SEVERITY\_F
- record-ID TIME F
- record-ID\_UOWID
- record-ID\_UOWID\_F
- record-ID\_UOW\_INST
- *record-ID\_*UOW\_INST\_F
- record-ID\_PFM Manager-name\_SEC
- record-ID\_PFM Manager-name\_MSEC

#### Notes on records

Note the following points when collecting records.

#### Notes on performance information when modifying system resources

Note the following when using the DLPAR function of AIX 5L V5.3 or later, the vPars function of HP-UX 11i, or the DR function of Solaris 9 or later to modify the system resources:

• Regardless of whether a PFM - Agent for Platform service is running or stopped, if the system resources are modified, there is no continuity between the performance data before and after the modification. Therefore, the performance data before and after the modification must be treated as separate.

If necessary, back up the Store database before modifying the system resources, then clear the Store database and begin collecting new performance data. For details about how to back up the Store database, see the chapter explaining backup and restoration in the manual *Job Management Partner 1/Performance Management User's Guide*.

• For the DR function of Solaris 9 or later, if the system resources are modified while a PFM - Agent for Platform service is running, the performance data listed in Table 6-10 cannot be correctly collected. Therefore, before modifying the system resources, stop the PFM - Agent for Platform service. After the modification, restart the PFM - Agent for Platform service. For details about how to start and stop services, see the chapter explaining how to start and stop Performance Management in the manual *Job Management Partner 1/ Performance Management User's Guide*.

The table below shows the types of system resources that are affected if they are modified while a PFM - Agent for Platform service is running, and the actions that you can take to correctly display reports after the modification.

Record	OS and name of the function used to modify system resources	System resource type	Actions to be taken after modification
CPU - Per Processor Detail (PI_CPUP) <sup>#1</sup>	<ul> <li>DLPAR of AIX 5L V5.3 or later</li> <li>vPars of HP-UX 11i</li> <li>DR of Solaris 9 or later</li> </ul>	CPU	<ul> <li>For a real-time report: Display the report again.</li> <li>For a historical report: Specify the display period so that it does not include the date and</li> </ul>
Device Detail (PI_DEVD) <sup>#1</sup>	DR of Solaris 9 or later	Device	time when the system resources were modified.
Device Summary (PI_DEVS) <sup>#1</sup>	-		
Network Interface Detail (PI_NIND) <sup>#1</sup>		LAN board	
Network Interface Summary (PI_NINS) <sup>#1</sup>			
System Summary Overview (PI) <sup>#2</sup>	DLPAR of AIX 5L V5.3 or later	<ul><li> CPU</li><li> Memory</li></ul>	
	vPars of HP-UX 11i	CPU	
	DR of Solaris 9 or later	<ul><li> CPU</li><li> Memory</li></ul>	

*Table 6-10:* System resource types and actions to be taken to correctly display reports after modification

#1

Fields other than those listed below are affected by a system resource modification:

- Interval (INTERVAL)
- Record Time (RECORD\_TIME)
- Record Type (INPUT\_RECORD\_TYPE)
- Fields that are added only when data is recorded in the Store database

#### #2

The table below shows the fields that are affected by a system resource modification.

System resource type	Target field			
CPU	<ul> <li>Active CPUs (NUMBER_OF_ACTIVE_CPUS)</li> <li>CPU % (KERNELMODE_USERMODE_PERCENT)</li> <li>Context Switches (CONTEXT_SWITCHES)</li> <li>Context Switches/sec (CONTEXT_SWITCHES_PER_SECOND)</li> <li>Idle % (IDLE_TIME_PERCENT)</li> <li>Interrupts (INTERRUPTS)</li> <li>Interrupts/sec (INTERRUPTS_PER_SECOND)</li> <li>Kernel CPU % (KERNELMODE_PERCENT)</li> <li>System Calls (SYSTEM_CALLS)</li> <li>System Calls/sec (SYSTEM_CALLS_PER_SECOND)</li> <li>Total Kernel-Mode Time (TOTAL_KERNELMODE_TIME)</li> <li>Total Idle Time (TOTAL_IDLE_TIME)</li> <li>Total User-Mode Time (TOTAL_USERMODE_TIME)</li> <li>Total Wait Time (TOTAL_WAIT_TIME)</li> <li>Traps(TRAPS)</li> <li>Traps/sec (TRAPS_PER_SECOND)</li> <li>User CPU % (USERMODE_PERCENT)</li> <li>Wait % (WAIT_TIME_PERCENT)</li> </ul>			
Memory	<ul> <li>Alloc Mem % (ALLOCATED_MEMORY_PERCENT)</li> <li>Alloc Mem Mbytes (ALLOCATED_MEMORY_MBYTES)</li> <li>Free Mem % (FREE_MEMORY_PERCENT)</li> <li>Free Mem Mbytes (FREE_MEMORY_MBYTES)</li> <li>Total Physical Mem Mbytes (TOTAL_MEMORY_MBYTES)</li> </ul>			

*Table 6-11:* Fields that are affected by a system resource modification

#### Performance information about resources that are logically partitioned

When the Micro-Partitioning function is used in AIX 5L V5.3 or later, a record is created for each logically partitioned processor. Therefore, even when resources are part of the same physical resource, their performance is not affected by other logical resources. Note that for a single-instance record of the PI record type, the combined total value of all resources including logical resources is displayed.

The table below shows the records and fields that are affected by the Micro-Partitioning function.

*Table 6-12:* Records and fields that are affected by the Micro-Partitioning function

Record name	Field name
CPU - Per Processor Detail (PI_CPUP)	All
Process Detail (PD)	CPU % (CPU_PERCENT_USED)

Record name	Field name
Process Detail Interval (PD_PDI)	
Program Summary (PD_PGM)	
System Summary Overview (PI)	Active CPUs (NUMBER_OF_ACTIVE_CPUS)
	CPU % (kernelmode_usermode_percent)
	Idle % (IDLE_TIME_PERCENT)
	Kernel CPU % (KERNELMODE_PERCENT)
	Total Idle Time (TOTAL_IDLE_TIME)
	Total Kernel-Mode Time (TOTAL_KERNELMODE_TIME)
	Total User-Mode Time (TOTAL_USERMODE_TIME)
	User CPU % (USERMODE_PERCENT)
	Wait % (wait_time_percent)
Terminal Summary (PD_TERM)	CPU % (CPU_PERCENT_USED)
User Summary (PD_USER)	
Workgroup Summary (PI_WGRP)	

#### Record generation results when data cannot be collected

The following explains the record generation results when data to be stored in fields cannot be collected:

Records cannot be generated

When PFM - Agent for Platform cannot collect performance data to be stored in the fields defined as ODBC key fields, no records are generated.

#### Information on terminated processes

Functions for collecting information on terminated processes cannot be used. Therefore, the performance data for the fields shown below cannot be collected.

Record name	Field name
Process Detail (PD)	Accounting Flags (ACCOUNTING_FLAGS)
	End Time (END_TIME)
	Exit Status (EXIT_STATUS)

Table 6-13: Fields for which performance data cannot be collected

Record name	Field name
	Mem Charge (MEMORY_CHARGE)
Process Detail Interval (PD_PDI)	Accounting Flags (ACCOUNTING_FLAGS)
	End Time (END_TIME)
	Exit Status (EXIT_STATUS)

#### Notes on reserved records

If PFM - Agent for Platform 07-00 or earlier is upgraded to 08-00 or later, records reserved in 08-00 or later appear in **Record** in the New Report > Field window of the PFM - Web Console report wizard during history collection setup. These records can be modified. However, if they are modified and then specified for data collection, no records will be collected. The following message is issued to the common message log during the first collection attempt only:

KAVF10600-W An invalid collection event occurred. (*record-id*, rc=*maintenance-code*)

Reference note:

When you perform a new installation of PFM - Agent for Platform 08-00 or later, the properties of the reserved records are not displayed.

#### Note on specifying a process name in an alarm condition

When you specify a process name in an alarm condition for the PD\_APP or PI\_WGRP record, only the string length that is within the range of data that can be collected for the PD record is used to determine the alarm condition. Accordingly, when the process name exceeds the data range as shown in the example below, and you specify \*xyz in the alarm condition, the expected condition judgment cannot be performed, since PFM - Agent for Platform does not hold the xyz part. In this case, specify an alarm condition within the range of data that can be collected for the PD record by, for example, specifying abc\*.

Example:

abc... xyz (the xyz part is outside the range that can be collected for the PD record)  $% \left( \left( {{{\mathbf{x}}_{\mathbf{y}}}_{\mathbf{y}}^{T}} \right) \right)$ 

# List of records

The table below shows the records that can be collected by PFM - Agent for Platform and the information stored in these records by category.

Category	Record name	Record ID	Information stored
System Memory Processor Protocol NFS	System Summary Overview	PI	Performance data per unit time on the entire system
Disk	File System Detail - Local	PD_FSL	Performance data showing the status of the local file system capacity at a given point in time
	File System Detail - Remote	PD_FSR	Performance data showing the status of the remote file system capacity at a given point in time
	Device Detail	PI_DEVD	Performance data per unit time on the local disk device usage
	Device Summary	PI_DEVS	Performance data in which the data stored in the Device Detail (PI_DEVD) record is summarized per unit time
Network	Network Interface Detail	PI_NIND	Performance data per unit time on a network interface
	Network Interface Summary	PI_NINS	Performance data in which the data stored in the Network Interface Detail (PI_NIND) record is summarized per unit time

Table 6-14: PFM - Agent for Platform record list (by category)

Category	Record name	Record ID	Information stored
Process	Process Detail	PD	Performance data showing the status of a process at a given point in time
	Process Detail Interval	PD_PDI	Performance data per unit time on a process
	Process Summary	PD_PDS	Performance data in which the data stored in the Process Detail (PD) record is summarized as a state at a given point in time
	Program Summary	PD_PGM	Performance data in which the data stored in the Process Detail (PD) record is summarized as the state for each program at a given point in time
	Terminal Summary	PD_TERM	Performance data in which the data stored in the Process Detail (PD) record is summarized as the state for each terminal at a given point in time
	User Summary	PD_USER	Performance data in which the data stored in the Process Detail (PD) record is summarized as the state for each user at a given point in time
	Workgroup Summary	PI_WGRP	Performance data per unit time on the processor's arithmetic operations, logical computation, initialization of peripheral device operations, the rate of interrupts such as process thread execution, and the time spent.
Processor	CPU - Per Processor Detail	PI_CPUP	Performance data per unit time on the processor usage
Message	Logged Messages	PL_MESS	Messages that are written into the log file specified by the Messages File property or the event file. This record cannot be used in Linux.
User-defined record	Application Summary	PD_APP	Performance data that summarizes, by application, the records stored in the Process Detail (PD) record at a given point in time
	User Data Detail	PD_UPD	User-specific performance data that indicates the status at a given point in time
	User Data Detail - Extended	PD_UPDB	
	User Data Interval	PI_UPI	User-specific performance data per unit time
	User Data Interval - Extended	PI_UPIB	

Category	Record name	Record ID	Information stored
Reserved records	IPC Summary	PD_IPCS	These records are reserved and cannot be used.
	Message Queue Detail	PD_MSQD	
	NFS Client Detail	PI_NCD	
	NFS Client Overview	PI_NCO	
	NFS Server Detail	PI_NSD	
	NFS Server Overview	PI_NSO	
	Quotas	PD_UFSQ	
	Semaphore Detail	PD_SEMD	
	Shared Memory Detail	PD_SHMD	
	Tape Device Summary	PI_TAPS	
	User File System Storage	PD_UFSS	

# Application Summary (PD\_APP)

#### Function

The Application Summary (PD\_APP) record stores performance data that summarizes, by application, the records stored in the Process Detail (PD) record at a given point in time. One record is stored for each application. This record is a multi-instance record.

Note:

To change the application definition, you must change the settings from PFM - Web Console.

#### Default values and values that can be specified

Item	Default value	Modifiable
Log	No	Yes
LOGIF	Blank	Yes
Sync Collection With	Detail Records, PD	No

#### **ODBC** key field

PD\_APP\_APPLICATION\_NAME

#### Lifetime

From the time the setting for monitoring application operation is specified using PFM - Web Console until the setting is deleted.

### **Record size**

- Fixed portion: 681 bytes
- Variable portion: 984 bytes

#### Fields

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Application Exist(APPLICATI ON_EXIST)	The results of all Process Range conditions. NORMAL or ABNORMAL is displayed. When a blank is displayed for Process01 Status -Process15 Status, the blank is ignored. NORMAL: At least one of the results of Process01 Status -Process15 Status is NORMAL. ABNORMAL: All the results of Process01 Status -Process15 Status are ABNORMAL. Blank: The settings are not set.		string(1 0)	No		
Application Name(APPLICATI ON_NAME)	The name specified by Application monitoring setting		string(6 4)	No		
Application Status(APPLICATI ON_STATUS)	The results of all Process Range conditions. NORMAL or ABNORMAL is displayed. When a blank is displayed for Process01 Status -Process15 Status, the blank is ignored. NORMAL: All the results of Process01 Status -Process15 Status are NORMAL. ABNORMAL: At least one of the results of Process01 Status -Process15 Status is ABNORMAL Blank: The settings are not set.		string(1 0)	No		
PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
---	--	-------------	----------------	-----------	----------------------------------	-------------
Interval(INTERVA L)	Interval for which the Application Summary (PD_APP) record was stored (in seconds). The normal value is 0.		ulong	No		
Process01 Count(PROCESS0 1_COUNT)	The number of processes currently operating		word	No		
Process01 Kind(PROCESS01 _KIND)	The specified type of the condition is displayed		string(4)	No		
Process01 Name(PROCESS0 1_NAME)	Process name		string(3 2)	No		
Process01 Range(PROCESS0 1_RANGE)	The range conditions for each process. The conditions are displayed as "Minimum value-Maximum value".		string(1 2)	No		
Process01 Status(PROCESS0 1_STATUS)	The Process Range condition result for each process. NORMAL, ABNORMAL, or a blank is displayed. NORMAL: No error exists. ABNORMAL: An error exists. Blank: The settings are not set.		string(1 0)	No		
Process02 Count(PROCESS0 2_COUNT)	The number of processes currently operating		word	No		
Process02 Kind(PROCESS02 _KIND)	The specified type of the condition is displayed		string(4)	No		
Process02 Name(PROCESS0 2_NAME)	Process name		string(3 2)	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Process02 Range(PROCESS0 2_RANGE)	The range conditions for each process. The conditions are displayed as "Minimum value-Maximum value".		string(1 2)	No		
Process02 Status(PROCESS0 2_STATUS)	The Process Range condition result for each process. NORMAL, ABNORMAL, or a blank is displayed. NORMAL: No error exists. ABNORMAL: An error exists. Blank: The settings are not set.		string(1 0)	No		
Process03 Count(PROCESS0 3_COUNT)	The number of processes currently operating		word	No		
Process03 Kind(PROCESS03 _KIND)	The specified type of the condition is displayed		string(4)	No		
Process03 Name(PROCESS0 3_NAME)	Process name		string(3 2)	No		
Process03 Range(PROCESS0 3_RANGE)	The range conditions for each process. The conditions are displayed as "Minimum value-Maximum value".		string(1 2)	No		
Process03 Status(PROCESS0 3_STATUS)	The Process Range condition result for each process. NORMAL, ABNORMAL, or a blank is displayed. NORMAL: No error exists. ABNORMAL: An error exists. Blank: The settings are not set.		string(1 0)	No		

DEM View neme	Description	Cum	Format	De	Not	Data agurag
PFM-View name (PFM-Manager name)	Description	mary	Format	lta	Support ed versions	Data source
Process04 Count(PROCESS0 4_COUNT)	The number of processes currently operating		word	No		
Process04 Kind(PROCESS04 _KIND)	The specified type of the condition is displayed		string(4)	No		
Process04 Name(PROCESS0 4_NAME)	Process name		string(3 2)	No		
Process04 Range(PROCESS0 4_RANGE)	The range conditions for each process. The conditions are displayed as "Minimum value-Maximum value".		string(1 2)	No		
Process04 Status(PROCESS0 4_STATUS)	The Process Range condition result for each process. NORMAL, ABNORMAL, or a blank is displayed. NORMAL: No error exists. ABNORMAL: An error exists. Blank: The settings are not set.		string(1 0)	No		
Process05 Count(PROCESS0 5_COUNT)	The number of processes currently operating		word	No		
Process05 Kind(PROCESS05 _KIND)	The specified type of the condition is displayed		string(4)	No		
Process05 Name(PROCESS0 5_NAME)	Process name		string(3 2)	No		
Process05 Range(PROCESS0 5_RANGE)	The range conditions for each process. The conditions are displayed as "Minimum value-Maximum value".		string(1 2)	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Process05 Status(PROCESS0 5_STATUS)	The Process Range condition result for each process. NORMAL, ABNORMAL, or a blank is displayed. NORMAL: No error exists. ABNORMAL: An error exists. Blank: The settings are not set.		string(1 0)	No		
Process06 Count(PROCESS0 6_COUNT)	The number of processes currently operating		word	No		
Process06 Kind(PROCESS06 _KIND)	The specified type of the condition is displayed		string(4)	No		
Process06 Name(PROCESS0 6_NAME)	Process name		string(3 2)	No		
Process06 Range(PROCESS0 6_RANGE)	The range conditions for each process. The conditions are displayed as "Minimum value-Maximum value".		string(1 2)	No		
Process06 Status(PROCESS0 6_STATUS)	The Process Range condition result for each process. NORMAL, ABNORMAL, or a blank is displayed. NORMAL: No error exists. ABNORMAL: An error exists. Blank: The settings are not set.		string(1 0)	No		
Process07 Count(PROCESS0 7_COUNT)	The number of processes currently operating		word	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Process07 Kind(PROCESS07 _KIND)	The specified type of the condition is displayed		string(4)	No		
Process07 Name(PROCESS0 7_NAME)	Process name		string(3 2)	No		
Process07 Range(PROCESS0 7_RANGE)	The range conditions for each process. The conditions are displayed as "Minimum value-Maximum value".		string(1 2)	No		
Process07 Status(PROCESS0 7_STATUS)	The Process Range condition result for each process. NORMAL, ABNORMAL, or a blank is displayed. NORMAL: No error exists. ABNORMAL: An error exists. Blank: The settings are not set.		string(1 0)	No		
Process08 Count(PROCESS0 8_COUNT)	The number of processes currently operating		word	No		
Process08 Kind(PROCESS08 _KIND)	The specified type of the condition is displayed		string(4)	No		
Process08 Name(PROCESS0 8_NAME)	Process name		string(3 2)	No		
Process08 Range(PROCESS0 8_RANGE)	The range conditions for each process. The conditions are displayed as "Minimum value-Maximum value".		string(1 2)	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Process08 Status(PROCESS0 8_STATUS)	The Process Range condition result for each process. NORMAL, ABNORMAL, or a blank is displayed. NORMAL: No error exists. ABNORMAL: An error exists. Blank: The settings are not set.		string(1 0)	No		
Process09 Count(PROCESS0 9_COUNT)	The number of processes currently operating		word	No		
Process09 Kind(PROCESS09 _KIND)	The specified type of the condition is displayed		string(4)	No		
Process09 Name(PROCESS0 9_NAME)	Process name		string(3 2)	No		
Process09 Range(PROCESS0 9_RANGE)	The range conditions for each process. The conditions are displayed as "Minimum value-Maximum value".		string(1 2)	No		
Process09 Status(PROCESS0 9_STATUS)	The Process Range condition result for each process. NORMAL, ABNORMAL, or a blank is displayed. NORMAL: No error exists. ABNORMAL: An error exists. Blank: The settings are not set.		string(1 0)	No		
Process10 Count(PROCESS1 0_COUNT)	The number of processes currently operating		word	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Process10 Kind(PROCESS10 _KIND)	The specified type of the condition is displayed		string(4)	No		
Process10 Name(PROCESS1 0_NAME)	Process name		string(3 2)	No		
Process10 Range(PROCESS1 0_RANGE)	The range conditions for each process. The conditions are displayed as "Minimum value-Maximum value".		string(1 2)	No		
Process10 Status(PROCESS1 0_STATUS)	The Process Range condition result for each process. NORMAL, ABNORMAL, or a blank is displayed. NORMAL: No error exists. ABNORMAL: An error exists. Blank: The settings are not set.		string(1 0)	No		
Process11 Count(PROCESS1 1_COUNT)	The number of processes currently operating		word	No		
Process11 Kind(PROCESS11 _KIND)	The specified type of the condition is displayed		string(4)	No		
Process11 Name(PROCESS1 1_NAME)	Process name		string(3 2)	No		
Process11 Range(PROCESS1 1_RANGE)	The range conditions for each process. The conditions are displayed as "Minimum value-Maximum value".		string(1 2)	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Process11 Status(PROCESS1 1_STATUS)	The Process Range condition result for each process. NORMAL, ABNORMAL, or a blank is displayed. NORMAL: No error exists. ABNORMAL: An error exists. Blank: The settings are not set.		string(1 0)	No		
Process12 Count(PROCESS1 2_COUNT)	The number of processes currently operating		word	No		
Process12 Kind(PROCESS12 _KIND)	The specified type of the condition is displayed		string(4)	No		
Process12 Name(PROCESS1 2_NAME)	Process name		string(3 2)	No		
Process12 Range(PROCESS1 2_RANGE)	The range conditions for each process. The conditions are displayed as "Minimum value-Maximum value".		string(1 2)	No		
Process12 Status(PROCESS1 2_STATUS)	The Process Range condition result for each process. NORMAL, ABNORMAL, or a blank is displayed. NORMAL: No error exists. ABNORMAL: An error exists. Blank: The settings are not set.		string(1 0)	No		
Process13 Count(PROCESS1 3_COUNT)	The number of processes currently operating		word	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Process13 Kind(PROCESS13 _KIND)	The specified type of the condition is displayed		string(4)	No		
Process13 Name(PROCESS1 3_NAME)	Process name		string(3 2)	No		
Process13 Range(PROCESS1 3_RANGE)	The range conditions for each process. The conditions are displayed as "Minimum value-Maximum value".		string(1 2)	No		
Process13 Status(PROCESS1 3_STATUS)	The Process Range condition result for each process. NORMAL, ABNORMAL, or a blank is displayed. NORMAL: No error exists. ABNORMAL: An error exists. Blank: The settings are not set.		string(1 0)	No		
Process14 Count(PROCESS1 4_COUNT)	The number of processes currently operating		word	No		
Process14 Kind(PROCESS14 _KIND)	The specified type of the condition is displayed		string(4)	No		
Process14 Name(PROCESS1 4_NAME)	Process name		string(3 2)	No		
Process14 Range(PROCESS1 4_RANGE)	The range conditions for each process. The conditions are displayed as "Minimum value-Maximum value".		string(1 2)	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Process14 Status(PROCESS1 4_STATUS)	The Process Range condition result for each process. NORMAL, ABNORMAL, or a blank is displayed. NORMAL: No error exists. ABNORMAL: An error exists. Blank: The settings are not set.		string(1 0)	No		
Process15 Count(PROCESS1 5_COUNT)	The number of processes currently operating		word	No		
Process15 Kind(PROCESS15 _KIND)	The specified type of the condition is displayed		string(4)	No		
Process15 Name(PROCESS1 5_NAME)	Process name		string(3 2)	No		
Process15 Range(PROCESS1 5_RANGE)	The range conditions for each process. The conditions are displayed as "Minimum value-Maximum value".		string(1 2)	No		
Process15 Status(PROCESS1 5_STATUS)	The Process Range condition result for each process. NORMAL, ABNORMAL, or a blank is displayed. NORMAL: No error exists. ABNORMAL: An error exists. Blank: The settings are not set.		string(1 0)	No		
Record Time(RECORD_TI ME)	Time at which the record was created (Greenwich Mean Time)		time_t	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Record Type(INPUT_REC ORD_TYPE)	Record type. Always APP.		char(8)	No		
Virtual Env ID(PD_APP_VIRT UAL_ENV_ID)	ID of the virtual environment made by the virtual system provided by the OS.		string(1 6)	No	HP-UX, Solaris 9 (SPARC), AIX 5L V5.3, Linux	

## CPU - Per Processor Detail (PI\_CPUP)

## Function

The CPU - Per Processor Detail (PI\_CPUP) record stores the performance data per unit time on the processor usage. Every time performance data is collected, a record is created for each processor. This is a multi-instance record.

Note:

• If the DLPAR function of AIX 5L V5.3 or later, the vPars function of HP-UX 11i, or the DR function of Solaris 9 or later is used to modify a system resource while a PFM - Agent for Platform service is running, some types of performance data cannot be correctly collected. The table below shows the types of system resources that are affected and the actions that you can take to correctly display reports after the modification:

System resource type	Report type	Actions to be taken after modification
CPU	Real-time	Display the report again.
	Historical	Specify the display period such that it does not include the date and time when the system resources were modified.

Fields other than those listed below are affected by a system resource modification:

- Interval (INTERVAL)
- Record Time (RECORD\_TIME)
- Record Type (INPUT\_RECORD\_TYPE)
- Fields that are added only when data is recorded in the Store database

For details about the notes on modifying system resources, see *Notes on performance information when modifying system resources* under *Notes on records* in this chapter.

## Default values and values that can be specified

ltem	Default value	Modifiable
Collection Interval	60	Yes
Collection Offset	0	Yes
Log	No	Yes

ltem	Default value	Modifiable		
LOGIF	Blank	Yes		

# ODBC key fields

PI\_CPUP\_LOGICAL\_PROCESSOR\_ID

## Lifetime

None

## **Record size**

- Fixed portion: 681 bytes
- Variable portion: 376 bytes

## Fields

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Boot Time(SYSTEM_B OOT_TIME)	The last boot time	СОРҮ	time_t	No		
CPU %(KERNELMOD E_USERMODE_P ERCENT)	CPU usage per processor (%)	%	float	No		((PROCESSO R_USER_TIM E + PROCESSOR_ SYSTEM_TI ME) / (PROCESSOR USER_TIME + PROCESSOR_ IDLE_TIME + PROCESSOR_ IDLE_TIME + PROCESSOR_ WAIT_TIME)) x 100
Context Switches(PROCES SOR_CONTEXT_ SWITCHES)	Number of times context switching was executed	AVG	ulong	Yes	HP-UX, Linux	

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Context Switches/ sec(PROCESSOR_ CONTEXT_SWIT CHES_PER_SECO ND)	Frequency at which context switching was executed (number of times per second)	R	float	Yes	HP-UX, Linux	PROCESSOR_ CONTEXT_S WITCHES7 INTERVAL
Idle %(PROCESSOR_I DLE_PERCENT)	Percentage of time the processor was idle (%)	%	float	No		PROCESSOR IDLE_TIME / (PROCESSOR USER_TIME + PROCESSOR_ SYSTEM_TI ME + PROCESSOR_ IDLE_TIME + PROCESSOR_ WAIT_TIME) × 100
Idle Time(PROCESSO R_IDLE_TIME)	Time during which the processor was idle (seconds)	AVG	utime	Yes		
Interrupts(PROCE SSOR_INTERRUP TS)	Number of interrupts that occurred	AVG	ulong	Yes	HP-UX, AIX	
Interrupts/ sec(PROCESSOR_ INTERRUPTS_PE R_SECOND)	Frequency at which interrupts occurred (number of times per second)	R	float	Yes	HP-UX, AIX	PROCESSOR_ INTERRUPTS / INTERVAL
Interval(INTERVA L)	Interval at which the CPU - Per Processor Detail (PI_CPUP) record was stored (seconds)	СОРҮ	ulong	Yes		RECORD_TI ME - previous-recor d-time; for real-time, RECORD_TI ME - last-boot-time
Processor ID(LOGICAL_PR OCESSOR_ID)	Processor identifier	СОРҮ	string(1 2)	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Record Time(RECORD_TI ME)	Time at which the record was created (Greenwich Mean Time)	СОРҮ	time_t	No		
Record Type(INPUT_REC ORD_TYPE)	Record type. Always CPUP.	СОРҮ	char(8)	No		
Status(PROCESSO R_STATUS)	Processor status	СОРҮ	string(1 2)	No		
Sys Calls/ sec(PROCESSOR_ SYSTEM_CALLS _PER_SECOND)	Frequency at which system calls were issued (number of system calls per second)	R	float	Yes	HP-UX, Linux	PROCESSOR_ SYSTEM_CA LLS / INTERVAL
System %(PROCESSOR_S YSTEM_PERCEN T)	Percentage of time the system ran in the kernel mode (%)	%	float	No		PROCESSOR SYSTEM_TI ME / (PROCESSOR USER_TIME + PROCESSOR_ SYSTEM_TI ME + PROCESSOR_ IDLE_TIME + PROCESSOR_ WAIT_TIME) x 100
System Calls(PROCESSO R_SYSTEM_CAL LS)	Number of system calls that were issued	AVG	ulong	Yes	HP-UX, Linux	
System Time(PROCESSO R_SYSTEM_TIM E)	Time during which the system ran in the kernel mode (seconds)	AVG	utime	Yes		
Traps(PROCESSO R_TRAPS)	Number of traps that were executed	AVG	ulong	Yes	HP-UX, AIX, Linux	

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Traps/ sec(PROCESSOR_ TRAPS_PER_SEC OND)	Frequency at which traps were executed (number of traps per second)	R	float	Yes	HP-UX, AIX, Linux	PROCESSOR_ TRAPS / INTERVAL
Type(PROCESSO R_TYPE)	Processor explanation	СОРҮ	string(4 0)	No		
Up Time(SYSTEM_U P_TIME)	Time elapsed since the last boot (seconds)	СОРҮ	string(2 0)	No		RECORD_TI ME - SYSTEM_BO OT_TIME
User %(PROCESSOR_ USER_PERCENT)	Percentage of time the processor ran in the user mode (%)	%	float	No		PROCESSOR USER_TIME / (PROCESSOR USER_TIME + PROCESSOR_ SYSTEM_TI ME + PROCESSOR_ IDLE_TIME + PROCESSOR_ WAIT_TIME) × 100
User Time(PROCESSO R_USER_TIME)	Time during which the processor ran in the user mode (seconds)	AVG	utime	Yes		
Wait %(PROCESSOR_ WAIT_PERCENT)	Percentage of time the processor was waiting for I/O (%)	%	float	No	Solaris 10	PROCESSOR WAIT_TIME / (PROCESSOR USER_TIME + PROCESSOR_ SYSTEM_TI ME + PROCESSOR_ IDLE_TIME + PROCESSOR_ WAIT_TIME) x 100
Wait Time(PROCESSO R_WAIT_TIME)	Time during which the processor was waiting for I/O (seconds)	AVG	utime	Yes	Solaris 10	

### Device Detail (PI\_DEVD)

#### Function

The Device Detail (PI\_DEVD) record stores the performance data per unit time on the local disk device usage. Every time performance data is collected, a record is created for each local disk device. This is a multi-instance record.

Notes:

- To collect the Device Detail (PI\_DEVD) record in AIX, execute the smitty chgsys command and set Continuously maintain DISK I/O history to true.
- In AIX, performance data of devices whose device names begin with vscsi or vhost is not collected.
- In Linux, the performance data of block devices whose major numbers and block information are specified in the following file is collected from / proc/partitions and stored in the Device Detail (PI DEVD) record.
  - Linux 4:/usr/share/doc/MAKEDEV-3.15/devices.txt
  - Linux 5:/usr/share/doc/MAKEDEV-3.23/devices-2.6+.txt
- If the DR function of Solaris 9 or later is used to modify a system resource while a PFM Agent for Platform service is running, some types of performance data cannot be correctly collected. The table below shows the types of system resources that are affected and the actions that you can take to correctly display reports after the modification.

System resource type	Report type	Actions to be taken after modification
Device	Real-time	Display the report again.
	Historical	Specify the display period such that it does not include the date and time when the system resources were modified.

Fields other than those listed below are affected by a system resource modification:

- Interval (INTERVAL)
- Record Time (RECORD\_TIME)
- Record Type (INPUT\_RECORD\_TYPE)
- Fields that are added only when data is recorded in the Store database

For details about the notes on modifying system resources, see *Notes on performance information when modifying system resources* under *Notes on records* in this chapter.

• In HP-UX 11i V3 (IPF), the local disk device of Legacy DSF and Persistent DSF both are collected.

## Default values and values that can be specified

Item	Default value	Modifiable
Collection Interval	60	Yes
Collection Offset	0	Yes
Log	No	Yes
LOGIF	Blank	Yes

## **ODBC** key fields

PI\_DEVD\_DEVICE\_NAME

#### Lifetime

None

#### **Record size**

- Fixed portion: 681 bytes
- Variable portion: 405 bytes

## Fields

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Avg Service Time(AVG_SERVI CE_TIME)	Average I/O service time for devices (seconds)	AVG	utime	No		TOTAL_SERV ICE_TIME / TOTAL_OPS
Avg Wait Time(AVG_WAIT_ TIME)	Average I/O wait time for devices (seconds)	AVG	utime	No	AIX	TOTAL_WAIT _TIME / TOTAL_OPS

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Busy %(BUSY_PERCE NT)	Percentage of time a disk was busy (%). This value may exceed 100 when processes are continuously executed on a device.	%	float	No		(TOTAL_BUS Y_TIME / INTERVAL) x 100
Device Name(DEVICE_N AME)	Device name	СОРҮ	string(4 0)	No		
Device Type(DEVICE_TY PE)	Device type. Disk (disk device) or Tape (tape device)	СОРҮ	string(5)	No		
I/O Mbytes(TOTAL_I O_MBYTES)	Total size of data transferred through I/O operations (MB)	AVG	float	Yes		
Interval(INTERVA L)	Interval at which the Device Detail (PI_DEVD) record was stored (seconds)	СОРҮ	ulong	Yes		RECORD_TI ME - previous record time; for real-time, RECORD_TI ME - last-boot-time
Mbytes Xferd/ sec(MBYTES_TR ANSFERRED_PE R_SECOND)	Average I/O speed (MB per second)	R	float	Yes		TOTAL_IO_M BYTES7 INTERVAL
Queue Length(QUEUE_L ENGTH)	Device queue length. The amount of data processed by an I/O in 1 second is given a value of 1.	AVG	ulong	No	AIX	
Read %(READ_OPS_PE RCENT)	Read operations as a percentage of all I/O operations (%)	%	float	No	HP-UX, AIX	READ_OPS / (READ_OPS + WRITE_OPS) x 100
Read Mbytes(TOTAL_R EAD_MBYTES)	Size of data transferred in read operations (MB)	AVG	float	Yes	HP-UX	
Read Ops(READ_OPS)	Number of read operations that occurred	AVG	ulong	Yes	HP-UX, AIX	

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Reads/ sec(READ_OPS_P ER_SECOND)	Frequency at which read operations occurred (number of read operations per second)	R	float	Yes	HP-UX, AIX	READ_OPS / INTERVAL
Record Time(RECORD_TI ME)	Time at which the record was created (Greenwich Mean Time)	СОРҮ	time_t	No		
Record Type(INPUT_REC ORD_TYPE)	Record type. Always DEVD.	СОРҮ	char(8)	No		
Seek Ops(SEEK_OPS)	Number of seek operations	AVG	ulong	Yes	Solaris, AIX, Linux	
Total Busy Time(TOTAL_BU SY_TIME)	Total busy time for a device (seconds). This value may exceed the value of Interval when processes are continuously executed on a device.	AVG	utime	Yes		
Total I/O Ops(TOTAL_OPS)	Number of I/O operations that occurred	AVG	ulong	Yes		
Total I/O Ops/ sec(TOTAL_OPS_ PER_SECOND)	Frequency at which I/O operations occurred (number of I/O operations per second)	R	float	Yes		TOTAL_OPS / INTERVAL

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Total Service Time(TOTAL_SER VICE_TIME)	Total service time for a device (seconds). This value includes wait time. In HP-UX, this value indicates the total service time of all I/Os, and therefore, it may significantly exceed the value of Interval when processes are continuously executed on a device. Even with other OSs, the value may exceed the value of Interval when processes are continuously executed on a device.	AVG	utime	Yes		
Total Wait Time(TOTAL_WAI T_TIME)	Total wait time for a device (seconds). In HP-UX, this value indicates the total wait time of all I/Os, and therefore, it may significantly exceed the value of Interval when processes are continuously executed on a device.	AVG	utime	Yes	AIX	
Wait Length Time(WAIT_LEN_ TIME)	Length of time I/Os waited for a device (seconds). The processing capacity of the I/Os that were waiting is divided by the I/Os' processing capacity per second, and is then integrated over the wait time.	AVG	utime	Yes	AIX	
Write %(WRITE_OPS_P ERCENT)	Write operations as a percentage of all I/O operations (%)	%	float	No	HP-UX, AIX	WRITE_OPS / (READ_OPS + WRITE_OPS) x 100
Write Mbytes(TOTAL_W RITE_MBYTES)	Size of data transferred in write operations (MB)	AVG	float	Yes	HP-UX	

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Write Ops(WRITE_OPS)	Number of write operations that occurred	AVG	ulong	Yes	HP-UX, AIX	
Writes/ sec(WRITE_OPS_ PER_SECOND)	Frequency at which write operations occurred (number of write operations per second)	R	float	Yes	HP-UX, AIX	WRITE_OPS / INTERVAL

## **Device Summary (PI\_DEVS)**

#### Function

The Device Summary (PI\_DEVS) record stores the performance data in which the data stored in the Device Detail (PI\_DEVD) record is summarized per unit time. Note that even if the Device Detail (PI\_DEVD) record is not collected, performance data is stored in the Device Summary (PI\_DEVS) record.

Notes:

- To collect the Device Summary (PI\_DEVS) record in AIX, execute the smitty chgsys command and set Continuously maintain DISK I/ O history to true.
- In Linux, the performance data of only the devices that have the following major numbers specified in the following file are collected from /proc/partitions and summarized in the Device Summary (PI\_DEVS) record: 3, 8, 22, 33, 34, 56, 57, 65 to 71, 88 to 91, and 128 to 135
  - Linux 4: /usr/share/doc/MAKEDEV-3.15/devices.txt
  - Linux 5: /usr/share/doc/MAKEDEV-3.23/devices-2.6+.txt

For major numbers, see the block devices in the above file that match the contents of the Device Name(DEVICE\_NAME) field.

• If the DR function of Solaris 9 or later is used to modify a system resource while a PFM - Agent for Platform service is running, some types of performance data cannot be correctly collected. The table below shows the types of system resources that are affected and the actions that you can take to correctly display reports after the modification.

System resource type	Report type	Actions to be taken after modification
Device	Real-time	Display the report again.
	Historical	Specify the display period such that it does not include the date and time when the system resources were modified.

Fields other than those listed below are affected by a system resource modification:

- Interval (INTERVAL)
- Record Time (RECORD\_TIME)

- Record Type (INPUT\_RECORD\_TYPE)
- Fields that are added only when data is recorded in the Store database

For details about the notes on modifying system resources, see *Notes on performance information when modifying system resources* under *Notes on records* in this chapter.

• Only the local disk devices of Persistent DSF are collected in HP-UX 11i v3 (IPF).

#### Default values and values that can be specified

Item	Default value	Modifiable
Collection Interval	60	Yes
Collection Offset	0	Yes
Log	No	Yes
LOGIF	Blank	Yes

## **ODBC** key fields

None

#### Lifetime

None

#### **Record size**

- Fixed portion: 1,069 bytes
- Variable portion: 0 bytes

## Fields

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Avg Service Time/ device(SERVICE_ TIME)	Average service time per device (seconds). In HP-UX, this value indicates the total service time of all I/Os, and therefore, it may significantly exceed the value of Interval when processes are continuously executed on a device. Even with other OSs, the value may exceed the value of Interval when processes are continuously executed on a device.	AVG	utime	No		TOTAL_SERV ICE_TIME / DEVICE_CO UNT
Avg Service Time/ op(AVG_SERVICE _TIME)	Average I/O service time for a device (seconds)	AVG	utime	No		TOTAL_SERV ICE_TIME / TOTAL_IO_O PS
Busy %(BUSY_PERCE NT)	Average percentage of time a disk was busy (%). This value may exceed 100 when processes are continuously executed on a device.	%	float	No		((TOTAL_BU SY_TIME / INTERVAL) / DEVICE_CO UNT) x 100
Devices(DEVICE_ COUNT)	Device count	AVG	ulong	No		Number of Device Detail (PI_DEVD) records of the category "disk" summarized in the Device Summary (PI_DEVS) record
I/O Mbytes(TOTAL_I O_MBYTES)	Total size of data transferred through I/O operations (MB)	AVG	double	Yes		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Interval(INTERVA L)	Interval at which the Device Summary (PI_DEVS) record was stored (seconds)	СОРҮ	ulong	Yes		RECORD_TI ME - previous-recor d-time; for real-time, RECORD_TI ME - last-boot-time
Mbytes Xferd/ sec(MBYTES_TR ANSFERRED_PE R_SECOND)	Average I/O speed (MB per second)	R	float	Yes		TOTAL_IO_M BYTES / INTERVAL
Queue Length(QUEUE_L ENGTH)	Average device queue length. The amount of data processed by an I/O in 1 second is given a value of 1.	AVG	ulong	No	AIX	sum-of-queue-l engths-of-all-d evices / DEVICE_CO UNT
Read Ops %(READ_OPS_PE RCENT)	Read operations as a percentage of all I/O operations (%)	%	float	No	HP-UX, AIX	TOTAL_REA D_OPS / TOTAL_IO_O PS x 100
Reads(TOTAL_RE AD_OPS)	Number of read operations that occurred	AVG	ulong	Yes	HP-UX, AIX	
Reads/ sec(READ_OPS_P ER_SECOND)	Frequency at which read operations occurred (number of read operations per second)	R	float	Yes	HP-UX, AIX	TOTAL_REA D_OPS / INTERVAL
Record Time(RECORD_TI ME)	Time at which the record was created (Greenwich Mean Time)	СОРҮ	time_t	No		
Record Type(INPUT_REC ORD_TYPE)	Record type. Always DEVS.	СОРҮ	char(8)	No		
Seek Ops(SEEK_OPS)	Number of seek operations	AVG	ulong	Yes	Solaris, AIX, Linux	

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Total Busy Time(TOTAL_BU SY_TIME)	Total busy time for a device (seconds). This value may exceed the value of Interval x Devices when processes are continuously executed on a device.	AVG	utime	Yes		
Total I/O Ops(TOTAL_IO_O PS)	Number of I/O operations that occurred	AVG	ulong	Yes		TOTAL_REA D_OPS + TOTAL_WRIT E_OPS
Total I/O Ops/ sec(TOTAL_OPS_ PER_SECOND)	Frequency at which I/O operations occurred (number of operations per second)	R	float	Yes		TOTAL_IO_O PS / INTERVAL
Total Service Time(TOTAL_SER VICE_TIME)	Total service time for a device (seconds). This value includes wait time. In HP-UX, this value indicates the total service time of all I/Os, and therefore, it may significantly exceed the value of Interval x Devices when processes are continuously executed on a device. Even with other OSs, the value may exceed the value of Interval when processes are continuously executed on a device.	AVG	utime	Yes		
Total Wait Length Time(TOTAL_WAI T_LEN_TIME)	Total length of time I/Os waited for a device (seconds). The processing capacity of the I/Os that were waiting is divided by the I/Os' processing capacity per second, and is then integrated over the wait time.	AVG	utime	Yes	AIX	

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Total Wait Time(TOTAL_WAI T_TIME)	Total wait time for a device (seconds). In HP-UX, this value indicates the total wait time of all I/Os, and therefore, it may significantly exceed the value of Interval x Devices when processes are continuously executed on a device.	AVG	utime	Yes	AIX	
Wait Length Time(WAIT_LEN_ TIME)	Average length of time an I/O waited for a device (seconds). The processing capacity of the I/Os that were waiting is divided by the I/Os' processing capacity per second, is integrated over the wait time, and is then divided by the device count.	AVG	utime	No	AIX	TOTAL_WAIT _LEN_TIME / DEVICE_CO UNT
Wait Time(WAIT_TIME )	Average wait time for a device (seconds). In HP-UX, this value indicates the total wait time of all I/Os, and therefore, it may significantly exceed the value of Interval when processes are continuously executed on a device.	AVG	utime	No	AIX	TOTAL_WAIT _TIME / DEVICE_CO UNT
Write Ops %(WRITE_OPS_P ERCENT)	Write operations as a percentage of all I/O operations (%)	%	float	No	HP-UX, AIX	TOTAL_WRIT E_OPS / TOTAL_IO_O PS x 100
Writes(TOTAL_W RITE_OPS)	Number of write operations that occurred	AVG	ulong	Yes	HP-UX, AIX	
Writes/ sec(WRITE_OPS_ PER_SECOND)	Frequency at which write operations occurred (number of write operations per second)	R	float	Yes	HP-UX, AIX	TOTAL_WRIT E_OPS / INTERVAL

## File System Detail - Local (PD\_FSL)

#### Function

The File System Detail - Local (PD\_FSL) record stores the performance data showing the status of the local file system capacity at a given point in time. A record is created for each local file system. This is a multi-instance record.

Notes:

- In HP-UX, Solaris, and Linux, the file system area for a general user is defined as the sum of the file system area used and the file system area that is available. The file system area for a superuser also includes a reserved file system area. In AIX, because there is no reserved area, there is no difference between the file system area for a general user and that for a superuser.
- In HP-UX, Solaris, and Linux, the number of i nodes is defined as the sum of the i nodes used and the i nodes that are available. The number of i nodes for a superuser also includes the number of reserved i nodes. In AIX, because there are no reserved i nodes, there is no difference between the number of reserved i nodes for a general user and that for a superuser.
- In specialized file systems, it may not be possible to collect performance data. For example, a remote file system whose remote host name cannot be acquired as a virtual local file system may be treated as a local file system.
- The basic block size (FFBS: Fundamental Filesystem Block Size) used in the field table of this record is the allocation unit used during file system creation. The number of blocks that corresponds to the basic block size is called the *basic block count*. The logical block size (PFBS: Preferred Filesystem Block Size) is the allocation unit used during input/output operations. The number of blocks that corresponds to the logical block size is called the *logical block count*.
- In Solaris 10, /system/contract or /system/object is not collected.
- In Solaris 10, do not use a colon (:) in a file system name. If a colon is used by mistake, the file name is treated as a remote file system and collected as the PD\_FSR record.
- In Linux 4, /sys or /var/lib/nfs/rpc\_pipefs is not collected.
- If you want to mask the mount command created with --bind specified in Linux 5, specify File System Type <> none for the filter condition.
- When information is collected into the PD\_FSL record, a system call is issued at the data collection interval. Because collecting information using the system call involves file system access, an attempt to execute the umount

command to unmount the file system during information collection might fail. If execution of the command fails, re-execute the umount command at a time different from the collection interval.

## Default values and values that can be specified

Item	Default value	Modifiable
Collection Interval	3600	Yes
Collection Offset	0	Yes
Log	No	Yes
LOGIF	Blank	Yes

#### **ODBC** key fields

PD\_FSL\_FILESYSTEM\_NAME

#### Lifetime

From the mounting of a file system until its unmounting

#### **Record size**

- Fixed portion: 681 bytes
- Variable portion: 1,216 bytes

## Fields

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Available Space %(TOTAL_MBYT ES_AVAILABLE_ PERCENT)	Percentage of size (MB) available to general users (%)		float	No		(TOTAL_MB YTES_AVAIL ABLE/ (TOTAL_SIZE _IN_MBYTES - TOTAL_MBY TES_RESERV ED)) x 100
Available Space Blocks(TOTAL_B LOCKS_AVAILA BLE)	Number of logical blocks available to general users		double	No		

PFM-View name	Description	Sum mary	Format	De Ita	Not Support	Data source
name)					ed versions	
Available Space Mbytes(TOTAL_M BYTES_AVAILAB LE)	Size available to general users (MB)		double	No		(Fundamental Block count available to the general user x Fundamental Block Size) / 1MB
Block Size(BLOCKSIZE)	Logical block size (bytes)		double	No		
Blocks Free(TOTAL_BLO CKS_FREE)	Number of free logical blocks		double	No		
Blocks in Use(TOTAL_BLO CKS_IN_USE)	Number of logical blocks being used		double	No		
Device Name(DEVICE_N AME)	Name of the device where the file system is located		string(4 0)	No		
File System(FILESYST EM_NAME)	File system mounting point		string(1 024)	No		
File System Type(FILESYSTE M_TYPE)	File system type (e.g., UFS, HFS)		string(2 0)	No		
Interval(INTERVA L)	Interval at which the File System Detail - Local (PD_FSL) record was stored (seconds)		ulong	No	HP-UX, Solaris, AIX, Linux	
Mbytes Free(TOTAL_MB YTES_FREE)	Size that is free (MB)		double	No		(TOTAL_BLO CKS_FREE x Fundamental Block Size) / 1MB
Mbytes Free %(TOTAL_MBYT ES_FREE_PERCE NT)	Percentage of size (MB) that is free (%)		float	No		(TOTAL_MB YTES_FREE / TOTAL_SIZE _IN_MBYTES ) x 100

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Mbytes Rsvd(TOTAL_MB YTES_RESERVE D)	Size reserved for superusers (MB)		double	No	AIX	TOTAL_MBY TES_FREE-T OTAL_MBYT ES_AVAILAB LE
Mbytes Rsvd %(TOTAL_MBYT ES_RESERVED_P ERCENT)	Percentage of size (MB) reserved for superusers (%)		float	No	AIX	(TOTAL_MB YTES_RESER VED / TOTAL_SIZE _IN_MBYTES ) x 100
Mbytes in Use(TOTAL_MBY TES_IN_USE)	Size used by general users (MB)		double	No		((TOTAL_SIZ E_IN_BLOCK S - TOTAL_BLO CKS_FREE) x Fundamental Block Size) / 1MB
Mbytes in Use %(TOTAL_MBYT ES_IN_USE_PER CENT)	Percentage of size (MB) used by general users (%)		float	No		(TOTAL_MB YTES_IN_US E / (TOTAL_SIZE _IN_MBYTES - TOTAL_MBY TES_RESERV ED)) x 100
Record Time(RECORD_TI ME)	Time at which the record was created (Greenwich Mean Time)		time_t	No		
Record Type(INPUT_REC ORD_TYPE)	Record type. Always FSL.		char(8)	No		
Total Inodes(TOTAL_N UMBER_OF_INO DES)	Number of i nodes in a file system		double	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Total Inodes Available(TOTAL_ INODES_AVAILA BLE)	Number of i nodes available to general users		double	No		
Total Inodes Available %(TOTAL_INODE S_AVAILABLE_P ERCENT)	Percentage of i nodes available to general users (%)		float	No		(TOTAL_INO DES_AVAILA BLE/ (TOTAL_NU MBER_OF_IN ODES - TOTAL_INOD ES_RESERVE D)) x 100
Total Inodes Free(TOTAL_INO DES_FREE)	Number of free i nodes		double	No		
Total Inodes Free %(TOTAL_INODE S_FREE_PERCEN T)	Percentage of i nodes that are free (%)		float	No		(TOTAL_INO DES_FREE / TOTAL_NUM BER_OF_INO DES) x 100
Total Inodes Rsvd(TOTAL_INO DES_RESERVED)	Number of i nodes reserved for superusers		double	No	AIX, Linux	TOTAL_INOD ES_FREE- TOTAL_INOD ES_AVAILAB LE
Total Inodes Rsvd %(TOTAL_INODE S_RESERVED_PE RCENT)	Percentage of i nodes reserved for superusers (%)		float	No	AIX, Linux	(TOTAL_INO DES_RESERV ED / TOTAL_NUM BER_OF_INO DES) x 100
Total Inodes in Use(TOTAL_INO DES_IN_USE)	Number of i nodes used		double	No		TOTAL_NUM BER_OF_INO DES - TOTAL_INOD ES_FREE

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Total Inodes in Use %(TOTAL_INODE S_IN_USE_PERC ENT)	Percentage of i nodes used (%)		float	No		(TOTAL_INO DES_IN_USE / (TOTAL_NU MBER_OF_IN ODES - TOTAL_INOD ES_RESERVE D)) x 100
Total Size Blocks(TOTAL_SI ZE_IN_BLOCKS)	Number of logical blocks in a file system		double	No		
Total Size Mbytes(TOTAL_SI ZE_IN_MBYTES)	File system size (MB)		double	No		(Fundamental Block Count x Fundamental Block Size) / 1MB

### File System Detail - Remote (PD\_FSR)

#### Function

The File System Detail - Remote (PD\_FSR) record stores the performance data showing the status of the remote file system capacity at a given point in time. A record is created for each remote file system. This is a multi-instance record.

Notes:

- In HP-UX, Solaris, and Linux, the file system area for a general user is defined as the sum of the file system area used and the file system area that is available. The file system area for a superuser also includes a reserved file system area. In AIX, because there is no reserved area, there is no difference between the file system area for a general user and that for a superuser.
- In specialized file systems, it may not be possible to collect performance data. For example, a remote file system whose remote host name cannot be acquired as a virtual local file system may be treated as a local file system.
- The *Unsupported* column in the File System Detail Remote (PD\_FSR) record indicates the platform on the remote file system side.
- The basic block size (FFBS: Fundamental Filesystem Block Size) used in the field table of this record is the allocation unit used during file system creation. The number of blocks that corresponds to the basic block size is called the *basic block count*. The logical block size (PFBS: Preferred Filesystem Block Size) is the allocation unit used during input/output operations. The number of blocks that corresponds to the logical block size is called the *logical block count*.
- In PFM Agent for Platform 09-00 or later, IPv6 is supported. The following table lists the fields in which numeric values are affected in an environment that contains both IPv4 and IPv6.
- When information is collected into the PD\_FSR record, a system call is issued at the data collection interval. Because collecting information using the system call involves file system access, an attempt to execute the umount command to unmount the file system during information collection might fail. If the execution of the command fails, re-execute the umount command at a time different from the collection interval.

PFM-View name	Obtained IP information				
	IPv4 environment	IPv6 environment	Coexisting environment		
IP Address	IP address resolved from the host name				

## Default values and values that can be specified

Item	Default value	Modifiable		
Collection Interval	3600	Yes		
Collection Offset	0	Yes		
Log	No	Yes		
LOGIF	Blank	Yes		

## **ODBC** key fields

- PD\_FSR\_FILESYSTEM\_NAME
- PD\_FSR\_IP\_ADDRESS

## Lifetime

From the mounting of a file system until its unmounting

## **Record size**

- Fixed portion: 681 bytes
- Variable portion: 1,702 bytes

### Fields

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Available Blocks(TOTAL_B LOCKS_AVAILA BLE)	Number of logical blocks available to general users		double	No		
Available Space %(TOTAL_MBYT ES_AVAILABLE_ PERCENT)	Percentage of size (MB) available to general users (%)		float	No		(TOTAL_MB YTES_AVAIL ABLE/ (TOTAL_SIZE _IN_MBYTES _ TOTAL_MBY TES_RESERV ED)) x 100
PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
---	---	-------------	------------------	-----------	-------------------------------------	--
Available Space Mbytes(TOTAL_M BYTES_AVAILAB LE)	Size available to general users (MB)		double	No		(Fundamental Block Count available to the general user x Fundamental Block Size) / 1MB
Block Size(BLOCKSIZE)	Logical block size (bytes)		double	No		
Blocks Free(TOTAL_BLO CKS_FREE)	Number of free logical blocks		double	No		
Blocks in Use(TOTAL_BLO CKS_IN_USE)	Number of logical blocks used		double	No		
File System(FILESYST EM_NAME)	File system mounting point		string(1 024)	No		
File System Type(FILESYSTE M_TYPE)	File system type (e.g., NFS)		string(2 0)	No		
Host(HOSTNAME )	Name of the host where the file system is located		string(2 56)	No		
IP Address(IP_ADDR ESS)	IP address of the host where the file system is located		string(5 0)	No		
Interval(INTERVA L)	Interval at which the File System Detail - Remote (PD_FSR) record was stored (seconds)		ulong	No	HP-UX, Solaris, AIX, Linux	
Mbytes Free(TOTAL_MB YTES_FREE)	Size not used (MB)		double	No		(TOTAL_BLO CKS_FREE x Fundamental Block Size) / 1MB

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Mbytes Free %(TOTAL_MBYT ES_FREE_PERCE NT)	Percentage of size (MB) not used (%)		float	No		(TOTAL_MB YTES_FREE / TOTAL_SIZE _IN_MBYTES ) x 100
Mbytes Rsvd(TOTAL_MB YTES_RESERVE D)	Size reserved for superusers (MB)		double	No	AIX	TOTAL_MBY TES_FREE-T OTAL_MBYT ES_AVAILAB LE
Mbytes Rsvd %(TOTAL_MBYT ES_RESERVED_P ERCENT)	Percentage of size (MB) reserved for superusers (%)		float	No	AIX	(TOTAL_MB YTES_RESER VED / TOTAL_SIZE IN_MBYTES ) x 100
Mbytes in Use(TOTAL_MBY TES_IN_USE)	Size used by general users (MB)		double	No		((TOTAL_SIZ E_IN_BLOCK S - TOTAL_BLO CKS_FREE) x Fundamental Block Size) / 1MB
Mbytes in Use %(TOTAL_MBYT ES_IN_USE_PER CENT)	Percentage of size (MB) used by general users (%)		float	No		(TOTAL_MB YTES_IN_US E / (TOTAL_SIZE _IN_MBYTES - TOTAL_MBY TES_RESERV ED)) x 100
Record Time(RECORD_TI ME)	Time at which the record was created (Greenwich Mean Time)		time_t	No		
Record Type(INPUT_REC ORD_TYPE)	Record type. Always FSR.		char(8)	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Remote File System(REMOTE_ FILESYSTEM_N AME)	Remote file system name		string(2 56)	No		
Total Size Blocks(TOTAL_SI ZE_IN_BLOCKS)	Number of logical blocks in a file system		double	No		
Total Size Mbytes(TOTAL_SI ZE_IN_MBYTES)	File system size (MB)		double	No		(Fundamental Block Count x Fundamental Block Size) / 1MB

## Logged Messages (PL\_MESS)

### Function

The Logged Messages (PL\_MESS) record stores the messages that are written into the log file specified by the Messages File property or the event file. A record is created for each line of message that is written into the log file. This is a multi-instance record.

For details about the Messages File property, see *F.2 Agent Collector service properties*. For details about event files, see *3. Collecting Log Information*.

Notes:

- This record cannot be used in Linux.
- The only log files monitored by this record are files that monotonously increase. The increase that has occurred since the start of log file monitoring is collected as data. Therefore, if there has been no increase, no data is collected.
- For the log file to be monitored, specify an absolute path name in the Messages File property or the event file. If log files are specified in both the Messages File property and the event file, both log files are monitored. If the log file specified in the Messages File property is invalid, this causes an OS error when PFM - Agent for Platform is started, and the KAVF10150-W message is displayed. If the log file specified in the event file is invalid, the KAVF10203-W message is displayed. If either of these messages is output, change the log file and restart PFM - Agent for Platform.
- If the same path and the same identifier (id) are specified multiple times inside the event file, the messages are summarized into a single record. However, if the same path and the same identifier (id) are specified in the Messages File property and the event file, separate records are created.
- If a space is specified for the log file, no log file is monitored.
- When this record is displayed as a real-time report, the display changes as follows.
  - If **Indicate delta value** is not selected, all message texts that have been added since the service startup are displayed.

• If **Indicate delta value** is selected, only the message texts that were added during the display interval are displayed.

# Default values and values that can be specified

ltem	Default value	Modifiable
Collection Interval	60	Yes
Collection Offset	0	Yes
Log	No	Yes
LOGIF	Blank	Yes

# **ODBC** key fields

PL\_MESS\_MESSAGE\_TEXT

## Lifetime

None

## **Record size**

- Fixed portion: 681 bytes
- Variable portion: 512 bytes

# Fields

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Interval(INTERVA L)	Interval at which the Logged Messages (PL_MESS) record was stored (seconds). Always 0.		ulong	No	HP-UX, Solaris, AIX, Linux	
Message Text(MESSAGE_T EXT)	Message text. Consists of a single line of information taken from the log file.		string(5 12)	No	Linux	
Record Time(RECORD_TI ME)	Time at which the record was created (Greenwich Mean Time)		time_t	No	Linux	
Record Type(INPUT_REC ORD_TYPE)	Record type. Always MESS.		char(8)	No	Linux	

## Network Interface Detail (PI\_NIND)

### Function

The Network Interface Detail (PI\_NIND) record stores the performance data per unit time on a network interface. The available network interfaces include a loopback adapter, a local Token Ring adapter, and an Ethernet adapter, multiple network interfaces can be installed on a single machine. Each interface can have multiple IP addresses. Every time performance data is collected, a record is created for each network interface, but only the first IP address that is found is used. This is a multi-instance record.

Notes:

• The interface flags that are set in the Flags (FLAGS) field and that can be judged are listed below:

• In AIX

UP, BROADCAST, DEBUG, LOOPBACK, POINTOPOINT, NOTRAILERS, RUNNING, NOARP, PROMISC, ALLMULTI, OACTIVE, SIMPLEX, MULTICAST

• In HP-UX

UP, LOOPBACK

• In Solaris

UP, BROADCAST, DEBUG, LOOPBACK, POINTOPOINT, NOTRAILERS, RUNNING, NOARP, PROMISC, ALLMULTI, INTELLIGENT, MULTICAST, MULTI BCAST, UNNUMBERED, PRIVATE

• In Linux

UP, BROADCAST, DEBUG, LOOPBACK, POINTOPOINT, NOTRAILERS, RUNNING, NOARP, PROMISC, ALLMULTI, MULTICAST, MASTER, SLAVE, PORTSEL, AUTOMEDIA, DYNAMIC

• If the DR function of Solaris 9 or later is used to modify a system resource while a PFM - Agent for Platform service is running, some types of performance data cannot be correctly collected. The table below shows the types of system resources that are affected and the actions that you can take to correctly display reports after the modification.

System resource type	Report type	Actions to be taken after modification
LAN board	Real-time	Display the report again.
	Historical	Specify the display period such that it does not include the date and time when the system resources were modified.

Fields other than those listed below are affected by a system resource modification:

- Interval (INTERVAL)
- Record Time (RECORD\_TIME)
- Record Type (INPUT\_RECORD\_TYPE)
- Fields that are added only when data is recorded in the Store database

For details about the notes on modifying system resources, see *Notes on performance information when modifying system resources* under *Notes on records* in this chapter.

- In Linux, only performance data on the network interface for which either an IPv4 address or an IPv6 address has been set is collected.
- In Linux 4, performance data on the sit0 interface is not collected.
- This record cannot be used in Solaris 10 shared-IP non-global zones, but can be used in exclusive-IP non-global zones. Note that no reports can be displayed in shared-IP non-global zones.
- In PFM Agent for Platform 09-00 or later, IPv6 is supported. The following table shows the fields whose values are affected in an environment that contains both IPv4 and IPv6.

PFM-View name	OS environment	Obtained IP information				
		IPv4 environment	IPv6 environment	Coexisting environment		
Broadcast Address	All	IPv4	Blank	IPv4		
Flags	HP-UX, AIX					
	Solaris, Linux, Linux (IPF)	IPv4	IPv6	IPv4		
IP Address	All	IPv4	Blank	IPv4		

PFM-View name	OS environment	Obtained IP information				
		IPv4 environment	IPv6 environment	Coexisting environment		
IP6 Address	All	Blank	IPv6	IPv6		
Interface	All	IPv4	IPv6	IPv4		
Interval	All					
Max Transmission Unit	HP-UX, Solaris, Linux, Linux (IPF)	IPv4	IPv6	IPv4		
	AIX					
Network Mask	All	IPv4	Blank	IPv4		
Network Name	All	IPv4	Blank	IPv4		
Pkt Collisions	HP-UX	IPv4	0	IPv4		
	AIX, Solaris, Linux, Linux (IPF)	IPv4	IPv6	Sum of the values for IPv4 and IPv6		
Pkt Receive Errors	HP-UX	IPv4	0	IPv4		
	AIX, Solaris, Linux, Linux (IPF)	IPv4	IPv6	Sum of the values for IPv4 and IPv6		
Pkt Xmit Errors	HP-UX	IPv4	0	IPv4		
	AIX, Solaris, Linux, Linux (IPF)	IPv4	IPv6	Sum of the values for IPv4 and IPv6		
Pkts Rcvd	All	IPv4	IPv6	Sum of the values for IPv4 and IPv6		
Pkts Rcvd/sec	All	IPv4/Interval	IPv6/Interval	(Sum of the values for IPv4 and IPv6)/ Interval		

PFM-View name	OS environment	Obtained IP information				
		IPv4 environment	IPv6 environment	Coexisting environment		
Pkts Xmitd	All	IPv4	IPv6	Sum of the values for IPv4 and IPv6		
Pkts Xmitd/ sec	All	IPv4/Interval	IPv6/Interval	(Sum of the values for IPv4 and IPv6)/ Interval		
Record Time	All					
Record Type	All					
Total Pkt Errors	HP-UX	Sum of the values of Pkt Receive Errors, Pkt Xmit Errors, and Pkt Collisions in IPv4	0	Sum of the values of Pkt Receive Errors, Pkt Xmit Errors, and Pkt Collisions in IPv4		
	AIX, Solaris, Linux, Linux (IPF)	Sum of the values of Pkt Receive Errors, Pkt Xmit Errors, and Pkt Collisions for IPv4	Sum of the values of Pkt Receive Errors, Pkt Xmit Errors, and Pkt Collisions for IPV6	Sum of the values of Pkt Receive Errors, Pkt Xmit Errors, and Pkt Collisions for IPV4 and IPV6		
Total Pkts	All	Sum of the values of pkts received and Pkts Xmitd for IPv4	Sum of the values of pkts received and Pkts Xmitd for IPv6	Sum of the values of pkts received and Pkts Xmitd for IPv4 and IPv6		
Total Xmit Receive Errors	HP-UX	Sum of the values of Pkt Receive Errors and Pkt Xmit Errors for IPv4	0	Sum of the values of Pkt Receive Errors and Pkt Xmit Errors for IPv4		

PFM-View name	OS environment	Obtained IP information				
		IPv4 environment	IPv6 environment	Coexisting environment		
	AIX, Solaris, Linux, Linux (IPF)	Sum of the values of Pkt Receive Errors and Pkt Xmit Errors for IPv4	Sum of the values of Pkt Receive Errors and Pkt Xmit Errors for IPv6	Sum of the values of Pkt Receive Errors and Pkt Xmit Errors for IPv4 and IPv6		
Туре	All					

Legend:

--: Information not affected by the IPv4 or IPv6 environment is collected.

# Default values and values that can be specified

Item	Default value	Modifiable
Collection Interval	60	Yes
Collection Offset	0	Yes
Log	No	Yes
LOGIF	Blank	Yes

## **ODBC** key fields

- PI\_NIND\_INTERFACE\_NAME
- PI\_NIND\_IP\_ADDRESS
- PI\_NIND\_IP6\_ADDRESS

## Lifetime

None

## **Record size**

- Fixed portion: 681 bytes
- Variable portion: 670 bytes

# Fields

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Broadcast Address(BROADC AST_ADDRESS)	The first broadcast address that was found. Displayed in the Internet address format. In HP-UX and Solaris, the broadcast address of a loopback instance is not displayed.	СОРҮ	string(2 0)	No		
Flags(FLAGS)	Interface flag setting. If it is 80 bytes or longer, the last character becomes >. In HP-UX, all flags that indicate interface statuses are included in the value in this field (the ifconfig command displays only some of the flags).	СОРҮ	string(8 0)	No		
IP Address(IP_ADDR ESS)	IP address of IPv4. Displayed in the Internet address format.	СОРҮ	string(2 0)	No		
IP6 Address(IP6_ADD RESS)	IP address of IPv6. Displayed in the Internet address format.	СОРҮ	string(5 0)	No		
Interface(INTERF ACE_NAME)	Interface name	СОРҮ	string(4 0)	No		
Interval(INTERVA L)	Interval at which the Network Interface Detail (PI_NIND) record was stored (seconds)	СОРҮ	ulong	Yes		RECORD_TI ME - previous record time; for real-time, RECORD_TI ME - last-boot-time
Max Transmission Unit(MAX_TRAN SMISSION_UNIT)	Maximum packet size (bytes)	СОРҮ	ulong	No		
Network Mask(NETWORK _MASK)	Subnet mask of the first IP address that was found. Displayed in the Internet address format.	СОРҮ	string(2 0)	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Network Name(NETWORK _NAME)	Network name. A network name that is 1,028 bytes or longer cannot be handled. The network name is displayed up to the size defined in the data model. In AIX and HP-UX, if NIS is active and there is no entry in the NIS database for network addresses, the first IP address of the interface that is found is masked and the result is displayed.	СОРҮ	string(2 56)	No		
Pkt Collisions(PACKE T_COLLISIONS)	Number of packet collisions that occurred	AVG	ulong	Yes		
Pkt Receive Errors(PACKET_R ECEIVE_ERRORS )	Number of packet receive errors	AVG	ulong	Yes		
Pkt Xmit Errors(PACKET_T RANSMIT_ERRO RS)	Number of packet transmission errors	AVG	ulong	Yes		
Pkts Rcvd(PACKETS_R ECEIVED)	Number of packets received	AVG	ulong	Yes		
Pkts Rcvd/ sec(PACKETS_RE CEIVED_PER_SE COND)	Frequency at which packets were received (number of packets per second)	R	float	Yes		PACKETS_RE CEIVED / INTERVAL
Pkts Xmitd(PACKETS_ TRANSMITTED)	Number of packets transmitted	AVG	ulong	Yes		
Pkts Xmitd/ sec(PACKETS_TR ANSMITTED_PE R_SECOND)	Frequency at which packets were transmitted (number of packets per second)	R	float	Yes		PACKETS_TR ANSMITTED/ INTERVAL

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Record Time(RECORD_TI ME)	Time at which the record was created (Greenwich Mean Time)	СОРҮ	time_t	No		
Record Type(INPUT_REC ORD_TYPE)	Record type. Always NIND.	СОРҮ	char(8)	No		
Total Pkt Errors(TOTAL_PA CKET_ERRORS)	Number of packet transmission and receiving errors (including the number of packet collisions)	AVG	ulong	Yes		PACKET_TR ANSMIT_ER RORS + PACKET_REC EIVE_ERROR S + PACKET_CO LLISIONS
Total Pkts(TOTAL_PAC KETS)	Number of packets transmitted and received	AVG	ulong	Yes		PACKETS_RE CEIVED + PACKETS_TR ANSMITTED
Total Xmit Receive Errors(TOTAL_TR ANS_RECEIVE_E RRORS)	Number of packet transmission and receiving errors (excluding the number of packet collisions)	AVG	ulong	Yes		PACKET_TR ANSMIT_ER RORS + PACKET_REC EIVE_ERROR S
Type(INTERFACE _TYPE)	Interface type	СОРҮ	string(2 0)	No		

## Network Interface Summary (PI\_NINS)

## Function

The Network Interface Summary (PI\_NINS) record stores the performance data in which the data stored in the Network Interface Detail (PI\_NIND) record is summarized per unit time.

The available network interfaces include a loopback adapter, a local Token Ring adapter, and an Ethernet adapter; multiple network interfaces can be installed on a single machine. Each interface can have multiple IP addresses. Every time performance data is collected, a record is created for each network interface, but only the first IP address that is found is used. Even when the Network Interface Detail (PI\_NIND) record is not collected, performance data is stored in the Network Interface Summary (PI\_NINS) record.

Notes:

• If the DR function of Solaris 9 or later is used to modify a system resource while a PFM - Agent for Platform service is running, some types of performance data cannot be correctly collected. The table below shows the types of system resources that are affected and the actions that you can take to correctly display reports after the modification.

System resource type	Report type	Actions to be taken after modification
LAN board	Real-time	Display the report again.
	Historical	Specify the display period such that it does not include the date and time when the system resources were modified.

Fields other than those listed below are affected by a system resource modification:

- Interval (INTERVAL)
- Record Time (RECORD\_TIME)
- Record Type (INPUT\_RECORD\_TYPE)
- Fields that are added only when data is recorded in the Store database

For details about the notes on modifying system resources, see *Notes on performance information when modifying system resources* under *Notes on records* in this chapter.

• This record cannot be used in Solaris 10 shared-IP non-global zones, but can



be used in exclusive-IP non-global zones. Although reports can be displayed in shared-IP non-global zones, 0 is displayed for all fields other than the Interval, Record Time, and Record Type fields.

## Default values and values that can be specified

ltem	Default value	Modifiable
Collection Interval	60	Yes
Collection Offset	0	Yes
Log	No	Yes
LOGIF	Blank	Yes

# **ODBC** key fields

None

## Lifetime

None

#### **Record size**

- Fixed portion: 797 bytes
- Variable portion: 0 bytes

## Fields

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Interface Count(NUMBER_ OF_INTERFACES )	Interface count	СОРҮ	ulong	No		Number of Network Interface Detail (PI_NIND) records summarized in Network Interface Summary (PI_NINS) record.

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Interval(INTERVA L)	Interval at which the Network Interface Summary (PI_NINS) record was stored (seconds)	СОРҮ	ulong	Yes		RECORD_TI ME - previous-recor d-time; for real-time, RECORD_TI ME - last-boot-time
Pkt Collisions(PACKE T_COLLISIONS)	Number of packet collisions that occurred	AVG	ulong	Yes		
Pkt Receive Errors(PACKET_R ECEIVE_ERRORS )	Number of packet receive errors	AVG	ulong	Yes		
Pkt Xmit Errors(PACKET_T RANSMIT_ERRO RS)	Number of packet transmission errors	AVG	ulong	Yes		
Pkts Rcvd(TOTAL_PAC KETS_RECEIVED )	Number of packets received	AVG	ulong	Yes		
Pkts Rcvd/ sec(PACKETS_RE CEIVED_PER_SE COND)	Frequency at which packets were received (number of packets per second)	R	float	Yes		TOTAL_PACK ETS_RECEIV ED / INTERVAL
Pkts Xmitd(PACKETS_ TRANSMITTED)	Number of packets transmitted	AVG	ulong	Yes		
Pkts Xmitd/ sec(PACKETS_TR ANSMITTED_PE R_SECOND)	Frequency at which packets were transmitted (number of packets per second)	R	float	Yes		PACKETS_TR ANSMITTED/ INTERVAL
Record Time(RECORD_TI ME)	Time at which the record was created (Greenwich Mean Time)	СОРҮ	time_t	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Record Type(INPUT_REC ORD_TYPE)	Record type. Always NINS.	СОРҮ	char(8)	No		

#### Process Detail (PD)

### Function

The Process Detail (PD) record stores the Performance data showing the status of a process at a given point in time. A record is created for each process ID within the system.

The performance data stored in this record is the same as that stored in the Process Detail Interval (PD\_PDI) record. However, if performance data collected at a point in time is the same as the performance data collected in the previous interval for the same process, performance data is stored in the same record, overwriting the data in the database. This point is different from the Process Detail Interval (PD\_PDI) record. After performance data is collected at a given point in time, if the process is terminated before the next performance data is collected, no performance data is collected on that process. Furthermore, no performance data is collected on processes that are not being executed.

When this record is collected on a real-time basis, performance data on all processes that are being executed by the system is stored. This is a multi-instance record.

Notes:

- If a process has no terminal name, ?? is displayed in the Terminal (TERMINAL\_NAME) field.
- In AIX and Solaris, only the data in the fields listed below is collected on defunct processes. For all other fields, either 0 or n/a is displayed.

Accounting Flags, Argument List, Exit Status, Flags, Group, Group ID, Parent PID, Parent Process List, PID, Process Group ID, Program, Program/ PID, Real Group, Real Group ID, Real User, Real User ID, Record Time, Record Type, Scheduler Class, Terminal, User, User ID

• In the Priority (PRIORITY) field, process priority is determined based on the number. In Solaris, the greater the number, the higher the priority. In AIX and Linux, the smaller the number, the higher the priority. In HP-UX, the number that indicates priority differs with each process setting. You can use the following command to check the process setting:

export UNIX95=1

ps -eo pid,cls,pri

When cls is one of the following, the smaller the number, the higher the priority:

FIFO

RR

RR2

When cls is one of the following, the greater the number, the higher the priority:

HPUX

RT

- The process flag lists that are set in the Flags (FLAGS) field and that can be judged are listed below.
  - In AIX

SLOAD, SNOSWAP, SFORKSTACK, STRC, SFIXPRI, SKPROC, SSIGNOCHLD, SSIGSET, SLKDONE, STRACING, SMPTRACE, SEXIT, SORPHANPGRP, SNOCNTLPROC, SPPNOCLDSTOP, SEXECED, SJOBSESS, SJOBOFF, SEXECING, SPSEARLYALLOC

• In HP-UX

SLOAD, SSYS, SLOCK, STRC, SWTED\_PARENT, SDEACTSELF, SOMASK, SWEXIT, SVFORK, SSEQL, SUANOM, SOUSIG, SOWEUPC, SSEL, SWANTS\_ALLCPU, SSERIAL, SFAULTING, SDEACT, SWAITIO, STRAPPING, SWTED\_DEBUGGER

• In Solaris 9

SSYS, STRC, SITBUSY, SLOAD, SLOCK, SPREXEC, SPROCTR, SPRFORK, SKILLED, SSCONT, SRUNLCL, SBPTADJ, SKILLCL, SUGID, SEXECED, SPASYNC, SJCTL, SNOWAIT, SVFORK, EXITLWPS, SWAITSIG, COREDUMP, SMSACCT, ASLWP

• In Solaris10

SSYS, SITBUSY, SWATCHOK, SKILLED, SSCONT, SZONETOP, SEXTKILLED, SUGID, SEXECED, SJCTL, SNOWAIT, SVFORK, SEXITLWPS, SCOREDUMP, SMSACCT, SLWPWRAP

- Performance data on a terminated process cannot be collected.
- If the target process of an instance is a zombie process, 0 is set in the fields listed below for Solaris, and -3 is set for AIX and HP-UX.

User, User ID, Real User, Real User ID, Group, Group ID, Real Group, Real Group ID

# Default values and values that can be specified

ltem	Default value	Modifiable
Collection Interval	60	Yes
Collection Offset	0	Yes
Log	No	Yes
LOGIF	Blank	Yes

# ODBC key fields

- PD\_START\_TIME
- PD\_PID

## Lifetime

From process execution until termination

## **Record size**

- Fixed portion: 681 bytes
- Variable portion: 2,682 bytes

## Fields

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Accounting Flags(ACCOUNTI NG_FLAGS)	Process operation history information. Valid only when the process is terminated (End Time is not n/a).		string(2 56)	No	HP-UX, Solaris, AIX, Linux	
Argument List(ARGUMENT _LIST)	Process argument list. Corresponds to the character string displayed in the COMMAND string of the ps -ef command. In AIX, the maximum size is limited to 119 bytes. In Linux, the maximum size is limited to 119 bytes. In HP-UX, the maximum size is limited to 63 bytes. In Solaris, the maximum size is limited to 79 bytes.		string(1 20)	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Avg I/O Kbytes(AVG_IO_K BYTES)	Average transfer size in I/O operations (KB)		float	No	HP-UX, AIX, Linux	TOTAL_IO_K BYTES / TOTAL_IO_O PS
CPU %(CPU_PERCEN T_USED)	Average value obtained by dividing CPU usage by the number of processors (%)		float	No		(((USER_CPU TIME + SYSTEM_CP U_TIME)/ ELAPSED_TI ME)/ processors-cou nt) x 100
CPU % Each(CPU_PERCE NT_EACH)	Process CPU usage (%)		float	No		((USER_CPU_ TIME + SYSTEM_CP U_TIME)/ ELAPSED_TI ME) x 100
CPU Limit(CPU_LIMIT )	Process CPU limit. This value is defined by the RLIMIT_CPU parameter of the setrlimit system call.		double	No	HP-UX, Solaris, Linux	
Child Process List(CHILD_PRO CESS_LIST)	Created child process list. The individual child processes are separated by blank spaces. If the list exceeds 128 bytes, the character becomes >.		string(1 28)	No		Traverse a list of processes using PID
Context Switches(CONTE XT_SWITCHES)	Number of times context switching was executed		ulong	Yes	HP-UX, Linux	
Core Size Limit(CORE_SIZE _LIMIT)	Maximum size of the core file that can be created by a process (bytes). This value is defined by the RLIMIT_CORE parameter of the setrlimit system call.		double	No	HP-UX, Solaris, Linux	

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Data Size Limit(DATA_SIZE _LIMIT)	Process data size limit (bytes). This value is defined by the RLIMIT_DATA parameter of the setrlimit system call.		double	No	HP-UX, Solaris, Linux	
Elapsed Time(ELAPSED_T IME)	Time elapsed since a process was started until the Process Detail (PD) record is stored or the process is terminated (seconds)		utime	No		<ul> <li>When the process is executing RECORD_TIME - START_TI ME</li> <li>Other cases</li> </ul>
End Time(END_TIME)	Process termination time. n/a if the process is being executed.		time_t	No	HP-UX, Solaris, AIX, Linux	START_TIME + ELAPSED_TI ME
Executable Data Kbytes(EXECUTA BLE_DATA_KBY TES)	Size of data being used (KB). To collect data for this field in Solaris, the environment variable SAUNIXPMAP must be specified in advance. Execute the following command from the command line: #		ulong	No	Linux	
Executable Text Kbytes(EXECUTA BLE_TEXT_KBY TES)	Size of the text being used (KB). To collect data for this field in Solaris, the environment variable SAUNIXPMAP must be specified in advance. Execute the following command from the command line: #		ulong	No	Linux	

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Exit Status(EXIT_STAT US)	Process termination status. Valid only when the process is terminated (End Time is not n/a).		string(2 0)	No	HP-UX, Solaris, AIX, Linux	
File Size Limit(FILE_SIZE_ LIMIT)	Process file size limit (bytes). This value is defined by the RLIMIT_FSIZE parameter of the setrlimit system call.		double	No	HP-UX, Solaris, Linux	
Flags(FLAGS)	Process flag list. If the list exceeds 120 bytes, the character becomes >.		string(1 20)	No	Linux	
Group(GROUP_N AME)	Effective group name of the process		string(2 56)	No		
Group ID(GROUP_ID)	Effective group ID of the process		long	No		
Hard CPU Limit(HARD_CPU _LIMIT)	Process hard CPU limit (Hcpulimit)		double	No	HP-UX, Solaris, Linux	
Hard Core Size Limit(HARD_COR E_SIZE_LIMIT)	Process hard core size limit (bytes) (Hcorelimit)		double	No	HP-UX, Solaris, Linux	
Hard Data Size Limit(HARD_DAT A_SIZE_LIMIT)	Process hard data size limit (bytes) (Hdatalimit)		double	No	HP-UX, Solaris, Linux	
Hard File Size Limit(HARD_FIL E_SIZE_LIMIT)	Process hard file size limit (bytes) (Hfilesizelimit)		double	No	HP-UX, Solaris, Linux	
Hard Open Files Limit(HARD_OPE N_FILES_LIMIT)	Process hard open file limit (Hopenfileslimit)		double	No	HP-UX, Solaris, AIX, Linux	
Hard Stack Size Limit(HARD_STA CK_SIZE_LIMIT)	Process hard stack size limit (bytes) (Hstacklimit)		double	No	HP-UX, Solaris, Linux	

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Hard Virtual Mem Size Limit(HARD_VIR TUAL_MEMORY _SIZE_LIMIT)	Process hard virtual memory size limit (bytes) (Hrsslimit)		double	No	HP-UX, Solaris, Linux	
Heap Kbytes(HEAP_KB YTES)	Heap size used (KB)		ulong	No	HP-UX, AIX, Linux	
Interval(INTERVA L)	Interval at which the Process Detail (PD) record was stored (seconds)		ulong	Yes	HP-UX, Solaris, AIX, Linux	
Major Faults(MAJOR_FA ULTS)	Number of page faults that cause physical I/O operations		ulong	Yes		
Mem Charge(MEMORY _CHARGE)	Process service unit charge. Valid only when the process is terminated (End Time is not n/a).		ulong	No	HP-UX, Solaris, AIX, Linux	
Minor Faults(MINOR_FA ULTS)	Number of page faults that do not cause physical I/O operations		ulong	Yes		
Niceness(NICENE SS)	Process niceness value. The scheduler class assigned to the process affects this value. For example, when a task is assigned to the scheduler class RT, the niceness value is 0.		long	No		
Open Files Limit(OPEN_FILE S_LIMIT)	Process open file limit. This value is defined by the RLIMIT_NOFILE parameter of the setrlimit system call.		double	No	HP-UX, Solaris, AIX, Linux	
PID(PID)	Process ID		long	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Parent PID(PARENT_PID )	Process ID of a parent process		long	No		
Parent Process List(PARENT_PR OCESS_LIST)	Parent process list of a process. For example, 3867<1<0 means process 0 created process 1, and process 1 created process 3867. If the list exceeds 128 bytes, the character becomes >.		string(1 28)	No		Traverse a list of processes using Parent PID
Priority(PRIORIT Y)	Process priority. If the process ID of a process in the AIX 32-bit environment is 0, 0 is set.		long	No		
Process Group ID(PROCESS_GR OUP_ID)	Process group ID		long	No		
Program(PROGRA M_NAME)	Program Name. Correspond to the character string displayed in the COMMAND string of the ps -e command. In AIX, the maximum size is limited to 32 bytes. In Linux, the maximum size is limited to 15 bytes. In HP-UX, the maximum size is limited to 14 bytes. In Solaris, the maximum size is limited to 15 bytes.		string(2 56)	No		
Program/ PID(PROGRAM_P ID)	Name of the program executed and a process ID		string(2 80)	No		
Reads(READ_OPS )	In AIX, this field shows the number of times RAW read operations occurred. In Solaris, this field shows the number of times Block read operation occurred.		ulong	Yes	HP-UX, Linux	

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Reads/ sec(READ_OPS_P ER_SECOND)	Frequency at which read operations occurred (number of operations per second)		float	Yes	HP-UX, Linux	READ_OPS / ELAPSED_TI ME
Real Group(REAL_GR OUP_NAME)	Real group name of the process		string(2 56)	No		
Real Group ID(REAL_GROUP _ID)	Real group ID of the process		long	No		
Real Mem Kbytes(REAL_ME MORY_KBYTES)	Physical memory size used (KB)		ulong	No		
Real User(REAL_USER _NAME)	Real user name of the process		string(2 56)	No		
Real User ID(REAL_USER_I D)	Real user ID of the process		long	No		
Record Time(RECORD_TI ME)	Time at which the record was created (Greenwich Mean Time)		time_t	No		
Record Type(INPUT_REC ORD_TYPE)	Record type. Always PD.		char(8)	No		
Scheduler Class(SCHEDULE R_CLASS)	Scheduling class name. One of the following values is set: TS, IA, FX, FSS, RT, SYS		string(1 2)	No	HP-UX, AIX, Linux	
Shared Lib Kbytes(SHARED_ LIBRARY_KBYT ES)	Size of the shared library used (KB)		ulong	No	HP-UX, Solaris, AIX, Linux	
Shared Mem Kbytes(SHARED_ MEMORY_KBYT ES)	Size of the shared memory used (KB)		ulong	No	Solaris, AIX	

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Signals Rcvd(NUMBER_O F_SIGNALS_REC EIVED)	Number of signals received		ulong	Yes	Linux	
Snapshot Time(LAST_SNAP SHOT_TIME)	Time at which the last process table information was acquired. Shows the record time if the process table contains no information.		time_t	No		
Stack Kbytes(STACK_K BYTES)	Size of the stack being used by the process (KB)		ulong	No	AIX	
Stack Size Limit(STACK_SIZ E_LIMIT)	Process stack size limit (bytes). This value is defined by the RLIMIT_STACK parameter of the setrlimit system call.		double	No	HP-UX, Solaris, Linux	
Start Time(START_TIM E)	Process start time		time_t	No		
State(STATE)	Process state. One of the following values is set: - In AIX IDLE, ZOMBIE, STOP, RUN, SWAP, NONE - In HP-UX IDLE, OTHER, RUN, SLEEP, STOP, ZOMBIE, NONE - In Solaris IDLE, ONCPU, RUN, SLEEP, STOP, ZOMBIE, NONE		string(1 0)	No		
Swaps(SWAPS)	Number of times swapping occurred		ulong	Yes	Linux	

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
System CPU(SYSTEM_CP U_TIME)	Time during which the system ran in the kernel mode (seconds)		utime	Yes		
Terminal(TERMIN AL_NAME)	Name of the executing terminal. Process without terminal name, ?? is displayed.		string(4 0)	No		
Throughput/ sec(IO_KBYTES_ PER_SECOND)	I/O operation speed (KB per second)		float	Yes	AIX, Linux	TOTAL_IO_K BYTES / ELAPSED_TI ME
Total I/O Kbytes(TOTAL_IO _KBYTES)	Total size transferred in I/O operations (KB)		float	Yes	AIX, Linux	
Total I/O Ops(TOTAL_IO_O PS)	Number of I/O operations that occurred		ulong	Yes	HP-UX, AIX, Linux	READ_OPS + WRITE_OPS
Total I/O Ops/ sec(TOTAL_IO_O PS_PER_SECOND )	Frequency at which I/O operations occurred (number of operations per second)		float	Yes	HP-UX, AIX, Linux	TOTAL_IO_O PS / ELAPSED_TI ME
Total Process Kbytes(TOTAL_P ROCESS_KBYTE S)	Process size (KB). In AIX, the value in this field is the same as the value displayed in the SZ string obtained by the ps -l command. In HP-UX and Solaris, the value in this field is the same as the value displayed in the SZ string obtained by the ps -l command, multiplied by the page size.		ulong	No		
User(USER_NAM E)	Effective user name of the process		string(2 56)	No		
User CPU(USER_CPU_ TIME)	Time during which the CPU ran in the user mode (seconds)		utime	Yes		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
User ID(USER_ID)	Effective user ID of the process		long	No		
Virtual Env ID(PD_VIRTUAL _ENV_ID)	ID of the virtual environment made by the virtual system provided by the OS.		string(1 6)	No	HP-UX, Solaris 9 (SPARC), AIX 5L V5.3, Linux	
Virtual Mem Kbytes(VIRTUAL _MEMORY_KBY TES)	Size of the virtual memory used (KB)		ulong	No	Solaris	
Virtual Mem Size Limit(VIRTUAL_ MEMORY_SIZE_ LIMIT)	Size limit of the process' virtual memory (bytes) (rsslimit). This value is defined by the RLIMIT_VMEM parameter of the setrlimit system call.		double	No	HP-UX, Solaris, Linux	
Writes(WRITE_OP S)	In AIX, this field shows the number of times RAW write operations occurred. In Solaris, this field shows the number of times Block write operation occurred.		ulong	Yes	HP-UX, Linux	
Writes/ sec(WRITE_OPS_ PER_SECOND)	Frequency at which write operations occurred (number of operations per second)		float	Yes	HP-UX, Linux	WRITE_OPS / ELAPSED_TI ME

## Process Detail Interval (PD\_PDI)

#### Function

The Process Detail Interval (PD\_PDI) record stores the performance data per unit time on a process. A record is created for each process ID within the system.

The performance data stored in this record is the same as that stored in the Process Detail (PD) record. However, if performance data collected at a point in time is the same as the performance data collected in the previous interval for the same process, performance data is not stored in the same record, and a new record is created. This point is different from the Process Detail (PD) record. Therefore, multiple records are created for the same process. After performance data is collected at a given point in time, if the process is terminated before the next performance data is collected, no performance data is collected on that process.

When this record is collected on a real-time basis, performance data on all processes that are being executed by the system is stored. This is a multi-instance record.

Notes:

• In AIX and Solaris, only the data in the fields listed below is collected on defunct processes. For all other fields, either 0 or n/a is displayed.

Accounting Flags, Argument List, End Time, Exit Status, Group, Group ID, Parent PID, PID, Program, Real User, Real User ID, Record Time, Record Type, Snapshot Time, State, Terminal, User, User ID

- The Interval (INTERVAL) field of this record is always 0. In the fields that show frequency, average, and percentage, the time elapsed since the process startup is used as the data source. To collect a delta value, the difference between the previous elapsed process time and the current elapsed process time is computed. If no delta value is to be collected, the cumulative elapsed time of the process is used for computation.
- In the Priority (PRIORITY) field, process priority is determined based on the size of the number. In Solaris, the greater the number, the higher the priority. In AIX and Linux, the smaller the number, the higher the priority. In HP-UX, the number that indicates priority differs with each process setting. You can use the following command to check the process setting:

export UNIX95=1

ps -eo pid,cls,pri

When cls is one of the following, the smaller the number, the higher the priority:



FIFO

RR

RR2

When cls is one of the following, the greater the number, the higher the priority:

HPUX

RT

- Performance data on a terminated process cannot be collected.
- If the target process of an instance is a zombie process, 0 is set in the fields listed below for Solaris, and -3 is set for AIX and HP-UX.

User, User ID, Real User, Real User ID, Group, Group ID, Real Group, Real Group ID

## Default values and values that can be specified

Item		Default value	Modifiable		
Log		No		Yes	
LOGIF		Blank		Yes	
Sync Collection With		Interval Records, PI		No	

## **ODBC** key fields

- PD\_PDI\_PID
- PD\_PDI\_START\_TIME

#### Lifetime

From process execution until termination

## **Record size**

- Fixed portion: 681 bytes
- Variable portion: 1,626 bytes

## Fields

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Accounting Flags(ACCOUNTI NG_FLAGS)	Process operation history information. Valid only when the process is terminated (End Time is not n/a).		string(2 56)	No	HP-UX, Solaris, AIX, Linux	
Argument List(ARGUMENT _LIST)	Process argument list. Correspond to the character string displayed in the COMMAND string of the ps -ef command. In AIX, the maximum size is limited to 119 bytes. In Linux, the maximum size is limited to 119 bytes. In HP-UX, the maximum size is limited to 63 bytes. In Solaris, the maximum size is limited to 79 bytes.		string(1 20)	No		
Avg I/O Kbytes(AVG_IO_K BYTES)	Average transfer size in I/O operations (KB)		float	No	HP-UX, AIX, Linux	TOTAL_IO_K BYTES / TOTAL_IO_O PS
CPU %(CPU_PERCEN T_USED)	Average value obtained by dividing CPU usage by the number of processors (%)		float	No		Non-delta calculation or collection first time, (((USER_CPU _TIME + SYSTEM_CP U_TIME)/ Process Cumulative Elapsed time)/ Processor Count) x 100. Others,(((USE R_CPU_TIME + SYSTEM_CP U_TIME)/ Interval)/ Processor Count) x 100

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
CPU % Each(CPU_PERCE NT_EACH)	Process CPU usage (%)		float	No		Non-delta calculation or collection first time, ((USER_CPU_ TIME + SYSTEM_CP U_TIME)/ Process Cumulative Elapsed time) x 100. Others,((USER CPU_TIME + SYSTEM_CP U_TIME)/ Interval) x 100
Context Switches(CONTE XT_SWITCHES)	Number of times context switching was executed		ulong	Yes	HP-UX, Linux	
End Time(END_TIME)	Process termination time. n/a if the process is being executed.		time_t	No	HP-UX, Solaris, AIX, Linux	START_TIME + Process Operation Time
Executable Data Kbytes(EXECUTA BLE_DATA_KBY TES)	Size of data used (KB). To collect data for this field in Solaris, the environment variable SAUNIXPMAP must be specified in advance. Execute the following command from the command line: # SAUNIXPMAP=1 # export SAUNIXPMAP		ulong	No	Linux	

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Executable Text Kbytes(EXECUTA BLE_TEXT_KBY TES)	Size of the text used (KB). To collect data for this field in Solaris, the environment variable SAUNIXPMAP must be specified in advance. Execute the following command from the command line: # SAUNIXPMAP=1 # export SAUNIXPMAP		ulong	No	Linux	
Exit Status(EXIT_STAT US)	Process termination status. Valid only when the process is terminated (End Time is not n/a).		string(2 0)	No	HP-UX, Solaris, AIX, Linux	
Group(GROUP_N AME)	Effective group name of the process		string(2 56)	No		
Group ID(GROUP_ID)	Effective group ID of the process		long	No		
Heap Kbytes(HEAP_KB YTES)	Heap size used (KB)		ulong	No	HP-UX, AIX, Linux	
Interval(INTERVA L)	Always 0.		ulong	Yes	HP-UX, Solaris, AIX, Linux	
Major Faults(MAJOR_FA ULTS)	Number of page faults that cause physical I/O operations		ulong	Yes		
Minor Faults(MINOR_FA ULTS)	Number of page faults that do not cause physical I/O operations		ulong	Yes		
Niceness(NICENE SS)	Process niceness value. The scheduler class assigned to the process affects this value. For example, when a task is assigned to the scheduler class RT, the niceness value is 0.		long	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
PID(PID)	Process ID		long	No		
Parent PID(PARENT_PID )	Process ID of a parent process		long	No		
Priority(PRIORIT Y)	Process priority. If the process ID of a process in the AIX 32-bit environment is 0, 0 is set.		long	No		
Program(PROGRA M_NAME)	Program Name. Correspond to the character string displayed in the COMMAND string of the ps -e command. In AIX, the maximum size is limited to 32 bytes. In Linux, the maximum size is limited to 15 bytes. In HP-UX, the maximum size is limited to 14 bytes. In Solaris, the maximum size is limited to 15 bytes.		string(2 56)	No		
Reads(READ_OPS )	In AIX, this field shows the number of times RAW read operations occurred. In Solaris, this field shows the number of times Block read operation occurred.		ulong	Yes	HP-UX, Linux	

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Reads/ sec(READ_OPS_P ER_SECOND)	Frequency at which read operations occurred (number of operations per second)		float	Yes	HP-UX, Linux	When delta value is not collected, READ_OPS / when collecting Process cumulative elapsed time delta value, READ_OPS / (Previous process elapsed time - Present process elapsed time)
Real Mem Kbytes(REAL_ME MORY_KBYTES)	Physical memory size used (KB)		ulong	No		
Real User(REAL_USER _NAME)	Real user name of the process		string(2 56)	No		
Real User ID(REAL_USER_I D)	Real user ID of the process		long	No		
Record Time(RECORD_TI ME)	Time at which the record was created (Greenwich Mean Time)		time_t	No		
Record Type(INPUT_REC ORD_TYPE)	Record type. Always PDI.		char(8)	No		
Shared Lib Kbytes(SHARED_ LIBRARY_KBYT ES)	Size of the shared library used (KB)		ulong	No	HP-UX, Solaris, AIX, Linux	
Shared Mem Kbytes(SHARED_ MEMORY_KBYT ES)	Size of the shared memory used (KB)		ulong	No	Solaris, AIX	
PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
---	---	-------------	----------------	-----------	----------------------------------	-------------
Signals Rcvd(NUMBER_O F_SIGNALS_REC EIVED)	Number of signals received		ulong	Yes	Linux	
Snapshot Time(LAST_SNAP SHOT_TIME)	Time at which the last process table information was acquired. Shows the record time if the process table contains no information.		time_t	No		
Stack Kbytes(STACK_K BYTES)	Size of the stack used by the process (KB)		ulong	No	AIX	
Start Time(START_TIM E)	Process start time		time_t	No		
State(STATE)	Process state. One of the following values is set: - In AIX IDLE, ZOMBIE, STOP, RUN, SWAP, NONE - In HP-UX IDLE, OTHER, RUN, SLEEP, STOP, ZOMBIE, NONE - In Solaris IDLE, ONCPU, RUN, SLEEP, STOP, ZOMBIE, NONE - In Linux RUN, SLEEP, SWAP, STOP, ZOMBIE, NONE		string(1 0)	No		
Swaps(SWAPS)	Number of times swapping occurred		ulong	Yes	Linux	
System CPU(SYSTEM_CP U_TIME)	Time during which the system ran in the kernel mode (seconds)		utime	Yes		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Terminal(TERMIN AL_NAME)	Name of the executing terminal. Process without terminal name, ?? is displayed.		string(4 0)	No		
Throughput/ sec(IO_KBYTES_ PER_SECOND)	I/O operation speed (KB per second)		float	Yes	AIX, Linux	When delta value is not collected,TOT AL_IO_KBYT ES / when collecting Process cumulative elapsed time delta value, TOTAL_IO_K BYTES / (Previous process elapsed time - Present process elapsed time)
Total I/O Kbytes(TOTAL_IO _KBYTES)	Total size transferred in I/O operations (KB)		float	Yes	AIX, Linux	
Total I/O Ops(TOTAL_IO_O PS)	Number of I/O operations that occurred		ulong	Yes	HP-UX, AIX, Linux	READ_OPS + WRITE_OPS
Total I/O Ops/ sec(TOTAL_IO_O PS_PER_SECOND )	Frequency at which I/O operations occurred (number of operations per second)		float	Yes	HP-UX, AIX, Linux	When delta value is not collected, TOTAL_IO_O PS / when collecting Process cumulative elapsed time delta value, TOTAL_IO_O PS / (Previous process elapsed time - Present process elapsed time)

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Total Process Kbytes(TOTAL_P ROCESS_KBYTE S)	Process size (KB). In AIX, the value in this field is the same as the value displayed in the SZ string obtained by the ps -1 command. In HP-UX and Solaris, the value in this field is the same as the value displayed in the SZ string obtained by the ps -1 command, multiplied by the page size. In Linux, this value is the same as the value of the SIZE column displayed by the top command.		ulong	No		
User(USER_NAM E)	Effective user name of the process		string(2 56)	No		
User CPU(USER_CPU_ TIME)	Time during which the CPU ran in the user mode (seconds)		utime	Yes		
User ID(USER_ID)	Effective user ID of the process (for a zombie process, this field is 0 on Solaris and - 3 on AIX and HP-UX.)		long	No		
Virtual Mem Kbytes(VIRTUAL _MEMORY_KBY TES)	Size of the virtual memory being used (KB)		ulong	No	Solaris	
Writes(WRITE_OP S)	In AIX, this field shows the number of times RAW write operations occurred. In Solaris, this field shows the number of times Block write operation occurred.		ulong	Yes	HP-UX, Linux	

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Writes/ sec(WRITE_OPS_ PER_SECOND)	Frequency at which write operations occurred (number of operations per second)		float	Yes	HP-UX, Linux	When delta value is not collected, WRITE_OPS / when collecting Process cumulative elapsed time delta value, WRITE_OPS / (Previous process elapsed time - Present process elapsed time)

# Process Summary (PD\_PDS)

#### Function

The Process Summary (PD\_PDS) record stores the performance data in which the data stored in the Process Detail (PD) record is summarized as a state at a given point in time.

The information for this record is collected from the process table information for the past minute. Additionally, the number of processes in which changes occurred in the values listed below during the collection interval is counted as active processes.

• In AIX

CPU usage time, number of page faults, number of context switches, and process size

• In HP-UX

CPU usage time, number of page faults, and process size

• In Solaris

CPU usage time, number of page faults, number of context switches, number of system calls, number of I/O operations, and process size

• In Linux

CPU usage time, number of page faults, process size, and current directory

Even when the Process Detail (PD) record is not collected, performance data is stored in the Process Summary (PD\_PDS) record.

#### Default values and values that can be specified

Item	Default value	Modifiable
Log	No	Yes
LOGIF	Blank	Yes
Sync Collection With	Interval Records, PI	No

#### **ODBC** key fields

None

#### Lifetime

None

## **Record size**

- Fixed portion: 741 bytes
- Variable portion: 0 bytes

# Fields

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Active System Processes(NUMBE R_OF_ACTIVE_S YSTEM_PROCES SES)	Number of active system processes. In the first real-time report, 0 is displayed.		ulong	No	AIX, Linux	
Active User Processes(NUMBE R_OF_ACTIVE_U SER_PROCESSES )	Number of active user processes. In the first real-time report, 0 is displayed. In AIX, this field shows the combined total number of active system processes and active user processes.		ulong	No		
Active Users(NUMBER_ OF_ACTIVE_USE RS)	Number of users who are executing the processes that are counted as active system or user processes. In the first real-time report, 0 is displayed.		ulong	No		
Daemon Processes(NUMBE R_OF_DAEMON_ PROCESSES)	Number of daemon processes		ulong	No		
Interval(INTERVA L)	Interval at which the Process Summary (PD_PDS) record was stored. Always 0.		ulong	No	HP-UX, Solaris, AIX, Linux	
Mem Processes(NUMBE R_OF_MEMORY_ PROCESSES)	Number of memory management processes. In Linux, the number of processes having process name as "kswapd0" are counted.		ulong	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
New Processes(NUMBE R_OF_NEW_PRO CESSES)	Number of processes started. Because the difference from the previous process information is computed, 0 is displayed in the first real-time report.		ulong	No		Present TOTAL_NUM BER_OF_PRO CESSES - Previous TOTAL_NUM BER_OF_PRO CESSES
Processes(TOTAL_ NUMBER_OF_PR OCESSES)	Number of processes within the system		ulong	No		
Record Time(RECORD_TI ME)	Time at which the record was created (Greenwich Mean Time)		time_t	No		
Record Type(INPUT_REC ORD_TYPE)	Record type. Always PDS.		char(8)	No		
Runnable Processes(NUMBE R_OF_RUNNABL E_PROCESSES)	Number of processes that are executable		ulong	No		
Sleeping Processes(NUMBE R_OF_SLEEPING _PROCESSES)	Number of processes that are sleeping		ulong	No		
Stopped Processes(NUMBE R_OF_STOPPED_ PROCESSES)	Number of processes that are stopped		ulong	No		
Swapped Processes(NUMBE R_OF_SWAPPED _PROCESSES)	Number of processes that have been swapped out. The number of processes that are not inside the core is determined from the process table.		ulong	No	Solaris 10	

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Terminals(NUMBE R_OF_ACTIVE_T ERMINALS)	Number of TTYs that are executing the processes that are counted as active system or user processes. In the first real-time report, 0 is displayed.		ulong	No		
Terminated Processes(NUMBE R_OF_DIED_PRO CESSES)	Number of terminated processes. Because the difference from the previous process information is computed, 0 is displayed in the first real-time report.		ulong	No		Previous TOTAL_NUM BER_OF_PRO CESSES - Present TOTAL_NUM BER_OF_PRO CESSES
Users(TOTAL_NU MBER_OF_USER S)	Number of real users		ulong	No		
Zombie Processes(NUMBE R_OF_ZOMBIE_P ROCESSES)	Number of zombie processes		ulong	No		

# Program Summary (PD\_PGM)

#### Function

The Program Summary (PD\_PGM) record stores the performance data in which the data stored in the Process Detail (PD) record is summarized as the state for each program at a given point in time. A record is created for each program that is being executed. This is a multi-instance record. Note that even when the Process Detail (PD) record is not collected, performance data is stored in the Program Summary (PD\_PGM) record.

#### Default values and values that can be specified

Item	Default value	Modifiable
Log	No	Yes
LOGIF	Blank	Yes
Sync Collection With	Detail Records, PD	No

### **ODBC** key fields

PD\_PGM\_PROGRAM\_NAME

## Lifetime

From the time when at least one process is being executed by a particular program name until the time when the number of processes being executed becomes 0.

#### **Record size**

- Fixed portion: 681 bytes
- Variable portion: 344 bytes

### **Fields**

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Avg I/O Kbytes(AVG_IO_K BYTES)	Average transfer size in I/O operations (KB)		float	No	HP-UX, AIX, Linux	TOTAL_IO_K BYTES / (READ_OPS + WRITE_OPS)

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
CPU %(CPU_PERCEN T_USED)	Average CPU usage by processors (%)		float	No		(((USER_CPU TIME + SYSTEM_CP U_TIME)/ total-elapsed-ti me-of-all-proce sses-executing- programs)/ processors-cou nt) x 100
Context Switches(CONTE XT_SWITCHES)	Number of times context switching was executed		ulong	No	HP-UX, Linux	
Interval(INTERVA L)	Interval at which the Program Summary (PD_PGM) record was stored (seconds). Always 0.		ulong	No	HP-UX, Solaris, AIX, Linux	
Major Faults(MAJOR_FA ULTS)	Number of page faults that cause physical I/O operations		ulong	No		
Minor Faults(MINOR_FA ULTS)	Number of page faults that do not cause physical I/O operations		ulong	No		
Process Count(PROCESS_ COUNT)	Number of processes that are executing programs. Number of processes that have this program name inside the process table.		ulong	No		
Program(PROGRA M_NAME)	Program name		string(2 56)	No		
Reads(READ_OPS )	In AIX, this field shows the number of times RAW read operations occurred. In Solaris, this field shows the number of times Block read operation occurred.		ulong	No	HP-UX, Linux	

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Reads/ sec(READ_OPS_P ER_SECOND)	Frequency at which read operations occurred (number of operations per second)		float	No	HP-UX, Linux	READ_OPS / total-elapsed-ti me-of-all-proce sses-executing- programs
Real Mem Kbytes(REAL_ME MORY_KBYTES)	Physical memory size used (KB)		ulong	No		
Record Time(RECORD_TI ME)	Time at which the record was created (Greenwich Mean Time)		time_t	No		
Record Type(INPUT_REC ORD_TYPE)	Record type. Always PGM.		char(8)	No		
Signals Rcvd(NUMBER_O F_SIGNALS_REC EIVED)	Number of signals received		ulong	No	Linux	
Swaps(SWAPS)	Number of times swapping occurred		ulong	No	Linux	
System CPU(SYSTEM_CP U_TIME)	Time during which the system ran in the kernel mode		utime	No		
Throughput/ sec(IO_KBYTES_ PER_SECOND)	I/O operation speed (KB per second)		float	No	AIX, Linux	TOTAL_IO_K BYTES / total-elapsed-ti me-of-all-proce sses-executing- programs
Total I/O Kbytes(TOTAL_IO _KBYTES)	Total size transferred in I/O operations (KB)		double	No	AIX, Linux	
Total I/O Ops(TOTAL_IO_O PS)	Number of I/O operations that occurred		ulong	No	HP-UX, AIX, Linux	READ_OPS + WRITE_OPS

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Total I/O Ops/ sec(TOTAL_IO_O PS_PER_SECOND )	Frequency at which I/O operations occurred (number of operations per second)		float	No	HP-UX, AIX, Linux	TOTAL_IO_O PS / total-elapsed-ti me-of-all-proce sses-executing- programs
User CPU(USER_CPU_ TIME)	Time during which the CPU ran in the user mode (seconds)		utime	No		
Virtual Mem Kbytes(VIRTUAL _MEMORY_KBY TES)	Size of the virtual memory used (KB)		ulong	No	Solaris	
Writes(WRITE_OP S)	In AIX, this field shows the number of times RAW write operations occurred. In Solaris, this field shows the number of times Block write operation occurred.		ulong	No	HP-UX, Linux	
Writes/ sec(WRITE_OPS_ PER_SECOND)	Frequency at which write operations occurred (number of operations per second)		float	No	HP-UX, Linux	WRITE_OPS / total-elapsed-ti me-of-all-proce sses-that-invok e-programs

# System Summary Overview (PI)

#### Function

The System Summary Overview (PI) record stores the performance data per unit time on the entire system.

Notes:

• When information is collected in a Solaris 10 environment or AIX System WPAR environment, the following fields cannot be collected:

NFS Server Lookup Ops, NFS Server Ops/sec, NFS Server Read Ops, NFS Server Read Ops/sec, NFS Server Total Bad Ops, NFS Server Total Ops, NFS Server Write Ops, NFS Server Write Ops/sec

• If the DLPAR function of AIX 5L V5.3 or later, the vPars function of HP-UX 11i, or the DR function of Solaris 9 or later is used to modify a system resource while a PFM - Agent for Platform service is running, some types of performance data cannot be correctly collected. The table below shows the types of system resources that are affected and the actions that you can take to correctly display reports after the modification.

OS and the name of function used to modify system resources	System resource type	Report type	Actions to be taken after modification
DLPAR of AIX 5L     V5.2 or later	• CPU	Real-time	Display the report again.
<ul> <li>DR of Solaris 9 or later</li> </ul>	• Memory	Historical	Specify the display period such that it does not include the date and time when the system resources were modified.
vPars of HP-UX 11i	CPU	Real-time	Display the report again.
		Historical	Specify the display period such that it does not include the date and time when the system resources were modified.

The table below shows the fields that are affected by a system resource modification.

System resource type	Target field
CPU	<ul> <li>Active CPUs (NUMBER_OF_ACTIVE_CPUS)</li> <li>CPU % (KERNELMODE_USERMODE_PERCENT)</li> <li>Context Switches (CONTEXT_SWITCHES)</li> <li>Context Switches/sec (CONTEXT_SWITCHES_PER_SECOND)</li> <li>Idle % (IDLE_TIME_PERCENT)</li> <li>Interrupts (INTERRUPTS)</li> <li>Interrupts/sec (INTERRUPTS_PER_SECOND)</li> <li>Kernel CPU % (KERNELMODE_PERCENT)</li> <li>System Calls (SYSTEM_CALLS)</li> <li>System Calls/sec (SYSTEM_CALLS_PER_SECOND)</li> <li>Total Kernel-Mode Time (TOTAL_KERNELMODE_TIME)</li> <li>Total Idle Time (TOTAL_IDLE_TIME)</li> <li>Total User-Mode Time (TOTAL_USERMODE_TIME)</li> <li>Total Wait Time (TOTAL_WAIT_TIME)</li> <li>Traps (TRAPS)</li> <li>Traps/sec (TRAPS_PER_SECOND)</li> <li>User CPU % (USERMODE_PERCENT)</li> <li>Wait % (WAIT_TIME_PERCENT)</li> </ul>
Memory	<ul> <li>Alloc Mem % (ALLOCATED_MEMORY_PERCENT)</li> <li>Alloc Mem Mbytes (ALLOCATED_MEMORY_MBYTES)</li> <li>Free Mem % (FREE_MEMORY_PERCENT)</li> <li>Free Mem Mbytes (FREE_MEMORY_MBYTES)</li> <li>Total Physical Mem Mbytes (TOTAL_MEMORY_MBYTES)</li> </ul>

• In PFM - Agent for Platform 09-00 or later, IPv6 is supported. The following table lists the fields in which numeric values are affected in an environment that contains both IPv4 and IPv6.

PFM-View name	Obtained IP information					
	IPv4 environment	IPv6 environment	Coexisting environment			
ICMP Pkts In	IPv4	0	IPv4			
ICMP Pkts Out	IPv4	0	IPv4			
ICMP6 Pkts In	0	IPv6	IPv6			
ICMP6 Pkts Out	0	IPv6	IPv6			
IP Pkts In	IPv4	0	IPv4			
IP Pkts Out	IPv4	0	IPv4			
IP6 Pkts In	0	IPv6	IPv6			

PFM-View name	Obtained IP information						
	IPv4 environment IPv6 environment		Coexisting environment				
IP6 Pkts Out	0	IPv6	IPv6				
Total Pkts In	Sum of the values of TCP Pkts In, UDP Pkts In, ICMP Pkts In, and ICMP6 Pkts In						
Total Pkts Out	Sum of the values of TCP Pkts Out, UDP Pkts Out, ICMP Pkts Out, and ICMP6 Pkts Out						

# Default values and values that can be specified

Item	Default value	Modifiable
Collection Interval	60	Yes
Collection Offset	0	Yes
Log	Yes	Yes
LOGIF	Blank	Yes

# ODBC key fields

None

## Lifetime

None

# **Record size**

- Fixed portion: 2,709 bytes
- Variable portion: 0 bytes

## Fields

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
1-Minute Run Queue Avg(ONE_MINUT E_RUN_QUEUE_ AVG)	Average number of threads that were waiting inside the execution queue in the past minute. In HP-UX, Solaris, and AIX, this value does not include the number of threads that were waiting for I/O.	AVG	float	No		
15-Minute Run Queue Avg(FIFTEEN_MI NUTE_RUN_QUE UE_AVG)	Average number of threads that were waiting inside the execution queue in the past 15 minutes. In HP-UX, Solaris, and AIX, this value does not include the number of threads that were waiting for I/O.	AVG	float	No		
5-Minute Run Queue Avg(FIVE_MINUT E_RUN_QUEUE_ AVG)	Average number of threads that were waiting inside the execution queue in the past 5 minutes. In HP-UX, Solaris, and AIX, this value does not include the number of threads that were waiting for I/O.	AVG	float	No		
Active CPUs(NUMBER_ OF_ACTIVE_CPU S)	Processor count	СОРҮ	ulong	No		CPU - Per Processor Detail (PI_CPUP) Record count.
Alloc Mem %(ALLOCATED_ MEMORY_PERC ENT)	Percentage of the physical memory size (MB) used (%)	%	float	No		(ALLOCATED _MEMORY_ MBYTES / TOTAL_MEM ORY_MBYTE S) x 100

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Alloc Mem Mbytes(ALLOCAT ED_MEMORY_M BYTES)	Megabytes of the physical memory used	AVG	float	No		TOTAL_MEM ORY_MBYTE S - FREE_MEMO RY_MBYTES
Alloc Swap %(ALLOCATED_ SWAP_PERCENT)	Percentage of the megabytes of the swap area used (%)	%	float	No		(ALLOCATED _SWAP_MBY TES / TOTAL_SWA P_MBYTES) x 100
Alloc Swap Mbytes(ALLOCAT ED_SWAP_MBYT ES)	Megabytes of the swap area used	AVG	float	No		TOTAL_SWA P_MBYTES - FREE_SWAP_ MBYTES
Block Ops(BLOCKIO_IO _OPS)	Number of block I/O operations that occurred	AVG	ulong	Yes	Linux	BLOCKIO_RE AD_OPS + BLOCKIO_W RITE_OPS
Block Reads(BLOCKIO_ READ_OPS)	Number of block read operations that occurred	AVG	ulong	Yes	Linux	
Block Reads/ sec(BLOCKIO_RE AD_OPS_PER_SE COND)	Frequency at which block read operations occurred (number of operations per second)	R	float	Yes	Linux	BLOCKIO_RE AD_OPS / INTERVAL
Block Writes(BLOCKIO_ WRITE_OPS)	Number of block write operations that occurred	AVG	ulong	Yes	Linux	
Block Writes/ sec(BLOCKIO_W RITE_OPS_PER_S ECOND)	Frequency at which block write operations occurred (number of operations per second)	R	float	Yes	Linux	BLOCKIO_W RITE_OPS / INTERVAL
Boot Time(CURRENT_ SYSTEM_BOOT_ TIME)	Last boot time	СОРҮ	time_t	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Buffers Mem %(BUFFERS_ME M_PERCENT)	Percentage of the megabytes of the buffer area used (%)	%	double	No	HP-UX, Solaris, AIX	(BUFFERS_M EM_MBYTES / TOTAL_MEM ORY_MBYTE S) x 100
Buffers Mem Mbytes(BUFFERS _MEM_MBYTES)	Megabytes of the buffer area used	AVG	double	No	HP-UX, Solaris, AIX	
CPU %(KERNELMOD E_USERMODE_P ERCENT)	CPU usage (%). It also indicates the average value per processor.	%	float	No		((TOTAL_USE RMODE_TIM E + TOTAL_KER NELMODE_T IME) / (TOTAL_IDL E_TIME + TOTAL_USER MODE_TIME + TOTAL_WAIT TIME + TOTAL_KER NELMODE_T IME)) x 100
Cache Mem %(CACHE_MEM_ PERCENT)	Percentage of the megabytes of the cache area used (%)	%	double	No	HP-UX, Solaris, AIX	(CACHE_ME M_MBYTES / TOTAL_MEM ORY_MBYTE S) x 100
Cache Mem Mbytes(CACHE_ MEM_MBYTES)	Megabytes of the cache area used	AVG	double	No	HP-UX, Solaris, AIX	
Cache Read %(CACHE_READ _PERCENT)	Cache read operations as a percentage of all read operations (%)	%	float	No	Linux	((LOGICAL_R EAD_OPS - BLOCKIO_RE AD_OPS) / LOGICAL_RE AD_OPS) x 100

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Cache Write %(CACHE_WRIT E_PERCENT)	Cache write operations as a percentage of all write operations (%)	%	float	No	Linux	((LOGICAL WRITE_OPS- BLOCKIO_W RITE_OPS)/ LOGICAL_W RITE_OPS) x 100
Context Switches(CONTE XT_SWITCHES)	Number of times context switching was executed	AVG	ulong	Yes		
Context Switches/ sec(CONTEXT_S WITCHES_PER_S ECOND)	Frequency at which context switching was executed (number of times per second)	R	float	Yes		CONTEXT_S WITCHES / INTERVAL
Effective Free Mem %(EFFECTIVE_F REE_MEM_PERC ENT)	The percentage (in mbytes) of physical memory that can be used by applications	%	double	No	HP-UX, Solaris, AIX	(EFFECTIVE_ FREE_MEM_ MBYTES / TOTAL_MEM ORY_MBYTE S) x 100
Effective Free Mem Mbytes(EFFECTI VE_FREE_MEM_ MBYTES)	The amount (in mbytes) of physical memory that can be used by applications	AVG	double	No	HP-UX, Solaris, AIX	
Faults(TOTAL_FA ULTS)	Number of page faults that occurred	AVG	ulong	Yes	Linux	MAJOR_FAU LTS + MINOR_FAU LTS
Free Mem %(FREE_MEMOR Y_PERCENT)	Percentage of physical memory size (MB) that is free (%)	%	float	No		(FREE_MEM ORY_MBYTE S / TOTAL_MEM ORY_MBYTE S) x 100
Free Mem Mbytes(FREE_ME MORY_MBYTES)	Megabytes of physical memory not used	AVG	float	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Free Swap %(FREE_SWAP_P ERCENT)	Percent of the swap area size (MB) not used (%)	%	float	No		(FREE_SWAP _MBYTES / TOTAL_SWA P_MBYTES) x 100
Free Swap Mbytes(FREE_SW AP_MBYTES)	Size of the swap area not used (MB)	AVG	float	No		
ICMP Pkts In(ICMP_PACKET S_IN)	Number of IPv4 ICMP packets received. Combined total of the numbers of local packets, remote packets, and packets in which errors occurred.	AVG	ulong	Yes		
ICMP Pkts Out(ICMP_PACKE TS_OUT)	Number of IPv4 ICMP packets sent. Combined total of the numbers of local packets, remote packets, and packets in which errors occurred.	AVG	ulong	Yes		
ICMP6 Pkts In(ICMP6_PACKE TS_IN)	Number of IPv6 ICMP packets received. Combined total of the numbers of local packets, remote packets, and packets in which errors occurred.	AVG	ulong	Yes		
ICMP6 Pkts Out(ICMP6_PACK ETS_OUT)	Number of IPv6 ICMP packets sent. Combined total of the numbers of local packets, remote packets, and packets in which errors occurred.	AVG	ulong	Yes		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
IP Pkts In(IP_PACKETS_I N)	Number of IPv4 IP packets received. Combined total of the number of local and remote packets. This value does not include the number of packets in which errors occurred.	AVG	ulong	Yes		
IP Pkts Out(IP_PACKETS _OUT)	Number of IPv4 IP packets sent. Combined total of the number of local and remote packets. This value does not include the number of packets in which errors occurred.	AVG	ulong	Yes		
IP6 Pkts In(IP6_PACKETS_ IN)	Number of IPv6 IP packets received. Combined total of the number of local and remote packets. This value does not include the number of packets in which errors occurred.	AVG	ulong	Yes		
IP6 Pkts Out(IP6_PACKET S_OUT)	Number of IPv6 IP packets sent. Combined total of the number of local and remote packets. This value does not include the number of packets in which errors occurred.	AVG	ulong	Yes		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Idle %(IDLE_TIME_P ERCENT)	Percentage of time a processor was idle (%). It also indicates the average value per processor.	%	float	No		(TOTAL_IDL E_TIME/( TOTAL_IDLE _TIME + TOTAL_USER MODE_TIME + TOTAL_WAIT _TIME + TOTAL_KER NELMODE_T IME)) x 100
Interrupts(INTERR UPTS)	Number of interrupts that occurred	AVG	ulong	Yes	AIX	
Interrupts/ sec(INTERRUPTS _PER_SECOND)	Frequency at which interrupts occurred (number of times per second)	R	float	Yes	AIX	INTERRUPTS / INTERVAL
Interval(INTERVA L)	Interval at which the System Summary Overview (PI) record was stored (seconds)	СОРҮ	ulong	Yes		RECORD_TI ME - previous-recor d-time; for real-time, RECORD_TI ME - last-boot-time
Kernel CPU %(KERNELMOD E_PERCENT)	Percentage of time the CPU ran in the kernel mode (%). It also indicates the average value per processor.	%	float	No		(TOTAL_KER NELMODE_T IME / (TOTAL_IDL E_TIME + TOTAL_USER MODE_TIME + TOTAL_WAIT TIME + TOTAL_KER NELMODE_T IME)) x 100
Logical I/O Ops(LOGICAL_IO _OPS)	Number of logical I/O operations that occurred	AVG	ulong	Yes	Linux	LOGICAL_RE AD_OPS + LOGICAL_W RITE_OPS

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Logical Read Mbytes(LOGICAL _READ_MBYTES )	Size transferred in logical read operations (MB). In HP-UX, this field shows the size of data read from block devices. In Solaris and AIX, this field shows the size of data read in read system calls.	AVG	float	Yes	Linux	
Logical Reads(LOGICAL_ READ_OPS)	Number of logical read operations that occurred	AVG	ulong	Yes	Linux	
Logical Reads/ sec(LOGICAL_RE AD_MBYTES_PE R_SECOND)	Speed of logical read operations (MB per second)	R	float	Yes	Linux	LOGICAL_RE AD_MBYTES / INTERVAL
Logical Write Mbytes(LOGICAL _WRITE_MBYTE S)	Size transferred in logical write operations (MB). In HP-UX, this field shows the size of data written into block devices. In Solaris and AIX, this field shows the size of data written in write system calls.	AVG	float	Yes	Linux	
Logical Writes(LOGICAL_ WRITE_OPS)	Number of logical write operations that occurred	AVG	ulong	Yes	Linux	
Logical Writes/ sec(LOGICAL_W RITE_MBYTES_P ER_SECOND)	Speed of logical write operations (MB per second)	R	float	Yes	Linux	LOGICAL_W RITE_MBYTE S / INTERVAL
Major Faults(MAJOR_FA ULTS)	Number of page faults that cause physical I/O operations	AVG	ulong	Yes	Linux	
Major Faults/ sec(MAJOR_FAU LTS_PER_SECON D)	Frequency at which page faults that cause physical I/ O operations occurred (number of times per second)	R	float	Yes	Linux	MAJOR_FAU LTS / INTERVAL

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Mem I/O Ops(MEMORY_IO _OPS)	Number of page faults that cause swapping and physical I/O operations	AVG	ulong	Yes	AIX, Linux	SWAP_IN_OP S+ SWAP_OUT_ OPS+ MAJOR_FAU LTS
Minor Faults(MINOR_FA ULTS)	Number of page faults that do not cause physical I/O operations	AVG	ulong	Yes	AIX, Linux	
Minor Faults/ sec(MINOR_FAUL TS_PER_SECON D)	Frequency at which page faults that do not cause physical I/O operations occurred (number of times per second)	R	float	Yes	AIX, Linux	MINOR_FAU LTS / INTERVAL
NFS Client Lookup Ops(NFS_CLIENT _LOOKUP_OPS)	Number of times lookup operations occurred on the NFS client	AVG	ulong	Yes	Linux	
NFS Client Ops/ sec(NFS_CLIENT _TOTAL_OPS_PE R_SECOND)	Frequency at which operations occurred on the NFS client (number of operations per second)	R	float	Yes	Linux	NFS_CLIENT _TOTAL_OPS 7 INTERVAL
NFS Client Read Ops(NFS_CLIENT _READ_OPS)	Number of times read operations occurred on the NFS client	AVG	ulong	Yes	Linux	
NFS Client Read Ops/ sec(NFS_CLIENT _READ_OPS_PER _SECOND)	Frequency at which read operations occurred on the NFS client (number of operations per second)	R	float	Yes	Linux	NFS_CLIENT _READ_OPS / INTERVAL
NFS Client Total Bad Ops(NFS_CLIENT _TOTAL_BAD_O PS)	Total number of failed operations on the NFS client	AVG	ulong	Yes	Linux	
NFS Client Total Ops(NFS_CLIENT _TOTAL_OPS)	Total number of operations that occurred on the NFS client	AVG	ulong	Yes	Linux	

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
NFS Client Write Ops(NFS_CLIENT _WRITE_OPS)	Number of times write operations occurred on the NFS client	AVG	ulong	Yes	Linux	
NFS Client Write Ops/ sec(NFS_CLIENT _WRITE_OPS_PE R_SECOND)	Frequency at which write operations occurred on the NFS client (number of operations per second)	R	float	Yes	Linux	NFS_CLIENT _WRITE_OPS / INTERVAL
NFS Server Lookup Ops(NFS_SERVE R_LOOKUP_OPS)	Number of times lookup operations occurred on the NFS server	AVG	ulong	Yes	Linux	
NFS Server Ops/ sec(NFS_SERVER _TOTAL_OPS_PE R_SECOND)	Frequency at which operations occurred on the NFS server (number of operations per second)	R	float	Yes	Linux	NFS_SERVER _TOTAL_OPS / INTERVAL
NFS Server Read Ops(NFS_SERVE R_READ_OPS)	Number of times read operations occurred on the NFS server	AVG	ulong	Yes	Linux	
NFS Server Read Ops/ sec(NFS_SERVER _READ_OPS_PER _SECOND)	Frequency at which read operations occurred on the NFS server (number of operations per second)	R	float	Yes	Linux	NFS_SERVER _READ_OPS / INTERVAL
NFS Server Total Bad Ops(NFS_SERVE R_TOTAL_BAD_ OPS)	Total number of failed operations on the NFS server	AVG	ulong	Yes	Linux	
NFS Server Total Ops(NFS_SERVE R_TOTAL_OPS)	Total number of operations that occurred on the NFS server	AVG	ulong	Yes	Linux	
NFS Server Write Ops(NFS_SERVE R_WRITE_OPS)	Number of times write operations occurred on the NFS server	AVG	ulong	Yes	Linux	
NFS Server Write Ops/ sec(NFS_SERVER _WRITE_OPS_PE R_SECOND)	Frequency at which write operations occurred on the NFS server (number of operations per second)	R	float	Yes	Linux	NFS_SERVER _WRITE_OPS / INTERVAL

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Other Pkts In(OTHER_PACK ETS_IN)	This field is always 0 because it is not supported	AVG	ulong	Yes	HP-UX, Solaris, AIX, Linux	
Other Pkts Out(OTHER_PAC KETS_OUT)	This field is always 0 because it is not supported	AVG	ulong	Yes	HP-UX, Solaris, AIX, Linux	
Page Ops/ sec(PAGE_OPS_P ER_SECOND)	Frequency at which page-in and page-out operations occurred (number of operations per second)	R	float	Yes	AIX, Linux	TOTAL_PAGE _OPS / INTERVAL
Page Reclaims/ sec(PAGE_RECLA IMS_PER_SECON D)	Frequency at which page reclaiming occurred (number of times per second)	R	float	Yes	AIX, Linux	TOTAL_PAGE _RECLAIMS / INTERVAL
Page Scans/ sec(PAGE_SCANS _PER_SECOND)	Frequency at which page scans occurred (number of times per second)	R	float	Yes	Linux	TOTAL_PAGE _SCANS / INTERVAL
Page-In Ops(PAGE_IN_OP S)	Number of page-in operations that occurred	AVG	ulong	Yes	AIX, Linux	
Page-In Ops/ sec(PAGE_IN_OP S_PER_SECOND)	Frequency at which page-in operations occurred (number of operations per second)	R	float	Yes	AIX, Linux	PAGE_IN_OP S / INTERVAL
Page-Out Ops(PAGE_OUT_ OPS)	Number of page-out operations that occurred	AVG	ulong	Yes	AIX, Linux	
Page-Out Ops/ sec(PAGE_OUT_O PS_PER_SECOND )	Frequency at which page-out operations occurred (number of operations per second)	R	float	Yes	AIX, Linux	PAGE_OUT_ OPS / INTERVAL
Pages In(PAGE_IN_COU NT)	Number of pages loaded through page-in operations	AVG	ulong	Yes		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Pages In/ sec(PAGE_IN_CO UNT_PER_SECO ND)	Frequency at which pages were loaded through page-in operations (number of pages per second)	R	float	Yes		PAGE_IN_CO UNT / INTERVAL
Pages Out(PAGE_OUT_ COUNT)	Number of pages extracted through page-out operations	AVG	ulong	Yes		
Pages Out/ sec(PAGE_OUT_C OUNT_PER_SEC OND)	Frequency at which pages were extracted through page-out operations (number of pages per second)	R	float	Yes		PAGE_OUT_C OUNT / INTERVAL
Physical I/O Ops(PHYSICAL_I O_OPS)	Number of physical I/O operations that occurred	AVG	ulong	Yes	Linux	PHYSICAL_R EAD_OPS + PHYSICAL_ WRITE_OPS
Physical Reads(PHYSICAL _READ_OPS)	Number of physical read operations that occurred	AVG	ulong	Yes	Linux	
Physical Writes(PHYSICAL _WRITE_OPS)	Number of physical write operations that occurred	AVG	ulong	Yes	Linux	
Processes(CURRE NT_PROCESS_C OUNT)	Number of processes within the system	AVG	ulong	No		Sum of the processes in the process table.
Processes Ended(PROCESSE S_ENDED)	Number of processes ended. Because the difference from the previous process information is computed, 0 is displayed in the first real-time report.	AVG	ulong	No		Earlier Interval Process Count - (CURRENT_P ROCESS_CO UNT - PROCESSES_ STARTED)
Processes Started(PROCESS ES_STARTED)	Number of processes started. Because the difference from the previous process information is computed, 0 is displayed in the first real-time report.	AVG	ulong	No		CURRENT_P ROCESS_CO UNT - PREVIOUS PROCESS COUNT

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Record Time(RECORD_TI ME)	Time at which the record was created (Greenwich Mean Time)	СОРҮ	time_t	No		
Record Type(INPUT_REC ORD_TYPE)	Record type. Always PI.	СОРҮ	char(8)	No		
Run Queue(PROCESSE S_IN_RUN_QUE UE)	Number of processes waiting inside the queue	AVG	float	No	Linux	
Software Lock Faults(SOFTWAR E_LOCK_FAULTS )	Number of times software lock failed	AVG	ulong	Yes	HP-UX, AIX, Linux	
Software Lock Faults/ sec(SOFTWARE_ LOCK_FAULTS_P ER_SECOND)	Frequency at which software lock failed (number of times per second)	R	float	Yes	HP-UX, AIX, Linux	SOFTWARE_ LOCK_FAUL TS / INTERVAL
Swap-In Ops(SWAP_IN_OP S)	Number of swap-in operations that occurred	AVG	ulong	Yes	AIX, Linux	
Swap-Ins/ sec(SWAP_IN_OP S_PER_SECOND)	Frequency at which swap-in operations occurred (number of times per second)	R	float	Yes	AIX, Linux	SWAP_IN_OP S / INTERVAL
Swap-Out Ops(SWAP_OUT_ OPS)	Number of swap-out operations that occurred	AVG	ulong	Yes	AIX, Linux	
Swap-Outs/ sec(SWAP_OUT_ OPS_PER_SECON D)	Frequency at which swap-out operations occurred (number of times per second)	R	float	Yes	AIX, Linux	SWAP_OUT_ OPS / INTERVAL
Swapped-In Pages(SWAP_IN_ COUNT)	Number of pages loaded through swap-in operations	AVG	ulong	Yes		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Swapped-In Pages/ sec(SWAP_IN_CO UNT_PER_SECO ND)	Frequency at which pages were loaded through swap-in operations (number of pages per second). In AIX, this field shows the frequency at which pages were swapped in only from the paging area through swap-in operations (number of pages per second).	R	float	Yes		SWAP_IN_CO UNT / INTERVAL
Swapped-Out Pages(SWAP_OUT _COUNT)	Number of pages extracted through swap-out operations	AVG	ulong	Yes		
Swapped-Out Pages/ sec(SWAP_OUT_ COUNT_PER_SE COND)	Frequency at which pages were extracted through swap-out operations (number of pages per second). In AIX, this field shows the frequency at which pages were swapped out only from the paging area through swap-out operations (number of pages per second).	R	float	Yes		SWAP_OUT_ COUNT / INTERVAL
System Calls(SYSTEM_C ALLS)	Number of system calls that were issued	AVG	ulong	Yes	Linux	
System Calls/ sec(SYSTEM_CA LLS_PER_SECON D)	Frequency at which system calls were issued (number of times per second)	R	float	Yes	Linux	SYSTEM_CA LLS / INTERVAL
System Up Time(CURRENT_ BOOT_SYSTEM_ UP_TIME)	Time elapsed since the last boot (seconds)	СОРҮ	string(2 0)	No		RECORD_TI ME - CURRENT_S YSTEM_BOO T_TIME

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
TCP Pkts In(TCP_PACKETS _IN)	Number of IPv4 TCP packets received. Combined total of the numbers of local packets, remote packets, and packets in which errors occurred. The total of the number of packets that IPv4 or IPv6 corresponds is displayed since 0900.	AVG	ulong	Yes		
TCP Pkts Out(TCP_PACKET S_OUT)	Number of IPv4 TCP packets sent. Combined total of the numbers of local packets, remote packets, and packets in which errors occurred. The total of the number of packets that IPv4 or IPv6 corresponds is displayed since 0900.	AVG	ulong	Yes		
Total Faults/ sec(TOTAL_FAUL TS_PER_SECON D)	Frequency at which page faults occurred (number of times per second)	R	float	Yes	Linux	TOTAL_FAUL TS / INTERVAL
Total Idle Time(TOTAL_IDL E_TIME)	Combined total idle time of all processors (seconds)	AVG	utime	Yes		
Total Kernel-Mode Time(TOTAL_KE RNELMODE_TIM E)	Combined total time for all processors in which they ran in the kernel mode (seconds)	AVG	utime	Yes		
Total Page Ops(TOTAL_PAG E_OPS)	Number of times paging operations occurred	AVG	ulong	Yes	AIX, Linux	PAGE_IN_OP S + PAGE_OUT_ OPS
Total Page Reclaims(TOTAL_ PAGE_RECLAIM S)	Number of times page reclaiming occurred	AVG	ulong	Yes	AIX, Linux	

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Total Page Scans(TOTAL_PA GE_SCANS)	Number of pages checked by page scan	AVG	ulong	Yes	Linux	
Total Physical Mem Mbytes(TOTAL_M EMORY_MBYTE S)	Physical memory size (MB)	СОРҮ	ulong	No		
Total Pkts(TOTAL_PAC KETS)	Total number of IPv4 TCP, IPv4 UDP, and IPv4 ICMP packets that were sent and received. The total of the number of packets that IPv4 or IPv6 corresponds is displayed since 0900.	AVG	ulong	Yes		TOTAL_PACK ETS_IN + TOTAL_PACK ETS_OUT
Total Pkts In(TOTAL_PACK ETS_IN)	Total number of IPv4 TCP, IPv4 UDP, and IPv4 ICMP packets that were received. The total of the number of packets that IPv4 or IPv6 corresponds is displayed since 0900.	AVG	ulong	Yes		TCP_PACKET S_IN + UDP_PACKE TS_IN + ICMP_PACKE TS_IN + ICMP6_PACK ETS_IN
Total Pkts Out(TOTAL_PAC KETS_OUT)	Total number of IPv4 TCP, IPv4 UDP, and IPv4 ICMP packets that were sent. The total of the number of packets that IPv4 or IPv6 corresponds is displayed since 0900.	AVG	ulong	Yes		TCP_PACKET S_OUT + UDP_PACKE TS_OUT + ICMP_PACKE TS_OUT + ICMP6_PACK ETS_OUT
Total Swap Mbytes(TOTAL_S WAP_MBYTES)	Swap area size (MB)	СОРҮ	ulong	No		
Total Swaps(TOTAL_S WAP_OPS)	Number of swapping operations that occurred	AVG	ulong	Yes	AIX, Linux	SWAP_IN_OP S + SWAP_OUT_ OPS

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Total Swaps/ sec(TOTAL_SWAP _OPS_PER_SECO ND)	Frequency at which swapping operations occurred (number of times per second)	R	float	Yes	AIX, Linux	TOTAL_SWA P_OPS / INTERVAL
Total User-Mode Time(TOTAL_USE RMODE_TIME)	Combined total time for all processors in which they ran in the user mode (seconds)	AVG	utime	Yes		
Total Wait Time(TOTAL_WAI T_TIME)	Combined total time for all processors in which they were waiting for I/O operations (seconds)	AVG	utime	Yes	Solaris 10	
Traps(TRAPS)	Number of traps that occurred	AVG	ulong	Yes	AIX, Linux	
Traps/ sec(TRAPS_PER_ SECOND)	Frequency at which traps occurred (number of times per second)	R	float	Yes	AIX, Linux	TRAPS / INTERVAL
UDP Pkts In(UDP_PACKET S_IN)	Number of IPv4 UDP packets received. Combined total of the numbers of local packets, remote packets, and packets in which errors occurred. The total of the number of packets that IPv4 or IPv6 corresponds is displayed since 0900.	AVG	ulong	Yes		
UDP Pkts Out(UDP_PACKE TS_OUT)	Number of IPv4 UDP packets sent. Combined total of the numbers of local packets, remote packets, and packets in which errors occurred. The total of the number of packets that IPv4 or IPv6 corresponds is displayed since 0900.	AVG	ulong	Yes		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
User CPU %(USERMODE_P ERCENT)	Percentage of time a processor ran in the user mode (%). It also indicates the average value per processor.	%	float	No		(TOTAL_USE RMODE_TIM E / (TOTAL_IDL E_TIME + TOTAL_USER MODE_TIME + TOTAL_WAIT TIME + TOTAL_KER NELMODE_T IME)) x 100
Users(CURRENT_ USER_COUNT)	Number of real users	AVG	ulong	No	Solaris	
Wait %(WAIT_TIME_P ERCENT)	Percentage of time a processor was waiting for I/O operations (%). It also indicates the average value per processor.	%	float	No	Solaris 10	(TOTAL_WAI T_TIME / (TOTAL_IDL E_TIME + TOTAL_USER MODE_TIME + TOTAL_WAIT TIME + TOTAL_KER NELMODE_T IME)) x 100

# Terminal Summary (PD\_TERM)

#### Function

The Terminal Summary (PD\_TERM) record stores the performance data in which the data stored in the Process Detail (PD) record is summarized as the state for each terminal at a given point in time. A record is created for each terminal. This is a multi-instance record. Note that even if the Process Detail (PD) record is not collected, performance data is stored in the Terminal Summary (PD\_TERM) record.

Notes:

• If a process has no terminal name, ?? is displayed in the Terminal (TERMINAL NAME) field.

### Default values and values that can be specified

ltem	Default value	Modifiable
Log	No	Yes
LOGIF	Blank	Yes
Sync Collection With	Detail Records, PD	No

## **ODBC** key fields

PD\_TERM\_TERMINAL\_NAME

#### Lifetime

From the time when at least one process is being executed at a particular terminal until the time when the number of processes being executed becomes 0.

#### **Record size**

- Fixed portion: 681 bytes
- Variable portion: 128 bytes

#### Fields

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Avg I/O Kbytes(AVG_IO_K BYTES)	Average transfer size in I/O operations (KB)		float	No	HP-UX, AIX, Linux	TOTAL_IO_K BYTES7 TOTAL_IO_O PS

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
CPU %(CPU_PERCEN T_USED)	Average value obtained by dividing CPU usage by the number of processors (%)		float	No		(((USER_CPU _TIME + SYSTEM_CP U_TIME)/ total-elapsed-ti me-of-all-proce sses-executed-f rom-a-terminal )/ processors-cou nt) x 100
Context Switches(CONTE XT_SWITCHES)	Number of times context switching was executed		ulong	No	HP-UX, Linux	
Interval(INTERVA L)	Interval at which the Terminal Summary (PD_TERM) record was stored (seconds). Always 0.		ulong	No	HP-UX, Solaris, AIX, Linux	
Major Faults(MAJOR_FA ULTS)	Number of page faults that cause physical I/O operations		ulong	No		
Minor Faults(MINOR_FA ULTS)	Number of page faults that do not cause physical I/O operations		ulong	No		
Process Count(PROCESS_ COUNT)	Number of processes executed from the terminal		ulong	No		Number of processes in processes table that are using a terminal
Reads(READ_OPS )	In AIX, this field shows the number of times RAW read operations occurred. In Solaris, this field shows the number of times Block read operation occurred.		ulong	No	HP-UX, Linux	
Reads/ sec(READ_OPS_P ER_SECOND)	Frequency at which read operations occurred (number of operations per second)		float	No	HP-UX, Linux	READ_OPS / total-elapsed-ti me-of-all-proce sses-executed-f rom-terminal

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Real Mem Kbytes(REAL_ME MORY_KBYTES)	Physical memory size used (KB)		float	No		
Record Time(RECORD_TI ME)	Time at which the record was created (Greenwich Mean Time)		time_t	No		
Record Type(INPUT_REC ORD_TYPE)	Record type. Always TERM.		char(8)	No		
Signals Rcvd(NUMBER_O F_SIGNALS_REC EIVED)	Number of signals received		ulong	No	Linux	
Swaps(SWAPS)	Number of times swapping occurred		ulong	No	Linux	
System CPU(SYSTEM_CP U_TIME)	Time during which the system ran in the kernel mode (seconds)		utime	No		
Terminal(TERMIN AL_NAME)	Terminal name. Process without terminal name, ?? is displayed.		string(4 0)	No		
Throughput/ sec(IO_KBYTES_ PER_SECOND)	I/O operation speed (KB per second)		float	No	AIX, Linux	TOTAL_IO_K BYTES / total-elapsed-ti me-of-all-proce sses-executed-f rom-terminal
Total I/O Kbytes(TOTAL_IO _KBYTES)	Total size transferred in I/O operations (KB)		double	No	AIX, Linux	
Total I/O Ops(TOTAL_IO_O PS)	Number of I/O operations that occurred		ulong	No	HP-UX, AIX, Linux	READ_OPS + WRITE_OPS
PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
--	---	-------------	--------	-----------	----------------------------------	--
Total I/O Ops/ sec(TOTAL_IO_O PS_PER_SECOND )	Frequency at which I/O operations occurred (number of operations per second)		float	No	HP-UX, AIX, Linux	TOTAL_IO_O PS / total-elapsed-ti me-of-all-proce sses-executed-f rom-terminal
User CPU(USER_CPU_ TIME)	Time during which the CPU ran in the user mode (seconds)		utime	No		
Virtual Mem Kbytes(VIRTUAL _MEMORY_KBY TES)	Size of the virtual memory used (KB)		float	No	Solaris	
Writes(WRITE_OP S)	In AIX, this field shows the number of times RAW write operations occurred. In Solaris, this field shows the number of times Block write operation occurred.		ulong	No	HP-UX, Linux	
Writes/ sec(WRITE_OPS_ PER_SECOND)	Frequency at which write operations occurred (number of operations per second)		float	No	HP-UX, Linux	WRITE_OPS / total-elapsed-ti me-of-all-proce sses-executed-f rom-terminal

# User Data Detail (PD\_UPD)

## Function

The User Data Detail (PD\_UPD) record is a user-defined record that stores user-specific performance data that indicates the status at a given point in time. For 08-00 or earlier, this is a reserved record (field) that cannot be used in any operating systems.

## Default values and values that can be specified

Item	Default value	Modifiable
Collection Interval	60	Yes
Collection Offset	0	Yes
Log	No	Yes
LOGIF	Blank	Yes

## **ODBC** key fields

- PD\_UPD\_TT
- PD\_UPD\_TS\_KEY
- PD\_UPD\_TD\_KEY

## Lifetime

From the time a  $\tt jpcuser$  command is executed until the next  $\tt jpcuser$  command is executed

## **Record size**

- Fixed portion: 681 bytes
- Variable portion: 284 bytes

## Fields

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Collect Time(API_TIME)	Time when data was converted		time_t	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Interval(INTERVA L)	Interval for which the User Data Detail (PD_UPD) record was stored (in seconds). The normal value is 0.		ulong	No		
Record Time(RECORD_TI ME)	Time at which the record was created (Greenwich Mean Time)		time_t	No		
Record Type(INPUT_REC ORD_TYPE)	Record type. Always UPD.		char(8)	No		
Trans Data Key(TD_KEY)	Transaction Data Key		ulong	No		
Trans String Key(TS_KEY)	Transaction String Key		string(2 0)	No		
Trans Type(TT)	Transaction Type		string(2 0)	No		
User Float 1(F1)	Floating-point value		double	No		
User Float 2(F2)	Floating-point value		double	No		
User Long 1(L1)	Long integer value		long	No		
User Long 2(L2)	Long integer value		long	No		
User String 1(S1)	Character-string 16 characters in length		string(1 6)	No		
User String 2(S2)	Character-string 16 characters in length		string(1 6)	No		
User String 3(S3)	Character-string 16 characters in length		string(1 6)	No		
User String 4(S4)	Character-string 16 characters in length		string(1 6)	No		
User String 5(S5)	Character-string 32 characters in length		string(3 2)	No		
User String 6(S6)	Character-string 32 characters in length		string(3 2)	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
User String 7(S7)	Character-string 64 characters in length		string(6 4)	No		
User Time 1(T1)	Time value (Time is displayed at the local time of the PFM - Web Console)		time_t	No		
User Unsigned Long 1(UL1)	Unsigned long value		ulong	No		
User Unsigned Long 2(UL2)	Unsigned long value		ulong	No		

# User Data Detail - Extended (PD\_UPDB)

## Function

The User Data Detail - Extended (PD\_UPDB) record is a user-defined record that stores user-specific performance data that indicates the status at a given point in time. This record has more fields than the User Data Detail (PD\_UPD) record. For 08-00 or earlier, this is a reserved record (field) that cannot be used in any operating systems.

## Default values and values that can be specified

Item	ltem	Modifiable
Collection Interval	60	Yes
Collection Offset	0	Yes
Log	No	Yes
LOGIF	Blank	Yes

## **ODBC** key fields

- PD\_UPDB\_TT
- PD\_UPDB\_TS\_KEY
- PD\_UPDB\_TD\_KEY

## Lifetime

From the time a  $\tt jpcuser$  command is executed until the next  $\tt jpcuser$  command is executed

## **Record size**

- Fixed portion: 681 bytes
- Variable portion: 712 bytes

## Fields

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Collect Time(API_TIME)	Time when data was converted		time_t	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Interval(INTERVA L)	Interval for which the User Data Detail - Extended (PD_UPDB) record was stored (in seconds). The normal value is 0.		ulong	No		
Record Time(RECORD_TI ME)	Time at which the record was created (Greenwich Mean Time)		time_t	No		
Record Type(INPUT_REC ORD_TYPE)	Record type. Always UPDB.		char(8)	No		
Trans Data Key(TD_KEY)	Transaction Data Key		ulong	No		
Trans String Key(TS_KEY)	Transaction String Key		string(2 0)	No		
Trans Type(TT)	Transaction Type		string(2 0)	No		
User Float 1(F1)	Floating-point value		double	No		
User Float 2(F2)	Floating-point value		double	No		
User Float 3(F3)	Floating-point value		double	No		
User Float 4(F4)	Floating-point value		double	No		
User Float 5(F5)	Floating-point value		double	No		
User Long 1(L1)	Long integer value		long	No		
User Long 2(L2)	Long integer value		long	No		
User Long 3(L3)	Long integer value		long	No		
User Long 4(L4)	Long integer value		long	No		
User Long 5(L5)	Long integer value		long	No		
User String 1(S1)	Character-string 16 characters in length		string(1 6)	No		
User String 10(S10)	Character-string 32 characters in length		string(3 2)	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
User String 11(S11)	Character-string 64 characters in length		string(6 4)	No		
User String 12(S12)	Character-string 64 characters in length		string(6 4)	No		
User String 13(S13)	Character-string 64 characters in length		string(6 4)	No		
User String 14(S14)	Character-string 64 characters in length		string(6 4)	No		
User String 15(S15)	Character-string 64 characters in length		string(6 4)	No		
User String 2(S2)	Character-string 16 characters in length		string(1 6)	No		
User String 3(S3)	Character-string 16 characters in length		string(1 6)	No		
User String 4(S4)	Character-string 16 characters in length		string(1 6)	No		
User String 5(S5)	Character-string 16 characters in length		string(1 6)	No		
User String 6(S6)	Character-string 32 characters in length		string(3 2)	No		
User String 7(S7)	Character-string 32 characters in length		string(3 2)	No		
User String 8(S8)	Character-string 32 characters in length		string(3 2)	No		
User String 9(S9)	Character-string 32 characters in length		string(3 2)	No		
User Time 1(T1)	Time value (Time is displayed at the local time of the PFM - Web Console)		time_t	No		
User Unsigned Long 1(UL1)	Unsigned long value		ulong	No		
User Unsigned Long 2(UL2)	Unsigned long value		ulong	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
User Unsigned Long 3(UL3)	Unsigned long value		ulong	No		
User Unsigned Long 4(UL4)	Unsigned long value		ulong	No		
User Unsigned Long 5(UL5)	Unsigned long value		ulong	No		

# User Data Interval (PI\_UPI)

## Function

The User Data Interval (PI\_UPI) record is a user-defined record that stores user-specific performance data per unit time. For 08-00 or earlier, this is a reserved record (field), which cannot be used in any operating systems.

## Default values and values that can be specified

Item	ltem	Modifiable
Collection Interval	60	Yes
Collection Offset	0	Yes
Log	No	Yes
LOGIF	Blank	Yes

## **ODBC** key fields

- PI\_UPI\_TT
- PI\_UPI\_TS\_KEY
- PI\_UPI\_TD\_KEY

## Lifetime

From the time a  $\verb"jpcuser"$  command is executed until the next  $\verb"jpcuser"$  command is executed

## **Record size**

- Fixed portion: 681 bytes
- Variable portion: 396 bytes

## Fields

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Collect Time(API_TIME)	Time when data was converted	СОРҮ	time_t	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Interval(INTERVA L)	Interval for which the User Data Interval (PI_UPI) record was stored (in seconds). The normal value is 0.	СОРҮ	ulong	No		
Record Time(RECORD_TI ME)	Time at which the record was created (Greenwich Mean Time)	СОРҮ	time_t	No		
Record Type(INPUT_REC ORD_TYPE)	Record type. Always UPI.	СОРҮ	char(8)	No		
Trans Data Key(TD_KEY)	Transaction Data Key	СОРУ	ulong	No		
Trans String Key(TS_KEY)	Transaction String Key	СОРҮ	string(2 0)	No		
Trans Type(TT)	Transaction Type	СОРҮ	string(2 0)	No		
User Float 1(F1)	Floating-point value	AVG	double	No		
User Float 2(F2)	Floating-point value	AVG	double	No		
User Float Roll 1(F1_R)	Accumulated floating-point value (This data is added when this data is summarized)	ADD	double	No		
User Float Roll 2(F2_R)	Accumulated floating-point value (This data is added when this data is summarized)	ADD	double	No		
User Long 1(L1)	Long integer value	AVG	long	No		
User Long 2(L2)	Long integer value	AVG	long	No		
User Long Roll 1(L1_R)	Accumulated long integer value (This data is added when this data is summarized)	ADD	long	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
User Long Roll 2(L2_R)	Accumulated long integer value (This data is added when this data is summarized)	ADD	long	No		
User String 1(S1)	Character-string 16 characters in length	СОРҮ	string(1 6)	No		
User String 2(S2)	Character-string 16 characters in length	СОРҮ	string(1 6)	No		
User String 3(S3)	Character-string 16 characters in length	СОРҮ	string(1 6)	No		
User String 4(S4)	Character-string 16 characters in length	СОРҮ	string(1 6)	No		
User String 5(S5)	Character-string 32 characters in length	СОРҮ	string(3 2)	No		
User String 6(S6)	Character-string 32 characters in length	СОРҮ	string(3 2)	No		
User String 7(S7)	Character-string 64 characters in length	СОРҮ	string(6 4)	No		
User Time 1(T1)	Time value (Time is displayed at the local time of the PFM - Web Console)	СОРҮ	time_t	No		
User Unsigned Long 1(UL1)	Unsigned long value	AVG	ulong	No		
User Unsigned Long 2(UL2)	Unsigned long value	AVG	ulong	No		
User Unsigned Long Roll 1(UL1_R)	Accumulated unsigned long value (This data is added when this data is summarized)	ADD	ulong	No		
User Unsigned Long Roll 2(UL2_R)	Accumulated unsigned long value (This data is added when this data is summarized)	ADD	ulong	No		

# User Data Interval - Extended (PI\_UPIB)

## Function

The User Data Interval - Extended (PI\_UPIB) record is a user-defined record that stores user-specific performance data per unit time. This record has more fields than the User Data Interval (PI\_UPI) record. For 08-00 or earlier, this is a reserved record (field), which cannot be used in any operating systems.

## Default values and values that can be specified

ltem	Default value	Modifiable
Collection Interval	60	Yes
Collection Offset	0	Yes
Log	No	Yes
LOGIF	В	Yes

## **ODBC** key fields

- PI\_UPIB\_TT
- PI\_UPIB\_TS\_KEY
- PI\_UPIB\_TD\_KEY

## Lifetime

From the time a  $\verb"jpcuser"$  command is executed until the next  $\verb"jpcuser"$  command is executed

## **Record size**

- Fixed portion: 681 bytes
- Variable portion: 992 bytes

## Fields

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Collect Time(API_TIME)	Time when data was converted	СОРҮ	time_t	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Interval(INTERVA L)	Interval for which the User Data Interval - Extended (PI_UPIB) record was stored (in seconds). The normal value is 0.	СОРҮ	ulong	No		
Record Time(RECORD_TI ME)	Time at which the record was created (Greenwich Mean Time)	СОРҮ	time_t	No		
Record Type(INPUT_REC ORD_TYPE)	Record type. Always UPIB.	СОРҮ	char(8)	No		
Trans Data Key(TD_KEY)	Transaction Data Key	СОРҮ	ulong	No		
Trans String Key(TS_KEY)	Transaction String Key	СОРҮ	string(2 0)	No		
Trans Type(TT)	Transaction Type	СОРҮ	string(2 0)	No		
User Float 1(F1)	Floating-point value	AVG	double	No		
User Float 2(F2)	Floating-point value	AVG	double	No		
User Float 3(F3)	Floating-point value	AVG	double	No		
User Float 4(F4)	Floating-point value	AVG	double	No		
User Float 5(F5)	Floating-point value	AVG	double	No		
User Float Roll 1(F1_R)	Accumulated floating-point value (This data is added when this data is summarized)	ADD	double	No		
User Float Roll 2(F2_R)	Accumulated floating-point value (This data is added when this data is summarized)	ADD	double	No		
User Float Roll 3(F3_R)	Accumulated floating-point value (This data is added when this data is summarized)	ADD	double	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
User Float Roll 4(F4_R)	Accumulated floating-point value (This data is added when this data is summarized)	ADD	double	No		
User Float Roll 5(F5_R)	Accumulated floating-point value (This data is added when this data is summarized)	ADD	double	No		
User Long 1(L1)	Long integer value	AVG	long	No		
User Long 2(L2)	Long integer value	AVG	long	No		
User Long 3(L3)	Long integer value	AVG	long	No		
User Long 4(L4)	Long integer value	AVG	long	No		
User Long 5(L5)	Long integer value	AVG	long	No		
User Long Roll 1(L1_R)	Accumulated long integer value (This data is added when this data is summarized)	ADD	long	No		
User Long Roll 2(L2_R)	Accumulated long integer value (This data is added when this data is summarized)	ADD	long	No		
User Long Roll 3(L3_R)	Accumulated long integer value (This data is added when this data is summarized)	ADD	long	No		
User Long Roll 4(L4_R)	Accumulated long integer value (This data is added when this data is summarized)	ADD	long	No		
User Long Roll 5(L5_R)	Accumulated long integer value (This data is added when this data is summarized)	ADD	long	No		
User String 1(S1)	Character-string 16 characters in length	СОРУ	string(1 6)	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
User String 10(S10)	Character-string 32 characters in length	СОРҮ	string(3 2)	No		
User String 11(S11)	Character-string 64 characters in length	СОРҮ	string(6 4)	No		
User String 12(S12)	Character-string 64 characters in length	СОРҮ	string(6 4)	No		
User String 13(S13)	Character-string 64 characters in length	СОРҮ	string(6 4)	No		
User String 14(S14)	Character-string 64 characters in length	СОРҮ	string(6 4)	No		
User String 15(S15)	Character-string 64 characters in length	СОРҮ	string(6 4)	No		
User String 2(S2)	Character-string 16 characters in length	СОРҮ	string(1 6)	No		
User String 3(S3)	Character-string 16 characters in length	СОРҮ	string(1 6)	No		
User String 4(S4)	Character-string 16 characters in length	СОРҮ	string(1 6)	No		
User String 5(S5)	Character-string 16 characters in length	СОРҮ	string(1 6)	No		
User String 6(S6)	Character-string 32 characters in length	СОРҮ	string(3 2)	No		
User String 7(S7)	Character-string 32 characters in length	СОРҮ	string(3 2)	No		
User String 8(S8)	Character-string 32 characters in length	СОРҮ	string(3 2)	No		
User String 9(S9)	Character-string 32 characters in length	СОРҮ	string(3 2)	No		
User Time 1(T1)	Time value (Time is displayed at the local time of the PFM - Web Console)	СОРҮ	time_t	No		
User Unsigned Long 1(UL1)	Unsigned long value	AVG	ulong	No		

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
User Unsigned Long 2(UL2)	Unsigned long value	AVG	ulong	No		
User Unsigned Long 3(UL3)	Unsigned long value	AVG	ulong	No		
User Unsigned Long 4(UL4)	Unsigned long value	AVG	ulong	No		
User Unsigned Long 5(UL5)	Unsigned long value	AVG	ulong	No		
User Unsigned Long Roll 1(UL1_R)	Accumulated unsigned long value (This data is added when this data is summarized)	ADD	ulong	No		
User Unsigned Long Roll 2(UL2_R)	Accumulated unsigned long value (This data is added when this data is summarized)	ADD	ulong	No		
User Unsigned Long Roll 3(UL3_R)	Accumulated unsigned long value (This data is added when this data is summarized)	ADD	ulong	No		
User Unsigned Long Roll 4(UL4_R)	Accumulated unsigned long value (This data is added when this data is summarized)	ADD	ulong	No		
User Unsigned Long Roll 5(UL5_R)	Accumulated unsigned long value (This data is added when this data is summarized)	ADD	ulong	No		

# User Summary (PD\_USER)

## Function

The User Summary (PD\_USER) record stores the performance data in which the data stored in the Process Detail (PD) record is summarized as the state for each user at a given point in time. A record is created for each user ID. This is a multi-instance record. Note that even if the Process Detail (PD) record is not collected, performance data is stored in the User Summary (PD\_USER) record.

*Note:* 

• If the target process of an instance is a zombie process, 0 is set in the field listed below for Solaris, and -3 is set for AIX and HP-UX.

User ID

## Default values and values that can be specified

Item	Default value	Modifiable
Log	No	Yes
LOGIF	Blank	Yes
Sync Collection With	Detail Records, PD	No

## **ODBC** key fields

PD\_USER\_REAL\_USER\_ID

#### Lifetime

From the time when at least one process with a particular user name is being executed until the time when the number of processes being executed becomes 0.

## **Record size**

- Fixed portion: 681 bytes
- Variable portion: 348 bytes

# Fields

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Avg I/O Kbytes(AVG_IO_K BYTES)	Average transfer size in I/O operations (KB)		float	No	HP-UX, AIX, Linux	TOTAL_IO_K BYTES / READ_OPS + WRITE_OPS
CPU %(CPU_PERCEN T_USED)	Average value obtained by dividing CPU usage by the number of processors (%)		float	No		(((USER_CPU _TIME + SYSTEM_CP U_TIME)/ total-elapsed-ti me-of-all-proce sses-executed- by-user)/ processors-cou nt) x 100
Context Switches(CONTE XT_SWITCHES)	Number of times context switching was executed		ulong	No	HP-UX, Linux	
Interval(INTERVA L)	Interval at which the User Summary (PD_USER) record was stored (seconds). Always 0.		ulong	No	HP-UX, Solaris, AIX, Linux	
Major Faults(MAJOR_FA ULTS)	Number of page faults that cause physical I/O operations		ulong	No		
Minor Faults(MINOR_FA ULTS)	Number of page faults that do not cause physical I/O operations		ulong	No		
Process Count(PROCESS_ COUNT)	Number of processes executed by users		ulong	No		
Reads(READ_OPS )	In AIX, this field shows the number of times RAW read operations occurred. In Solaris, this field shows the number of times Block read operation occurred.		ulong	No	HP-UX, Linux	

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Reads/ sec(READ_OPS_P ER_SECOND)	Frequency at which read operations occurred (number of operations per second)		float	No	HP-UX, Linux	READ_OPS / total-elapsed-ti me-of-all-proce sses-belonging -to-a-user-acco unt
Real Mem Kbytes(REAL_ME MORY_KBYTES)	Physical memory size used (KB)		float	No		
Record Time(RECORD_TI ME)	Time at which the record was created (Greenwich Mean Time)		time_t	No		
Record Type(INPUT_REC ORD_TYPE)	Record type. Always USER.		char(8)	No		
Signals Rcvd(NUMBER_O F_SIGNALS_REC EIVED)	Number of signals received		ulong	No	Linux	
Swaps(SWAPS)	Number of times swapping occurred		ulong	No	Linux	
System CPU(SYSTEM_CP U_TIME)	Time during which the system ran in the kernel mode (seconds)		utime	No		
Throughput/ sec(IO_KBYTES_ PER_SECOND)	I/O operation speed (KB per second)		float	No	AIX, Linux	TOTAL_IO_K BYTES / total-elapsed-ti me-of-all-proce sses-belonging -to-a-user-acco unt
Total I/O Kbytes(TOTAL_IO _KBYTES)	Total size transferred in I/O operations (KB)		double	No	AIX, Linux	
Total I/O Ops(TOTAL_IO_O PS)	Number of I/O operations that occurred		ulong	No	HP-UX, AIX, Linux	READ_OPS + WRITE_OPS

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Total I/O Ops/ sec(TOTAL_IO_O PS_PER_SECOND )	Frequency at which I/O operations occurred (number of operations per second)		float	No	HP-UX, AIX, Linux	TOTAL_IO_O PS / total-process-ti me-of-all-proce sses-belonging -to-a-user-acco unt
User(REAL_USER _NAME)	Effective user name		string(2 56)	No		
User CPU(USER_CPU_ TIME)	Time during which the CPU ran in the user mode (seconds)		utime	No		
User ID(REAL_USER_I D)	Effective user ID		long	No		
Virtual Mem Kbytes(VIRTUAL _MEMORY_KBY TES)	Size of the virtual memory used (KB)		float	No	Solaris	
Writes(WRITE_OP S)	In AIX, this field shows the number of times RAW write operations occurred. In Solaris, this field shows the number of times Block write operation occurred.		ulong	No	HP-UX, Linux	
Writes/ sec(WRITE_OPS_ PER_SECOND)	Frequency at which write operations occurred (number of operations per second)		float	No	HP-UX, Linux	WRITE_OPS / total-elapsed-ti me-of-all-proce sses-belonging -to-a-user-acco unt

## Workgroup Summary (PI\_WGRP)

## Function

The Workgroup Summary (PI\_WGRP) record stores the Performance data in which the data stored in the Process Detail (PD) record is summarized as the state for each workgroup at a given point in time. A record is created for each workgroup. For details about how to collect workgroup information, see *4. User-Defined Record Collection*.

A workgroup named Other is automatically created for all process records that do not belong to any of the defined workgroups.

This is a multi-instance record.

Note that even if the Process Detail (PD) record is not collected, performance data is stored in the Workgroup Summary (PI\_WGRP) record.

Notes:

- When there are many objects to be collected because, for example, there are many processes on the machine, increased throughput results in a heavier processing load.
- To change a workgroup definition, you need to restart PFM Agent for Platform.
- Group names are based on actual group names, and not on effective group names.

#### Default values and values that can be specified

ltem	Default value	Modifiable
Collection Interval	60	Yes
Collection Offset	0	Yes
Log	No	Yes
LOGIF	Blank	Yes

## **ODBC** key fields

PI\_WGRP\_WORKGROUP\_NAME

#### Lifetime

None

## **Record size**

- Fixed portion: 681 bytes
- Variable portion: 278 bytes

# Fields

PFM-View name (PFM-Manager name)	Description Sum Fo mary		Format	De Ita	Not Support ed versions	Data source
Argument Lists(ARGUMENT _LISTS)	Process argument list. If the value exceeds 30 bytes, the character becomes >. This field shows the character string specified in the arguments_02 parameter of the wgfile file.	СОРҮ	string(3 0)	No		
Avg I/O Kbytes(AVG_IO_K BYTES)	Average transfer size in I/O operations (KB)	СОРҮ	float	No	HP-UX, AIX, Linux	TOTAL_IO_K BYTES / (READ_OPS + WRITE_OPS)
CPU %(CPU_PERCEN T_USED)	Average value obtained by dividing CPU usage by the number of processors (%)	СОРҮ	float	No		
CPU % Each(CPU_PERCE NT_USED_EACH )	CPU usage by workgroups	СОРҮ	float	No		((USER_CPU_ TIME + SYSTEM_CP U_TIME)/ INTERVAL) x 100
Context Switches(CONTE XT_SWITCHES)	Number of times context switching was executed	СОРҮ	ulong	Yes	HP-UX, Linux	

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Groups(GROUPS)	Group name list. If the value exceeds 30 bytes, the character becomes >. This field shows the character string specified in the groups parameter of the wgfile file. This field shows the character string specified in the groups or groups_02 parameter of the wgfile file in version 08-00 or later.	СОРҮ	string(3 0)	No		PFM - Agent for Platform adds the process group name to this field for each process the workgroup executes.
Interval(INTERVA L)	Interval at which the Workgroup Summary (PI_WGRP) record was stored (seconds)	СОРҮ	ulong	Yes		When the delta value is not collected, total of the operating time of each process. When the delta value is collected, RECORD_TI ME - previous record time
Major Faults(MAJOR_FA ULTS)	Number of page faults that cause physical I/O operations	СОРҮ	ulong	Yes		
Process Count(PROCESS_ COUNT)	Number of processes executed by workgroups	СОРҮ	ulong	No		Number of processes in the process table that have user properties, group properties, or program properties that match the workgroup definition

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Programs(PROGR AMS)	Program name list. If the value exceeds 30 bytes, the character becomes >. This field shows the character string specified in the programs parameter of the wgfile file. This field shows the character string specified in the programs or programs_02 parameter of the wgfile file in version 08-00 or later.	СОРҮ	string(3 0)	No		PFM - Agent for Platform adds the process program name to this field for each process the workgroup executes.
Reads(READ_OPS )	AD_OPS In AIX, this field shows the number of times RAW read operations occurred. In Solaris, this field shows the number of times Block read operation occurred.		ulong	Yes	HP-UX, Linux	
Reads/ sec(READ_OPS_P ER_SECOND)	Frequency at which read operations occurred (number of operations per second)	R	float	Yes	HP-UX, Linux	READ_OPS / total-elapsed-ti me-of-all-proce sses-executed- by-workgroup
Real Mem Kbytes(REAL_ME MORY_KBYTES)	Physical memory size used (KB)	СОРҮ	ulong	No		
Record Time(RECORD_TI ME)	Time at which the record was created (Greenwich Mean Time)	СОРҮ	time_t	No		
Record Type(INPUT_REC ORD_TYPE)	Record type. Always WGRP.	СОРҮ	char(8)	No		
Swaps(SWAPS)	Number of times swapping occurred	СОРУ	ulong	Yes	Linux	
System CPU(SYSTEM_CP U_TIME)	Time during which the system ran in the kernel mode (seconds)	СОРҮ	utime	Yes		

PFM-View name (PFM-Manager name)	-View name Description M-Manager name)		Format	De Ita	Not Support ed versions	Data source
Throughput/ sec(IO_KBYTES_ PER_SECOND)	I/O operation speed (KB per second)	R	float	Yes	AIX, Linux	TOTAL_IO_K BYTES / total-elapsed-ti me-of-all-proce sses-executed- by-workgroup
Total I/O Kbytes(TOTAL_IO _KBYTES)	Total size transferred in I/O operations (KB)	СОРҮ	double	Yes	AIX, Linux	
Total I/O Ops(TOTAL_IO_O PS)	I/O Number of I/O operations TOTAL_IO_O that occurred		ulong	Yes	HP-UX, AIX, Linux	READ_OPS + WRITE_OPS
Total I/O Ops/ sec(TOTAL_IO_O PS_PER_SECOND )	Frequency at which I/O operations occurred (number of operations per second)	R	float	Yes	HP-UX, AIX, Linux	TOTAL_IO_O PS / total-elapsed-ti me-of-all-proce sses-executed- by-workgroup
User CPU(USER_CPU_ TIME)	Time during which the CPU ran in the user mode (seconds)	СОРҮ	utime	Yes		
Users(USERS)	User name list. If the value exceeds 30 bytes, the character becomes >. This field shows the character string specified in the users parameter of the wgfile file. This field shows the character string specified in the users or users_02 parameter of the wgfile file in version 08-00 or later.	СОРҮ	string(3 0)	No		PFM - Agent for Platform adds the process user name to this field for each process the workgroup executes.
Virtual Mem Kbytes(VIRTUAL _MEMORY_KBY TES)	Size of the virtual memory used (KB)	СОРҮ	ulong	No	Solaris	

PFM-View name (PFM-Manager name)	Description	Sum mary	Format	De Ita	Not Support ed versions	Data source
Workgroup(WORK GROUP_NAME)	Workgroup name. Other is displayed if a process does not belong to any of the defined workgroups. This field shows the character string specified in the workgroup parameter of the wgfile file.	СОРҮ	string(3 0)	No		
Writes(WRITE_OP S)	In AIX, this field shows the number of times RAW write operations occurred. In Solaris, this field shows the number of times Block write operation occurred.	СОРҮ	ulong	Yes	HP-UX, Linux	
Writes/ sec(WRITE_OPS_ PER_SECOND)	Frequency at which write operations occurred (number of operations per second)	R	float	Yes	HP-UX, Linux	WRITE_OPS / total-elapsed-ti me-of-all-proce sses-executed- by-workgroup

# 7. Messages

This chapter explains the PFM - Agent for Platform message format, message output destinations, syslogs, and messages.

- 7.1 Message format
- 7.2 Message output destinations
- 7.3 List of messages output to syslog
- 7.4 Messages

## 7.1 Message format

This section shows the format of the messages that are output by PFM - Agent for Platform and how they are described in the manual.

## 7.1.1 Format of output messages

This section explains the format of the messages that are output by PFM - Agent for Platform. A message consists of a message ID followed by message text. The message format follows: KAVFnnnnn-Y message-text

The message ID indicates the following content:

Κ

Indicates the system identifier.

AVF

Indicates that this is a PFM - Agent message.

nnnnn

Indicates a message serial number. The message number for PFM - Agent for Platform is 10*xxx*.

Y

Indicates a message type.

• E: Error

Processing is halted.

• W: Warning

Processing continues after the message is issued.

• I: Information

Provides information to the user.

• Q: Response

Prompts the user to respond.

The correspondence between the message type and the syslog priority level is explained below.

- E

• Level: LOG\_ERR

Meaning: Error message

– W

- Level: LOG\_WARNING
- Meaning: Warning message

- I

- Level: LOG\_INFO
- Meaning: Additional information message

-Q

(Not output)

#### 7.1.2 Format of message explanations

This section explains the message description format in this manual. The italicized portion of the message text means the display content differs depending on the circumstance under which the message is issued. Messages are listed in the order of message ID. An example of the message description format follows.

#### Message ID

Message text

Message explanation

**(S)** 

Indicates the action taken by the system.

(0)

Indicates the action that should be taken by the operator when the message is displayed.

#### Reference note:

The system administrator who has been contacted by an operator must collect log information as described in *8. Error Handling Procedures*, and conduct an initial investigation.

When conducting an initial investigation of the problem, refer to the OS log information (syslog) and the various types of log information that is output by PFM - Agent for Platform. From these types of log information, determine what happened during the period when the problem occurred and take actions to avoid or correct the problem. Also record the operating method used that led to the problem. At the same time, try to determine whether the problem can be reproduced.

# 7.2 Message output destinations

This section lists the output destinations of the messages that are output by PFM - Agent for Platform.

The following conventions are used in the table:

Legend:

Y: Message is output.

--: No message is output.

Table 7-1:	PFM - Agent for Platform message output destinations

Message ID	lessage ID Output destination							
	syslog	Common message log	Standard output	Standar d error output	Publi c log	Debu g log	JP1 syste m event #1	Agent event #2
KAVF10001	Y	Y						
KAVF10002	Y	Y						
KAVF10003	Y	Y						
KAVF10004	Y	Y					Y	Y
KAVF10010		Y						
KAVF10011		Y						
KAVF10013		Y						
KAVF10100		Y						
KAVF10101	Y	Y						
KAVF10102	Y	Y						
KAVF10103	Y	Y						
KAVF10105		Y						
KAVF10106		Y						
KAVF10107		Y						
KAVF10150		Y					Y	Y

Message ID		Output destination									
	syslog	Common message log	Standard output	Standar d error output	Publi c log	Debu g log	JP1 syste m event #1	Agent event #2			
KAVF10200	Y	Y									
KAVF10201	Y	Y									
KAVF10202	Y	Y									
KAVF10203		Y									
KAVF10204		Y					Y	Y			
KAVF10205		Y					Y	Y			
KAVF10206		Y					Y	Y			
KAVF10300		Y					Y	Y			
KAVF10301		Y					Y	Y			
KAVF10500		Y					Y	Y			
KAVF10501		Y					Y	Y			
KAVF10502		Y					Y	Y			
KAVF10503		Y									
KAVF10600		Y									
KAVF10700		Y									
KAVF10701		Y									
KAVF10901						Y					
KAVF10902						Y					
KAVF10904						Y					
KAVF10905						Y					
KAVF10906						Y					
KAVF10907						Y					
KAVF10908						Y					

#### 7. Messages

Message ID	Output destination									
	syslog	Common message log	Standard output	Standar d error output	Publi c log	Debu g log	JP1 syste m event #1	Agent event #2		
KAVF10909						Y				
KAVF10910						Y				
KAVF10911						Y				
KAVF10912						Y				
KAVF10913						Y				
KAVF10914						Y				
KAVF10915						Y				
KAVF10916				Y	Y					
KAVF10917				Y	Y					
KAVF10919				Y	Y					
KAVF10920				Y	Y					
KAVF10923				Y	Y					
KAVF10924					Y					
KAVF10925					Y					
KAVF10926					Y					
KAVF10927					Y					
KAVF10928					Y					
KAVF10929						Y				
KAVF10930						Y				
KAVF10931						Y				
KAVF10932						Y				
KAVF10935				Y	Y					
KAVF10941				Y						

Message ID		Output destination										
	syslog	Common message log	Standard output	Standar d error output	Publi c log	Debu g log	JP1 syste m event #1	Agent event #2				
KAVF10943				Y	Y							
KAVF10948					Y							
KAVF10950						Y						
KAVF10951						Y						
KAVF10952					Y							
KAVF10953						Y						
KAVF10954					Y							
KAVF10957			Y									
KAVF10982				Y	Y							
KAVF10983				Y	Y							
KAVF10984				Y	Y							
KAVF10985				Y	Y							
KAVF10986						Y						
KAVF10987						Y						
KAVF10988						Y						
KAVF10989						Y						
KAVF10990						Y						
KAVF10991						Y						
KAVF10992						Y						
KAVF10993						Y						
KAVF10994						Y						
KAVF10995						Y						
KAVF10996						Y						

Message ID	Output destination							
	syslog	Common message log	Standard output	Standar d error output	Publi c log	Debu g log	JP1 syste m event #1	Agent event #2
KAVF10997						Y		
KAVF10998						Y		

#1

A JP1 system event notifies JP1/IM of changes in the agent status. For details about the JP1 system events, see the chapter explaining operation monitoring in linkage with the integrated management product (JP1/IM) in the manual *Job Management Partner 1/Performance Management User's Guide.* 

The following table lists the prerequisite programs for issuing JP1 system events.

<i>Tuble 7 2.</i> Therequisite programs for issuing star system event	Table	7-2:	Prerequisite	programs	for	issuing	JP1	system	events
---	-------	------	--------------	----------	-----	---------	-----	--------	--------

Host type	Prerequisite program	Version
Monitoring manager	PFM - Manager	09-00 or later
Monitoring console server	PFM - Web Console	08-00 or later
Monitoring agent	PFM - Agent for Platform	08-00 or later (To issue an event output by PFM - Agent, the version must be 09-00 or later.)
	PFM - Manager or PFM - Base	09-00 or later
	JP1/Base	09-00 or later

#2

An agent event notifies PFM - Manager of changes in the agent status. For details about the agent events, see the chapter explaining event display in the manual *Job Management Partner 1/Performance Management User's Guide*.

The following table lists the prerequisite programs for issuing agent events.

*Table 7-3:* Prerequisite programs for issuing agent events

Host type	Prerequisite program	Version
Monitoring manager	PFM - Manager	09-00 or later

Host type	Prerequisite program	Version
Monitoring console server	PFM - Web Console	08-00 or later
Monitoring agent	PFM - Agent for Platform	09-00 or later
	PFM - Manager or PFM - Base	09-00 or later

# 7.3 List of messages output to syslog

This section shows the list of messages that PFM - Agent for Platform outputs to syslog.

Syslogs are output to the syslog file. For details about the syslog file storage location, see the syslog daemon configuration file (the default is /etc/syslogd.conf).

The table below shows the message information that is output by PFM - Agent for Platform to syslog.

Message ID	syslog		
	Facility	Level	
KAVF10001-I	LOG_DAEMON	LOG_INFO	
KAVF10002-E	LOG_DAEMON	LOG_ERR	
KAVF10003-I	LOG_DAEMON	LOG_INFO	
KAVF10004-E	LOG_DAEMON	LOG_ERR	
KAVF10101-E	LOG_DAEMON	LOG_ERR	
KAVF10102-E	LOG_DAEMON	LOG_ERR	
KAVF10103-E	LOG_DAEMON	LOG_ERR	
KAVF10200-E	LOG_DAEMON	LOG_ERR	
KAVF10201-E	LOG_DAEMON	LOG_ERR	
KAVF10202-E	LOG_DAEMON	LOG_ERR	

*Table 7-4:* Message information that is output to syslog
# 7.4 Messages

This section explains the messages that are output by PFM - Agent for Platform and how to handle them. The messages that are output by PFM - Agent for Platform are listed below.

#### KAVF10001-I

Agent Collector has stopped. (host=host-name, service=host-name<UNIX>)

The Agent Collector service terminated normally.

(S)

Terminates processing of the Agent Collector service.

#### KAVF10002-E

Agent Collector failed to start.

Startup of the Agent Collector service failed.

(S)

Terminates processing of the Agent Collector service.

(0)

Check the preceding message that was output to the common message log and take the action indicated in it.

#### KAVF10003-I

Agent Collector has started. (host=host-name, service=host-name<UNIX>)

Startup of the Agent Collector service was completed.

(S)

Begins collecting performance data on the Agent Collector service.

#### KAVF10004-E

Agent Collector stopped abnormally.

Agent Collector service terminated abnormally.

(S)

Terminates processing of the Agent Collector service.

(O)

Check the preceding message that was output to the common message log and take the action indicated in it. If the cause cannot be determined, collect

maintenance information and then contact the system administrator. For details about how to collect maintenance information, see the chapter explaining troubleshooting in the manual *Job Management Partner 1/Performance Management User's Guide*.

#### KAVF10010-I

Name Server has been connected.

During the start of the Agent Collector service, the Name Server service was successfully connected.

(S)

Continues the start of the Agent Collector service.

#### KAVF10011-I

Agent Store has been connected.

During the start of the Agent Collector service, the Agent Store service was successfully connected.

(S)

Continues the start of the Agent Collector service.

#### KAVF10013-W

A user command failed to start. (record=record-id, en=OS-detail-code)

An attempt to start a user command has failed.

(S)

Continues subsequent processing.

(0)

Check the execution status of the user command.

#### KAVF10100-E

An error occurred in an OS API (*API-name*). (en=*OS-detail-code*, arg1=*argument-1*, arg2=*argument-2*, arg3=*argument-3*)

An error occurred in the OS API. The code indicated by en is the error number (errno) of the system call.

(S)

Terminates the processing of the Agent Collector service if the error occurred during startup.

(O)

If this message is output during the start of the Agent Collector service, check whether the log file specified in the Messages File property exists. If not, change the log file name and then restart PFM - Agent for Platform. If the log file does

exist, or for all other cases, check the OS detail code. If the cause cannot be determined, collect maintenance information and then contact the system administrator. For details about how to collect maintenance information, see the chapter explaining troubleshooting in the manual *Job Management Partner 1/ Performance Management User's Guide.* 

#### KAVF10101-E

An error occurred in a function (function-name). (rc=maintenance-code, arg1=argument-1, arg2=argument-2, arg3=argument-3)

An error occurred in a function being controlled.

(S)

Terminates the processing of the Agent Collector service.

(0)

Collect maintenance information and then contact the system administrator. For details about how to collect maintenance information, see the chapter explaining troubleshooting in the manual *Job Management Partner 1/Performance Management User's Guide*.

#### KAVF10102-E

A signal has been accepted. (sn=signal-number)

A signal interrupt occurred. The code indicated by sn is the OS signal number.

(S)

Terminates the processing of the Agent Collector service.

(0)

Collect maintenance information and then contact the system administrator. For details about how to collect maintenance information, see the chapter explaining troubleshooting in the manual *Job Management Partner 1/Performance Management User's Guide*.

#### KAVF10103-E

An exception occurred. (msg=*exception-message*)

An exception occurred during the processing of the Agent Collector service.

(S)

Terminates the processing of the Agent Collector service.

(0)

Check whether a shortage has not occurred in the system resources such as memory. If the cause cannot be determined, collect maintenance information and then contact the system administrator. For details about how to collect maintenance information, see the chapter explaining troubleshooting in the

#### 7. Messages

manual Job Management Partner 1/Performance Management User's Guide.

# KAVF10105-W

The file does not exist in the path specified by using Web Console. (PL\_MESS) (*API-name*) (en= *OS-detail-code*, arg1=argument-1, arg2=argument-2, arg3=argument-3)

The file indicated by *argument-1* does not exist in the path specified for collecting the record.

(S)

Continues the processing of the Agent Collector service.

(0)

Use PFM - Web Console to specify the file path, and then restart Agent Collector.

#### KAVF10106-W

The information to be collected has not been set in Web Console.  $(\mbox{PD}\_\mbox{APP})$ 

The information to be collected for the record has not been set in Web Console.

**(S)** 

Continues the processing of the Agent Collector service.

(O)

Use PFM - Web Console to set the information to be collected, and then collect the record.

#### KAVF10107-W

The path name specified by using Web Console exceeds the 256-byte limit. (  $\it record-ID$  ) (filename)

The length of the characters specified as the path name for collecting the record indicated by *record-ID* is too long.

**(S)** 

Continues the processing of the Agent Collector service.

(O)

Use PFM - Web Console to specify the file path, and then restart Agent Collector.

#### KAVF10150-W

An error occurred in an OS API (*API-name*). (en=*OS-detail-code*, arg1=*argument-1*, arg2=*argument-2*, arg3=*argument-3*)

An error occurred in the OS API. The code indicated by en is the error number (errno) of the system call.

(S)

Continues the processing of the Agent Collector service.

If *argument-1* is jpc\_ufss, the Agent Collector service cannot collect the User File System Storage (PD\_UFSS) record.

(0)

Check the OS detail code, remove the error cause, and then restart the Agent Collector service. If the cause cannot be determined, collect maintenance information and then contact the system administrator. For details about how to collect maintenance information, see the chapter explaining troubleshooting in the manual *Job Management Partner 1/Performance Management User's Guide*.

#### KAVF10200-E

An attempt to initialize a connection failed.

An attempt to establish connection failed during the start of the Agent Collector service.

(S)

Terminates the start of the Agent Collector service.

(0)

Check whether the applicable host can be connected to the network. If the cause cannot be determined, collect maintenance information and then contact the system administrator. For details about how to collect maintenance information, see the chapter explaining troubleshooting in the manual *Job Management Partner 1/Performance Management User's Guide*.

#### KAVF10201-E

Initialization of Agent Configuration failed.

Initialization of Agent Configuration failed during the start of the Agent Collector service.

(S)

Terminates the start of the Agent Collector service.

(0)

Check whether the service startup initialization file (jpcagt.ini) is found under the /opt/jplpc/agtu/agent/ directory. If not, copy the jpcagt.ini.model file to the jpcagt.ini file. If the cause cannot be determined, collect maintenance information and then contact the system administrator. For details about how to collect maintenance information, see the chapter explaining troubleshooting in the manual *Job Management Partner 1/ Performance Management User's Guide*.

#### KAVF10202-E

An attempt to initialize a record failed.

An attempt to initialize a record failed during the start of the Agent Collector service.

(S)

Terminates the start of the Agent Collector service.

(O)

Collect maintenance information and then contact the system administrator. For details about how to collect maintenance information, see the chapter explaining troubleshooting in the manual *Job Management Partner 1/Performance Management User's Guide*.

#### KAVF10203-W

Invalid entry in *file-name*.

An error was found in the definition file or specification of the user command properties.

(S)

Ignores the definition content and continues the start of the Agent Collector service.

(O)

Correct the definition in the displayed file and then restart the service. Alternatively, correct the user command properties.

#### KAVF10204-W

An attempt to collect the OS information failed.

An attempt to collect the OS version information failed.

(S)

Continues the processing of the Agent Collector service.

However, the field values of the following records cannot be correctly collected:

CPU - Per Processor Detail (PI CPUP)

- Boot Time (SYSTEM\_BOOT\_TIME)
- Status (PROCESSOR\_STATUS)
- Up Time (SYSTEM\_UP\_TIME)

IPC Summary (PD\_IPCS)

- Max Shared Mem Size (SHMMAX)
- Min Shared Mem Size (SHMMIN)
- Shared Mem IDs (SHMMNI)

System Summary Overview (PI)

- Boot Time (CURRENT\_SYSTEM\_BOOT\_TIME)
- Free Swap Mbytes (FREE\_SWAP\_MBYTES)
- ICMP Pkts In (ICMP\_PACKETS\_IN)
- ICMP Pkts Out (ICMP\_PACKETS\_OUT)
- IP Pkts In (IP\_PACKETS\_IN)
- IP Pkts Out (IP\_PACKETS\_OUT)
- System Up Time (CURRENT\_BOOT\_SYSTEM\_UP\_TIME)
- TCP Pkts In (TCP PACKETS IN)
- TCP Pkts Out (TCP\_PACKETS\_OUT)
- Total Physical Mem Mbytes (TOTAL\_MEMORY\_MBYTES)
- Total Pkts (TOTAL\_PACKETS)
- Total Pkts In (TOTAL\_PACKETS\_IN)
- Total Pkts Out (TOTAL\_PACKETS\_OUT)
- Total Swap Mbytes (TOTAL\_SWAP\_MBYTES)
- UDP Pkts In (UDP\_PACKETS\_IN)
- UDP Pkts Out (UDP\_PACKETS\_OUT)
- (O)

After allocating free space (the suggested size is 50 KB) under /tmp, restart the Agent Collector service.

#### KAVF10205-W

Initialization of interprocess communication failed.

An attempt to initialize communication with a child process of the jpcagtu process failed.

(S)

Continues the processing of the Agent Collector service.

However, the following fields cannot be collected:

- The IP Address (IP\_ADDRESS) field of the File System Detail Remote (PD\_FSR) record
- The Network Mask (NETWORK\_MASK) field of the Network Interface Detail (PI\_NIND) record

• All fields of the following records (only in the Solaris 64-bit environment):

Process Detail (PD), Process Detail Interval (PD\_PDI), Process Summary (PD\_PDS), Program Summary (PD\_PGM), Terminal Summary (PD\_TERM), User Summary (PD\_USER), Workgroup Summary (PI\_WGRP)

(O)

Ignore the message if the fields of the records listed above are not being collected.

If the fields of the records listed above are being collected, check whether a system resource shortage has occurred. If the cause cannot be determined, collect maintenance information and then contact the system administrator. For details about how to collect maintenance information, see the chapter explaining troubleshooting in the manual *Job Management Partner 1/Performance Management User's Guide*.

#### KAVF10206-W

Interprocess communication failed.

Communication with a child process of the jpcagtu process failed.

(S)

Continues the processing of the Agent Collector service.

However, the following fields cannot be collected:

- The IP Address (IP\_ADDRESS) field of the File System Detail Remote (PD\_FSR) record
- The Network Mask (NETWORK\_MASK) field of the Network Interface Detail (PI\_NIND) record
- All fields of the following records (only in the Solaris 64-bit environment):

Process Detail (PD), Process Detail Interval (PD\_PDI), Process Summary (PD\_PDS), Program Summary (PD\_PGM), Terminal Summary (PD\_TERM), User Summary (PD\_USER), Workgroup Summary (PI\_WGRP)

(0)

Ignore the message if the fields of the records listed above are not being collected.

If the fields of the records listed above are being collected, check whether a system resource shortage has occurred. If the cause cannot be determined, collect maintenance information and then contact the system administrator. For details about how to collect maintenance information, see the chapter explaining troubleshooting in the manual *Job Management Partner 1/Performance Management User's Guide*.

#### KAVF10300-W

An attempt to collect a record failed. (record=record-id)

There was a record that the Agent Collector service could not collect.

(S)

Continues the processing of the Agent Collector service.

(0)

If this message is issued continuously, check whether there is an invalid setting in the system environment of the monitoring target system. If the cause cannot be determined, collect maintenance information and then contact the system administrator. For details about how to collect maintenance information, see the chapter explaining troubleshooting in the manual *Job Management Partner 1/ Performance Management User's Guide*.

#### KAVF10301-W

An attempt to collect performance data used for *record-id* record has failed.

An error occurred during the collection of the performance data to be used by the displayed record.

(S)

Continues the processing of the Agent Collector service.

However, the performance data of the displayed record cannot be correctly collected.

(O)

Ignore the message if the displayed record is not being collected.

If the displayed record is being collected, check the preceding message that was output to the common message log and take the action indicated in it. If the cause cannot be determined, collect maintenance information and then contact the system administrator. For details about how to collect maintenance information, see the chapter explaining troubleshooting in the manual *Job Management Partner 1/Performance Management User's Guide*.

#### KAVF10500-W

Memory is insufficient. (required memory=requested-size)

Memory allocation failed.

(S)

Continues the processing of the Agent Collector service.

(0)

Stop those applications that are not being used or expand the memory size.

#### KAVF10501-W

The disk capacity is insufficient.

File access failed because of insufficient disk capacity.

(S)

Continues the processing of the Agent Collector service.

(0)

Delete unneeded files or expand the disk capacity.

#### KAVF10502-W

An I/O error occurred.

An I/O error occurred.

(S)

Continues the processing of the Agent Collector service.

(O)

Check whether a problem such as a hard disk error is preventing data from being written to the file system. If so, remove the error cause.

#### KAVF10503-W

Reception of a signal caused the service to stop. (signal=signal-number)

The Agent Collector service stops when it receives the signal. The code indicated by signal is an OS signal number.

**(S)** 

Terminates the processing of the Agent Collector service.

(O)

The system may have been terminated without the service automatic stop script being set up. Check whether the service automatic stop script has been set up.

If the service automatic stop script is not set up, set it up. For details about how to set up the service automatic stop script, see the chapter explaining how to start and stop Performance Management in the manual *Job Management Partner 1/ Performance Management User's Guide.* 

If the service automatic stop script is set up, or if this message was issued during operations other than system termination, collect maintenance information and then contact the system administrator. For details about how to collect maintenance information, see the chapter explaining troubleshooting in the manual *Job Management Partner 1/Performance Management User's Guide*.

#### KAVF10600-W

An invalid collection event occurred. (record=*record-id*, rc=*maintenance-code*)

An unsupported collection event indicated by the record ID occurred.

**(S)** 

Does not collect the record indicated by the record ID. Continues the processing of Agent Collector.

 $(\mathbf{O})$ 

An attempt is being made for an unsupported record to collect a real-time report, perform alarm monitoring, or write to the Store database.

- For a real-time report, stop the attempt to collect the record.
- For an alarm, unbind the alarm that is using the record not supported by the host. For details about how to unbind an alarm, see the chapter explaining operation monitoring using alarms in the manual *Job Management Partner 1/Performance Management User's Guide*.
- For details about how to stop writing to the Store database, see the chapter explaining the management of operation monitoring data in the manual *Job Management Partner 1/Performance Management User's Guide*.

#### KAVF10700-W

It failed to occur JP1 system event or Agent event extension.

An attempt to issue a JP1 system event or Agent event extension has failed.

(S)

Continues the processing of the Agent Collector service.

**(**0**)** 

Check the preceding message that was output to the common message log and take the action indicated in it. If the cause cannot be determined, collect maintenance information and then contact the system administrator.

For details about how to collect maintenance information, see the chapter explaining troubleshooting in the manual *Job Management Partner 1/ Performance Management User's Guide*.

#### KAVF10701-W

It failed to issue JP1 system event or Agent event extension, because Memory is insufficient.

An attempt to issue a JP1 system event or Agent event extension has failed due to insufficient memory.

(S)

Continues the processing of the Agent Collector service.

 $(\mathbf{O})$ 

Check whether system resources such as memory are sufficient. If the cause cannot be determined, collect maintenance information and then contact the system administrator. For details about how to collect maintenance information, see the chapter explaining troubleshooting in the manual *Job Management Partner 1/Performance Management User's Guide*.

#### KAVF10901-W

Warning: The specified value (*specified-value*) for the option (tt) is too long. (filename = *user-defined-data-file-path*)

The value specified for the option (tt) is too long.

(S)

The jpcuser command skips the current line and continues processing.

(0)

Shorten the specified value.

### KAVF10902-W

Warning: The specified value (*specified-value*) for the option (ks) is too long. (filename = *user-defined-data-file-path*)

The value specified for the option (ks) is too long.

(S)

The jpcuser command skips the current line and continues processing.

(0)

Shorten the specified value.

#### KAVF10904-W

Warning: The data value count (number-of-specified-values) does not match the option count (number-of-options). (filename = user-defined-data-file-path)

The number of specified values does not match the number of specified options.

(S)

The jpcuser command skips the current line and continues processing.

(0)

Specify the same number of values and options.

#### KAVF10905-W

```
Warning: The data line is too long. (filename =
user-defined-data-file-path)
```

The data line is too long.

**(S)** 

The jpcuser command skips the current line and continues processing.

(O)

Shorten the data line.

#### KAVF10906-W

```
Warning: The specified value for the option must be 0 or a positive number. (option-name = specified-value, filename = user-defined-data-file-path)
```

A value smaller than 0 was specified for the option option-name.

(S)

The jpcuser command sets 0 and continues processing.

(0)

Specify 0 or a greater value.

#### KAVF10907-W

```
Warning: The specified value for the option is too long.
(option-name = specified-value, filename = user-defined-data-file-path)
```

The value specified for the option option-name is too long.

(S)

The jpcuser command sets a blank line and continues processing.

(0)

Shorten the specified value.

#### KAVF10908-W

```
Warning: The specified value (specified-value) for the option (t) is invalid. (filename = user-defined-data-file-path)
```

The value specified for the option (t) is invalid.

(S)

The jpcuser command sets n/a and continues processing.

(0)

Correct the specified value.

#### KAVF10909-W

```
Warning: The specified value for the option must be a numeric value. (option-name = specified-value, filename = user-defined-data-file-path)
```

A value that is not a numeric value was specified for the option option-name.

(S)

The jpcuser command sets 0 and continues processing.

(0)

Specify a numeric value.

#### KAVF10910-W

```
Warning: The specified value for a floating-point number option
is invalid. (option-name = specified-value, filename =
user-defined-data-file-path)
```

The value specified for the floating-point option option-name is invalid.

(S)

The jpcuser command sets 0 and continues processing.

(O)

Correct the specified value.

#### KAVF10911-W

```
Warning: An overflow or an underflow occurred for the value specified for the option. (option-name = specified-value, filename = user-defined-data-file-path)
```

An overflow or an underflow occurred due to the value specified for the option *option-name*.

(S)

The jpcuser command continues processing.

(O)

Correct the specified value.

#### KAVF10912-W

Warning: "" is specified for the option (*option-name*). (filename = *user-defined-data-file-path*)

No value is specified for the option option-name.

(S)

The jpcuser command sets 0 and continues processing.

(O)

Specify a value.

#### KAVF10913-W

```
Warning: The specified value (specified-value) for the option (ki) must be 0 or a positive number. (filename = user-defined-data-file-path)
```

A value smaller than 0 was specified for the option (ki).

(S)

The jpcuser command skips the current line and continues processing.

(O)

Specify 0 or a larger value.

#### KAVF10914-W

```
Warning: An overflow or an underflow occurred for the value
(specified-value) specified for the option (ki). (filename =
user-defined-data-file-path)
```

An overflow or an underflow occurred due to the value specified for the option (ki).

(S)

The jpcuser command skips the current line and continues processing.

(0)

Correct the specified value.

#### KAVF10915-W

```
Warning: "" is specified for the option (tt). (filename =
user-defined-data-file-path)
```

No value is specified for the option (tt).

(S)

The jpcuser command skips the current line and continues processing.

(0)

Specify a value.

#### KAVF10916-E

Error: The specified value (*specified-value*) for record-ID is invalid.

The value (specified-value) specified for the record ID is invalid.

(S)

Terminates processing of the jpcuser command.

(O)

Correct the specified value.

#### KAVF10917-E

Error: An invalid number of arguments was specified.

An invalid number of arguments was specified.

(S)

Terminates processing of the jpcuser command.

(0)

Correct the number of specified values.

#### KAVF10919-E

```
Error: An invalid arguments (specified-value) were specified.
```

An invalid argument was specified.

(S)

Terminates processing of the jpcuser command.

(0)

Correct the specified value.

### KAVF10920-E

Error: The user-defined data file option (-file) is not specified.

The user-defined data file option (-file) is not specified.

(S)

Terminates processing of the jpcuser command.

(O)

Specify the user-defined data file option (-file).

#### KAVF10923-E

Error: The user-defined data file cannot be opened. (filename = file-name)

The user-defined data file cannot be accessed.

(S)

Terminates processing of the jpcuser command.

(O)

Check whether the specified file name is correct and whether the file specified by *file-name* exists and is accessible. If the cause cannot be determined, collect maintenance information and then contact the system administrator.

#### KAVF10924-E

Error: There is no product information section in the user-defined data file.

There is no product information section in the user-defined data file.

(S)

Terminates processing of the jpcuser command.

(O)

Specify a product information section.

#### KAVF10925-E

Error: The product information section of the user-defined data file is invalid. Product Name=product-name, FormVer=format-version

The product information section in the user-defined data file is invalid.

(S)

Terminates processing of the jpcuser command.

(0)

Correct the product information section.

#### KAVF10926-E

Error: The user-defined data file does not contain an option header line.

The user-defined data file does not contain an option header line.

(S)

Terminates processing of the jpcuser command.

(O)

Specify an option header line.

#### KAVF10927-E

Error: The user-defined data file does not contain any data lines.

The user-defined data file does not contain any data lines.

(S)

Terminates processing of the jpcuser command.

(0)

Specify a data line.

#### KAVF10928-E

Error: The option header line is too long.

The option header line is too long.

(S)

Terminates processing of the jpcuser command.

(0)

Shorten the option header line.

#### KAVF10929-E

```
Error: Too many options (specified-value) were specified.
```

Too many options were specified.

(S)

Terminates processing of the jpcuser command.

(O)

Reduce the number of specified options.

### KAVF10930-E

Error: An invalid option (option-name) was specified.

An invalid option was specified for the option option-name.

(S)

Terminates processing of the jpcuser command.

(O)

Correct the option.

#### KAVF10931-E

Error: The option (option-name) is not supported for the specified record (record-ID) .

The specified option is not supported for the specified record ID.

(S)

Terminates processing of the jpcuser command.

(O)

Correct the record ID or option.

# KAVF10932-E

Error: The option (tt) is not specified.

The option (tt) is not specified.

(S)

Terminates processing of the jpcuser command.

(0)

Specify the option (tt).

#### KAVF10935-E

Error: A fatal error has occurred.

A fatal error has occurred.

(S)

Terminates processing of the jpcuser command.

(0)

Collect maintenance information and then contact the system administrator.

#### KAVF10941-E

Error: Superuser permissions are required.

A user who does not have superuser permissions attempted to execute the jpcuser command.

**(S)** 

Terminates processing of the jpcuser command.

(O)

Execute the jpcuser command as a user who has superuser permissions.

#### KAVF10943-E

Error: jpcuser terminated with error.

The jpcuser command terminated abnormally.

(S)

Terminates processing of the jpcuser command.

(0)

Check the preceding message that was output to the public log, and take the action indicated in it.

#### KAVF10948-I

Information: jpcuser terminated successfully.

The jpcuser command terminated normally.

(S)

Terminates processing of the jpcuser command.

#### KAVF10950-W

```
Warning: "" is specified for the option (ki). (filename = user-defined-data-file-path)
```

"" is specified for the option (ki).

(S)

The jpcuser command skips the current line and continues processing.

(0)

Specify a valid value for the option (ki).

#### KAVF10951-W

```
Warning: "" is specified for the option (ks). (filename = user-defined-data-file-path)
```

"" is specified for the option (ks).

(S)

The jpcuser command skips the current line and continues processing.

(O)

Specify a valid value for the option (ks).

#### KAVF10952-E

```
Error: The option header line specified in the user-defined data file is incorrect. (specified-value)
```

The option header line specified in the user-defined data file is incorrect.

(S)

Terminates processing of the jpcuser command.

(O)

Correct the option header line.

#### KAVF10953-W

```
Warning: The data line specified in the user-defined data file is incorrect. (specified-value, filename = user-defined-data-file-path)
```

The data line specified in the user-defined data file is incorrect.

(S)

The jpcuser command skips the current line and continues processing.

(0)

Correct the data line.

#### KAVF10954-W

```
Warning: jpcuser terminated with a warning.
```

The jpcuser command terminated with a warning.

(S)

Terminates processing of the jpcuser command.

(0)

Correct the problem generating the warning indicated in the preceding message.

#### KAVF10957-I

```
Information: Usage: jpcuser <Record Name> -file <User-defined
Data File Path> [-file <User-defined Data File Path>]... [-debug
<value>]
```

This message explains how to use the jpcuser command.

(S)

Terminates processing of the jpcuser command.

#### KAVF10982-E

```
Error: The directory (directory-name) is specified for the user-defined data file.
```

A directory is specified for the user-defined data file.

(S)

Terminates processing of the jpcuser command.

(0)

Specify a file name.

#### KAVF10983-E

Error: The name of a user-defined data file is duplicated.
(filename = file-name)

The user-defined data file name is already being used.

(S)

Terminates processing of the jpcuser command.

(0)

Correct the duplication of user-defined data files.

#### KAVF10984-E

Error: The debug option is duplicated.

The debug option has been specified twice.

(S)

Terminates processing of the jpcuser command.

(O)

Either do not specify the debug option, or specify it only once.

#### KAVF10985-E

```
Error: There are no user-defined data files.
```

There are no user-defined data files.

(S)

Terminates processing of the jpcuser command.

(O)

Check whether the specified file name is correct and whether the file specified by *file-name* exists and is accessible. If the cause cannot be determined, collect maintenance information and then contact the system administrator.

#### KAVF10986-W

```
Warning: The option header line specified in the user-defined
data file is incorrect. (option = specified-value, filename =
user-defined-data-file-path)
```

The option header line specified in the user-defined data file is incorrect.

**(S)** 

Skips this user-defined data file.

(O)

Correct the option header line.

#### KAVF10987-W

```
Warning: The user-defined data file cannot be opened. (filename = file-name)
```

The user-defined data file cannot be accessed.

**(S)** 

Skips this user-defined data file.

(O)

Check whether the specified file name is correct and whether the file specified by *file-name* exists and is accessible. If the cause cannot be determined, collect maintenance information and then contact the system administrator.

#### KAVF10988-W

```
Warning: There is no product information section in the user-defined data file. (filename = user-defined-data-file-path)
```

There is no product information section in the user-defined data file.

(S)

Skips this user-defined data file.

(O)

Specify a product information section.

#### KAVF10989-W

```
Warning: The product information section of the user-defined data file is invalid. Product Name = product-name, FormVer = format-version, filename = user-defined-data-file-path
```

The product information section in the user-defined data file is invalid.

(S)

Skips this user-defined data file.

(0)

Correct the product information section.

#### KAVF10990-W

```
Warning: The user-defined data file does not contain an option header line. (filename = user-defined-data-file-path)
```

The user-defined data file does not contain an option header line.

(S)

Skips this user-defined data file.

(0)

Specify an option header line.

#### KAVF10991-W

```
Warning: The user-defined data file does not contain any data lines. (filename = user-defined-data-file-path)
```

The user-defined data file does not contain any data lines.

(S)

Skips this user-defined data file.

(0)

Specify a data line.

#### KAVF10992-W

```
Warning: The option header line is too long. (filename =
user-defined-data-file-path)
```

The option header line is too long.

(S)

Skips this user-defined data file.

(O)

Shorten the option header line.

#### KAVF10993-W

Warning: Too many options (specified-value) were specified. (filename
= user-defined-data-file-path)

Too many options were specified.

(S)

Skips this user-defined data file.

(O)

Correct the specification.

#### KAVF10994-W

```
Warning: An invalid option (option-name) was specified. (filename
= user-defined-data-file-path)
```

An invalid value was specified for the option indicated by option-name.

(S)

Skips this user-defined data file.

(O)

Correct the option.

#### KAVF10995-W

Warning: The option (*option-name*) is not supported for the specified record (*record-ID*). (filename = *user-defined-data-file-path*)

The specified option is not supported for the specified record ID.

(S)

Skips this user-defined data file.

(0)

Correct the record ID or option.

#### KAVF10996-W

Warning: The option (tt) is not specified. (filename =
user-defined-data-file-path)

The option (tt) is not specified.

(S)

Skips this user-defined data file.

(O)

Specify the option (tt).

#### KAVF10997-W

Warning: The user-defined data file was skipped. (filename =
user-defined-data-file-path)

The user-defined data file was skipped.

(S)

Skips the file and continues the jpcuser command processing.

(O)

Check the message that was output immediately before this message and correct the error.

#### KAVF10998-W

Warning: The directory (*directory-name*) is specified for the user-defined data file.

A directory is specified for the user-defined data file.

(S)

Skips the file and continues the jpcuser command processing.

(O)

Correct the specification.

# Chapter 8. Error Handling Procedures

This chapter explains how to handle the errors that occur during the operation of Performance Management. It describes how to handle the errors that occur mainly in PFM - Agent. For details about how to handle errors that occur in the overall Performance Management system, see the chapter explaining troubleshooting in the manual *Job Management Partner 1/Performance Management User's Guide*.

- 8.1 Error handling procedures
- 8.2 Troubleshooting
- 8.3 Log information
- 8.4 Data to be collected in the event of an error
  - 8.5 Data collection procedure
  - 8.6 Performance Management error detection
  - 8.7 Performance Management system error recovery

# 8.1 Error handling procedures

This section explains how to handle the errors that occur in Performance Management. Checking the operating conditions

Check the following details:

- Operating conditions when the error occurred
- Message content (if a message has been issued)
- Log information in the common message log, for example

For details about the cause of each message and how to handle it, see 7. *Messages*. For details about the log information that is output by Performance Management, see 8.3 Log information.

### Collecting data

You must collect data to identify the error cause. See 8.4 Data to be collected in the event of an error and 8.5 Data collection procedure, and collect the necessary data.

#### Investigating the error

Based on the collected data, investigate the error cause and isolate the area in which the error occurred or determine the scope of the error.

# 8.2 Troubleshooting

This section explains troubleshooting for Performance Management. If an error occurs while you are using Performance Management, first check whether any of the phenomena explained in this section has occurred.

The table below shows the major errors that may occur in Performance Management.

*Table 8-1:* Error description

Category	Error description	Description location
Setting up or starting a service	<ul> <li>The Performance Management program service does not start.</li> <li>It takes a long time between a service startup request and the actual service startup.</li> <li>When another program begins a service immediately after a Performance Management program service has been stopped, communication cannot be correctly executed.</li> <li>After the message The disk capacity is insufficient. is issued, the Master Store service or Agent Store service stops.</li> </ul>	8.2.1
Executing commands	<ul> <li>When the jpctool service list (jpcctrl list) command is executed, a non-active service name is output.</li> <li>When the jpctool db dump (jpcctrl dump) command is executed, data that is different from the specified Store database is output.</li> </ul>	8.2.2
Report definitions	• Information for some period of time is not displayed in historical reports.	8.2.3
Alarm definitions	<ul><li>The program defined in action execution does not run correctly.</li><li>No alarm event is displayed.</li></ul>	8.2.4
Collecting and managing performance data	<ul> <li>Even though the data retention period is set to be short, the size of PFM - Agent's Store database does not decrease.</li> <li>The message Illegal data was detected in the Store database. is output to the common message log.</li> </ul>	8.2.5

# 8.2.1 Setting up or starting a service

This section explains how to handle errors related to setup and service startup.

#### (1) Performance Management program service does not start

The possible causes and how to handle them are described below.

• PFM - Manager is stopped

When PFM - Manager and PFM - Agent are on the same host, if PFM - Manager is stopped, the PFM - Agent service cannot start. Make sure the PFM - Manager service is running. If the PFM - Manager service is not running, start it. For details about how to start a service, see the chapter explaining how to start and stop Performance Management in the manual *Job Management Partner 1/ Performance Management User's Guide*.

• The same port number is specified for multiple services of a Performance Management program

If the same port number is specified for multiple services of a Performance Management program, the service of the Performance Management program cannot start. By default, port numbers are automatically assigned, and thus no duplication occurs. If you specified a fixed port number for the service of a Performance Management program when setting up Performance Management, check the port number settings. If the same port number is specified for multiple services of a Performance Management program, specify different port numbers. For details about how to specify port numbers, see the chapter explaining installation and setup in the manual *Job Management Partner 1/Performance Management Planning and Configuration Guide*.

• A directory specified for storing the Store database is invalid

If any of the directories listed below is specified in an inaccessible or nonexistent directory, the Agent Store service cannot start. Check the directory name and attributes and correct them if necessary.

- Store database storage destination directory
- Store database backup directory
- Store database partial backup directory
- Store database export destination directory
- Store database import destination directory

If any of these directories is specified for multiple Agent Store services, the Agent Store services cannot start. Check the directory settings and correct them if necessary.

• The machine's host name was modified using a method other than the specified



#### method

For details about how to change a machine's host name, see the chapter explaining installation and setup in the manual *Job Management Partner 1/Performance Management Planning and Configuration Guide*. If the machine's host name is modified using a method other than the specified method, the service of a Performance Management program may not start in some cases.

# (2) It takes a long time between a service startup request and the actual service startup

It may take a long time after the jpcpm start (jpcstart) command is executed or a service is started using the **Service** icon before the service actually starts. If the startup takes a long time because of any of the causes listed below, the time it takes for the service startup is shortened during subsequent service startup operations.

- If you start a service in stand-alone mode, service startup may take a long time.
- If a service is started by restarting the system without specifying that the service be automatically stopped when the system is stopped, the Store database index may be rebuilt. In this case, service startup may take a long time.
- When the service is started after a new agent is added, the Store database index is created only during the initial startup. As a result, service startup may take a long time.
- If the Store service cannot be terminated normally because of a power failure, for example, the Store database index is rebuilt during a restart, and as a result, service startup may take a long time.

### (3) When another program begins a service immediately after a Performance Management program service has been stopped, communication cannot be correctly executed

Immediately after a Performance Management program service has been stopped, if the port number that was used by this service is used by another program to start a service, communication may not be correctly executed. To avoid this condition, specify one of the following:

• Specify fixed port numbers for assignment to the services of the Performance Management program.

Assign fixed port numbers for the individual services of the Performance Management program. For details about how to specify port numbers, see the chapter explaining installation and setup in the manual *Job Management Partner I/Performance Management Planning and Configuration Guide*.

• Specify the TCP\_TIMEWAIT value

Use the TCP\_TIMEWAIT value to set the connection waiting time.

On HP-UX and AIX, specify as follows to set the connection waiting time to be at least 75 seconds:

- HP-UX:tcp\_time\_wait\_interval:240000
- AIX:tcp\_timewait:5

For Windows and Solaris, use the default (4 minutes) setting.

For Linux, the default connection waiting time (60 seconds) cannot be changed. Specify fixed port numbers for assignment to the services of the Performance Management program.

# (4) After the message "The disk capacity is insufficient." is issued, the Master Store service or Agent Store service stops

If the disk used by the Store database does not have sufficient free space, storing of data in the Store database is halted. In this case, the message The disk capacity is insufficient. is issued and the Master Store service or Agent Store service stops.

When this message is issued, take one of the following steps:

Allocate sufficient disk capacity

Estimate the disk space requirement for the Store database, and change the Store database storage destination to a disk that has sufficient capacity. For details about how to estimate the disk space requirement for the Store database, see *A*. *Estimating System Requirements*. For details about how to change the Store database storage destination, see 2.4 *Changing the operation of PFM - Agent for Platform*.

• Change the saving conditions for the Store database

Change the saving conditions for the Store database and adjust the upper limit for the data volume in the Store database. For details about how to change the saving conditions for the Store database, see the chapter explaining management of operation monitoring data in the manual *Job Management Partner 1/ Performance Management User's Guide.* 

If the Master Store service or Agent Store service still does not start even after one of these steps has been taken, an unrecoverable logical conflict has occurred in the Store database. In this case, first restore the Store database from backup data and then start the Master Store service or Agent Store service. If there is no available backup data, first initialize the Store database and then start the Master Store service or Agent Store service. To initialize the Store database, delete all of the following files, which are located in the Store database destination directory:

- Files with the extension .DB
- Files with the extension . IDX

For details about the Store database destination directory, see the chapter explaining installation and setup in the manual *Job Management Partner 1/Performance Management Planning and Configuration Guide*.

# 8.2.2 Executing commands

This section explains the errors that are related to the execution of Performance Management commands.

# (1) When the jpctool service list (jpcctrl list) command is executed, a non-active service name is output

The possible causes and how to handle them are described below.

• A Performance Management program was uninstalled without deleting the service information of the Performance Management program

Even after a Performance Management program is uninstalled, the service information on the Performance Management program still remains in the database. Execute the jpctool service delete (jpcctrl delete) command to delete the service information on the Performance Management program. For details about how to delete service information, see the chapter explaining how to install and set up Performance Management in the manual *Job Management Partner 1/Performance Management System Configuration and User's Guide*.

• The host name of the machine was changed without deleting the service information of the Performance Management program

If the host name of the machine is changed without deleting the service information of the Performance Management program, the service information of the service ID to which the previous host name is added remains in the database managed by the Master Manager service. Execute the jpctool service delete (jpcctrl delete) command to delete the service information of the Performance Management program. For details about how to delete service information and how to change a host name, see the chapter explaining how to install and set up Performance Management in the manual *Job Management Partner 1/Performance Management System Configuration and User's Guide*.

# (2) When the jpctool db dump (jpcctrl dump) command is executed, data that is different from the specified Store database is output

If you specify the same export file name for the same Store service and execute the jpctool db dump (jpcctrl dump) command multiple times, the earlier output result is overwritten by the later output result. When executing the jpctool db dump (jpcctrl dump) command multiple times on the same Store service, specify export files having different names. For details about how to export the Store database, see the chapter explaining management of operation monitoring data in the manual *Job Management Partner 1/Performance Management User's Guide*.

# 8.2.3 Report definitions

This section explains the cause of a problem related to Performance Management report definitions.

# (1) Information for a period of time is not displayed in historical reports

If the current time of the machine on which PFM - Agent has been installed is moved forward, history information between the original time and the new current time is not saved.

# 8.2.4 Alarm definitions

This section explains how to handle the errors related to Performance Management alarm definitions.

### (1) The program defined in action execution does not run correctly

The possible causes and how to handle them are described below.

• PFM - Manager or the Action Handler service of the action execution destination host is not active

If PFM - Manager or the Action Handler service of the action execution destination host is stopped, actions cannot be executed. To execute an action, you must first start PFM - Manager and the Action Handler service of the action execution destination host.

### (2) No alarm event is displayed

The possible causes and how to handle them are described below.

• PFM - Manager is not active

If PFM - Manager is stopped, alarm events from PFM - Agent cannot be correctly issued. To monitor alarm events, you must first start PFM - Manager.

# 8.2.5 Collecting and managing performance data

This section explains how to handle the errors related to the collection and management of Performance Management performance data.

# (1) Even though the data retention period is set to be short, the size of PFM - Agent's Store database does not decrease

In Store version 1.0, if the Store database file volume has already reached its limit, shortening the data retention period does not reduce the file size. In this case, after specifying a short retention period, back up the Store database, and then restore it.

For details about how to specify a data retention period, see the chapter explaining management of operation monitoring data in the manual *Job Management Partner 1/ Performance Management User's Guide*. For details about how to back up and restore the Store database, see the chapter explaining backup and restore in the manual *Job* 



# Management Partner 1/Performance Management User's Guide.

# (2) The message "Illegal data was detected in the Store database." is output to the common message log

Unexpected service stoppage or machine shutdown may have produced illegal data in the Store database. Take one of the following steps:

- If the Store database has been backed up, restore it.
- If the Store database has not been backed up, stop the Agent Store service and delete the corresponding database file (\*.DB files and \*.IDX files), and then restart the service.

# 8.2.6 Other problems

Check the condition that was present when the error occurred. If a message has been issued, check its content. For details about the log information that is output by Performance Management, see *8.3 Log information*.

If you cannot eliminate the error even after taking the steps described in 8.2.1 Setting up or starting a service through 8.2.5 Collecting and managing performance data, or if other errors occur, collect data for error cause investigation and contact the system administrator.

For details about the data that need to be collected and how to collect it, see 8.4 Data to be collected in the event of an error and 8.5 Data collection procedure.

# 8.3 Log information

When an error occurs in Performance Management, check the log information to determine how to handle the error. When Performance Management is being used, the following four types of log information are output:

- System log
- Common message log
- Operation status log
- Trace log

These four types of log information and the log options that can be set in each type of log information are explained below.

# 8.3.1 Log types

# (1) System log

The system log is used to report system statuses and errors. This log is output to the syslog file.

For the output format, see the chapter explaining log information in the manual *Job Management Partner 1/Performance Management Reference*.

# (2) Common message log

The common message log is used to report system statuses and errors. The log information that is output to the common message log is more detailed than the log information that is output to the system log. For details about the output destination file name for the common message log and file size, see 8.3.2 Log files and directories. For the output format, see the chapter explaining log information in the manual Job Management Partner 1/Performance Management Reference.

# (3) Operation status log

The operation status log is output by PFM - Web Console. For details about the output destination file name for the operation status log and file size, see the chapter explaining troubleshooting in the manual *Job Management Partner 1/Performance Management User's Guide*. For the output format, see the chapter explaining log information in the manual *Job Management Partner 1/Performance Management Reference*.

# (4) Trace log

The trace log is collected to investigate the process leading up to the error and to measure the time that was used for each process.
The trace log is output to the log file that each service of a Performance Management program has.

## 8.3.2 Log files and directories

This section explains the log information that is output by Performance Management. For details about the operation status log output destination file name and file size, see the chapter explaining troubleshooting in the manual *Job Management Partner 1/ Performance Management User's Guide*.

## (1) Common message log

This section describes the common message log, which is one of the logs that are output by Performance Management. The table below shows the service name or control name, which is the output source for the common message log, log file names, and disk usage.

Log type	Output source	File name	Disk usage <sup>#1</sup> (KB)
Common message log	Performance Management	/opt/jp1pc/log/ jpclog{01 02} <sup>#2</sup>	2,048 (x 2)
		/opt/jp1pc/log/ jpclogw{01 02} <sup>#2</sup>	2,048 (x 2)

Table 8-2: Common message log file names

## #1

The number inside the parentheses () indicate the number of log files that are created for each service. For example, 2,048 (x 2) means that a maximum of two log files, each with a disk usage of 2,048 KB, are created. In this case, the total disk usage is 4,096 KB.

#### #2

The log file name of the common message log ends with 01 or 02.

### Sequential file (jpclog) method

Log information is output first to a log file whose name ends with 01. When the size of this log file reaches its upper limit, the end of the log file name is changed from 01 to 02, and a new log file whose name ends with 01 is created. From this point on, log information is output to the log file whose name ends with 01. If a log file whose name ends with 02 already exists, it is overwritten. The latest log is always output to the log file whose name ends with 01.

Wrap-around file (jpclogw) method

Log information is output first to a log file whose name ends with 01. When the size of this log file reaches its upper limit, a new log file whose name ends with 02 is created. From this point on, log information is output to the log file whose name ends with 02. If a log file whose name ends with 02 already exists, all of its data is deleted first, and then log information is output beginning at the first line in this log file. Thereafter, the log output files are alternated.

For details about log file output methods, see the chapter explaining error detection in Performance Management in the manual *Job Management Partner 1/Performance Management User's Guide*.

## (2) Trace log

This section describes the trace log, which is one of the logs that are output by Performance Management. The table below shows the service name or control name, which is the output source for the trace log of PFM - Agent, and storage destination directory name.

Log type	Output source	Directory name
Trace log	Agent Collector service	/opt/jp1pc/agtu/agent/log/
	Agent Store service	/opt/jp1pc/agtu/store/log/
	Performance Management command	/opt/jp1pc/tools/log/

Table 8-3: Trace log storage destination directory name

## 8.4 Data to be collected in the event of an error

If you cannot eliminate the error even when you have taken the steps described in 8.2 *Troubleshooting*, you must collect data to identify the error cause and contact the system administrator. This section explains the data that must be collected when an error occurs.

Performance Management provides a command for collecting the necessary data in a batch. To collect PFM - Agent data, use the jpcras command. Data that can be collected using the jpcras command is indicated by a symbol in the table.

Note:

Data that can be collected using the jpcras command differs depending on the operations specified during command execution. For details about the options that can be specified for the command, see the chapter explaining commands in the manual *Job Management Partner 1/Performance Management Reference*.

## 8.4.1 In UNIX

## (1) OS' log information

You need to collect the OS-related log information indicated in the following table.

Information type	Overview	Default file name	Can be collected using the jpcras command?
System log	syslog	<ul> <li>For HP-UX /var/adm/syslog/syslog.log</li> <li>For Solaris /var/adm/messages*</li> <li>For AIX /var/adm/syslog*</li> <li>For Linux /var/log/messages*</li> </ul>	Y <sup>#1</sup>
Process information	List of processes		Y
System files	hosts file	/etc/hosts	Y
		/etc/inet/ipnodes <sup>#2</sup>	Y <sup>#3</sup>
	services file	/etc/services	Y
OS information	Patch information		Y

Table 8-4: OS-related log information

#### 8. Error Handling Procedures

Information type	Overview	Default file name	Can be collected using the jpcras command?
	Kernel information		Y
	Version information		Y
	Network status		Y
	Environment variable		Y
	Host name		Y
Dump information	core file <sup>#4</sup>		Y

## Legend:

Y: Can be collected

--: Not applicable

## #1

You cannot collect this data when using a system that is set to output data using the default path and file name. Collect the data manually.

## #2

The /etc/inet/ipnodes file exists only in Solaris. Collect this file together with the /etc/hosts file.

### #3

Only the jpcras command in PFM - Manager 09-00 or later, or PFM - Base 09-00 or later, can collect this data.

#### #4

In HP-UX 11i V3 (IPF), you can use the coreadm command to change the name of a core file. After renaming, the jpcras command cannot collect any files whose name does not begin with core. For these files, collect information manually.

## (2) Performance Management information

You need to collect the types of information related to Performance Management that are described below. If the error occurred in network connection, you also need to collect information from the connection destination machine. The following table describes the information related to Performance Management.

Information type	Description	Default file name	Collection by the jpcras command possible
Common message log	Message log output by Performance Management (sequential file method)	/opt/jp1pc/log/jpclog{01 02} <sup>#1</sup>	Y
	Message log output by Performance Management (wrap-around method)	/opt/jp1pc/log/jpclogw{01 02} <sup>#1</sup>	Y
Configuration information	Information file for each configuration		Y
	Output results of the jpctool service list (jpcctrl list) command		Y
Version information	Product version		Y
	History information		Y
Database information	Agent Store	<ul> <li>For Store 1.0 /opt/jplpc/agtu/store/*.DB /opt/jplpc/agtu/store/*.IDX</li> <li>For Store 2.0 /opt/jplpc/agtu/store/STPD /opt/jplpc/agtu/store/STPI The following files under the /opt/jplpc/ agtu/store/STPL directory: *.DB *.IDX</li> </ul>	Y

Table 8-5: Performance Management information

Information type	Description	Default file name	Collection by the jpcras command possible
Trace log	Trace information on each service of a Performance Management program	#2	Y
Definition file	Application definition file	/opt/jp1pc/agtu/agent/jpcapp	Y
Information about the function for collecting user-specific performance data	Configuration information	/opt/jp1pc/agtu/agent/jpcuser/ jpcuser.ini	Y
	Debug log	/opt/jp1pc/agtu/agent/jpcuser/debug/ jpcuser_dbg_{01 02 03 04 05}.log	Y
	Trace log	<pre>/opt/jp1pc/agtu/agent/jpcuser/log/trace/ msglog{01 02}</pre>	Y
	Public log	<pre>/opt/jplpc/agtu/agent/jpcuser/log/ public/jpclog{01 02}</pre>	Y
	User data file	/opt/jp1pc/agtu/agent/jpcuser/userdata/ jpcuser_{UPI UPIB UPD UPDB}	Y
	Core dump file <sup>#3</sup>	/opt/jp1pc/agtu/agent/jpcuser/core	Y
Installation log <sup>#4</sup>	Default log of Hitachi PP Installer	<pre>/etc/.hitachi/.hitachi.log /etc/.hitachi/ .hitachi.log{01 02 03 04 05} /etc/.hitachi/.install.log /etc/.hitachi/ .install.log{01 02 03 04 05}</pre>	N

Legend:

Y: Can be collected

N: Cannot be collected

--: Not applicable

#1

For details about log file output methods, see the chapter explaining error

detection in Performance Management in the manual Job Management Partner 1/Performance Management User's Guide.

#2

For details about the trace log storage destination directory, see 8.3.2 Log files and directories.

#3

In HP-UX 11i V3 (IPF), you can use the coreadm command to change the name of a core dump file. After renaming, the jpcras command cannot collect any files whose name does not begin with core. For these files, collect information manually.

#4

Collect this log if installation fails.

## (3) Operation details

You need the following types of information on the operation that was taking place when the error occurred:

- Operation details
- Time at which the error occurred
- Machine configuration (including each OS version, host name, and the configurations of PFM Manager and PFM Agent)
- Whether the error can be reproduced
- Performance Management user name used for logon if the user logged on from PFM Web Console

#### (4) Error information

You need to collect the following error information:

• Messages output to the console if the error occurred during command execution

#### (5) Other information

The following types of information are also necessary:

• The argument specified for the command if the error occurred during command execution

## 8.5 Data collection procedure

This section explains how to collect data when an error occurs.

## 8.5.1 In UNIX

#### (1) Executing the data collection command

To collect data for investigating the cause of the error, you use the jpcras command. The procedure for executing the data collection command is described below. Note that the operations explained here must be executed by an OS user who has the root user permission.

- 1. Log on to the host on which the service for which the data to be collected is installed.
- 2. Specify the data and the storage destination directory for the data to be collected and execute the jpcras command.

To use the jpcras command to store all of the data that can be collected in the / tmp/jpc/agt directory, specify as follows: jpcras /tmp/jpc/agt all all

The data collected by the data collection command is stored in the specified directory in compressed format by the tar command and compress command. The file name is as follows:

jpcras*YYMMDD*.tar.Z

Year, month and date are placed in YYMMDD.

When the jpcras command is executed, the jpctool service list -id \* -host \* (jpcctrl list \* host=\*) command is executed internally to obtain a list of PFM services and to confirm whether the services are running. Execution of this internal command might take a long time if a firewall exists between the host that executes the command and a host in another Performance Management system or if the system configuration is large. In either case, you can set the JPC\_COLCTRLNOHOST environment variable to 1 to suppress processing of the jpctool service list -id \* -host \* (jpcctrl list \* host=\*) command to shorten the command execution time.

For details about the jpcras command, see the chapter explaining commands in the manual *Job Management Partner 1/Performance Management Reference*.

## (2) Checking the operation details

Check the operation that was taking place when the error occurred and record it. You need to check the following information:

- Operation details
- Time at which the error occurred
- Machine configuration (including each OS version, host name, and the configurations of PFM Manager and PFM Agent)
- Whether the error can be reproduced
- Performance Management user name used for logon if the user logged on from PFM Web Console.

## (3) Collecting error information

The following types of error information must be collected:

• Messages output to the console if the error occurred during command execution

## (4) Collecting other information

The following types of information must also be collected:

• The argument specified for the command if the error occurred during command execution

## (5) Performance data information

You also need to collect the following information related to performance data. The following table lists the information related to performance data to be specifically collected by PFM - Agent for Platform, depending on the installation environment.

Collected item		Can be collected using the jpcras command?			
	AIX	HP-UX	Solaris	Linux	
Processor information	<ul> <li>lsdev -Cc processor</li> <li>lsattr -El proc#</li> </ul>	ioscan -fnC processor	psrinfo -v	/proc/ cpuinfo	Y
System paging space information	lsps -a	swapinfo -a	swap -l	<ul> <li>/proc/ meminfo</li> <li>free</li> <li>/proc/ swaps</li> <li>procinfo</li> </ul>	Y

Table 8-6: Performance data information

Collected item		Can be collected using the jpcras command?			
	AIX	HP-UX	Solaris	Linux	
I/O statistics information	<ul> <li>lsdev -Cc disk</li> <li>iostat</li> <li>lscfg</li> </ul>	<ul> <li>lsdev -C disk</li> <li>iostat</li> <li>/etc/ netconfi g</li> </ul>	• Iostat • prtconf -D	<ul><li>lsdev</li><li>iostat</li><li>procinfo</li></ul>	Y
Status information for inter-process communicatio n function	ipcs -a	ipcs -a	ipcs -a	<ul> <li>ipcs -a</li> <li>ipcs -at</li> <li>ipcs -ap</li> <li>ipcs -ac</li> <li>ipcs -al</li> <li>ipcs -au</li> </ul>	Y
Static information about file system	/etc/ filesystems	/etc/fstab	/etc/vfstab	/etc/fstab	Y
Network status information	<ul> <li>netstat -s</li> <li>netstat -in</li> <li>lsattr -E -l inet0</li> <li>/etc/ inetd.conf</li> </ul>	<ul> <li>netstat         -s</li> <li>netstat         -in</li> <li>ioscan         -fnC lan</li> <li>/etc/         rc.confi         g.d/         netconf</li> <li>/etc/         inetd.co         nf</li> </ul>	<pre>netstat -s netstat -in /etc/inet/ * /etc/ defaultrou ter /etc/ inetd.conf</pre>	<ul> <li>netstat <ul> <li>-s</li> </ul> </li> <li>netstat <ul> <li>-ni</li> </ul> </li> <li>ifconfig <ul> <li>-a</li> </ul> </li> </ul>	Y
LAN device configuration and status display	ifconfig -a	lanscan -v	ifconfig -a	ifconfig -a	Y

Collected item		Can be collected using the jpcras command?			
	AIX	HP-UX	Solaris	Linux	L
hosts file information				/etc/hosts	Y
NIS configuration file information	/etc/ netsvc.conf	/etc/ nsswitch.co nf	/etc/inet/ hosts	/etc/ yp.conf	Y
Summary information for file system assignment	repquota -a	repquota -a	repquota -a	repquota -a	Y
Storage information collected by agent	agtu/agent/ storage.d	agtu/agent/ storage.d	agtu/agent/ storage.d	agtu/ agent/ storage.d	Y
Bit count information for kernel	bootinfo -K	getconf KERNEL_BITS	isainfo -kv	getconf LONG_BIT	Y
Implemented memory size information	bootinfo -r	grep -i Physical / var/adm/ syslog/ syslog.log	prtconf	<ul> <li>/proc/ meminfo</li> <li>free</li> <li>procinfo</li> </ul>	Y
System information (OS, version, and model)	uname -aoslevel	uname -a	uname -a	uname -a	Y
Execution level information	who -r	who -r	who -r	runlevel	Y
System time	date	date	date	date	Y
Time zone	<ul> <li>/etc/ environmen t</li> <li>/etc/ profile</li> </ul>	/etc/ TIMEZONE	<ul> <li>/etc/ TIMEZONE</li> <li>/etc/ default/ init</li> </ul>	/etc/ sysconfig/ clock	Y

Collected item		Can be collected using the jpcras command?			
	AIX	HP-UX	Solaris	Linux	
Directory information to be exported onto NFS client	<ul> <li>/etc/ exports</li> <li>/etc/xtab</li> </ul>	<ul> <li>/etc/ exports</li> <li>/etc/ xtab</li> </ul>	<ul> <li>/etc/dfs/ dfstab</li> <li>/etc/dfs/ sharetab<sup>#</sup></li> <li>/etc/ rmtab<sup>#</sup></li> </ul>	<ul> <li>/etc/ exports</li> <li>/var/ lib/ nfs/ xtab</li> </ul>	Y
Workgroup monitor settings information	agtu/agent/ wgfile	agtu/agent/ agtu/agent/ agtu/ wgfile wgfile agent/ wgfile		agtu/ agent/ wgfile	Y
Event file monitor settings information	agtu/agent/ evfile	agtu/agent/ evfile	agtu/agent/ evfile	agtu/ agent/ evfile	Y
Installed software information	lslpp -L all	swlist	pkginfo	• rpm -qai • rpm -qa -last	Y
OS patch information	instfix -a	<ul> <li>swlist         <ul> <li>patch</li> <li>what /                 stand/                 vmunix</li> </ul> </li> </ul>	showrev -a	• rpm -qai • rpm -qa -last	Y
OS setup information	<ul> <li>/usr/bin/ ls -l / unix</li> <li>/usr/bin/ ls -la / usr/lib/ boot</li> </ul>				Y
Process list			/bin/ps -elfZ (Solaris 10 only)		Y
Solaris zone information			/usr/sbin/ zoneadm list -cv (Solaris 10 only)		Y

Legend:

- Y: Can be collected
- --: Not applicable

#

When the zone functionality is used in Solaris 10, this information cannot be collected in a non-global zone environment.

## 8.6 Performance Management error detection

You can use the health check function to detect errors in Performance Management itself. This function monitors the operating status of the monitoring agent and the host on which the monitoring agent is running, and displays the monitoring results in PFM - Web Console as changes in the status of the monitoring agent.

You can also use the PFM service Auto-restart functionality to automatically restart the PFM service when it abnormally terminates for some reason, or to restart it on a regular basis.

To use the health check function to monitor the operating status of the monitoring agent or use the PFM service Auto-restart functionality, you need to use the status management function. This function checks the detailed status of the Performance Management service. Therefore, the version of the target monitoring agent must support the status management function and the status management function must be enabled. There are no requirements when you monitor the operating status of the host.

Using JP1/Base, which is an integrated system monitoring and management product, to monitor Performance Management log files can also detect errors in Performance Management itself. This allows the system administrator to detect an error if a problem occurs, determine the cause of the error, and take an appropriate recovery measure.

For details about detecting errors in Performance Management itself, see the chapter explaining error detection in Performance Management in the manual *Job Management Partner 1/Performance Management User's Guide.* 

## 8.7 Performance Management system error recovery

When an error occurs on a Performance Management server, you need to restore the server to the normal state that was present before the error occurred, based on a backup file.

For details about how to restore a server to its pre-error state, see the chapter explaining troubleshooting in the manual *Job Management Partner 1/Performance Management User's Guide*.

# Appendixes

A. Estimating System Requirements

**B.** Kernel Parameters

C. List of Identifiers

D. List of Processes

E. List of Port Numbers

F. Properties of PFM - Agent for Platform

G. List of Files and Directories

H. Migration Procedure and Notes on Migration

I. Version Compatibility

J. Outputting Action Log Data

K. Version Changes

L. Glossary

Before you build a system that uses PFM - Agent for Platform, Hitachi recommends that you estimate the system requirements to determine whether the performance of the machine to be used is sufficient to operate PFM - Agent for Platform.

The items to be estimated are described below.

## A.1 Estimating memory requirements

Memory requirements change according to the settings and usage of PFM - Agent for Platform.

## (1) Formula for estimating memory

You can use the following formula to roughly estimate the memory requirements for PFM - Agent for Platform.

PFM - Agent for Platform memory requirements = A + B

Legend:

A: Memory requirements in initial status

The memory requirements for *A* are listed in the following table:

Table A-1: Memory requirements in initial status

	Memory requirements (units: MB)				
Status of PFM - Agent for Platform	HP-UX	Solaris	AIX	Linux (x86), Linux (x64)	Linux (IPF)
Operation in the initial status <sup>#</sup>	25	45	40	35	120

#

The required memory includes the portion for the PI type record history collection.

B: Increment in the memory requirements necessary for record collection

*B* is computed as follows:

 $B = (C_1 + D_{11} \dots + D_{1m}) + \dots + (C_n + D_{n1} \dots + D_{nm})$ 

C: Common memory requirements by system resource type

D: Memory requirements unique to record

- *m*: Number of collected records
- *n*: Number of system resource types

The memory requirements indicated by C are shown in the following table.

System Memory requirements (units: KB) Record resource HP-UX AIX type Solaris Linux Linux (IPF) (x86), Linux (x64) CPU CPU - Per Processor 176 136 260 240 64 Detail (PI CPUP) System System Summary 3,136 224 264 206 336 Overview (PI) Device Device Detail 101 x  $80 \ \mathbf{x} \ \textit{Nd}^{\#}$  $57 \times Nd^{\#}$ 57 x Nd<sup>#</sup> 60 x *Nd*<sup>#</sup> (PI\_DEVD) Nd<sup>#</sup> + 64+22+136Device Summary (PI DEVS) Network Interface Detail 0 120 Network 32 30 60 (PI NIND) Network Interface Summary (PI\_NINS) File File System Detail -256 35 41 29 96 system Local (PD FSL) File System Detail -Remote (PD\_FSR) 482 x 440 x 244 x Process Application Summary 594 x 385 x (PD APP)  $Np^{\#} +$  $Np^{\#} +$  $Np^{\#} +$  $Np^{\#} +$  $Np^{\#} +$ Process Detail (PD) 766 144 288 368 471 Process Detail Interval (PD\_PDI) Process Summary (PD PDS) Program Summary (PD\_PGM) Terminal Summary (PD\_TERM) User Summary (PD\_USER) Workgroup Summary (PI\_WGRP)

Table A-	-2:	Common	memory	requirements	by system	resource type
----------	-----	--------	--------	--------------	-----------	---------------

System	Record	Memory requirements (units: KB)						
type		HP-UX	Solaris	AIX	Linux (x86), Linux (x64)	Linux (IPF)		
User category	User Data Detail (PD_UPD)	39	199	45	213	418		
	User Data Detail - Extended (PD_UPDB)	447	299	80	500	632		
	User Data Interval (PI_UPI)	312	1,266	256	0	388		
	User Data Interval - Extended (PI_UPIB)	348	1,156	96	492	704		
Log	Logged Messages (PL_MESS)	32	40	156				

Legend:

--: Not applicable

#

The formulas used to compute *Nd* and *Np* are shown in the following table. *Table A-3:* Nd and Np computation method

Туре	Computation method	Command						
		HP-UX	Solaris	AIX	Linux (x86), Linux (x64)	Linux (IPF)		
Nd	Divide the number of disk devices returned by the commands shown on the right by 100.	ioscan -fnC disk	iostat -x	iostat -d interval-c ount	iostat -d	iostat -d		
Np	Divide the number of processes returned by the commands shown on the right by 100.	ps -ef	ps -ef	ps -A	ps -ef	ps -ef		

*D* is computed as follows:

D = E + F + G

E: Fixed memory requirements for the record

*F*: Memory requirements for incrementing when the record history is collected

*G*: Memory requirements for incrementing when the record is collected in real time (this value does not depend on the number of real-time reports displayed)

The memory requirements for *D* are listed in the following table.

Table A-4: Memory requirements unique to record

Record	Type of	Memory requirements (units: KB)						
	ncreme nt	HP-UX	Solaris	AIX	Linux (x86), Linux (x64)	Linux (IPF)		
Application Summary (PD_APP)	Fixed	2,610	392	3,184	1,355	1,728		
	Historical	767	0	308	398	709		
	Real-time	0	-351	0	0	0		
CPU - Per	Fixed	176	136	260	64	240		
(PI_CPUP)	Historical	0	0	0	0	0		
	Real-time	240	400	336	412	1,044		
Device Detail (PI_DEVD)	Fixed	97 x $Nd^{\#2}$ + 36	54 x Nd <sup>#2</sup> + 528	20 x Nd <sup>#2</sup> + 84	63 x Nd <sup>#2</sup> + 52	90 x Nd <sup>#2</sup> + 128		
	Historical	0	62 x Nd <sup>#2</sup> - 440 <sup>#1</sup>	49 x Nd <sup>#2</sup> - 78 <sup>#1</sup>	0	0		
	Real-time	$-1 \times Nd^{\#2} + 302^{\#1}$	0	0	$-41 \times Nd^{\#2} + 456^{\#1}$	$-62 \times Nd^{\#2} + 1,028^{\#1}$		

Record	Type of	Memory requirements (units: KB)						
	nt	HP-UX	Solaris	AIX	Linux (x86), Linux (x64)	Linux (IPF)		
Device Summary (PI_DEVS)	Fixed	16	35 x Nd <sup>#2</sup> + 88	17 x Nd <sup>#2</sup> + 44	4 x Nd <sup>#2</sup> - 16 <sup>#1</sup>	13 x Nd <sup>#2</sup> + 150		
	Historical	0	0	-1 x Nd <sup>#2</sup> + 34 <sup>#1</sup>	0	0		
	Real-time	13 x Nd <sup>#2</sup> + 368	-20 x $Nd^{\#2} +$ $440^{\#1}$	0	-6 x Nd <sup>#2</sup> + 396 <sup>#1</sup>	-27 x Nd <sup>#2</sup> + 928 <sup>#1</sup>		
File System	Fixed	54	133	0	16	160		
Detail - Local (PD_FSL)	Historical	0	0	0	0	0		
	Real-time	618	440	165	480	928		
File System	Fixed	558	309	249	698	1,120		
(PD_FSR)	Historical	0	0	0	0	0		
	Real-time	618	400	65	537	928		
Logged	Fixed	32	100	156				
(PL_MESS)	Historical	0	0	0				
	Real-time	400	400	400				
Network	Fixed	436	250	0	12	250		
(PI_NIND)	Historical	0	0	0	0	0		
	Real-time	2,432	432	240	480	864		
Network	Fixed	432	144	0	12	112		
Summary	Historical	0	0	0	0	0		
(PI_NINS)	Real-time	2,844	384	240	432	992		

Record	Type of		Memory red	quirements	(units: KB)	
	ncreme nt	HP-UX	Solaris	AIX	Linux (x86), Linux (x64)	Linux (IPF)
Process Detail (PD)	Fixed	468 x Np <sup>#2</sup> + 472	$258 \times Np^{\#2} + 622$	178  x $Np^{\#2} +$ 339	$359 \times Np^{\#2} + 100$	427 x Np <sup>#2</sup> + 1,563
	Historical	0	0	0	0	0
	Real-time	78 x Np <sup>#2</sup> - 348 <sup>#1</sup>	327 x Np <sup>#2</sup> - 180	550 x Np <sup>#2</sup> - 29	12 x Np <sup>#2</sup> + 149	211 x Np <sup>#2</sup> - 843 <sup>#1</sup>
Process Detail Interval (PD_PDI)	Fixed	346 x Np <sup>#2</sup> + 428	$374 \times Np^{\#2} + 330$	52 x Np <sup>#2</sup> + 274	$320 \times Np^{\#2} + 400$	244 x <i>Np</i> <sup>#2</sup> + 1,251
	Historical	0	0	0	0	0
	Real-time	80 x Np <sup>#2</sup> - 544	168 x Np <sup>#2</sup> - 159	$312 \times Np^{\#2} + 38^{\#2}$	104 x Np <sup>#2</sup> - 294 <sup>#1</sup>	120 x Np <sup>#2</sup> - 1,065 <sup>#1</sup>
Process Summary (PD_PDS)	Fixed	520 x Np <sup>#2</sup> - 288	680 x Np <sup>#2</sup> - 33	$248 \times Np^{\#2} + 394$	$300 \times Np^{\#2} + 352$	$336 \times Np^{\#2} + 720$
	Historical	768 x Np <sup>#2</sup> - 272	450 x Np <sup>#2</sup> + 111	399 x Np <sup>#2</sup> - 726 <sup>#1</sup>	218  x $Np^{\#2} +$ 408	406 x Np <sup>#2</sup> + 768
	Real-time	0	0	0	0	0
Program Summary (PD_PGM)	Fixed	$4 \times Np^{\#2} + 504$	-14  x $Np^{\#2} + 602^{\#1}$	-41 x Np <sup>#2</sup> + 588 <sup>#1</sup>	$-30 \times Np^{\#2} + 366^{\#1}$	$-37 \times Np^{\#2} + 853^{\#1}$
	Historical	200 x Np <sup>#2</sup> - 16	221 x Np <sup>#2</sup> - 164	41 x Np <sup>#2</sup> - 239 <sup>#1</sup>	0	39 x Np <sup>#2</sup> + 544
	Real-time	0	0	0	42 x Np <sup>#2</sup> - 180 <sup>#1</sup>	0

Record	Type of	Memory requirements (units: KB)						
	nt	HP-UX	Solaris	AIX	Linux (x86), Linux (x64)	Linux (IPF)		
System	Fixed	3,136	224	264	206	336		
Overview (PI)	Historical	0	0	0	0	0		
	Real-time	136	424	336	564	960		
Terminal Summary (PD_TERM)	Fixed	-2 x Np <sup>#2</sup> + 36 <sup>#1</sup>	-14 x Np <sup>#2</sup> + 510 <sup>#1</sup>	-1 x Np <sup>#2</sup> + 4 <sup>#1</sup>	-14 x Np <sup>#2</sup> + 162 <sup>#1</sup>	-30 x Np <sup>#2</sup> + 486 <sup>#1</sup>		
	Historical	252 x Np <sup>#2</sup> - 8	234 x Np <sup>#2</sup> - 331	22 x Np <sup>#2</sup> + 149	15 x Np <sup>#2</sup> - 100 <sup>#1</sup>	30 x Np <sup>#2</sup> + 912		
	Real-time	0	0	0	0	0		
User Data Detail (PD_UPD)	Fixed	293 x <i>Nu</i> <sup>#2</sup>	169 x Nu	243 x Nu <sup>#2</sup>	111 x Nu <sup>#2</sup>	110 x Nu <sup>#2</sup>		
	Historical	0	0	0	0	0		
	Real-time	217 x <i>Nu</i> <sup>#2</sup>	167 x Nu <sup>#2</sup>	63 x Nu <sup>#2</sup>	133 x Nu <sup>#2</sup>	241 x Nu <sup>#2</sup>		
User Data Detail - Extended (PD_UPDB)	Fixed	373 x Nu <sup>#2</sup>	413 x Nu <sup>#2</sup>	576 x Nu <sup>#2</sup>	200 x Nu <sup>#2</sup>	216 x Nu <sup>#2</sup>		
	Historical	0	0	0	0	0		
	Real-time	285 x <i>Nu</i> <sup>#2</sup>	243 x Nu <sup>#2</sup>	74 x <i>Nu</i> <sup>#2</sup>	413 x Nu <sup>#2</sup>	378 x Nu <sup>#2</sup>		
User Data Interval (PI_UPI)	Fixed	256 x Nu <sup>#2</sup>	129 x Nu <sup>#2</sup>	282 x Nu <sup>#2</sup>	121 x Nu <sup>#2</sup>	124 x Nu <sup>#2</sup>		
	Historical	0	0	0	0	0		
	Real-time	176 x <i>Nu</i> <sup>#2</sup>	85 x Nu <sup>#2</sup>	2 x Nu <sup>#2</sup>	201 x Nu <sup>#2</sup>	253 x Nu <sup>#2</sup>		

Record	Type of	Memory requirements (units: KB)						
	nt	HP-UX	Solaris	AIX	Linux (x86), Linux (x64)	Linux (IPF)		
User Data Interval - Extended (PI_UPIB)	Fixed	472 x Nu <sup>#2</sup>	447 x Nu <sup>#2</sup>	672 x Nu <sup>#2</sup>	220 x Nu <sup>#2</sup>	240 x Nu <sup>#2</sup>		
	Historical	0	0	0	0	0		
	Real-time	280 x Nu <sup>#2</sup>	101 x Nu <sup>#2</sup>	72 x Nu <sup>#2</sup>	111 x Nu <sup>#2</sup>	401 x Nu <sup>#2</sup>		
User Summary (PD_USER)	Fixed	250 x Np <sup>#2</sup> + 28	-20 x Np <sup>#2</sup> + 468 <sup>#1</sup>	-1 x Np <sup>#2</sup> + 45 <sup>#1</sup>	1 x Np <sup>#2</sup> - 9 <sup>#1</sup>	-27 x Np <sup>#2</sup> + 459 <sup>#1</sup>		
	Historical	0	0	281  x $Np^{\#2} + 57$	$4 \times Np^{\#2} + 319$	$4 \times Np^{\#2} + 910$		
	Real-time	$2 \times Np^{\#2} - 20^{\#1}$	236 x Np <sup>#2</sup> - 150	0	0	0		
Workgroup Summary (PI_WGRP)	Fixed	254 x Np <sup>#2</sup> + 60	-14 x Np <sup>#2</sup> + 518 <sup>#1</sup>	2 x Np <sup>#2</sup> + 387	-6 x Np <sup>#2</sup> + 545 <sup>#1</sup>	-22 x Np <sup>#2</sup> + 1,691 <sup>#1</sup>		
	Historical	0	0	0	0	0		
	Real-time	534 x <i>Np</i> <sup>#2</sup> - 312	644  x $Np^{\#2} + 27$	674 x Np <sup>#2</sup> - 256	227 x Np <sup>#2</sup> - 366 <sup>#1</sup>	375 x Np <sup>#2</sup> - 981 <sup>#1</sup>		

Legend:

--: Not applicable

#1

Use 0 when the value is negative.

#2

Formulas used to compute *Nd*, *Np*, and *Nu* are shown below.

Туре	Computation	Command						
method		HP-UX	Solaris	AIX	Linux (x86), Linux (x64)	Linux (IPF)		
Nd	Divide the number of disk devices returned by the commands shown on the right by 100.	ioscan -fnC disk	iostat -x	iostat -d interval-c ount	iostat -d	iostat -d		
Np	Divide the number of processes returned by the commands shown on the right by 100.	ps -ef	ps -ef	ps -A	ps -ef	ps -ef		
Nu	Divide the number of specified instances for the user-defined record by 100.	Not applicabl e	Not applicabl e	Not applicabl e	Not applicabl e	Not applicabl e		

*Table A-5:* Nd, Np, and Nu computation method

## (2) Example of estimating memory requirements

The following shows how to estimate the memory requirements for the PD, PD\_FSL, PD\_PDI, PI, and PI\_CPUP records when the OS is Solaris.

Memory requirements of PFM - Agent for Platform = A + B

Obtaining the value of A

Use Table A-1 to find the value of A, which is 30 MB.

Obtaining the value of *B* 

 $B = (C_1 + D_{11} \dots + D_{1m}) + \dots (C_n + D_{n1} \dots + D_{nm})$ 

C: Common memory requirements by system resource type

D: Memory requirements unique to record

*m*: Number of collected records

*n*: Number of system resource types

Obtaining the value of *C* 

Use Table A-2 to obtain the memory requirements based on the type of the target system resource. The following table shows the values obtained for this example.

System resource type			Value of C (units: KB)	Valu e of n			
	PD	PD_FSL	PD_PD I	PI	PI_CPU P	-	
File system		Y				35	1
Process	Y		Y			440 x <i>Np</i> + 144	2
System				Y		224	1
CPU					Y	136	1
Correspondenc e between the C value and the record	C1	C2	C1	<i>C4</i>	С5		

Table A-6: Example of common memory requirements by system resource type

Legend:

Y: Applicable

--: Note applicable

Obtaining the value of D

Use Table A-4 to obtain the memory usages for records. The formula depends on the type of records to be collected as follows:

- Historical data only: D = E + F
- Real-time data only: D = E + G
- Historical and real-time data: D = E + F + G

This example assumes that historical and real-time data is collected.

The following table shows the values of E, F, and G for each record type.

Table A-7: Example of memory requirements unique to each record

Type of increment	Record							
	PD	PD_FSL	PD_PDI	PI	PI_CPUP			
E: Fixed	258 x <i>Np</i> + 622	133	374 x <i>Np</i> + 330	224	136			
F: Historical	0	0	0	0	0			

Type of increment	Record						
	PD	PD_FSL	PD_PDI	PI	PI_CPUP		
G: Real-time	327 x Np - 180	440	168 x <i>Np</i> - 159	424	400		
Correspondence between the <i>D</i> value and the record	DII	D21	D12	D31	D41		

The total value is computed as follows:

#1

The memory requirements for a process (the value of C1) + the memory requirements of PD (the value of D11) + the memory requirements of PD\_PDI (the value of D12)

#2

The memory requirements for a file system (the value of C2) + the memory requirements of PD FSL (the value of D21)

#3

The memory requirements for a system (the value of C3) + the memory requirements of PI (the value of D31)

#4

The memory requirements for a CPU (the value of C4) + the memory requirements of PI CPUP (the value of D41)

Use the values of A and B in the following formula to obtain the memory requirements:

Memory requirements of PFM - Agent for Platform = A + B

## A.2 Estimating disk space requirements

Disk space requirements vary according to the number of records for which performance data is collected.

This section explains how to estimate the disk space requirements of PFM - Agent for Platform.

## (1) Disk space requirements of the entire system

	Disk space requirements (units: MB)							
Status of PFM - Agent for Platform	HP-UX	Solaris	AIX	Linux (x86), Linux (x64)	Linux (IPF)			
Installation completed <sup>#</sup>	20	15	38	10	15			
Operation in the initial state	155	150	173	145	150			
Other operating statuses	105 + W	100 + W	123 + W	95 + W	100 + W			

Table A-8: Disk space requirements of the entire system

Legend:

W: Disk space requirements of the Store database

#

The disk space requirements during installation of PFM - Agent for Platform are twice as large as the values shown in the table.

The disk space requirements of the Store database are computed by adding together the disk space requirements of PI-type records, PD-type records, and PL-type records.

For the formula for estimating the disk space requirements by record type, see below.

#### (2) Disk space requirements of the Store database (Store 1.0)

The following explains the disk space requirements of the Store database (Store 1.0).

#### (a) Formula for estimating disk space requirements

In the Store database, records of the same type are stored in the same file. The table below shows the disk space requirements of the Store database (Store 1.0) by record type.

Record type	Disk space requirements estimation formula (units: bytes)		
PI record type	$(X_1 + \dots + X_a + 3,500 \times a)$		
PD record type	$(Y_1 + \dots + Y_b + 700 \times b)$		
PL record type	$(Z_1 + \dots + Z_c + 700 \times c)$		

*Table A-9*: Disk space requirements of the Store database by record type

Legend:

X: Disk space requirements of each record for which historical data is collected as PI-type records

X is computed as follows:

 $X = \{e \ge f + (d + 1,900) \ge \{(e \ge f)/(65,250 - d) + 1\}^{\#1} \ge g \ge 1.5$ 

*Y*: Disk space requirements of each record for which historical data is collected as PD-type records

*Y* is computed as follows:

 $Y = \{e \ge h + (d + 1,900) \ge \{(e \ge f)/(65,250 - d) + 1\}^{\#1} \ge (h/f)^{\#2} \ge 1.5$ 

*Z*: Disk space requirements of each record for which historical data is collected as PL-type records.

Z is computed as follows:

 $Z = \{e \ge h + (d + 1,900) \ge \{(e \ge f)/(65,250 - d) + 1\}^{\#1} \ge (h/f)^{\#2} \ge 1.5$ 

*a*: Number of records for which historical data is collected as PI-type records For example, 2 if you set to save PI CPUP and PI DEVD.

*b*: Number of records for which historical data is collected as PD-type records For example, 2 if you set to save PD FSL and PD FSR.

c: Number of records for which historical data is collected as PL-type records

d: Size of the fixed portion of each record for which historical data is collected<sup>#3</sup>

*e*: Size of the variable portion of each record for which historical data is  $collected^{#3}$ 

*f*: Number of instances in the record for which historical data is collected (1 for a single-instance record. See Table A-10 for multiple instances)<sup>#4</sup>

g: Number of saved records for which historical data is collected (the number of

instances is not considered)<sup>#5</sup>

*h*: Number of retained records for which historical data of PD-type records and PL-type records is collected<sup>#6</sup>

#1

Truncate the computation result of  $\{(e \times f)/(65,250 - d) + 1\}$  at the decimal point.

#2

Truncate the computation result of (h/f) at the decimal point.

#3

For details about the fixed and variable part size of each record, see *Record size* for each record in *6. Records*.

#4

You can use the commands listed in the following table to estimate the number of instances in each record.

	Command				
Record name	HP-UX	Solaris	AIX	Linux	Explanation
Application Summary (PD_APP)	None	None	None	None	The number registered in the Application monitoring setting for the Agent Collector properties
CPU - Per Processor Detail (PI_CPUP)	sar -u -M interval-cou nt	sar -u interval-cou nt	sar -w -P ALL interval-cou nt	top -c	The number of CPUs returned by this command
Device Detail (PI_DEVD)	ioscan -fnC disk	iostat -x	iostat -d interval-cou nt	iostat -d	In HP-UX, Solaris, and AIX, the number of disk devices returned by this command. In Linux, the number of disk devices, excluding partitions, returned by this command.
Device Summary (PI_DEVS)	None	None	None	None	1, since this is a single-instance record

Table A-10: Number of instances in each record

	Command				
Record name	HP-UX	Solaris	AIX	Linux	Explanation
File System Detail - Local (PD_FSL)	df	df	df	df	The number of file systems returned by this command, which is the number of file systems that do not accompany the host name (If the mount command is executed with the bind option specified, the value returned by the df command differs from the number of PFM - Agent for Platform instances.)
File System Detail - Remote (PD_FSR)	df	df	df	df	The number of file systems returned by this command, which is the number of file systems that accompany the host name
Logged Messages (PL_MESS)	None	None	None	None	The number of lines written in the file specified in the Messages File property or event file. In Linux, however, the number of instances cannot be obtained because this functionality is not supported.
Network Interface Detail (PI_NIND)	lanscan	netstat -in	ifconfig -a	netstat -ni	In HP-UX, the number of physical interfaces returned by this command + 1. In Solaris, AIX, and Linux, the number of physical interfaces returned by this command.
Network Interface Summary (PI_NINS)	None	None	None	None	1, since this is a single-instance record

	Command				
Record name	HP-UX	Solaris	AIX	Linux	Explanation
Process Detail (PD)	ps -ef	ps -ef	ps -A	ps -ef	The number of processes returned by this command
Process Detail Interval (PD_PDI)	ps -ef	ps -ef	ps -A	ps -ef	The number of processes returned by this command
Process Summary (PD_PDS)	None	None	None	None	1, since this is a single-instance record
Program Summary (PD_PGM)	ps -e	ps -e	ps -A	ps -e	The combined number of different CMDs displayed by this command
System Summary Overview (PI)	None	None	None	None	1, since this is a single-instance record
Terminal Summary (PD_TERM)	ps -e	ps -e	ps -Af	ps -e	The sum of the number of different TTYs displayed by this command
User Data Detail (PD_UPD)	None	None	None	None	The number of user-defined data items converted by the jpcuser command
User Data Detail - Extended (PD_UPDB)	None	None	None	None	The number of user-defined data items converted by the jpcuser command
User Data Interval (PI_UPI)	None	None	None	None	The number of user-defined data items converted by the jpcuser command
User Data Interval - Extended (PI_UPIB)	None	None	None	None	The number of user-defined data items converted by the jpcuser command

	Command				
Record name	HP-UX	Solaris	AIX	Linux	Explanation
User Summary (PD_USER)	ps -ef	ps -ef	ps -ef	ps -ef	The sum of the number of different RUIDs displayed by this command
Workgroup Summary (PI_WGRP)	None	None	None	None	The number of workgroups specified in the workgroup file + 1

#### #5

For PI-type records, because collected data is automatically summarized by certain segments (hour, day, week, month, and year basis), you need to calculate the number of instances by taking into consideration the number of saved records in terms of minutes, hours, days, weeks, months, and years. The following table shows the default retention period and number of saved records.

*Table A-11:* Default retention period and the default number of records saved

Data type	Retention period	Number of records <sup>#6</sup> saved (when the collection interval is 1 minute)
Minute-by-minute	1 day	1,440
Hourly	7 days	168
Daily	1 year	366
Weekly	1 year	52
Monthly	1 year	12
Yearly	No limit	(number-of-years-collected) x 1

#6

For details about the number of saved records, see *F.1 Agent Store service properties*.

## (b) Estimation examples (Store database free space)

The following provides an example of estimating the disk space requirements of the Store database (Store 1.0).

Estimation example 1

On HP-UX, for the PI record type CPU - Per Processor Detail (PI\_CPUP), if PI record types other than PI\_CPUP are not set to be saved, assume that variables *a* to *g* shown in Table A-9 have the following values:

*a* = 1

d = 681e = 376

f = 2

```
g = 2,039
```

*f* is computed as follows:

Execute the sar -u -M *interval-count* command to check the result. If the result is 2 (see Table A-10):

f=2

g is computed as follows:

For PI\_CPUP, when the collection interval is one minute, the yearly collection period is one year, and the retention period is set as shown in #5 of Table A-10, g is computed as follows: 1,440 + 168 + 366 + 52 + 12 + 1 = 2,039 records

g = 2,039

*X* is computed as follows:

```
 \begin{array}{l} X = \{e \ge f + (d + 1,900) \ge \{e \ge f/(65,250 - d) + 1\}\} \ge g \ge 1.5 \\ X = \{376 \ge 2 + (681 + 1,900) \ge \{376 \ge 2/(65,250 - 681) + 1\}\} \ge 2,039 \ge 1.5 \\ = \{752 + (2,581) \ge \{752/64,569 + 1\}\} \ge 3,058.5 \\ = \{752 + 2,581 \ge 1\} \ge 3,058.5 \\ = 3,333 \ge 3,058.5 \\ = 10,285,917 \ (bytes) \end{array}
```

**≒** 9.8 (MB)

Estimation example 2

On HP-UX, for the PD record type File System Detail - Local (PD\_FSL) if PD record types other than PD\_FSL are not set to be saved, assume that variables b to h shown in Table A-9 have the following values:

b = 1d = 681e = 1,216

5	1	5

*f*=3

*h* = 2,232

*f* is computed as follows:

Execute the df command. If the result is 3 (see Table A-10):

f = 3

*h* is computed as follows:

The default number of records saved for the retention period is 10,000.

- To save month data by setting the collection interval to 3,600 seconds:
- h = 24 records (for one day) x 31 (for one month) x 3 (f value) = 2,232 records
- h = 2,232 records

*Y* is computed as follows:

$$Y = \{e \ge h + (d + 1,900) \ge \{e \ge f/(65,250 - d) + 1\} \ge (h/f)\} \ge 1.5$$
  

$$Y = \{1,216 \ge 2,232 + (681 + 1,900)\} \ge \{1,216 \ge 3/(65,250 - 681) + 1 \ge (2,232/3)\} \ge 1.5$$
  

$$= \{1,216 \ge 2,232 + 2,581 \ge \{3,648/64,569 + 1\} \ge 744\} \ge 1.5$$
  

$$= \{2,714,112 + 2,581 \ge 1 \ge 744\} \ge 1.5$$
  

$$= \{2,714,112 + 1,920,264\} \ge 1.5$$
  

$$= 4,634,376 \ge 1.5$$
  

$$= 6,951,564 \text{ (bytes)}$$
  

$$\Rightarrow 7 \text{ (MB)}$$

## (3) Disk space requirements of the Store database (Store 2.0)

The following explains the disk space requirements of the Store database (Store 2.0).

## (a) Formula for estimating disk space requirements, number of files, and number of directories

The following explains how to estimate the disk space requirements, the number of files, and the number of directories.

#### Disk space requirements

The disk space requirements of the Store database are the sum of the disk space requirements for each disk type. For the PI record type, the disk space requirements are also the sum of the disk space requirements for each summarization category.

Note:
When performance data is stored in the Store database, several fields are added. Because the added fields are included in the disk space requirements, there is no need to make a new estimate. The fields added to all records are the same as the fields in Store 1.0. For details, see (2) Disk space requirements of the Store database (Store 1.0).

Formula for estimating disk space requirement *X* by record type (units: bytes)

 $X = \{ (e + 2) \ge f + (d + 60) \ge \{ ((e + 2) \ge f) / (65, 250 - d) + 1 \}^{\#1} \ge a/b \ge (c + 1) \ge 1.1$ 

*a*: This value varies depending on the record type and the summarization category. See Table A-12.

*b*: This value varies depending on the record type and the summarization category. See Table A-12.<sup>#2</sup>

*c*: Historical-data retention period setting.<sup>#3</sup> The unit to be specified varies depending on the record type and the summarization category. For details about the units, see Table A-12.

d: Size of the fixed portion of each record for which historical data is collected.<sup>#4</sup>

*e*: Size of the variable portion of each record for which historical data is collected.<sup>#4</sup>

*f*: Number of instances in the record for which historical data is collected (1 for a single-instance record).<sup>#5</sup> When the number of instances is 2 or greater, the number is rounded to the nearest multiple of 4. For example, if the number of instances is 2, the value of *f* is 4. If the number of instances is 13, the value of *f* is 16. If the number of instances is 1, the value of *f* is 1.

Record type	Summarization category	а	b	С
PI	Minute	1,440	$1 + (g - 1)/60^{\#2}$	Retention period (units: day)
	Hour	24	$1 + (g - 1)/3,600^{\#2}$	Retention period (units: day)
	Day	7	$1 + (g - 1)/86,400^{\#2}$	Retention period (units: week)
	Week	1	$1 + (g - 1)/604,800^{\#2}$	Retention period (units: week)
	Month	1	$1 + (g - 1)/2,592,000^{\#2}$	Retention period (units: month)

Table A-12: Values set in a, b, and c

#### A. Estimating System Requirements

Record type Summarization category		а	b	С
	Year	1	$1 + (g - 1)/31,622,400^{\#2}$	Retention period (units: year)
PD		1,440	<i>g</i> /60	Retention period (units: day)
PL		1,440	<i>g</i> /60	Retention period (units: day)

### Legend:

g: Setting of the historical data collection interval (units: second)

- --: Not applicable
- #1

Truncate the computation result of  $\{((e+2) \times f)/(65,250 - d) + 1\}$  at the decimal point.

#2

For PI-type records, truncate the computation result of b at the decimal point.

#3

Tables A-13 to A-15 show the default retention periods for Store 2.0.

#4

For details about the size of the fixed portion and variable portion of each record, see the description about record size in *6. Records*.

#5

For details about the number of instances for each record, see (2) Disk space requirements of the Store database (Store 1.0).

*Table A-13:* Default retention period for the PI record type

Data type	Retention period
By the minute	1 day
Hourly	7 days
Daily	54 weeks

Data type	Retention period		
Weekly	54 weeks		
Monthly	12 months		
Yearly	No limit		

Record name	Retention period (units: day)
PD	2
PD_FSL	31
PD_FSR	31
PD_IPCS	366
PD_MSQD	366
PD_PDI	2
PD_PDS	2
PD_PGM	2
PD_SEMD	366
PD_SHMD	366
PD_TERM	2
PD_UFSQ	366
PD_UFSS	366
PD_UPD	10
PD_UPDB	10
PD_USER	10
PD_APP	10

Table A-15: Default retention period for the PL record type

Record name	Retention period (units: day)
PL_MESS	10

#### Number of files

The following shows the formula for estimating the number of files *N* that are created in the Store database:

 $N = 20 + 2 \times ($   $(A11 + A12 + \ldots + A1m + m) +$   $(A21 + A22 + \ldots + A2m + m) +$   $(A31 + A32 + \ldots + A3m + m) +$   $(A41 + A42 + \ldots + A4m + m) +$   $(A51 + A52 + \ldots + A5m + m) +$   $(11 \times m) +$   $(B1 + B2 + \ldots + Bn + n) +$   $(C1 + C2 + \ldots + Co + o)$ 

*m*: Number of records collected as PI-type records

n: Number of records collected as PD-type records

o: Number of records collected as PL-type records

*All* to *Alm*: Minute-by-minute record retention period setting for each PI-type record (units: day)

A21 to A2m: Hourly record retention period setting for each PI-type record (units: day)

*A31* to *A3m*: Daily record retention period setting for each PI-type record (units: week)

*A41* to *A4m*: Weekly record retention period setting for each PI-type record (units: week)

*A51* to *A5m*: Monthly record retention period setting for each PI-type record (units: month)

B1 to Bn: Retention period setting for each PD-type record (units: day)

Cl to Co: Retention period setting for each PL-type record (units: day)

### Number of directories

The following shows the formula for estimating the number of directories N that are created in the Store database.

```
\begin{split} \mathbb{N} &= 25 + 2 \times ((Almax) + (A2max) + (A3max) + (A4max) + (A5max) + \\ \mathbb{11} &+ (Bmax) + (Cmax)) \end{split}
```

*Almax*: Maximum retention period setting for the data of the records which are collected as PI-type records and whose summarization category is Minute (units: day)

*A2max*: Maximum retention period setting for the data of the records which are collected as PI-type records and whose summarization category is Hour (units: day)

*A3max*: Maximum retention period setting for the data of the records which are collected as PI-type records and whose summarization category is Day (units: week)

*A4max*: Maximum retention period setting for the data of the records which are collected as PI-type records and whose summarization category is Week (units: week)

*A5max*: Maximum retention period setting for the data of the records which are collected as PI-type records and whose summarization category is Month (units: month)

*Bmax*: Maximum retention period setting for each PD-type record (units: day)

Cmax: Maximum retention period setting for each PL-type record (units: day)

### Number of files that the Store service opens

The following shows the formula for estimating the number of files *N* that the Store service opens:

 $N = 20 + 2 \times (6 \times l + m + n)$ 

*l*: Number of records collected as PI-type records

m: Number of records collected as PD-type records

*n*: Number of records collected as PL-type records

#### (b) Examples of estimating disk space requirements

The following provides an example of estimating the disk space requirements of the Store database (Store 2.0) of PFM - Agent for Platform.

### Disk space requirements

This example shows how to estimate the disk space requirements when collection of the PI DEVD and PD PDI records is specified.

The following explains how to estimate the disk space requirements of the PI\_DEVD record. The variables shown in the formula in (a) Formula for estimating disk space requirements, number of files, and number of directories have the following values: d = 681 (bytes)

e = 405 (bytes) f = 4g = 60 (seconds)

The following shows how to calculate the disk space requirements by record type, such as a record collected by the minute or hourly.

Minute-by-minute record

The variables have the following values:

```
a = 1,440
b = 1 + (60-1)/60
```

A. Estimating System Requirements

= 1.98... = 1 (Digits after the decimal point are truncated.) c = 3 (days) The formula is as follows: X (minute) = { (405 + 2) x 4 + (681 + 60) x { ((405 + 2) x 4) / (65,250 - 681) + 1 } x 1,440/1 x (3 + 1) x 1.1 = { 1,628 + 741 x 1 } x 6,336 = 2,369 x 6,336 = 15,009,984 (bytes) = Approximately 15 (MB)

Hourly record

The variables have the following values:

a = 24
b = 1 + (60-1)/3,600
= 1.01...
= 1 (Digits after the decimal point are truncated.)
c = 3 (days)

The formula is as follows:

```
\begin{array}{l} X \ (\text{hour}) \ = \ \left\{ (405 \ + \ 2) \ x \ 4 \ + \ (681 \ + \ 60) \ x \ \left\{ ((405 \ + \ 2) \ x \ 4) \right/ \\ (65,250 \ - \ 681) \ + \ 1 \right\} \ x \ 24/1 \ x \ (3 \ + \ 1) \ x \ 1.1 \\ \\ \ = \ \left\{ 1,628 \ + \ 741 \ x \ 1 \right\} \ x \ 105.6 \\ \\ \ = \ 2,369 \ x \ 105.6 \\ \\ \ = \ 250,166.4 \ (\text{bytes}) \ = \ \text{Approximately } 0.3 \ (\text{MB}) \end{array}
```

Daily record

The variables have the following values:

a = 7
b = 1 + (60 - 1)/86,400
= 1.00...
= 1 (Digits after the decimal point are truncated.)
c = 1 (week)
The formula is as follows:

```
\begin{array}{l} X \ (\mathrm{day}) \ = \ \left\{ (405 \ + \ 2) \ x \ 4 \ + \ (681 \ + \ 60) \ x \ \left\{ ((405 \ + \ 2) \ x \ 4) \right/ \\ (65,250 \ - \ 681) \ + \ 1 \right\} \right\} \ x \ 7/1 \ x \ (1 \ + \ 1) \ x \ 1.1 \\ \\ = \ \left\{ 1,628 \ + \ 741 \ x \ 1 \right\} \ x \ 15.4 \\ \\ = \ 2,369 \ x \ 15.4 \\ \\ = \ 36,482.6 \ (\mathrm{bytes}) \ = \ \mathrm{Approximately} \ 0.04 \ (\mathrm{MB}) \end{array}
```

Weekly record

The variables have the following values: a = 1b = 1 + (60 - 1)/604,800

```
= 1.00...
= 1 (Digits after the decimal point are truncated.)
C = 1 (week)
```

The formula is as follows:

 $\begin{array}{l} X \ (\text{week}) \ = \ \left\{ (405 \ + \ 2) \ x \ 4 \ + \ (681 \ + \ 60) \ x \ \left\{ ((405 \ + \ 2) \ x \ 4) \right/ \\ (65,250 \ - \ 681) \ + \ 1 \right\} \right\} \ x \ 1/1 \ x \ (1 \ + \ 1) \ x \ 1.1 \\ \\ = \ \left\{ 1,628 \ + \ 741 \ x \ 1 \right\} \ x \ 2.2 \\ \\ = \ 2,369 \ x \ 2.2 \\ \\ = \ 5,211.8 \ (\text{bytes}) \ = \ \text{Approximately } 0.005 \ (\text{MB}) \end{array}$ 

Monthly record

The variables have the following values:

a = 1
b = 1 + (60 - 1)/2,592,000
= 1.00...
= 1 (Digits after the decimal point are truncated.)
c = 1 (month)

The formula is as follows:

```
\begin{array}{l} X \mbox{ (month)} = \left\{ (405 + 2) \mbox{ x } 4 + (681 + 60) \mbox{ x } \left\{ ((405 + 2) \mbox{ x } 4) \right/ \\ (65,250 - 681) \mbox{ + 1} \right\} \mbox{ x } 1/1 \mbox{ x } (1 + 1) \mbox{ x } 1.1 \\ = \left\{ 1,628 + 741 \mbox{ x } 1 \right\} \mbox{ x } 2.2 \\ = 2,369 \mbox{ x } 2.2 \\ = 5,211.8 \mbox{ (bytes)} = \mbox{ Approximately } 0.005 \mbox{ (MB)} \end{array}
```

Yearly record

The variables have the following values:

```
a = 1
b = 1 + (60 - 1)/31,622,400
= 1.00...
= 1 (Digits after the decimal point are truncated.)
c = 10 (fixed)
```

#### The formula is as follows:

```
\begin{array}{l} X \ (\text{year}) \ = \ \left\{ (405 \ + \ 2) \ x \ 4 \ + \ (681 \ + \ 60) \ x \ \left\{ ((405 \ + \ 2) \ x \ 4) \right/ \\ (65,250 \ - \ 681) \ + \ 1 \right\} \ x \ 1/1 \ x \ (10 \ + \ 1) \ x \ 1.1 \\ \\ \ = \ \left\{ 1,628 \ + \ 741 \ x \ 1 \right\} \ x \ 12.1 \\ \\ \ = \ 2,369 \ x \ 12.1 \\ \\ \ = \ 28,664.9 \ (\text{bytes}) \ = \ \text{Approximately } 0.03 \ (\text{MB}) \end{array}
```

From the above calculations, the disk space requirements of the PI\_DEVD record are obtained as follows:

= Approximately 15 (MB)

The following explains how to estimate the disk space requirements of the PD\_PDI record.

The variables have the following values:

a = 1,400 b = 60/60 = 1 c = 10 (days) d = 681 (bytes) e = 966 (bytes) f = 12g = 60 (seconds)

The formula is as follows:

```
\begin{array}{l} X = \left\{ (966 + 2) \ x \ 12 + (681 + 60) \ x \ \left\{ ((966 + 2) \ x \ 12) / (65,250 - 681) + 1 \right\} \ x \ 1,400 / 1 \ x \ (10 + 1) \ x \ 1.1 \\ = \left\{ 11,616 + 741 \ x \ 1 \right\} \right\} \ x \ 17,424 \\ = \ 12,357 \ x \ 17,424 \\ = \ 215,308,368 \ (bytes) = \ Approximately \ 215 \ (MB) \end{array}
```

The disk space requirements are therefore PI DEVD + PD PDI = 230 MB.

### Number of files

This example shows how to estimate the number of files when the PI, PI\_DEVD, PD, and PD\_PDI records are to be collected. The variables shown in the formula in (a) Formula for estimating disk space requirements, number of files, and number of directories have the following values:

m = 2 n = 2 o = NoneAll to Alm = 3 (days) A2l to A2m = 3 (days) A3l to A3m = 1 (week) A4l to A4m = 1 (week) A5l to A5m = 1 (month) Bl to Bn = 10 (days) Cl to Co = Not required

The following shows the formula for estimating the number of files *N* that are created in the Store database:

 $N = 20 + 2 \times ($   $(A11 + A12 + \ldots + A1m + m) +$   $(A21 + A22 + \ldots + A2m + m) +$   $(A31 + A32 + \ldots + A3m + m) +$   $(A41 + A42 + \ldots + A4m + m) +$ 

```
(A51 + A52 + \ldots + A5m + m) + (11 \times m) + (B1 + B2 + \ldots + Bn + n) + (C1 + C2 + \ldots + Co + o))
= 20 + 2 \times \{ [3 (for PI) + 3 (for PI_DEVD) + 2] + [3 (for PI) + 3 (for PI_DEVD) + 2] + [1 (for PI) + 1 (for PI_DEVD) + 2] + [1 (for PI) + 1 (for PI_DEVD) + 2] + [1 (for PI) + 1 (for PI_DEVD) + 2] + [1 (for PI) + 1 (for PI_DEVD) + 2] + [11 \times 2] + [10 (for PD) + 10 (for PD_PDI) + 2] \}
= 20 + 2 \times \{8 + 8 + 4 + 4 + 4 + 22 + 22\}
= 164
```

# Number of directories

This example shows how to estimate the number of directories when the PI, PI\_DEVD, PD, and PD PDI records are to be collected.

The variables shown in the formula for the number of directories in (a) Formula for estimating disk space requirements, number of files, and number of directories have the following values:

```
Almax = 3 (days) (Principle: When the setting for PI is 2 days
and the setting for PI_DEVD is 3 days, 3 days is used.)
A2max = 3 (days)
A3max = 1 (week)
A4max = 1 (week)
A5max = 1 (month)
Bmax = 10 (days) (Principle: When the setting for PD_PDI is 8
days and the setting for PD is 10 days, 10 days is used.)
Cmax = None
```

The following shows the formula for estimating the number of directories *N* that are created in the Store database:

 $N = 25 + 2 \times ((A1max) + (A2max) + (A3max) + (A4max) + (A5max) + 11 + (Bmax) + (Cmax)) = 25 + 2 \times (3 + 3 + 1 + 1 + 1 + 11 + 10 + 0) = 85$ 

#### Number of files that the Store service opens

This example shows how to estimate the number of files that the Store service opens when the PI, PI\_DEVD, PD, and PD\_PDI records are to be collected.

The variables shown in the estimation formula in (a) Formula for estimating disk space requirements, number of files, and number of directories have the following

A. Estimating System Requirements

values: l = 2 m = 2n = 0

The following shows the formula for estimating the number of files N that the Store service opens:

 $N = 20 + 2 \times (6 \times 1 + m + n)$ = 20 + 2 \times (6 \times 2 + 2 + 0) = 48

# **B. Kernel Parameters**

You do not need to adjust the kernel parameters for PFM - Agent for Platform.

For details about kernel parameter adjustment when you use PFM - Manager and PFM - Web Console in a UNIX environment, see the list of kernel parameters in the appendix to the manual *Job Management Partner 1/Performance Management Planning and Configuration Guide*.

# C. List of Identifiers

When operating PFM - Agent for Platform or extracting performance data from the Store database of PFM - Agent for Platform, identifiers that indicate PFM - Agent for Platform are necessary in some cases. The following table shows the identifiers of PFM - Agent for Platform.

Application	Name	Identifier	Explanation
Command, etc.	Product ID	υ	Product ID is part of a service ID. You need a service ID when you use a command to check the Performance Management system configuration or back up performance data. For details about service IDs, see the chapter explaining the Performance Management functions in the manual <i>Job Management Partner 1/Performance</i> <i>Management Planning and Configuration Guide</i> .
	Service key	agtu Or UNIX	You need a service key when you use a command to start or stop PFM - Agent for Platform. For details about service keys, see the chapter explaining the Performance Management functions in the manual <i>Job Management</i> <i>Partner 1/Performance Management Planning and</i> <i>Configuration Guide</i> .
ODBC	Product type identifier	UNIX	You need a product type identifier when you use an SQL statement to extract data. For details, see the chapter explaining operation analysis that is linked with an ODBC-compatible application program in the manual <i>Job Management Partner 1/Performance Management User's Guide</i> .
Help	Help ID	pcau	Indicates help for PFM - Agent for Platform.

Table C-1: PFM - Agent for Platform identifier list

# **D. List of Processes**

This appendix lists the processes in PFM - Agent for Platform.

For details about the processes in PFM - Manager, PFM - Base, and PFM - Web Console, see the appendix to the manual *Job Management Partner 1/Performance Management Reference*.

The following table shows the processes in PFM - Agent for Platform. The value provided next to the process name indicates the number of processes that can be concurrently started.

Process name (Number of processes)	Function		
jpcagtu (1)	Agent Collector service process. One Agent Collector service process is started for each PFM - Agent for Platform.		
jpc_hostutil (1) <sup>#1</sup>	Host information acquisition program		
jpc_process (1) <sup>#2</sup>	64-bit process information acquisition program		
jpcsto(1)	Agent Store service process. One Agent Store service process is started for each PFM - Agent for Platform.		
stpqlpr $(1)^{\#3}$	Process for executing a backup or export of the Store database		

Table D-1: List of processes in PFM - Agent for Platform

#### #1

Child process of the jpcagtu process.

### #2

Child process of the jpcagtu process. In HP-UX, AIX, or Linux, this process is not installed.

#### #3

Child process of the jpcsto process.

# E. List of Port Numbers

This appendix lists the port numbers used by PFM - Agent for Platform.

For details about the port numbers used by PFM - Manager, PFM - Web Console, and PFM - Base, and directions to pass through the firewall, see the appendix to the manual *Job Management Partner 1/Performance Management Reference*.

You can also change port numbers to the desired numbers as needed by the user environment.

For details about how to change port numbers, see the chapter explaining installation and setup in the manual *Job Management Partner 1/Performance Management Planning and Configuration Guide*. The protocol used is TCP/IP.

Note:

Performance Management supports static NAT (Basic NAT), which converts addresses on a one-to-one basis.

Performance Management does not support dynamic NAT or NAPT (IP Masquerade, NAT+), which includes a port conversion function.

# E.1 Port numbers of PFM - Agent for Platform

The following table shows the port numbers used by PFM - Agent for Platform.

Port number	Service name	Parameter	Application
20277#	Agent Store service	jplpcstou	Used for recording performance data and acquiring historical reports.
20278 <sup>#</sup>	Agent Collector service	jp1pcagtu	Used for binding an alarm and acquiring real-time reports.

*Table E-1:* Port numbers used by PFM - Agent for Platform

#

If you do not change the port numbers to the desired numbers when executing the jpcconf port define (jpcnsconfig port define) command, these port numbers are assigned. If the jpcconf port define (jpcnsconfig port define) command is not executed, port numbers not being used by the system are automatically assigned when the service is restarted.

# E.2 Firewall passage directions

When PFM - Manager and PFM - Agent for Platform are located across a firewall, specify fixed values for the port numbers of PFM - Manager and all PFM - Agent

services. Furthermore, specify each port number in the direction shown in the table below to allow all services to pass through the firewall.

*Table E-2:* Firewall passage directions (between PFM - Manager and PFM - Agent)

Service name	Parameter	Passage direction	
Agent Store	jplpcstou	Agent <== Manager	
Agent Collector	jplpcagtu	Agent <== Manager	

Legend:

Manager: PFM - Manager host

Agent: PFM - Agent host

c==: Direction for starting communication (connection) from the right term to the
left term

When communication (connection) is initiated, the receiving side (the side indicated by the tip of the arrow) uses the port numbers shown in Table E-1 as receiving ports. The connecting side uses the free port numbers assigned by the OS as sending ports. The available range of port numbers depends on the OS.

When a connection is initiated from Manager to Agent as shown above, set the firewall so that the sending ports temporarily used by Manager can pass through to the receiving ports of Agent.

Note:

To execute the jpctool db dump (jpcctrl dump) or jpctool service list (jpcctrl list) command on the PFM - Agent host, use one of the following methods:

- Specify the proxy option of the jpctool db dump (jpcctrl dump) or jpctool service list (jpcctrl list) command such that communication takes place via PFM Manager. For details about the proxy option of the jpctool db dump (jpcctrl dump) or jpctool service list (jpcctrl list) command, see the chapter explaining commands in the manual *Job Management Partner 1/Performance Management Reference*.
- Specify port numbers between the PFM Agent hosts, with the firewall passage directions shown in the following table.

### E. List of Port Numbers

Table	<i>E-3</i> :	Firewall p	bassage	directions	(between	PFM	- Agent	hosts)

Service name	Parameter	Passage direction
Agent Store service	jplpcstou	Agent <== => Agent
Agent Collector service	jplpcagtu	Agent <== => Agent

Legend:

Agent: PFM - Agent host

# F. Properties of PFM - Agent for Platform

This appendix lists the properties of the Agent Store and Agent Collector services of PFM - Agent for Platform that are displayed on PFM - Web Console.

### F.1 Agent Store service properties

The following table shows the properties of the Agent Store service of PFM - Agent for Platform.

Folder name	Property name	Explanation
	First Registration Date	Shows the first date on which the service was recognized by PFM - Manager.
	Last Registration Date	Shows the last date on which the service was recognized by PFM - Manager.
General		Stores information such as the host name and directories. The properties stored in this folder cannot be modified.
	Directory	Shows the name of the current directory in which the service runs.
	Host Name	Shows the name of the host on which the service runs.
	Process ID	Shows the process ID of the service.
	Physical Address	Shows the IP address and port number of the host on which the service runs.
	User Name	Shows the name of the user who executed the service process.
	Time Zone	Shows the time zone used by the service.
System		Stores the OS information of the OS under which the service has been started. The properties stored in this folder cannot be modified.
	СРИ Туре	Shows the CPU type.
	Hardware ID	Shows the hardware ID.
	OS Type	Shows the OS type.
	OS Name	Shows the OS name.
	OS Version	Shows the OS version.

Table F-1: Properties of the Agent Store service of PFM - Agent for Platform

### F. Properties of PFM - Agent for Platform

Fold	der name	Property name	Explanation
Network Services			Stores information on the Performance Management communication common library. The properties stored in this folder cannot be modified.
		Build Date	Shows the Agent Store service creation date.
		INI File	Shows the name of the directory storing the jpcns.ini file.
Network Services	Service		Stores information on the service. The properties stored in this folder cannot be modified.
		Description	Shows the host name.
		Local Service Name	Shows the service ID.
		Remote Service Name	Shows the service ID of the Master Manager service of the connection destination PFM - Manager host.
		EP Service Name	Shows the service ID of the Correlator service of the connection destination PFM - Manager host.
Retention			Specifies the data retention period when the Store version is 1.0. For details, see the chapter explaining management of operation monitoring data in the manual <i>Job Management Partner 1/Performance Management User's Guide.</i>
		Product Interval - Minute Drawer	Specifies the minute-by-minute record retention period for PI-type records. One of the following can be selected: • Minute • Hour • Day • 2 Days • 3 Days • 4 Days • 5 Days • 6 Days • Week • Month • Year

Folder name	Property name	Explanation
	Product Interval - Hour Drawer	Specifies the hourly record retention period for PI-type records. One of the following can be selected: Hour Day 2 Days 3 Days 4 Days 5 Days 6 Days Week Month Year
	Product Interval - Day Drawer	Specifies the daily record retention period for PI-type records. One of the following can be selected: Day 2 Days 3 Days 4 Days 5 Days 6 Days Week Month Year
	Product Interval - Week Drawer	Specifies the weekly record retention period for PI-type records. One of the following can be selected: • Week • Month • Year
	Product Interval - Month Drawer	Specifies the monthly record retention period for PI-type records. One of the following can be selected: • Month • Year
	Product Interval - Year Drawer	Specifies the yearly record retention period for PI-type records. Fixed to Year.
	Product Detail - record-ID-of-PD- type-record	Specifies the number of records retained for each PD-type record. An integer in the range from 0 to 2,147,483,647 can be specified. <i>Note:</i> If an invalid numerical value or a character such as a letter is specified, an error message is displayed.

Folde	r name	Property name	Explanation
		Product Log - MESS	Specifies the number of Log Messages (PL_MESS) records that can be retained. An integer in the range from 0 to 2,147,483,647 can be specified. <i>Note:</i> If an invalid numerical value or a character such as a letter is specified, an error message is displayed.
RetentionEx			Specifies the data retention period when the Store version is 2.0. For details, see the chapter explaining management of operation monitoring data in the manual <i>Job Management Partner 1/Performance Management User's Guide</i> .
RetentionEx	Product Interval - record-ID-of- PI-type-record		Specifies the record retention period for PI-type records.
		Period - Minute Drawer (Day)	Specifies the minute-by-minute performance data retention period for each PI-type record ID. An integer in the range from 0 to 366 can be specified for the retention period (number of days).
		Period - Hour Drawer (Day)	Specifies the hourly performance data retention period for each PI-type record ID. An integer in the range from 0 to 366 can be specified for the retention period (number of days).
		Period - Day Drawer (Week)	Specifies the daily performance data retention period for each PI-type record ID. An integer in the range from 0 to 522 can be specified for the retention period (number of weeks).
		Period - Week Drawer (Week)	Specifies the weekly performance data retention period for each PI-type record ID. An integer in the range from 0 to 522 can be specified for the retention period (number of weeks).
		Period - Month Drawer (Month)	Specifies the monthly performance data retention period for each PI-type record ID. An integer in the range from 0 to 120 can be specified for the retention period (number of months).
		Period - Year Drawer (Year)	Displays the yearly performance data retention period for each PI-type record ID.
	Product Detail - record-ID-of- PD-type-recor d	Period (Day)	Specifies the performance data retention period for each PD-type record ID. An integer in the range from 0 to 366 can be specified for the retention period (number of days).

Folder	r name	Property name	Explanation
	Product Log - record-ID-of- PL-type-recor d	Period (Day)	Specifies the performance data retention period for each PL-type record ID. An integer in the range from 0 to 366 can be specified for the retention period (number of days).
Disk Usage			Stores the disk capacity used by each database. The properties stored in this folder show the disk usage at the time when these properties are displayed. The properties stored in this folder cannot be modified.
		Product Interval	Shows the disk capacity used by PI-type records.
		Product Detail	Shows the disk capacity used by PD-type records.
		Product Alarm	Shows the disk capacity used by PA-type records. Not used in PFM - Agent for Platform (UNIX).
		Product Log	Shows the disk capacity used by PL-type records.
		Total Disk Usage	Shows the disk capacity used by the entire database.
Configuration			Shows the properties of the Agent Store service.
		Store Version	<ul> <li>Shows the Store database version.</li> <li>For Store version 1.0: <ol> <li>0</li> <li>For Store version 2.0:</li> <li>2.0</li> </ol> </li> </ul>

Legend:

--: Not applicable

# F.2 Agent Collector service properties

The following table shows the properties of the Agent Collector service of PFM - Agent for Platform.

*Table F-2:* Properties of the Agent Collector service of PFM - Agent for Platform

Folder name	Property name	Explanation
	First Registration Date	Shows the first date on which the service was recognized by PFM - Manager.
	Last Registration Date	Shows the first date on which the service was recognized by PFM - Manager.

Folder	name	Property name	Explanation
		Data Model Version	Shows the version of the data model.
General			Stores information such as the host name and directories. The properties stored in this folder cannot be modified.
		Directory	Shows the name of the current directory in which the service runs.
		Host Name	Shows the name of the host on which the service runs.
		Process ID	Shows the process ID of the service.
		Physical Address	Shows the IP address and port number of the host on which the service runs.
		User Name	Shows the name of the user who executed the service process.
		Time Zone	Shows the time zone used by the service.
System			Stores the OS information of the OS under which the service has been started. The properties stored in this folder cannot be modified.
		СРИ Туре	Shows the CPU type.
		Hardware ID	Shows the hardware ID.
		OS Type	Shows the OS type.
		OS Name	Shows the OS name.
		OS Version	Shows the OS version.
Network Services			Stores information on the Performance Management communication common library. The properties stored in this folder cannot be modified.
		Build Date	Shows the Agent Collector service creation date.
		INI File	Shows the name of the directory storing the jpcns.ini file.
Network Services	Service		Stores information on the service. The properties stored in this folder cannot be modified.
		Description	Shows the host name.
		Local Service Name	Shows the service ID.

Folder	name	Property name	Explanation
		Remote Service Name	Shows the service ID of the Agent Store service to which the Agent Collector service connects.
		AH Service Name	Shows the service ID of the Action Handler service that is located on the same host.
JP1 Event Configurations	1		Sets the condition for issuing JP1 events.
		service	Yes or No is selected from a list for the Agent Collector service, Agent Store service, Action Handler service, and Status Server service to specify whether to output JP1 system events for each service.
		JP1 Event Send Host	Specifies the name of the event server to which J1/Base connects. However, only the event server running on the logical host or physical host on the same machine as for the Action Handler service can be specified. From 0 to 255 bytes of alphanumeric characters, periods (.), and hyphens (-) can be specified. If a value outside this range is specified, it is assumed that no value has been specified. If no value is specified, the host on which the Action Handler service is running is used as the host that issues events. If localhost is specified, the physical host is assumed.
		Monitoring Console Host	Specifies the PFM - Web Console host that is to be started when the PFM - Web Console browser is started by starting the JP1/IM - Manager monitor. From 0 to 255 bytes of alphanumeric characters, periods (.), and hyphens (-). If a value outside this range is specified, it is assumed that no value has been specified. If no value is specified, the PFM - Manager host to be connected is assumed.
		Monitoring Console Port	Specifies the port number of PFM - Web Console (http request port number) to be started. A value in the range from 1 to 65,535 can be specified. If a value outside this range is specified, it is assumed that no value has been specified. If no value is specified, 20358 is set.
JP1 Event Configurations	Alarm	JP1 Event Mode	<ul> <li>Specifies whether a JP1 system event or a JP1 user event is to be issued if the alarm status changes.</li> <li>JP1 User Event: A JP1 user event is issued.</li> <li>JP1 System Event: A JP1 system event is issued.</li> </ul>
Detail Records			Stores the properties of PD-type records. The record ID of the record being collected is displayed in bold letters.
Detail Records	record-ID <sup>#1</sup>		Stores record properties.

Folder	name	Property name	Explanation
		Description	Shows record description. This property cannot be modified.
		Log	Yes or No is selected from a list to specify whether to register records in the Store database. If this value is Yes and the Collection Interval is greater than 0, records are registered in the database.
		Collection Interval	Specifies the data collection interval. A value in the range from 0 to 2,147,483,647 seconds can be specified in 1-second increments. If $0$ is specified, the collection interval is $0$ and no data is collected.
		Collection Offset	Specifies the offset value for starting data collection. A value in the range from 0 to 32,767 seconds can be specified in 1-second increments, but cannot exceed the range specified for Collection Interval. Regardless of the value specified for Collection Offset, the data collection recording time is the same as the value specified for Collection Interval.
		LOGIF	Specifies the condition for registering records in the database. Only those records satisfying the condition are registered in the database. Displays the conditional expression (character string) created in the LOGIF Expression Setting window, which is displayed by clicking <b>LOGIF</b> on the bottom frame of the Property window of the service that is displayed under the <b>Services</b> tab in PFM - Web Console.
		Sync Collection With	Synchronizes collection with the record specified in the following format: Sync Collection With=record-type, record-ID Example: Sync Collection With=Interval Records, PI
Interval Records			Stores the properties of PI-type records. The record ID of the record being collected is displayed in bold letters.
Interval Records	record-ID <sup>#1</sup>		Stores record properties.
		Description	Shows record description. This property cannot be modified.
		Log	Yes or No is selected from a list to specify whether to register records in the Store database. If this value is Yes and the Collection Interval is greater than 0, records are registered in the database.

Folder	name	Property name	Explanation
		Collection Interval	Specifies the data collection interval. A value in the range from 0 to $2,147,483,647$ seconds can be specified in 1-second increments. If 0 is specified, the collection interval is 0 and no data is collected.
		Collection Offset	Specifies the offset value for starting data collection. A value in the range from 0 to 32,767 seconds can be specified in 1-second increments, but cannot exceed the range specified for Collection Interval. Regardless of the value specified for Collection Offset, the data collection recording time is the same as the value specified for Collection Interval.
		LOGIF	Specifies the condition for registering records in the database. Only those records satisfying the condition are registered in the database. Displays the conditional expression (character string) created in the LOGIF Expression Setting window, which is displayed by clicking <b>LOGIF</b> on the bottom frame of the Property window of the service that is displayed under the <b>Services</b> tab in PFM - Web Console.
		Sync Collection With	Synchronizes collection with the record specified in the following format: Sync Collection With=record-type, record-ID Example: Sync Collection With=Interval Records, PI
Log Records			Stores the properties of PL-type records. The record ID of the record being collected is displayed in bold letters.
Log Records	record-ID <sup>#1</sup>		Stores record properties.
		Description	Shows record description. This property cannot be modified.
		Log	Yes or No is selected from a list to specify whether to register records in the Agent Store database. If this value is Yes and the Collection Interval is greater than 0, records are registered in the database.
		Collection Interval	Specifies the data collection interval. A value in the range from 0 to $2,147,483,647$ seconds can be specified in 1-second increments. If 0 is specified, the collection interval is 0 and no data is collected.

Folder	name	Property name	Explanation
	Collection Offset	Specifies the offset value for starting data collection. A value in the range from 0 to 32,767 seconds can be specified in 1-second increments, but cannot exceed the range specified for Collection Interval. Regardless of the value specified for Collection Offset, the data collection recording time is the same as the value specified for Collection Interval.	
		LOGIF	Specifies the condition for registering records in the database. Only those records satisfying the condition are registered in the database. Displays the conditional expression (character string) created in the LOGIF Expression Setting window, which is displayed by clicking <b>LOGIF</b> on the bottom frame of the Property window of the service that is displayed under the <b>Services</b> tab in PFM - Web Console.
		Sync Collection With	Synchronizes collection with the record specified in the following format: Sync Collection With=record-type, record-ID Example: Sync Collection With=Interval Records, PI
Restart Configurations			Sets the condition for automatically restarting the PFM service. The condition can be set when the version of PFM - Manager or PFM - Base is 09-00 or later. For details about the PFM service Auto-restart functionality, see the chapter explaining the Performance Management functions in the manual <i>Job Management</i> <i>Partner 1/Performance Management Planning and</i> <i>Configuration Guide</i> .
		Restart when Abnormal Status	Specifies whether to automatically restart the service if the Status Server service cannot correctly obtain the statuses of the Action Handler service, Agent Collector service, and Agent Store service.
		Restart when Single Service Running	Specifies whether to automatically restart the service if only the Agent Store service or only the Agent Collector service is running.
Restart Configurations	Action Handler	Auto Restart	Specifies whether to use the Auto-restart functionality for the Action Handler service.
		Auto Restart - Interval (Minute)	Sets the interval in minutes for checking the operating status of the service when the Auto-restart functionality is used.
		Auto Restart - Repeat Limit	Sets the number of times restart is retried in succession when the Auto-restart functionality is used.

Folder name		Property name	Explanation
		Scheduled Restart	Specifies whether to use the scheduled restart functionality for the Action Handler service.
		Scheduled Restart - Interval	Sets the restart interval when the scheduled restart functionality is used.
		Scheduled Restart - Interval Unit	Sets the unit of the restart interval when the scheduled restart functionality is used.
		Scheduled Restart - Origin - Year	The restart year can be specified as an integer in the range from 1971 to 2035.
		Scheduled Restart - Origin - Month	The restart month can be specified as an integer in the range from 1 to 12.
		Scheduled Restart - Origin - Day	The restart day can be specified as an integer in the range from 1 to 31.
		Scheduled Restart - Origin - Hour	The restart time (hour) can be specified as an integer in the range from 0 to 23.
		Scheduled Restart - Origin - Minute	The restart time (minute) can be specified as an integer in the range from 0 to 59.
Agent Collector		Auto Restart	Specifies whether to use the Auto-restart functionality for the Agent Collector service.
		Auto Restart - Interval (Minute)	Sets the interval in minutes for checking the operating status of the service when the Auto-restart functionality is used.
		Auto Restart - Repeat Limit	Sets the number of times restart is retried in succession when the Auto-restart functionality is used.
		Scheduled Restart	Specifies whether to use the scheduled restart functionality for the Agent Collector service.
		Scheduled Restart - Interval	Sets the restart interval when the scheduled restart functionality is used.
		Scheduled Restart - Interval Unit	Sets the unit of the restart interval when the scheduled restart functionality is used.
		Scheduled Restart - Origin - Year	The restart year can be specified as an integer in the range from 1971 to 2035.
		Scheduled Restart - Origin - Month	The restart month can be specified as an integer in the range from 1 to 12.
		Scheduled Restart - Origin - Day	The restart day can be specified as an integer in the range from 1 to 31.

### F. Properties of PFM - Agent for Platform

Folder name		Property name	Explanation
		Scheduled Restart - Origin - Hour	The restart time (hour) can be specified as an integer in the range from 0 to 23.
		Scheduled Restart - Origin - Minute	The restart time (minute) can be specified as an integer in the range from 0 to 59.
	Agent Store	Auto Restart	Specifies whether to use the Auto-restart functionality for the Agent Store service.
		Auto Restart - Interval (Minute)	Sets the interval in minutes for checking the operating status of the service when the Auto-restart functionality is used.
		Auto Restart - Repeat Limit	Sets the number of times a restart is retried in succession when the Auto-restart functionality is used.
		Scheduled Restart	Specifies whether to use the scheduled restart functionality for the Agent Store service.
		Scheduled Restart - Interval	Sets the restart interval when the scheduled restart functionality is used.
		Scheduled Restart - Interval Unit	Sets the unit of the restart interval when the scheduled restart functionality is used.
		Scheduled Restart - Origin - Year	The restart year can be specified as an integer in the range from 1971 to 2035.
		Scheduled Restart - Origin - Month	The restart month can be specified as an integer in the range from 1 to 12.
		Scheduled Restart - Origin - Day	The restart day can be specified as an integer in the range from 1 to 31.
		Scheduled Restart - Origin - Hour	The restart time (hour) can be specified as an integer in the range from 0 to 23.
		Scheduled Restart - Origin - Minute	The restart time (minute) can be specified as an integer in the range from 0 to 59.
Agent Configuration			Stores the properties that define information specific to PFM - Agent for Platform.

Folder	name	Property name	Explanation
		ALL Zone Collection for Process <sup>#2</sup>	<ul> <li>Selects whether process information only for the global zone is to be collected. If PFM - Agent for Platform is running in a non-global zone, process information only for that non-global zone is collected, regardless of the property setting.</li> <li>Y: Process information for the global zone and non-global zones is collected.</li> <li>N: Process information for the global zone is collected.</li> </ul>
		ALL WPAR Collection for Process <sup>#3</sup>	<ul> <li>Selects whether process information only for the global environment is to be collected. If PFM - Agent for Platform is running in a system WPAR environment, process information only for that system WPAR environment is collected, regardless of the property setting.</li> <li>Y: Process information for the global environment and WPAR environments is collected.</li> <li>N: Process information for the global environment is collected.</li> </ul>
		Messages File <sup>#4</sup>	<ul> <li>Specifies the absolute path name for the syslog file name.</li> <li>To change the setting, you must use PFM - Web Console. You can specify a path name that does not exceed 256 bytes. The default values are as follows:</li> <li>HPUX : /var/adm/syslog/syslog.log</li> <li>Solaris : /var/adm/messages</li> <li>AIX : /var/adm/syslogfile</li> </ul>
		User Defined Record DataMaxCount	Stores the property that defines the maximum number of user records that can be collected.
Application monitoring setting	instance-na me <sup>#5</sup>		Shows the monitoring instance name that is added.
		Process[01-15] Kind <sup>#6</sup>	<ul> <li>Shows the process type:</li> <li>None: No process is specified.</li> <li>Execute: See the value of the ps -e command.</li> <li>Command Line: See the value of the ps -ef command.</li> </ul>
		Process[01-15] Name <sup>#6</sup>	Enter a process name that does not exceed 127 bytes.

Folder name		Property name	Explanation
		Process[01-15] Range <sup>#6</sup>	Insert a hyphen between the limits (for example, 1-2). If a single value without a hyphen is specified, the same value can be specified for the upper and lower limits. For example, when 10 is specified, 10-10 is set. A value in the range from 0 to 65535 can be specified.
ADDITION OR DELETION A SETTING		ADD AN APPLICATION MONITORING SETTING	Shows the monitoring instance name to be added.
		DELETE AN APPLICATION MONITORING SETTING	Selects the monitoring instance name to be deleted. Specify None if you do not want to delete a monitoring instance.
		ADD AN APPLICATION MONITORING SETTING FOR VIRTUAL ENVIRONMEN T	Sets the range of data to be collected for the processes in the PD_APP record. A value in the range from 0 to 2147483647 can be specified. Characters cannot be entered.
User Command $user$ -record- Setting $name^{\#7}$ Execute		Execute	Specifies whether to use the function for periodically executing user commands. • Yes: Use. • No: Do not use.
		UserCommand	Specifies the absolute path for user commands. The maximum length of the string that can be specified for an absolute path is 255 bytes. Alphanumeric characters and symbols can be specified, except for the following characters:   < >

Legend:

--: Not applicable

#1

For the directory name, a record ID without a database ID is displayed. For details about record IDs of individual records, see *6. Records*.

#2

Displayed only in Solaris.

#3

Displayed only in AIX V6.1.

#4

Not displayed in Linux.

#5

For the directory name, the instance name set in ADD AN APPLICATION MONITORING SETTING is displayed. For details about how to set the instance name, see 4.2.2 Settings for collecting information about the application operating status.

#6

For Process[01-15] Kind, Process[01-15] Name, and Process[01-15] Range, a value in the range from 01 to 15 appears in place of [01-15] in each property name. For example, the property items that are actually displayed will be Process01 Kind, Process07 Name, and Process15 Range.

#7

For the folder name, PD\_UPD, PD\_UPDB, PI\_UPI, or PI\_UPIB is displayed.

# G. List of Files and Directories

This appendix lists the files and directories of PFM - Agent for Platform.
The installation directory for Performance Management is /opt/jplpc/.
The following table lists the files and directories of PFM - Agent for Platform. *Table G-1:* List of files and directories of PFM - Agent for Platform

Directory name	File name	Explanation
/opt/jplpc/agtu/		Base directory of PFM - Agent for Platform (UNIX)
/opt/jp1pc/agtu/agent/		Base directory of Agent Collector service
	evfile	Event file <sup>#1</sup>
	evfile.model	Model file of event file <sup>#1</sup>
	jpc_hostutil	Host information acquisition program
	jpc_process	64-bit process information acquisition program <sup>#2</sup>
	jpcagt.ini <sup>#3</sup>	Service startup initialization file of Agent Collector
	jpcagt.ini.mo del	Model file of service startup initialization file of Agent Collector
	jpcagtu	Service executing program of Agent Collector
	jpcapp <sup>#4</sup>	Application definition file
	wgfile	Workgroup file
	wgfile.model	Model file of workgroup file
/opt/jplpc/agtu/agent/log/		Storage directory for internal log files of the Agent Collector service
/opt/jplpc/agtu/agent/jpcuser/		Base directory of the function for collecting user-specific performance data
/opt/jplpc/agtu/agent/jpcuser/	jpcuser	Execution program for the function for collecting user-specific performance data
/opt/jplpc/agtu/agent/jpcuser/	jpcuser.ini	Configuration file for the function for collecting user-specific performance data

Directory name	File name	Explanation
/opt/jplpc/agtu/agent/jpcuser/	core	Core dump file for the function for collecting user-specific performance data
/opt/jp1pc/agtu/agent/jpcuser/ debug/		jpucuser command debug log directory
/opt/jp1pc/agtu/agent/jpcuser/ log/trace/		Trace log file (internal log file) storage directory
/opt/jp1pc/agtu/agent/jpcuser/ log/public/		Public log file storage directory
/opt/jp1pc/agtu/agent/jpcuser/ userdata/		User data file output directory
/opt/jp1pc/agtu/nls/		Message catalog installation directory
/opt/jp1pc/agtu/store/		Base directory of Agent Store service
	*.DB	Performance data file
	*.IDX	Index file of the performance data file
	*.LCK	Lock file of the performance data file
	jpcsto.ini <sup>#3</sup>	Service startup initialization file of Agent Store
	jpcsto.ini.mo del	Model file of service startup initialization file of Agent Store
	*.DAT	Data model definition file
/opt/jplpc/agtu/store/backup/		Default database backup destination folder
/opt/jplpc/agtu/store/partial/		Default database partial-backup destination folder
/opt/jplpc/agtu/store/dump/		Default database export destination folder
/opt/jplpc/agtu/store/import/		Default database import destination folder
/opt/jplpc/agtu/store/log/		Storage directory for the Agent Store service internal log files
/opt/jp1pc/agtu/store/STPD/		PD database specific folder
/opt/jp1pc/agtu/store/STPI/		PI database specific folder
/opt/jp1pc/agtu/store/STPL/		PL database specific folder
/opt/jp1pc/auditlog/		Default output directory for action log files

Directory name	File name	Explanation
	jpcauditn.log <sup>#</sup> 5	Action log file
/opt/jplpc/setup/		Setup file installation directory
	jpcagtuu.Z	Add archive file for PFM - Agent additional setup (UNIX)
	jpcagtuw.EXE	Add archive file for PFM - Agent additional setup (Windows)
/opt/jplpc/setup/alarm/		Storage directory for alarm table restoration
	UALARMXXXX	File for restoring alarm tables. xxxx is the alarm table version. Example: For version 8.11, 0811 is displayed.
/opt/jp1pc/setup/extract/		Setup file expansion directory
/opt/jp1pc/setup/update/		Version upgrade work directory
/opt/jplpc/setup/update/agtu/		Directory for PFM - Agent for Platform (UNIX) version upgrade
	*.*	Files for PFM - Agent for Platform (UNIX) version upgrade

Legend:

--: Not applicable

#1

This file is not installed in Linux.

### #2

This file is not installed in HP-UX, AIX, and Linux.

# #3

Files having the lck extension may be created in the same directory. This file is internally used by Performance Management. You must not modify or delete the file.

Example: /opt/jp1pc/agtu/agent/jpcagt.ini

/opt/jp1pc/agtu/agent/jpcagt.ini.lck

#4

This file exists only when the setting for monitoring an application is specified.

# #5

*n* is a numeric value. The number of log files can be changed in the jpccomm.ini file.

# H. Migration Procedure and Notes on Migration

To upgrade PFM - Agent for Platform to a newer version, install the newer version by overwriting the older version. For details about installation operations, see 2. *Installation and Setup*.

For details about migrating from an older version of Performance Management to a newer version (from version 07-00 or earlier to 08-00 or later), see the appendix of the manual *Job Management Partner 1/Performance Management Planning and Configuration Guide*.

Notes:

- When upgrading the PFM Agent for Platform version, do not uninstall the older version. If you uninstall it, performance data and other data created with the older version are also deleted, and as a result, the newer version will not work.
- When a newer version of PFM Agent for Platform program is installed by overwriting an older version, the following items are automatically updated:
  - Store database file of the Agent Store service
  - ini file
- In Performance Management programs of version 08-00 or newer, the locations of the Store executing programs (jpcsto.exe and stpqlpr.exe for Windows, and jpcsto and stpqlpr for UNIX) have been changed. When PFM Manager and PFM Agent are upgraded to version 08-00 or newer, the Store executing programs at the older locations are deleted.
## I. Version Compatibility

In PFM - Agent, there are product versions as well as data model versions.

Because data models maintain upward compatibility, report definitions and alarm definitions created in the older version can also be used in the newer version of the data model.

The following table shows version compatibility of PFM - Agent for Platform.

**PFM - Agent for Platform Data model version** Alarm table version of the version monitoring template 06-70 3.0 6.70 07-00 4.0 7.00 08-00 6.0 8.00 08-11 7.2 8.11 09-00 7.6 09.00

Table 1-1: PFM - Agent for Platform version compatibility

In PFM - Agent for Platform, an alarm table of a version that is not available in the Performance Management system being used may sometimes be displayed under **Alarms** in the PFM - Web Console window. Therefore, check the alarm table version being used by the Performance Management system and its compatibility before using an alarm table.

Furthermore, an alarm table version that is not in Table I-1 is displayed on the PFM -Web Console window. Therefore, check the version of PFM - Agent for Platform being used by the Performance Management system. The table below shows data model version and monitoring template alarm table version that is not in Table I-1.

*Table I-2:* Data model version and monitoring template alarm table version that is not in Table I-1

Data model version	Monitoring template alarm table version
5.0	7.50
7.0	8.10
7.4	8.50

For details about version compatibility, see the version compatibility description in the appendix to the manual *Job Management Partner 1/Performance Management* 

I. Version Compatibility

Planning and Configuration Guide.

# J. Outputting Action Log Data

Action log data of Performance Management is history information that is output in cooperation with the alarm function related to exceeded thresholds, such as for a system load.

For example, if an alarm indicating an error such as an exceeded threshold occurs, data indicating when, and by which service, the alarm was issued is output to the action log.

Action log data can be output when the version of PFM - Manager or PFM - Base is 08-11 or later.

An action log is a CSV text file. By saving action logs periodically and converting them with spreadsheet software, you can use the action logs as analysis data.

Output of action log data is specified in the jpccomm.ini file. This appendix describes the contents of the action log data output by PFM - Agent and PFM - Base, and how to specify the settings for outputting the action log.

## J.1 Types of events output to the action log

The following table shows the types of events output to the action log and the times at which PFM - Agent and PFM - Base output data to the action log. The event types are the identifiers used within the action log to classify.

Event type	Explanation	PFM - Agent and PFM - Base output the action log when:
StartStop	Events indicating that software has been started or terminated.	<ul><li>A PFM service has been started or stopped.</li><li>Stand-alone mode has been started or terminated.</li></ul>
ExternalService	Events indicating the result of communication between a JP1 product and an external service. This event type also indicates that an abnormal communication has occurred.	The status of a connection with PFM - Manager has changed.
ManagementAction	Events indicating that an important program action has been executed. This event type also indicates that the action was executed in response to another audit category.	An automated action is executed.

Table J-1: Types of events output to the action log

# J.2 Format for saving the action log files

This section explains the format for saving the action log files.

Action log data is output to a specified file (the current output file). When the current output file becomes full, the action log data in that file is saved to another file (the shift file). The procedure for switching the file for storing action log data is as follows:

- 1. Action log data is output sequentially to the current output file jpcaudit.log.
- 2. When the current output file becomes full, the action log data is saved in a shift file.

Shift files are named by suffixing a number to the name of the current output file. Each time the current output file becomes full, each shift file is renamed by incrementing its suffix by 1. Therefore, the file whose name has the largest number is the oldest log file.

Example:

When the current output file jpcaudit.log becomes full, the contents of the file are saved to the shift file jpcaudit1.log.

When the current output file becomes full again, the information is moved to jpcaudit1.log, and the existing shift file jpcaudit1.log is renamed to jpcaudit2.log.

Note that when the number of log files exceeds the number of saved log files (specified in the jpccomm.ini file), the oldest log file is deleted.

3. The current output file is initialized, and new action log data is written.

Whether action log data is to be output, the output destination, and the number of output files are specified in the jpccomm.ini file. For details about how to specify the jpccomm.ini file, see *J.4 Settings for outputting action log data*.

## J.3 Format of output action log data

Data related to audit events is output to the Performance Management action log. Action log data is output to one file for one host. The action log data is output to a file on either of the following hosts:

- When a service is executed: The data is output to the file on the host on which the service runs.
- When a command is executed: The data is output to the file on the host on which the command was executed.

The following describes the format of the action log, the output destination, and the items that are output.

## (1) Output format

CALFHM x.x, output-item-1=value-1, output-item-2=value-2, ..., output-item-n=value-n

## (2) Output destination

/opt/jp1pc/auditlog/

The output destination for action log data can be changed in the jpccomm.ini file. For details about how to specify the jpccomm.ini file, see *J.4 Settings for outputting action log data*.

## (3) Output items

There are two types of output items:

Common output items

Items that are always output by all JP1 products that output action log data

■ Fixed output items

Items that are optionally output by a JP1 product that outputs action log data

## (a) Common output items

The following table lists and describes the common output items and their values. This table also includes the items and information output by PFM - Manager.

No.	Output item		Value	Explanation
	Item name	Output attribute name		
1	Common specification identifier		CALFHM	Indicates the action log format
2	Common specification revision number		<i>x</i> . <i>x</i>	Revision number for managing action logs
3	Serial number	seqnum	serial-number	Serial number of the action log record
4	Message ID	msgid	KAVE <i>xxxxx-x</i>	Message ID of the product

*Table J-2:* Common output items in action logs

No.	Outp	ut item	Value	Explanation
	Item name	Output attribute name		
5	Date and time	date	YYYY-MM-DDThh:mm:ss.sssTZD <sup>#</sup>	Date, time, and time zone indication identifying when the action log was output
6	Program name	progid	JP1PFM	Name of the program for which the event occurred
7	Component name	compid	service-ID	Name of the component for which the event occurred
8	Process ID	pid	process-ID	Process ID of the process for which the event occurred
9	Location	ocp:host	<ul><li> host-name</li><li> IP-address</li></ul>	Location where the event occurred
10	Event type	ctgry	<ul> <li>StartStop</li> <li>Authentication</li> <li>ConfigurationAccess</li> <li>ExternalService</li> <li>AnomalyEvent</li> <li>ManagementAction</li> </ul>	Category name used to classify the event output to the action log
11	Event result	result	<ul><li>Success</li><li>Failure</li><li>Occurrence</li></ul>	Result of the event
12	Subject identification information	subj:pid	process-ID	<ul> <li>One of the following:</li> <li>Process ID of a process running as a user operation</li> <li>Process ID of the process that caused the event</li> </ul>
		subj:uid	account-identifier (PFM user/JP1 user)	• Name of the user who caused the event
		subj:euid	effective-user-ID (OS user)	• Identification information in a one-to-one correspondence with the user

## Legend:

--: None

#

T is a separator between the date and the time.

TZD is the time zone specifier. One of the following values is output.

+*hh:mm*: The time zone is *hh:mm* ahead of UTC.

- -*hh:mm*: The time zone is *hh:mm* behind UTC.
- z: The time zone is the same as UTC.

## (b) Fixed output items

The following table lists and describes the fixed output items and their values. This table also includes the items and information output by PFM - Manager.

No.	Output item		Value	Explanation
	Item name	Output attribute name		
1	Object information	obj	<ul> <li><i>PFM - Agent-service-ID</i></li> <li><i>added-deleted-or-updated-user-name</i> (PFM user)</li> </ul>	Intended object for the operation
		obj:table	alarm-table-name	-
		obj:alarm	alarm-name	
2	Action information	op	<ul> <li>Start</li> <li>Stop</li> <li>Add</li> <li>Update</li> <li>Delete</li> <li>Change Password</li> <li>Activate</li> <li>Inactivate</li> <li>Bind</li> <li>Unbind</li> </ul>	Information about the action that caused the event

Table J-3: Fixed output items in action logs

No.	Output item		Value	Explanation
	Item name	Output attribute name		
3	Permissions information	auth	<ul> <li>Administrator: Management</li> <li>General user: Ordinary</li> <li>Windows: Administrator</li> <li>UNIX: SuperUser</li> </ul>	Permissions information of the user who executed the command or service
		auth:mode	<ul> <li>PFM authentication mode: pfm</li> <li>JP1 authentication mode: jp1</li> <li>OS user: os</li> </ul>	Authentication mode of the user who executed the command or service
4	Output source	outp:host	PFM - Manager-host-name	Host that output the action log
5	Instruction source	subjp:host	<ul> <li>login-host-name</li> <li>execution-host-name (only when the jpctool alarm (jpcalarm) command is executed)</li> </ul>	Host that issued the instruction for the operation
6	Descriptive text	msg	message	Message that is output when an alarm occurs or when an automated action is executed

Whether the fixed output items are output and what they contain differ depending on when the action log data is output. The following describes the message ID and output data for each case.

## ■ A PFM service starts or stops (StartStop)

- Output host: The host on which the service is running
- Output component: The service that started or stopped

Item name	Attribute name	Value
Message ID	msgid	Started: KAVE03000-I Stopped: KAVE03001-I

Item name	Attribute name	Value
Action information	ор	Started: Start Stopped: Stop

## ■ Stand-alone mode starts or stops (StartStop)

- Output host: PFM Agent host
- Output component: Agent Collector service and Agent Store service

Item name	Attribute name	Value
Message ID	msgid	Stand-alone mode has started: KAVE03002-I Stand-alone mode has terminated: KAVE03003-I

Notes:

- 1. No fixed output items are output.
- When PFM Agent is started, PFM Agent services connect to the PFM -Manager host, register node information, and obtain the latest alarm definition information. If a connection with the PFM - Manager host cannot be established, PFM - Agent starts in stand-alone mode, in which only part of its functionality, such as collection of operating information, is enabled. In addition, KAVE03002-I is output to indicate that PFM - Agent has started in stand-alone mode. From this point, the PFM - Agent services periodically attempt to connect to PFM - Manager. When the services are able to successfully register node information or obtain definition information, PFM - Agent leaves stand-alone mode and KAVE03003-I is output. In this way, the action log enables you to understand that PFM - Agent was running in an imperfect condition for the period from the output of KAVE03002-I to the output of KAVE03003-I.

## The status of the connection with PFM - Manager changes (ExternalService)

- Output host: PFM Agent host
- Output component: Agent Collector service and Agent Store service

Item name	Attribute name	Value
Message ID	msgid	Sending of an event to PFM - Manager failed (queuing was started): KAVE03300-I. An event was resent to PFM - Manager: KAVE03301-I.

#### J. Outputting Action Log Data

Notes:

- 1. No fixed output items are output.
- 2. If the Agent Store service is unable to send an event to PFM Manager, the Agent Store service starts queuing events, up to a maximum of three. When queuing is started after a failure to send an event, KAVE03300-I is output. When the connection with PFM Manager is restored and all queued events have been sent, KAVE03301-I is output. In this way, the action log enables you to understand that real-time sending of events to PFM Manager was disabled for the period from the output of KAVE03000-I to the output of KAVE03001-I.
- 3. The Agent Collector service usually sends events to PFM Manager via the Agent Store service. It directly sends events to PFM Manager only when the Agent Store service has stopped for some reason. If sending of events fails, KAVE03300-I is output but KAVE03301-I is not output, since no events are queued. In this way, the action log enables you to understand that some events have not been sent to PFM Manager.

## ■ An automated action is executed (ManagementAction)

• Output host: The host on which the action was executed

٠	Output component:	Action	Handler	service
---	-------------------	--------	---------	---------

Item name	Attribute name	Value
Message ID	msgid	The command execution process was created successfully: KAVE03500-I. An attempt to create a command execution process failed: KAVE03501-W. Email was send successfully: KAVE03502-I. Sending of email failed: KAVE03503-W
Free description	msg	Command execution: cmd=executed-command-line. Email sending: mailto=destination-email-address.

Note:

KAVE03500-I is output when the command execution process is created successfully. Thereafter, log information about whether the command was executed and about the execution results is not output to the action log.

## (4) Output example

The following is an example of output action log data: CALFHM 1.0, seqnum=1, msgid=KAVE03000-I, date=2007-01-18T22:46:49.682+09:00, progid=JP1PFM, compid=TA1host01, pid=2076,

```
ocp:host=host01, ctgry=StartStop, result=Occurrence,
subj:pid=2076,op=Start
```

# J.4 Settings for outputting action log data

The settings for outputting action log data are defined in the jpccomm.ini file. If no settings are specified, no action log data is output. The following describes the settings required to output action log data, and how to specify the settings.

#### (1) Setting procedure

To specify the settings for outputting action log data:

- 1. Stop all PFM services on the host.
- 2. Using a text editor, edit the jpccomm.ini file.
- 3. Save and close the jpccomm.ini file.

#### (2) Details about the jpccomm.ini file

The following describes the jpccomm.ini file in detail.

(a) Storage directory

/opt/jp1pc/

## (b) Format

In the jpccomm.ini file, define the following information:

- Whether to output action log data
- Output destination of the action log
- Number of action logs that can be saved
- File size of the action log

The specification format is as follows:

#### "item-name"=value

The following table shows the items that you can specify.

#### Table J-4: Items specified in the jpccomm.ini file and their initial values

No.	ltem	Explanation
1	[Action Log Section]	The section name, which cannot be changed.

## J. Outputting Action Log Data

No.	Item	Explanation	
2	Action Log Mode	<ul> <li>Specify whether to output action log data. You must specify this item.</li> <li>Initial value: <ul> <li>(Data not output)</li> </ul> </li> <li>Specifiable value: <ul> <li>(Data not output) or 1 (Information output)</li> <li>If any other value is specified, an error message is output and action log data will not be output.</li> </ul> </li> </ul>	
3	Action Log Dir	<ul> <li>Specify the action log output destination.</li> <li>If a path longer than the limit is specified or if access to the directory f an error message is output to the command log and action log data will be output.</li> <li>Initial value: <ul> <li>None set</li> <li>Default value used when no specification is made: <ul> <li>/opt/jplpc/auditlog/</li> </ul> </li> <li>Specifiable value: <ul> <li>A character string from 1 to 185 bytes</li> </ul> </li> </ul></li></ul>	
4	Action Log Num	<ul> <li>Specify the upper limit on the total number of log files (number of saved files). Specify the sum of the number of current output files and shift files.</li> <li>Initial value: None set</li> <li>Default value used when no specification is made: 5</li> <li>Specifiable value: An integer in the range from 2 to 10</li> <li>If a character string containing a non-numeric value is specified, an error message is output and the default value 5 is set.</li> <li>If a numeric value outside the valid range is specified, an error message is output and the integer nearest the specified value in the range from 2 to 10 is set.</li> </ul>	
5	Action Log Size	<ul> <li>Specify the log file size in kilobytes.</li> <li>Initial value: None set</li> <li>Default value used when no specification is made: 2048</li> <li>Specifiable value: An integer in the range from 512 to 2096128</li> <li>If a character string containing a non-numeric value is specified, an error message is output and the default value 2048 is set.</li> <li>If a numeric value outside the valid range is specified, an error message is output and the integer nearest the specified value in the range from 512 to 2096128 is set.</li> </ul>	

## K. Version Changes

## K.1 Changes in 09-00

- The name *solution set* has changed to *monitoring template*.
- The following OSs have been added as the OSs on which PFM Agent for Platform operates and as OSs for programs that can be monitored:
  - Solaris 10 (x86)
  - Solaris 10 (x64)
  - AIX V6.1
  - Linux 5 Advanced Platform (x86)
  - Linux 5 (x86)
  - Linux 5 Advanced Platform (AMD64 & EM64T)
  - Linux 5 (AMD64 & EM64T)
  - Linux 5 Advanced Platform (IPF)
  - Linux 5 (IPF)
- The monitoring items in a virtual environment have been increased. Accordingly, the following field has been added to the PD and PD\_APP records:

Virtual Env ID

In addition, the following properties have been added to the list of properties for the Agent Collector service:

ALL WPAR Collection for Process, ADD AN APPLICATION MONITORING SETTING FOR VIRTUAL ENVIRONMENT

- The alarm table version for the monitoring template has been changed from 8.11 to 09.00. Accordingly, the following alarm tables have been added:
  - PFM UNIX Template Alarms [CPU]09.00
  - PFM UNIX Template Alarms [MEM]09.00
  - PFM UNIX Template Alarms [DSK]09.00
  - PFM UNIX Template Alarms [NET]09.00
  - PFM UNIX Template Alarms [PS]09.00

The following alarms have also been added:

• CPU Per Processor(K)

#### K. Version Changes

- CPU Per Processor(U)
- Alloc Mem Mbytes
- File System Free(L)
- File System Free(R)
- Disk Busy %
- Disk Queue
- Network Rcvd/sec
- Process End
- Process Alive
- Linkage with JP1/IM has been enhanced. Accordingly, the following folder has been added to the list of properties for the Agent Collector service:

JP1 Event Configurations

• The following messages have been added:

KAVF10013-W, KAVF10700-W to KAVF10701-W

The data model version has changed from 7.2 to 7.6. Accordingly, the format of the following fields has been changed from ulong to double:

Program Summary (PD\_PGM) record

• Total I/O Kbytes (TOTAL\_IO\_KBYTES)

Terminal Summary (PD\_TERM) record

• Total I/O Kbytes (TOTAL\_IO\_KBYTES)

User Summary (PD\_USER) record

• Total I/O Kbytes (TOTAL\_IO\_KBYTES)

Workgroup Summary (PI\_WGRP) record

- Total I/O Kbytes (TOTAL\_IO\_KBYTES)
- With the addition of new-format commands compatible with 08-11 or earlier commands, the commands for 09-00 or later is now indicated as follows:

command-for-09-00-or-later (command-for-08-11-or-earlier)

- The following examples of operations have been added:
  - Example of collecting information about used ports
  - Example of collecting performance data from multiple hosts on which PFM products are not installed

PFM - Agent for Platform can now run in a Solaris10 local zone. It is now possible to collect process information for the global zone and local zones separately. Accordingly, the following folder has been added to the list of properties for the Agent Collector service:

ALL Zone Collection for Process

- Setup procedures have been simplified.
- Functionality that executes a user command from PFM Agent for Platform at a fixed interval has been added. Accordingly, the following folder has been added to the list of properties for the Agent Collector service.

User Command Setting

IPv6 is now supported. Accordingly, the following fields has been added:

System Summary Overview (PI) record

- ICMP6 Pkts In (ICMP6\_PACKETS\_IN)
- ICMP6 Pkts Out (ICMP6\_PACKETS\_OUT)
- IP6 Pkts In (IP6\_PACKETS\_IN)
- IP6 Pkts Out (IP6\_PACKETS\_OUT)

Network Interface Detail (PI\_NIND) record

• IP6 Address (IP6\_ADDRESS)

The description of the following fields has been changed:

System Summary Overview (PI) record

- TCP Pkts In (TCP\_PACKETS\_IN)
- TCP Pkts Out (TCP\_PACKETS\_OUT)
- Total Pkts (TOTAL\_PACKETS)
- Total Pkts In (TOTAL\_PACKETS\_IN)
- Total Pkts Out (TOTAL\_PACKETS\_OUT)
- UDP Pkts In (UDP\_PACKETS\_IN)
- UDP Pkts Out (UDP PACKETS OUT)

A note on an environment in which IPv4 and IPv6 coexist has been added to the following records:

- File System Detail Remote (PD\_FSR) record
- Network Interface Detail (PI\_NIND) record
- System Summary Overview (PI) record

- The formulas for estimating memory requirements and disk space requirements have been changed.
- A function that automatically restarts the PFM service when it has stopped abnormally during operation has been added to PFM - Manager. Accordingly, the following folder has been added to the list of properties for the Agent Collector service:

**Restart Configurations** 

# K.2 Changes in 08-11

• A function that monitors memory usage in Linux has been added. Accordingly, the following fields have been added.

Record name	Field name
System Summary Overview (PI)	Buffers Mem % (BUFFERS_MEM_PERCENT)
	Buffers Mem Mbytes (BUFFERS_MEM_MBYTES)
	Cache Mem % (CACHE_MEM_PERCENT)
	Cache Mem Mbytes (CACHE_MEM_MBYTES)
	Effective Free Mem % (EFFECTIVE_FREE_MEM_PERCENT)
	Effective Free Mem Mbytes (EFFECTIVE_FREE_MEM_MBYTES)

- A function that creates one user data file from multiple user-created data files has been added to the jpcuser command.
- HP-UX 11i V3 (IPF) has been added as an applicable OS for PFM Agent for Platform.
- The following messages have been added:

```
KAVF10105-W, KAVF10106-W, KAVF10107-W, KAVF10901-W, KAVF10902-W,
KAVF10904-W, KAVF10905-W, KAVF10906-W, KAVF10907-W, KAVF10908-W,
KAVF10909-W, KAVF10910-W, KAVF10911-W, KAVF10912-W, KAVF10913-W,
KAVF10914-W, KAVF10915-W, KAVF10916-E, KAVF10917-E, KAVF10919-E,
KAVF10920-E, KAVF10923-E, KAVF10924-E, KAVF10925-E, KAVF10926-E,
KAVF10927-E, KAVF10928-E, KAVF10929-E, KAVF10930-E, KAVF10931-E,
KAVF10932-E, KAVF10935-E, KAVF10941-E, KAVF10943-E, KAVF10948-I,
KAVF10950-W, KAVF10951-W, KAVF10952-E, KAVF10953-W, KAVF10954-W,
KAVF10982-E, KAVF10983-E, KAVF10984-E, KAVF10985-E, KAVF10986-W,
KAVF10987-W, KAVF10988-W, KAVF10989-W, KAVF10990-W, KAVF10991-W,
KAVF10992-W, KAVF10993-W, KAVF10994-W, KAVF10995-W, KAVF10996-W,
```

KAVF10997-W, KAVF10998-W

- The formula for estimating memory requirements has been changed.
- The version of the alarm table for the solution set has been changed from 8.00 to 8.11.
- The data model version has changed from 6.0 to 7.2, and the format of the following fields has been changed.

Record name	Field name	
File System Detail - Local (PD_FSL)	Total Inodes (TOTAL_NUMBER_OF_INODES)	
	Total Inodes Available (TOTAL_INODES_AVAILABLE)	
	Total Inodes Free (TOTAL_INODES_FREE)	
	Total Inodes Rsvd (TOTAL_INODES_RESERVED)	
	Total Inodes in Use (TOTAL_INODES_IN_USE)	

- An example of using PFM Agent for Platform to monitor performance has been added.
- A method for upgrading Store version 1.0 to Store version 2.0 has been added.
- A function that outputs action logs has been added.
- Information about the command that changes the performance data storage location has been added.
- The function that collects information about whether applications are running has been added. Accordingly, the following record has been added:

Application Summary (PD\_APP)

 A function for collecting user-specific performance data such as information that is not provided by PFM - Agent for Platform and information specific to a machine or environment has been added. Accordingly, the following records have been added:

User Data Detail (PD\_UPD) record, User Data Detail - Extended (PD\_UPDB) record, User Data Interval (PI\_UPI) record, and User Data Interval - Extended (PI\_UPIB) record

- Performance Management information that the jpcras command collects has been added.
- The following properties have been added.

Service name	Property
Agent Store	Period (Day)
	Period - Day Drawer (Week)
	Period - Hour Drawer (Day)
	Period - Minute Drawer (Day)
	Period - Month Drawer (Month)
	Period - Week Drawer (Week)
	Period - Year Drawer (Year)
Agent Collector	ADD AN APPLICATION MONITORING SETTING
	DELETE AN APPLICATION MONITORING SETTING
	Process[01-15] Kind
	Process[01-15] Name
	Process[01-15] Range
	User Defined Record DataMaxCount

 An explanation of how to use PFM - Agent for Platform on a virtual system has been added.

# K.3 Changes in version 08-00

- The product name has been changed to Job Management Partner 1/Performance Management - Agent Option for Platform.
- PFM Web Console and PFM Base have been added to the supported product list.
- PFM View has been deleted from the supported product list.
- The OS on which PFM Agent for Platform runs and the monitoring target programs have been changed to Solaris 10.
- The workgroup file specification method has been expanded.
- The wrap-around file (jpclogw) method has been added to save to the common message log output by PFM - Agent for Platform so that users can select from one the following two methods:
  - Sequential file (jpclog) method (conventional method)

- Wrap-around file (jpclogw) method
- The Status Server service has been added to manage the status of Performance Management services.
- For the Performance Management system, a PFM Agent for Platform setup has been added to update the data model version of PFM Agent for Platform.
- The version of the solution set alarm table has been changed from 7.00 to 8.00.
- The following table shows the content of changes.

Report name		Content of change	
	NFS Client Detail report NFS Server Detail report	The report was changed to be a reserved report.	

The version of the data model has been changed from 4.0 to 6.0. The following table shows the content of changes.

Record name	Field name	Content of change
Device Summary (PI_DEVS)	I/O Mbytes (TOTAL_IO_MBYTES)	The format was changed.
File System Detail - Local (PD_FSL)	Available Space Blocks (TOTAL_BLOCKS_AVAILABLE)	
	Available Space Mbytes (TOTAL_MBYTES_AVAILABLE)	
	Block Size (BLOCKSIZE)	
	Blocks Free (TOTAL_BLOCKS_FREE)	
	Blocks in Use (TOTAL_BLOCKS_IN_USE)	
	Mbytes Free (TOTAL_MBYTES_FREE)	
	Mbytes Rsvd (TOTAL_MBYTES_RESERVED)	
	Mbytes in Use (TOTAL_MBYTES_IN_USE)	
	Total Size Blocks (TOTAL_SIZE_IN_BLOCKS)	
	Total Size Mbytes (TOTAL_SIZE_IN_MBYTES)	
File System Detail -	Available Blocks (TOTAL_BLOCKS_AVAILABLE)	
Keniote (PD_FSR)	Available Space Mbytes (TOTAL_MBYTES_AVAILABLE)	
	Block Size (BLOCKSIZE)	

## K. Version Changes

Record name	Field name	Content of change
	Blocks Free (TOTAL_BLOCKS_FREE)	
	Blocks in Use (TOTAL_BLOCKS_IN_USE)	
	Host (hostname)	
	Mbytes Free (TOTAL_MBYTES_FREE)	
	Mbytes Rsvd (TOTAL_MBYTES_RESERVED)	
	Mbytes in Use (TOTAL_MBYTES_IN_USE)	
	Mbytes Rsvd (TOTAL_MBYTES_RESERVED)	
	Total Size Blocks (TOTAL_SIZE_IN_BLOCKS)	
	Total Size Mbytes (TOTAL_SIZE_IN_MBYTES)	
IPC Summary	Max Shared Mem Size (SHMMAX)	
(PD_IPCS)	Shared Mem Alloc (SHRSEGTOTAL)	
Network Interface Detail (PI_NIND)	Network Name (NETWORK_NAME)	
Process Detail (PD)	Program (PROGRAM_NAME)	*
	Program/PID (PROGRAM_PID)	*
Process Detail Interval (PD_PDI)	Program (program_name)	*
Program Summary (PD_PGM)	Program (program_name)	*
Quotas (PD_UFSQ)	File Name (QUOTA_FILENAME)	
Shared Memory Detail (PD_SHMD)	Segment Size (SEGSZ)	*
User File System Storage (PD_UFSS)	File System Size Mbytes (FILESYSTEM_SIZE_IN_MBYTES)	*
	Mbytes in Use (MBYTES_IN_USE)	
Device Summary (PI_DEVS)		The record size was changed.
File System Detail - Local (PD_FSL)		

Record name	Field name	Content of change
File System Detail - Remote (PD_FSR)		
IPC Summary (PD_IPCS)		
Network Interface Detail (PI_NIND)		
Process Detail (PD)		
Process Detail Interval (PD_PDI)		
Program Summary (PD_PGM)	-	
Quotas (PD_UFSQ)		
Shared Memory Detail (PD_SHMD)		
User File System Storage (PD_UFSS)		
Workgroup Summary (PI_WGRP)		
CPU - Per Process Detail (PI_CPUP)	CPU % (KERNELMODE_USERMODE_PERCENT)	A field was added.
Device Detail	Busy % (busy_percent)	
(PI_DEAD)	Total Busy Time (TOTAL_BUSY_TIME)	
Device Summary	Busy % (busy_percent)	
(PI_DEVS)	Total Busy Time (TOTAL_BUSY_TIME)	
Workgroup Summary	Argument Lists	
(PI_WGRP)	CPU % Each	
IPC Summary (PD_IPCS)		The record was changed to be a
Message Queue Detail (PD_MSQD)		reserved record.
NFS Client Detail (PI_NCD)		

## K. Version Changes

Record name	Field name	Content of change
NFS Client Overview (PI_NCO)		
NFS Server Detail (PI_NSD)		
NFS Server Overview (pi_nso)		T
Quotas (PD_UFSQ)		Ť
Semaphore Detail (PD_SEMD)		*
Shared Memory Detail (PD_SHMD)		*
Tape Device Summary (PD_TAPS)	-	
User File System Storage (PD_UFSS)		
CPU - Per Processor Detail (PI_CPUP)	-	A note was changed or added.
Device Detail (PI_DEVD)	-	
Device Summary (PI_DEVS)	-	
File System Detail - Local (PD_FSL)	-	
Network Interface Detail (pi_nind)		
Process Detail (PD)		
Process Detail Interval (PD_PDI)		T
Program Summary (PD_PGM)	-	
Terminal Summary (PD_TERM)		
User Summary (PD_USER)		

Legend:

--: Not applicable

■ The following messages have been added:

KAVF10150-W, KAVF10204-W, KAVF10205-W, KAVF10206-W, KAVF10301-W, KAVF10500-W, KAVF10501-W, KAVF10502-W, KAVF10503-W, KAVF10600-W

# K.4 Changes in version 07-00

- The multiple LAN connection function is now supported.
- The version of the alarm solution set has been changed from 6.70 to 7.00.
- The version of the data model has been changed from 3.0 to 4.0. The following table lists the content of changes.
  - Addition

Record name	ODBC key field
Message Queue Detail (PD_MSQD)	PD_MSQD_ID
Shared Memory Detail (PD_SHMD)	PD_SHMD_ID

• Change

Record name	Field name	Content of change
Logged Messages (PL_MESS)	Message Text (MESSAGE_TEXT)	Format
System Summary Overview (PI)		Possibility of change

Legend:

--: Not applicable

- A function to start PFM Agent in stand-alone mode is now supported.
- An install log file has been added in which errors during installation are output.
- Creation processing for the index file of the Store database executed upon startup of the Store service has been changed to be executed during version upgrade installation or database restoration.
- The following property has been added.

Service name	Property
Agent Collector	Data Model Version

The following properties have been deleted.

## K. Version Changes

Service name	Property
Agent Store	Everything under Copyright. Version under Network Services
Agent Collector	Version under Network Services

• The following message has been added:

KAVF10204-W

## L. Glossary

## action

The operation that is automatically executed by Performance Management when the monitored data reaches the threshold. The following types of actions are available:

- E-mail transmission
- Command execution
- SNMP trap issuance
- JP1 event issuance

## **Action Handler**

One of the PFM - Manager or PFM - Base services. It is a service for executing an action.

## administrative tools

Various types of commands and GUI functions that are used for checking service statuses and manipulating performance data. The following operations can be performed:

- Displaying service configuration and status
- Saving and restoring performance data
- Exporting of performance data to a text file
- Erasing of performance data

## Agent

The PFM - Agent service that collects performance data.

## **Agent Collector**

One of the PFM - Agent services. It is a service for collecting performance data and evaluating performance data based on a threshold value that is set in an alarm.

#### **Agent Store**

One of the PFM - Agent services. It is a service for storing performance data. The Agent Store service uses a database for recording performance data. Each PFM - Agent has its own Agent Store service.

#### alarm

Information that defines the action to be taken or the event message to be issued when the monitored data reaches the threshold.

#### L. Glossary

#### alarm table

A table into which one or more alarms are collected and which defines the following types of information:

- Objects to be monitored (Process, TCP, WebService, or the like)
- Information to be monitored (CPU usage, number of bytes received per second, or the like)
- Monitoring condition (threshold)

### binding

The operation of associating an alarm with an agent. Once binding occurs, when the performance data collected by the agent reaches the threshold defined in the alarm, the user can be notified.

#### Correlator

One of the PFM - Manager services. It is a service for controlling event delivery among services. When the alarm status being monitored by this service exceeds the threshold, this service sends an alarm event and an agent event to the Trap Generator service and PFM - Web Console.

#### data model

A general term for records and fields that each PFM - Agent has. Data models are managed according to version.

## database ID

An ID that is assigned to each record in PFM - Agent that indicates the database for storing records. A database ID indicates the type of records to be stored in the database. The following database IDs are used:

- PI: Indicates a database for records of the PI record type.
- PD: Indicates a database for records of the PD record type.

#### drilldown report

A report that is associated with a report or report field. You use a drilldown report to display the detailed information or related information of a report.

#### field

A set of performance data that comprises a record.

## historical report

A report indicating the status of the monitoring target from the past to the present.

#### instance

In this manual, the term *instance* is used in the following ways:

• To indicate a recording format for records

A record that is recorded in a single line is called a *single-instance record*; a record that is recorded in multiple lines is called a *multi-instance record*; and each line inside a record is called an *instance*.

• To indicate a PFM - Agent startup method

When a single agent monitors the monitoring targets on the same host, it is called a *single-instance agent*. In contrast, when the monitoring targets support multiple instances, each agent can monitor each monitoring target instance. This is called a *multi-instance agent*. Each agent of a multi-instance agent is called an *instance*.

## lifetime

The duration in which the integrity of the performance data collected into each record can be guaranteed.

## Master Manager

One of the PFM - Manager services. It is the main service of PFM - Manager.

## Master Store

One of the PFM - Manager services. It is a service for managing the alarm events issued by each PFM - Agent. The Master Store service uses a database for holding event data.

## monitoring template

Predefined alarms and reports provided in PFM - Agent. The monitoring template enables you to easily prepare for monitoring the operating status of PFM - Agent without writing any complicated definitions.

## multi-instance record

A record that is recorded in multiple lines. Such records have a specific ODBC key field.

See Instance.

## Name Server

One of the PFM - Manager services. It is a service for managing the service configuration information inside a system.

## **ODBC** key fields

Indicates the ODBC key fields that are necessary for using an SQL statement in PFM - Manager or PFM - Base to utilize the record data stored in the Store database. Some

L. Glossary

ODBC key fields are common to all records, while others are unique to some records.

#### PD record type

See Product Detail record type.

#### performance data

Resource usage data collected from a monitoring target system.

## **Performance Management**

A general term for a group of software programs necessary for monitoring and analyzing issues related to system performance. Performance Management consists of the following five program products:

- PFM Manager
- PFM Web Console
- PFM Base
- PFM Agent
- PFM RM

## **PFM - Agent**

One of the program products comprising Performance Management. PFM - Agent that is equivalent to a system-monitoring facility. Various types of PFM - Agent are available according to the applications, databases, and OSs to be monitored. PFM - Agent has the following functions:

- Monitoring of the performance of the monitoring target
- Collection and recording of data from the monitoring target

#### PFM - Base

One of the program products comprising Performance Management. PFM - Base provides the basic functions for Performance Management to monitor operations. It is a prerequisite program product for PFM - Agent. PFM - Base provides the following functionality:

- Management tools such as various types of commands
- Common functions needed for linking Performance Management to other systems

#### PFM - Manager

One of the program products comprising Performance Management. PFM - Manager is equivalent to a manager facility and has the following functions:

• Management of Performance Management program products

• Management of events

#### PFM - Manager name

A name that identifies the field stored in the Store database. This name is used for specifying a field in a command.

## **PFM - View name**

The alias of a PFM - Manager name. The PFM - View name is more intuitive than the PFM - Manager name. For example, the PFM - View name of the PFM - Manager name INPUT\_RECORD\_TYPE is Record Type. The PFM - View names are useful when specifying fields on the GUI of PFM - Web Console.

## **PFM - Web Console**

One of the program products comprising Performance Management. PFM - Web Console provides the web application server functions necessary for centrally monitoring the Performance Management system from a web browser. PFM - Web Console has the following functions:

- GUI display
- Integrated monitoring and management functions
- Report and alarm definition

## PI record type

See Product Interval record type.

## PL record type

See Product Log record type.

## Product Detail record type

The record type that stores the performance data that indicates the system status at a given point in time, such as detailed information on the processes that are currently active. Use the PD record type when you want to determine the system statuses at a given point in time, such as those listed below:

- System's operating status
- Capacity of the file system currently being used

## Product Interval record type

The record type that stores the performance data for a specific duration (interval), such as the number of active processes during every minute. Use the PI record type when you want to analyze the changes and trends in the system status over time, such as those listed below:

Trend in the number of system calls that occurred within a specific time span

## Product Log record type

The record type that stores the log information on applications that are being executed or databases being used on UNIX.

## real-time report

A report indicating the current status of the monitoring target.

#### record

A format for storing collected performance data. The record type differs according to each database of the Store database.

#### report

A report defines the information to be used when graphically displaying the performance data collected by PFM - Agent. A report mainly defines the following types of information:

- Records to be displayed in a report
- Performance data display items
- Performance data display format (table, graph, or the like)

#### service ID

A unique ID assigned to the service of a Performance Management program. For example, to use a command to check the system configuration of Performance Management or to back up the performance data of individual agents, you specify the service ID of the Performance Management program and execute the command.

The format of the service ID differs depending on whether the product name display functionality is enabled. For details about the service ID format, see the chapter explaining the Performance Management functions in the manual *Job Management Partner 1/Performance Management Planning and Configuration Guide*.

## single-instance record

A record that is recorded in a single line. Such records do not have a specific ODBC key field.

See Instance.

## stand-alone mode

The mode in which PFM - Agent is running alone. Even when the Master Manager service and Name Server service of PFM - Manager cannot be started because of an error, you can start PFM - Agent alone and collect performance data.

## status management function

A function for managing the statuses of all services that run on PFM - Manager and

PFM - Agent. The status management function enables the system administrator to correctly determine the service startup and stop statuses at each host, making it possible to take the appropriate error recovery measures.

## Store database

The database that stores the performance data collected by the Agent Collector service.

## **Trap Generator**

One of the PFM - Manager services. It is a service that issues SNMP traps.

## user defined record

A user-specified record for storing performance data that is not provided by default. When a user-defined record is specified, the collected performance data can be monitored from PFM - Web Console. The following types of user defined records are available:

- Application Summary (PD\_APP) record
- User Data Detail (PD\_UPD) record
- User Data Detail Extended (PD\_UPDB) record
- User Data Interval (PI\_UPI) record
- User Data Interval Extended (PI\_UPIB) record
- Workgroup Summary (PI WGRP) record

## workgroup

The unit in which PFM - Agent for Platform monitors the processes being executed. A workgroup can be specified in the following units:

- UNIX user
- UNIX group
- Programs executed by a process

# Index

## Α

abbreviations defined ii action 4, 577 Action Handler 577 action log data outputting 555 actual host name 80 administrative tools 577 agent 577 Agent Collector 577 Agent Collector service property 537 Agent Store 577 Agent Store service property 533 alarm 4, 577 Alloc Mem Mbytes 198 CPU Per Processor(K) 194 CPU Per Processor(U) 196 Disk Busy % 203 Disk Queue 205 Disk Service Time 187 File System Free(L) 199 File System Free(R) 201 format of explanation 183 I/O Wait Time 188 Kernel CPU 189 list of 184 Network Rcvd/sec 207 Pagescans 190 Process Alive 209 Process End 208 Run Queue 191 Swap Outs 192 User CPU 193 alarm table 4, 578 alias name 80 Avg Service Time - Top 10 Devices report 219 Avg Service Time Status - Top 10 Devices report 220

# В

backup 113 binding 4, 578 browsing manuals in Web browser settings for 115

# С

collecting user-defined record 125 commands jpcuser 164 common message log 480, 481 Console Messages report 221 conventions abbreviations ii diagrams viii fonts and symbols ix KB, MB, GB and TB xi mathematical expressions x version numbers xii Correlator 578 CPU - Per Processor Detail (PI CPUP) record 312 CPU Per Processor Status report 222 CPU Per Processor Usage report 223 CPU Status (Multi-Agent) report 226 CPU Status report 224 CPU Trend (Multi-Agent) report 229 CPU Trend report 228 CPU Usage - Top 10 Processes report 230 CPU Usage Summary report 231

## D

data collected in the event of an error 483 collection procedure 488 data model 3, 274, 578 data type, list of 282 database ID 578

#### Index

debug log 172 Device Detail (PI\_DEVD) record 317 Device Detail report 233 Device Summary (PI DEVS) record 323 Device Usage Status (Multi-Agent) report 235 Device Usage Status report 234 diagram conventions viii directory 481 list of 548 Disk Service Time alarm 187 disk space requirement, estimating 509 DLPAR function 291 DR function 291 drilldown report 578 field level 211 report level 211

## Е

environment configuration required for collecting performance data 84 error handling procedure 471 event file, setting up 120 example collecting information about used ports 22 collecting performance data from multiple hosts on which PFM products are not installed 24 operation of performance monitoring 8

# F

field 3, 211, 578 added only when record is recorded in Store database 288 output when data stored in Store database is exported 290 value 283 File System Detail - Local (PD\_FSL) record 329 File System Detail - Remote (PD\_FSR) record 335 file, list of 548 firewall passage direction 530 font conventions ix format jpcuser command 164 user-created data file 167 Free Space Mbytes - Top 10 Local File Systems report 236 functionality for periodically executing user commands 155

# G

GB meaning xi

## Н

historical report 3, 578

## I

I/O Activity - Top 10 Processes report 237 I/O Overview report 238 I/O Wait Time alarm 188 identifier, list of 528 information on terminated processes 294 instance 579 IP address, setting up 80

#### J

jpcconf db define (jpcdbctrl config) command 106 jpcras command 488 jpcsto.ini file 107 jpcuser command format 164

## Κ

KB meaning xi Kernel CPU alarm 189 kernel parameter 527

## L

LANG environment variable, setting 96 lifetime 579 Local File System Detail report 239 log file 481 changing size 100 log information 480 collecting 117 common message log 480 operation status log 480

overview of collection 118 preparing to collect 120 system log 480 trace log 480 Logged Messages (PL\_MESS) record 340

#### Μ

Major Page Faults - Top 10 Processes report 240 Master Manager 579 Master Store 579 mathematical expressions conventions x MB meaning xi Memory Paging report 241 Memory Paging Status (Multi-Agent) report 243 Memory Paging Status report 242 memory requirement, estimating 498 message 435, 445 format of 436 format of explanation 437 format of output 436 output destination 438 Micro-Partitioning function 293 migration notes on 552 procedure 552 monitoring template 5, 181, 182, 579 overview of 182 multi-instance record 579

## Ν

Name Server 579 Network Interface Detail (PI\_NIND) record 342 Network Interface Detail report 244 Network Interface Summary (PI\_NINS) record 350 Network Interface Summary report 246, 247 Network Overview report 248 network setup 99 Network Status (Multi-Agent) report 250 Network Status report 249 NFS Activity Overview report 252 NFS Load Trend report 253 NFS Usage Status (Multi-Agent) report 255 NFS Usage Status report 254

# 0

ODBC key field 579 list of 278 operation in virtualized systems 39 operation status log 480

## Ρ

Pagescans alarm 190 Paging Trend (Multi-Agent) report 256 PD 354 PD record type 3, 580 PD APP 299 PD\_FSL 329 PD\_FSR 335 PD PDI 366 PD PDS 377 PD PGM 381 PD TERM 406 PD UPD 410 PD UPDB 413 PD\_USER 425 performance data 580 changing storage destination 100 changing storage location of 106 collection methods 6 management methods 6 overview of collecting 6 overview of managing 6 performance information about resources that are logically partitioned 293 notes on, when modifying system resources 291 Performance Management 580 multiple, installing on same host 85 multiple, setting up on same host 85 performance monitoring example of operation 8 PFM - Agent 580 PFM - Agent for Platform changing operation of 106 changing system configuration of 105 features of 2 installation procedure 90

installation workflow 88 installing 79, 80 overview of 1 registering 96 setting up 79, 80, 96 setting up PFM - Manager for connection destination of 100 setup file 98 setup workflow 88 uninstallation procedure 103 PFM - Base 580 PFM - Manager 580 name 581 PFM - View name 581 PFM - Web Console 581 setting up 122, 139 PI 385 PI record type 3, 581 PI CPUP 312 PI DEVD 317 PI DEVS 323 PI NIND 342 PI NINS 350 PI UPI 417 PI UPIB 420 PI WGRP 429 PL record type 4, 581 PL MESS 340 port number 530 list of 530 setting up 81 prerequisite program 82 Process Detail (PD) record 354 Process Detail Interval (PD PDI) record 366 Process Detail report 257 Process Overview report 259 Process Summary (PD PDS) record 377 Process Summary Status report 260 Process Trend report 261 process, list of 529 Product Detail record type 581 Product Interval record type 581 Product Log record type 582 Program Summary (PD PGM) record 381

property 533 Agent Collector service 537 Agent Store service 533

## R

real-time report 3, 582 record 3, 211, 273, 582 Application Summary (PD APP) 299 CPU - Per Processor Detail (PI CPUP) 312 Device Detail (PI DEVD) 317 Device Summary (PI DEVS) 323 File System Detail - Local (PD FSL) 329 File System Detail - Remote (PD FSR) 335 format of explanation 275 generation results when data cannot be collected 294 list of 296 Logged Messages (PL\_MESS) 340 Network Interface Detail (PI NIND) 342 Network Interface Summary (PI NINS) 350 notes on 291 PD record type 3 PI record type 3 PL record type 4 Process Detail (PD) 354 Process Detail Interval (PD PDI) 366 Process Summary (PD PDS) 377 Program Summary (PD PGM) 381 single-instance 582 System Summary Overview (PI) 385 Terminal Summary (PD TERM) 406 User Data Detail (PD UPD) 410 User Data Detail - Extended (PD UPDB) 413 User Data Interval (PI UPI) 417 User Data Interval - Extended (PI UPIB) 420 User Summary (PD USER) 425 Workgroup Summary (PI WGRP) 429 Remote File System Detail report 262 report 3, 582 Avg Service Time - Top 10 Devices 219 Avg Service Time Status - Top 10 Devices 220 Console Messages 221
System Utilization Status 270 Workload Status 271 Workload Status (Multi-Agent) 272 restoration 114 Run Queue alarm 191

### S

service ID 582 settings for collecting information about application operating status 139 user-specific performance data 153 settings for PFM - Manager deleting 103 setup command 99 single-instance record 582 Space Usage - Top 10 Local File Systems report 263 Space Usage - Top 10 Remote File Systems report 264 stand-alone mode 582 status management function 494, 582 Store database 4, 583 free space, estimation examples 514 summarization rules 279 Swap Outs alarm 192 symbol conventions ix syntax conventions ix syslog list 444 system log 480 System Overview report 265, 268 system requirement, estimating 498 System Summary Overview (PI) record 385 System Utilization Status report 270

# Т

TB meaning xi Terminal Summary (PD\_TERM) record 406 trace log 480, 482 Trap Generator 583 troubleshooting 473

### U

uninstallation and unsetup 102

#### 589

#### CPU Per Processor Status 222 CPU Per Processor Usage 223 CPU Status 224 CPU Status (Multi-Agent) 226 CPU Trend 228 CPU Trend (Multi-Agent) 229 CPU Usage - Top 10 Processes 230 CPU Usage Summary 231 Device Detail 233 Device Usage Status 234 Device Usage Status (Multi-Agent) 235 format of explanation 211 Free Space Mbytes - Top 10 Local File Systems 236 historical 3 I/O Activity - Top 10 Processes 237 I/O Overview 238 list of folder 216 Local File System Detail 239 Major Page Faults - Top 10 Processes 240 Memory Paging 241 Memory Paging Status 242 Memory Paging Status (Multi-Agent) 243 Network Interface Detail 244 Network Interface Summary 246, 247 Network Overview 248 Network Status 249 Network Status (Multi-Agent) 250 NFS Activity Overview 252 NFS Load Trend 253 NFS Usage Status 254 NFS Usage Status (Multi-Agent) 255 organization of folder 213 Paging Trend (Multi-Agent) 256 Process Detail 257 Process Overview 259 Process Summary Status 260 Process Trend 261 real-time 3 Remote File System Detail 262 Space Usage - Top 10 Local File Systems 263 Space Usage - Top 10 Remote File Systems 264 System Overview 265, 268

#### Index

unsetup procedures 103 user command 154 User CPU alarm 193 user data file 154 user defined record 583 User Summary (PD\_USER) record 425 user-created data 154 user-created data file format 167 user-defined record 126 collecting 125 overview of collection 126

# V

version compatibility 553 version number conventions xii version upgrade, notes on 86 vPars function 291

# W

workgroup 583 workgroup file setting up 130 specification example 136 specifying 131 workgroup information collecting 130 Workgroup Summary (PI\_WGRP) record 429 Workload Status (Multi-Agent) report 272 Workload Status report 271

590

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