

# Symantec NetBackup™ Release Notes

Release 7.6.1

Software Release Update

Document Version 1



# Symantec NetBackup™ Release Notes

Documentation version: 7.6.1

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# Technical Support

Symantec Technical Support maintains support centers globally. Technical Support's primary role is to respond to specific queries about product features and functionality. The Technical Support group also creates content for our online Knowledge Base. The Technical Support group works collaboratively with the other functional areas within Symantec to answer your questions in a timely fashion. For example, the Technical Support group works with Product Engineering and Symantec Security Response to provide alerting services and virus definition updates.

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For information about Symantec's support offerings, you can visit our website at the following URL:

[www.symantec.com/business/support/](http://www.symantec.com/business/support/)

All support services will be delivered in accordance with your support agreement and the then-current enterprise technical support policy.

## About Symantec Operations Readiness Tools

Symantec Operations Readiness Tools (SORT) is a robust set of standalone and web-based tools that support Symantec enterprise products. For NetBackup, SORT provides the ability to collect, analyze, and report on host configurations across UNIX/Linux or Windows environments. This data is invaluable when you want to assess if your systems are ready for an initial NetBackup installation or for an upgrade.

Access SORT from the following webpage:

<https://sort.symantec.com/netbackup>

Once you get to the SORT page, more information is available as follows:

- Installation and Upgrade Checklist  
Use this tool to create a checklist to see if your system is ready for a NetBackup installation or an upgrade. This report contains all the software and the hardware

compatibility information specific to the information provided. The report also includes product installation or upgrade instructions, as well as links to other references.

- Hot fix and EEB Release Auditor  
Use this tool to find out whether a release that you plan to install contains the hot fixes that you need.
- Custom Reports  
Use this tool to get recommendations for your system and Symantec enterprise products.
- NetBackup Future Platform and Feature Plans  
Use this tool to get information about what items Symantec intends to replace with newer and improved functionality. The tool also provides insight about what items Symantec intends to discontinue without replacement. Some of these items include certain NetBackup features, functionality, 3rd-party product integration, Symantec product integration, applications, databases, and the OS platforms.

Help for the SORT tools is available. Click **Help** in the upper right corner of the SORT home page. You have the option to:

- Page through the contents of the help similar to a book
- Look for topics in the index
- Search the help with the search option

## Contacting Technical Support

Customers with a current support agreement may access Technical Support information at the following URL:

[www.symantec.com/business/support/](http://www.symantec.com/business/support/)

Before contacting Technical Support, make sure you have satisfied the system requirements that are listed in your product documentation. Also, you should be at the computer on which the problem occurred, in case it is necessary to replicate the problem.

When you contact Technical Support, please have the following information available:

- Product release level
- Hardware information
- Available memory, disk space, and NIC information
- Operating system

- Version and patch level
- Network topology
- Router, gateway, and IP address information
- Problem description:
  - Error messages and log files
  - Troubleshooting that was performed before contacting Symantec
  - Recent software configuration changes and network changes

## Licensing and registration

If your Symantec product requires registration or a license key, access our technical support Web page at the following URL:

[www.symantec.com/business/support/](http://www.symantec.com/business/support/)

## Customer service

Customer service information is available at the following URL:

[www.symantec.com/business/support/](http://www.symantec.com/business/support/)

Customer Service is available to assist with non-technical questions, such as the following types of issues:

- Questions regarding product licensing or serialization
- Product registration updates, such as address or name changes
- General product information (features, language availability, local dealers)
- Latest information about product updates and upgrades
- Information about upgrade assurance and support contracts
- Information about the Symantec Buying Programs
- Advice about Symantec's technical support options
- Nontechnical presales questions
- Issues that are related to CD-ROMs, DVDs, or manuals

## Support agreement resources

If you want to contact Symantec regarding an existing support agreement, please contact the support agreement administration team for your region as follows:

Asia-Pacific and Japan [customercare\\_apac@symantec.com](mailto:customercare_apac@symantec.com)

Europe, Middle-East, and Africa [semea@symantec.com](mailto:semea@symantec.com)

North America and Latin America [supportsolutions@symantec.com](mailto:supportsolutions@symantec.com)

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# About NetBackup 7.6.1

This chapter includes the following topics:

- [About the NetBackup 7.6.1 release](#)
- [About NetBackup Late Breaking News](#)
- [About NetBackup third-party legal notices](#)

## About the NetBackup 7.6.1 release

Symantec is pleased to announce the release of NetBackup 7.6.1. This release introduces significant features, enhancements, and performance improvements to NetBackup and its associated options. These new features and enhancements improve and expand NetBackup's capability to protect mission-critical data and applications in physical and virtualized environments.

The *NetBackup Release Notes* document is meant to act as a snapshot of information about a version of NetBackup at the time of its release. Old information and any information that no longer applies to a release is either removed from the release notes or migrated elsewhere in the NetBackup documentation set.

See [“About new enhancements and changes in NetBackup”](#) on page 14.

### About EEBs and release content

NetBackup 7.6.1 incorporates fixes to many of the known issues that affected customers in previous versions of NetBackup. Some of these fixes are associated with the customer-specific issues that have been documented in the form of Titan or Salesforce.com (SFDC) cases. Several of the customer-related fixes that were incorporated into this release were also made available as emergency engineering binaries (EEBs).

Listings of the EEBs and Etracks that document the known issues that have been fixed in NetBackup 7.6.1 can be found on the Symantec Operations Readiness Tools (SORT) website and in the [NetBackup Emergency Engineering Binary Guide](#).

See “[About Symantec Operations Readiness Tools](#)” on page 82.

See “[About NetBackup release content](#)” on page 63.

## About NetBackup appliance releases

The NetBackup appliances run a software package that includes a preconfigured version of NetBackup. When a new appliance software release is developed, the latest version of NetBackup is used as a basis on which the appliance code is built. For example, NetBackup Appliance 2.6 is based on NetBackup 7.6. This development model ensures that all applicable features, enhancements, and fixes that were released within NetBackup are included in the latest release of the appliance.

The NetBackup appliance software is released at the same time as the NetBackup release upon which it is based, or soon thereafter. If you are a NetBackup appliance customer, make sure to review the *NetBackup Release Notes* that correspond to the NetBackup appliance version that you plan to run.

Appliance-specific documentation is available at the following location:

<http://www.symantec.com/docs/DOC2792>

## About upgrade paths to the NetBackup 7.6.1 line of releases

Upgrades to NetBackup 7.6.1 are supported from versions as early as NetBackup 6.0. However, some of the functionality that was introduced in NetBackup 7.6.0.4 is not present in the NetBackup 7.6.1 GA release. The difference in functionality is limited to bug fixes and a small set of features.

Please review the following upgrade scenarios to determine the proper upgrade path:

- If you are running NetBackup 7.6.0.3 or earlier, your upgrade path is to NetBackup 7.6.1 GA.

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**Note:** If you are running NetBackup 7.6 and do not plan to upgrade to version 7.6.1 (including the 5330 appliance) within the first calendar quarter of 2015, Symantec recommends that you upgrade to version 7.6.0.4 to take advantage of the latest bug fixes and compatibility features.

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- If you are running NetBackup 7.6.0.4, your suggested upgrade path is to a release in the NetBackup 7.6.1 maintenance line (triple-dot) available in the first

calendar quarter of 2015. Symantec will publicly declare the maintenance release that provides the recommended upgrade path when that software is released to manufacturing (RTM).

Please check the following tech note periodically for updated information:

<http://www.symantec.com/docs/TECH225453>

## About NetBackup Late Breaking News

For the most recent NetBackup news and announcements, visit the NetBackup Late Breaking News website at the following location:

<http://www.symantec.com/docs/TECH74904>

Other NetBackup-specific information can be found at the following location:

[go.symantec.com/nb](http://go.symantec.com/nb)

## About NetBackup third-party legal notices

NetBackup products may contain third-party software for which Symantec is required to provide attribution. Some of the third-party programs are available under open source or free software licenses. The license agreement accompanying NetBackup does not alter any rights or obligations that you may have under those open source or free software licenses.

The proprietary notices and the licenses for these third-party programs are documented in the *NetBackup Third-party Legal Notices* document, which is available at the following website:

<http://www.symantec.com/about/profile/policies/eulas/>

# New features, enhancements, and changes

This chapter includes the following topics:

- [About new enhancements and changes in NetBackup](#)
- [NetBackup 7.6.1 new features, enhancements, and changes](#)
- [NetBackup 7.6.0.4 new features, enhancements, and changes](#)
- [NetBackup 7.6.0.3 new features, enhancements, and changes](#)
- [NetBackup 7.6.0.2 new features, enhancements, and changes](#)

## About new enhancements and changes in NetBackup

In addition to new features and product fixes, NetBackup releases often contain new customer-facing enhancements and changes. Examples of common enhancements include new platform support, upgraded internal software components, interface changes, and expanded feature support. Most new enhancements and changes are documented in the *NetBackup Release Notes* and the NetBackup compatibility lists.

---

**Note:** The *NetBackup Release Notes* only lists the new platform support that begins at a particular NetBackup version level at the time of its release. However, Symantec routinely backdates platform support to previous versions of NetBackup. You should refer to the NetBackup compatibility lists for the most up-to-date platform support listings.

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See [“About the NetBackup 7.6.1 release”](#) on page 11.

See [“About NetBackup compatibility lists and information”](#) on page 78.

## NetBackup 7.6.1 new features, enhancements, and changes

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**Note:** Please review the following topic for information about upgrade parity with the 7.6.0.x line of releases:

See [“About upgrade paths to the NetBackup 7.6.1 line of releases”](#) on page 12.

---

The following list contains some of the general new features, enhancements, and changes that can be found in NetBackup starting in version 7.6.1:

- The Sybase SQL Anywhere database (NetBackup catalog) is automatically upgraded to version 16.0.
- The Activity Monitor has been enhanced to display job hierarchy and now includes error code hyperlinks under **Job Details > Detailed Status**. You can toggle between the flat view and job hierarchical view by clicking on the toolbar button in the Activity Monitor.
- NetBackup now recognizes the access control list and extended attribute metadata of General Parallel File System files and folders. By default, NetBackup backs up and restores the ACL and extended attributes for GPFS volumes. No additional configuration is necessary.  
More information is included in the *NetBackup Administrator's Guide, Volume I* for version 7.6.1.  
Refer to the [Symantec NetBackup Hardware Compatibility List](#) for supported operating systems and GPFS versions.
- The **Maximum Backup Copies** host property is no longer configurable. In version 7.6.1, NetBackup always considers 10 to be the maximum number of copies of a backup image that can exist at the same time within a single master server domain.  
This property appeared under the **Global Attributes** master server host properties in the **NetBackup Administration Console**.

### NetBackup Media Server Deduplication Option

The following list contains some of the new features, enhancements, and changes that are associated with the NetBackup Media Server Deduplication Option (MSDP) starting in NetBackup 7.6.1:

- NetBackup supports 96 TBs of storage in a single **Media Server Deduplication Pool** on SUSE Linux systems. NetBackup supports this expanded capacity on SUSE Linux systems to help customers transition from the NetBackup PureDisk product and the NetBackup 50xx series of Deduplication Appliances. Both of those products are based on SUSE Linux.

More information about the new MSDP features is available in the 7.6.1 version of the *NetBackup Deduplication Guide* available through the following URL:

<http://www.symantec.com/docs/DOC5332>

- The NetBackup 7.6.1 release makes significant changes to the deduplication database to improve performance and scalability. The MSDP database changes in NetBackup 7.6.1 require that the existing database records be converted to a new format during an upgrade installation. For more information about upgrading and converting your MSDP environment to NetBackup 7.6.1, refer to the *NetBackup Upgrade Guide* and the *NetBackup Deduplication Guide*.
- To increase availability, NetBackup introduces a two-tier approach in this release to protect the MSDP catalog, as follows:
  - Daily shadow copies  
NetBackup automatically creates copies of the MSDP catalog daily, which provides the first tier of protection. If NetBackup detects corruption in any part the catalog, NetBackup restores that part automatically from the most recent shadow copy.
  - Catalog backup policy  
NetBackup provides a utility that you can use to create a backup policy for the MSDP catalog. It populates the backup policy with appropriate values for your MSDP catalog.  
The MSDP catalog backups provide the second tier of catalog protection.  
The catalog backups are available if the shadow copies are not available or corrupt.

More information about the MSDP catalog protection features is available in the 7.6.1 version of the *NetBackup Deduplication Guide* at the following URL:

<http://www.symantec.com/docs/DOC5332>

- Symantec changed how NetBackup reports Media Server Deduplication Pool space usage. Previously, root reserved space on the file system was added to the Media Server Deduplication Pool space used. Therefore, it was possible that NetBackup reported more used space on the volume than the file system utilities reported. Beginning with this release, root reserved space is no longer added to the used space, it is subtracted from the file system raw space. After you upgrade to NetBackup 7.6.1, the amount of raw space and used space that is reported may decrease. The space did not change, the reporting is more accurate.



## NetBackup OpsCenter

The following list contains some of the new features, enhancements, and changes that are associated with NetBackup OpsCenter starting in version 7.6.1:

- In OpsCenter 7.6.1, the OpsCenter server database is upgraded to Sybase SQL Anywhere 16.0.  
After the Sybase software upgrade, defragment the OpsCenter database for better performance.  
For information on OpsCenter database defragmentation, refer to the *OpsCenter Performance and Tuning Guide* at the following location:  
<http://www.symantec.com/docs/DOC5808>
- Starting with OpsCenter 7.6.1, you no longer need to install and configure the OpsCenter Agent to collect data from NetBackup. OpsCenter uses the NBSL component and the `bpj_ava` protocol to collect data from NetBackup.

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**Note:** You still need to install and configure the OpsCenter Agent to collect data from Backup Exec.

---

- OpsCenter 7.6.1 can monitor the NetBackup 5330 Appliance and its components: The Primary Storage Shelf and the Expansion Storage Shelf.  
To monitor the NetBackup 5330, you need to add the corresponding master server appliance in OpsCenter. After you have added the appropriate master server appliance in OpsCenter, you can do the following:
  - Create alert policies based on the conditions that are specific to the NetBackup 5330.
  - View alerts when NetBackup 5330 hardware fails.

## NetBackup for VMware

The following list contains some of the new features, enhancements, and changes that are associated with NetBackup for VMware starting in version 7.6.1:

- NetBackup Plug-in for VMware vSphere Web Client  
The plug-in allows virtualization administrators to access the following functionality directly from within the vSphere Web Client administration console:
  - Monitoring and reporting of VM backups
  - Self-service restores of VMs
- Support for a Linux restore host for instant recovery of VMware virtual machines

A NetBackup 7.6.1 restore host for Instant Recovery can now be on either Windows or Linux. This feature also adds support for the NetBackup Appliance 5230 as the instant recovery restore host.

- Enhanced VMware protection to data that is stored within the Virtual SAN datastore, including the following:
  - Virtual machines on the Virtual SAN datastore are protected by NetBackup for VMware policies
  - Automatic discovery of VMs on Virtual SAN datastores using VIP filter
  - Ability to impose resource limits on Virtual SAN datastores
  - Maintains parity with other VMware datastore types like VMFS and NFS

## Bare Metal Restore

The following list contains some of the new features, enhancements, and changes that are associated with Bare Metal Restore (BMR) starting in NetBackup 7.6.1:

- BMR no longer supports the creation of new legacy SRTs on BMR boot servers running NetBackup 7.6.1 and later. The only method to create a Windows SRT is Fast Restore. However, there are a few methods that you may continue to use for legacy SRT restores. Refer to the *NetBackup Bare Metal Restore Administrator's Guide* for more information.
- The BMR Windows recovery environment has been upgraded from Windows Preinstallation Environment (WinPE) version 3.0 (based on Windows Server 2008 R2) to version 5.0 (based on Windows Server 2012 R2).  
Microsoft no longer supports embedding WinPE within enterprise products. Therefore, NetBackup BMR 7.6.1 does not provide a built-in WinPE environment for the creation of SRTs. Creating SRTs using a BMR 7.6.1 boot server for setting up the recovery environment requires the Microsoft ADK. For more information, refer to the *NetBackup Bare Metal Restore Administrator's Guide*.

# NetBackup 7.6.0.4 new features, enhancements, and changes

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**Note:** The items that are described in this topic may not have parity with the upcoming NetBackup 7.6.1 release.

See [“About upgrade paths to the NetBackup 7.6.1 line of releases”](#) on page 12.

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The following list contains some of the new features, enhancements, and changes that can be found in NetBackup starting in version 7.6.0.4:

- Agent support for Enterprise Vault 11

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**Note:** To upgrade to Enterprise Vault 11 from Enterprise Vault 8 and newer, no modifications are required to be made in the backup policy.

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- Support for Microsoft Cluster Server (MSCS) on Windows Server 2012
- Bare Metal Restore (BMR) support for the following platforms:
  - Recovery of Windows clients to computers that have Advanced Format (AF) 512e disks
- You no longer need to install NetBackup or Network File System (NFS) client services on a Client Access server (CAS) to perform granular restore technology (GRT) restores for Exchange Server 2010 or Exchange Server 2013. You also do not need to make any other configuration settings on the CAS for NetBackup. NetBackup now performs Exchange granular restores on the destination client that you configure or specify. As in previous NetBackup releases, NetBackup uses Exchange Web Services (EWS) to restore mailbox and public folder items. In the past, NetBackup used a local host URL to interface with EWS, and thus needed to execute on a CAS. Beginning with version 7.6.0.3 NetBackup began GRT support for Exchange Server 2013. NetBackup 7.6.0.3 and later can execute on any Exchange server that has access to the target database. From that client, NetBackup includes a discovered CAS in the URL that it uses to access EWS. The PowerShell syntax to set the EWS-related attributes is different for Exchange Server 2013 than the syntax for Exchange Server 2010. For Exchange 2013 with NetBackup 7.6.0.3 or later:

```
New-ManagementRole -Name SymantecEWSImpersonationRole -Parent
ApplicationImpersonation
New-ManagementRoleAssignment -Role SymantecEWSImpersonationRole
-User NetBackupUser -Name "NetBackupUser-EWSImpersonation"
New-ThrottlingPolicy -Name "SymantecEWSRestoreThrottlingPolicy"
-EwsCutoffBalance "Unlimited" -EwsMaxBurst "Unlimited"
-EwsMaxConcurrency "Unlimited" -ExchangeMaxCmdlets "Unlimited"
-MessageRateLimit "Unlimited" -PowerShellCutoffBalance "Unlimited"
-PowerShellMaxBurst "Unlimited" -PowerShellMaxCmdlets "Unlimited"
-PowerShellMaxConcurrency "Unlimited" -PowerShellMaxOperations
"Unlimited" -RecipientRateLimit "Unlimited" -ThrottlingPolicyScope
"Regular"
```

## SAN Client now provides more concurrent Fibre Transport connections per media server

Beginning with this release, NetBackup supports more concurrent FT connections per media server than in past releases.

NetBackup uses the **Maximum concurrent FT connections Fibre Transport** host property to control the number of concurrent connections to a Fibre Transport media server. You can enter up to the following maximum connections for the media server or servers to use:

- For NetBackup 5230 and later Deduplication Appliances: 40.
- On a Linux FT media server host: 40.  
 NetBackup recommends that you use 32 or fewer connections concurrently on Linux.
- On a Solaris FT media server host: 64.

If no value is set, NetBackup uses the following defaults:

- For NetBackup Deduplication Appliances model 5230 and later: 32
- For NetBackup Fibre Transport media servers: Eight times the number of fast HBA ports on the media server plus four times the number of slow HBA ports for. A fast port is 8 GB or faster, and a slow port is less than 8 GB.

If the total number of concurrent connections on Linux is too low for your purposes, you can increase the total number of concurrent connections. The consequence is that each client backup or restore job uses fewer buffers, which means that each job is slower because of fewer buffers. To increase the number of concurrent connections, reduce the number of buffers per connection. To do so, create the following file and include one of the supported values in the file:

```
/usr/opensv/netbackup/db/config/NUMBER_DATA_BUFFERS_FT
```

[Table 2-1](#) shows the values that NetBackup supports for the `NUMBER_DATA_BUFFERS_FT` file for Linux. NetBackup supports 644 buffers per media server for Fibre Transport.

**Table 2-1** Supported values for buffers per FT connection on Linux

<code>NUMBER_DATA_BUFFERS_FT</code>	Total concurrent connections: NetBackup 5230 and later appliance	Total concurrent connections: Linux FT media server
16	40	40
12	53	53

**Table 2-1** Supported values for buffers per FT connection on Linux (*continued*)

NUMBER_DATA_BUFFERS_FT	Total concurrent connections: NetBackup 5230 and later appliance	Total concurrent connections: Linux FT media server
10	64	64

## NetBackup 7.6.0.3 new features, enhancements, and changes

The following list contains some of the new features, enhancements, and changes that can be found in NetBackup starting in version 7.6.0.3:

- Windows Server 2012 R2 support for the following:
  - Master server and media server
  - OpsCenter server
  - BMR server
  - Windows Storage Server (media server)
  - Symantec Cluster Server powered by Veritas (SFVHA)
  - Microsoft Cluster Server (supported on Windows Server 2012 R2; not supported on Windows Server 2012)
  - MSDP Client Direct
  - SAN client

---

**Note:** Support requires a special full installation package.

See [“Special full installation packages for NetBackup server and client on Windows 8.1/Server 2012 R2”](#) on page 30.

---

- FT media server support for Red Hat Enterprise Linux (RHEL) 6.5
- Support for Microsoft Exchange 2013 and SharePoint 2013, including support for Granular Recovery Technology (GRT)
- Support for Microsoft SQL Server 2014 on Windows Server 2008/2008 R2/2012/2012 R2
- Support for IBM Domino 9.0.1 on Windows Server 2012 R2

- Hyper-V policy support for single file recovery functionality on Windows Server 2012 R2 Update 1
- Support for VDDK 5.5 Update 1
- Bare Metal Restore (BMR) support for the following platforms:
  - Windows Server 2012 R2 boot server and client
  - Windows 8.1 client
  - Oracle Enterprise Linux (OEL) 5.9 client
  - RHEL 6.5 boot server and client
  - RHEL 5.10 boot server and client

## NetBackup utility enhancements

NetBackup 7.6.0.3 includes improvements to the `NBCC`, `NBCCA`, and `nbsu` utilities. The improvements to `NBCC` and `NBCCA` include enhancements and high-priority fixes that improve the end-user experience. These fixes help the NetBackup Support organization identify NetBackup catalog and database consistency issues. Enhancements to `nbsu` in version 1.7.1 include improvements to diagnostic data collection and the diagnosis of issues with NetBackup.

## Using Query Builder to speed up a search for specific vApps

To speed up the search for VMs in a large VMware vCloud Director environment, you can use Query Builder rules in the NetBackup policy to search specific vApps. For instructions, see the following Symantec document:

<http://www.symantec.com/docs/HOWTO99923>

## A new BMR user prompt has been added to choose between multiple kernel levels

An additional user prompt has been added to let you choose the appropriate kernel when you create a Bare Metal Restore (BMR) shared resource tree (SRT) for a Linux client using operating system installation media that have multiple kernels.

For example, the following prompt is displayed when you create an Oracle Linux 6.4 client:

```
Choose appropriate SRT kernel version for your SRT :
```

1. vmlinuz-2.6.39-400.17.1.el6uek.x86\_64
2. vmlinuz-2.6.32-358.el6.x86\_64

```
Enter your selection [1] :
```

In the example, the default kernel selection is the Oracle Linux UEK kernel (`vmlinux-2.6.39-400.17.1.el6uek.x86_64`) and gets added in the SRT by default. However, you may need to select a different kernel depending on your requirements. In this example, you must select the Red Hat Enterprise Linux (RHEL) kernel (`vmlinux-2.6.32-358.el6.x86_64`) when an SRT is created for Oracle Linux 6.4 running on a Windows 2008 R2 Hyper-V VM.

## New default configuration parameters in the MSDP pd.conf file

Symantec changed the values of two configuration parameters in the **Media Server Deduplication Pool** `pd.conf` file. The following are the parameters and their new values:

```
MAX_LOG_MBSIZE = 100
RESTORE_DECRYPT_LOCAL = 1
```

## NetBackup status code: 4243

**Message:** Insufficient space available on datastore

**Explanation:** VMware datastore(s) do not contain adequate space to perform a snapshot operation.

**Recommended action:** Free some space on the datastore(s) and retry the operation.

## NetBackup status code: 2821

**Message:** Hyper-V policy restore error

**Explanation:** On a Hyper-V restore operation, a connectivity issue between the Hyper-V host and the media server causes `bptm` to fail to write to the socket.

**Recommended Action:** Try the following:

- Update the NIC drivers and firmware if necessary.
- Ensure that the network hardware between the media server and the client operates properly.
- Add NetBackup processes and directories to the Antivirus Exclusion List since antivirus applications may close the established socket.
- Increase TCP resiliency on the Windows hosts (master servers, media servers, and clients) by setting the `TcpMaxDataRetransmissions` registry key to a value of 10. The default value is 5.

More information is available from Microsoft about the `TcpMaxDataRetransmissions` registry key:

[msdn.microsoft.com/en-us/library/aa915651.aspx](https://msdn.microsoft.com/en-us/library/aa915651.aspx)

Click [here](#) to view technical notes and other information in the Symantec Knowledge Base about this status code.

## NetBackup 7.6.0.2 new features, enhancements, and changes

The following list contains some of the new features, enhancements, and changes that can be found in NetBackup starting in version 7.6.0.2:

- Fix for the OpenSSL "Heartbleed" vulnerability in NetBackup and NetBackup appliances
- New Amazon Simple Storage Service (S3) region support
- New configuration option for NetBackup OpsCenter scheduled reports
- New option in the Backup, Archive, and Restore dialogs to select a media server during a restore
- Support for Hyper-V Server 2012 R2, including support for file-level Granular Recovery Technology (GRT) and the vhdx virtual hard disk format
- Support for VMware VDDK 5.5 with vSphere 5.5 and vCloud Director 5.5  
See "[NetBackup for VMware operational notes](#)" on page 55.
- Support for Oracle 12c  
See "[NetBackup for Oracle operational notes](#)" on page 41.
- NetBackup Fibre Transport (FT) media server support for SLES 11 SP3
- Bare Metal Restore (BMR) support for the following platforms:
  - Windows 8/Server 2012 boot server and client
  - Solaris 11.1 boot server and client
  - SUSE 11 SP2 boot server and client
  - SUSE 11 SP3 boot server and client
  - Red Hat Enterprise Linux (RHEL) 6 on Xen virtualization
  - The xvda disk format for Oracle Enterprise Linux on Oracle VM



## OpenSSL Heartbleed vulnerability to NetBackup and NetBackup appliances

NetBackup and the NetBackup appliances use the OpenSSL cryptography library that contains the CVE-2014-0160 vulnerability (also known as the "Heartbleed" security bug). The effect of this vulnerability in NetBackup is limited to telemetry and the NetBackup Plug-in for VMware vCenter (vCenter plug-in). Symantec has fixed this vulnerability starting with the NetBackup 7.6.0.2 and NetBackup Appliance 2.6.0.2 releases.

If you use the vCenter plug-in, Symantec recommends that you take the following precautionary actions after upgrading to NetBackup 7.6.0.2 or later:

- On the vCenter plug-in virtual appliance:
  - 1 Change the virtual appliance local account password.
  - 2 If you have explicitly enabled the SSH daemon (`sshd`), you should regenerate a new key pair.
- Alternatively, you can reinstall the virtual appliance and upload the NetBackup master server token again.

For updated information about this issue and how it might affect your NetBackup environment, refer to the following tech note on the Symantec Support website:

<http://www.symantec.com/docs/TECH216555>

## About the Amazon Simple Storage Service (S3) region support

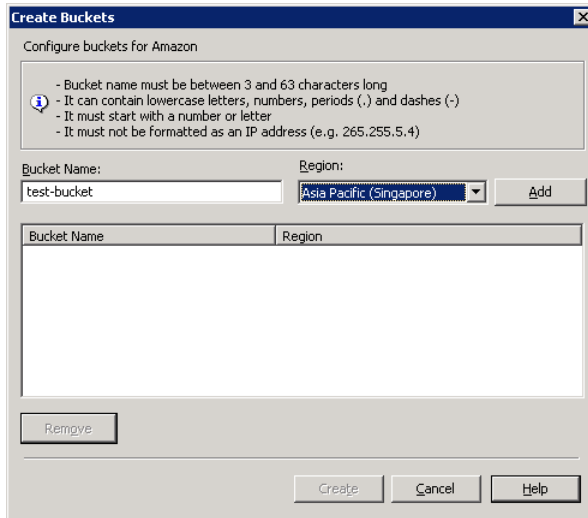
Beginning with the 7.6.0.2 release, NetBackup 7.6 supports Amazon cloud storage in all of its provided regions. By default, NetBackup uses the US Standard region for Amazon cloud storage.

Support for Amazon regions other than US Standard requires the following release levels:

- NetBackup 7.5 media servers must run NetBackup 7.5.0.6 or later.
- NetBackup 7.6 media servers must run NetBackup 7.6.0.2 or later.

When you configure a NetBackup disk pool for Amazon, you can select the region in which to create the Amazon storage bucket. The following dialog box appears when you click the **Add** button on the **Select Volumes** panel of the **Disk Pool Configuration Wizard**:

**Figure 2-1** Configure buckets for Amazon dialog box



NetBackup writes your backups to that region’s cloud and does not route the traffic through the main Amazon Web Service hosts in the United States.

The following are the requirements for bucket names in regions other than the US Standard region:

- Bucket names must be at least 3 and no more than 63 characters long.
- Bucket names must be a series of one or more labels. The labels can contain lowercase letters, numbers, and dashes. Each label must start and end with a lowercase letter or a number. Use a single period (.) to separate adjacent labels, as in the following example: `gold.backups.bucket1`.
- Bucket names must not be formatted as an IP address.

## New nbdevconfig command option (-config)

Beginning with the 7.6.0.2 release, the `nbdevconfig` command includes a new option (`-config`) to specify regions other than US Standard in which to create buckets. Use this option with the `-createdv` option to specify the Amazon bucket. The following is the format and description of the option:

```
-config region:region-url
```

The `region-url` must be one of the following:

`ap-northeast-1`                      Asia Pacific (Tokyo)

<code>ap-southeast-1</code>	Asia Pacific (Singapore)
<code>ap-southeast-2</code>	Asia Pacific (Sydney)
<code>eu-west-1</code>	European Union (Ireland)
<code>sa-east-1</code>	South America (Sao Paulo)
<code>us-west-1</code>	US West (Northern California)
<code>us-west-2</code>	US West (Oregon)

If the `region-url` string does not exactly match the notation, the bucket is created in the US Standard region. If this option is omitted, the bucket is created in the US Standard region.

## Configuring OpsCenter scheduled reports for faster report generation

When you export or email a scheduled tabular report, 1000 records are fetched at a time from the database when the report generates. For large databases (0.5 million rows of data, for example) it can take several hours for the scheduled reports to generate.

Starting with NetBackup OpsCenter 7.6.0.2, you can configure a new page size setting to help reduce the time it takes to generate scheduled reports.

### To configure the page size setting

- 1 Open the `report.conf` file at the following location:

Windows	<code>&lt;INSTALL_PATH&gt;\Symantec\OpsCenter\server\config</code>
UNIX	<code>&lt;INSTALL_PATH&gt;/SYMCOpsCenterServer/config</code>

- 2 Add the following parameter: `report.export.pageSize`

For example:

```
report.export.pageSize = 20000
```

---

**Note:** Setting any value higher than 50000 for the `report.export.pageSize` parameter is not recommended and can lead to memory issues.

---

---

**Note:** This setting is not applicable for manually-exported reports.

---

**3 Stop all of the OpsCenter Server services using the following command:**

Windows	<code>&lt;INSTALL_PATH&gt;\OpsCenter\server\bin\opsadmin.bat stop</code>
UNIX	<code>&lt;INSTALL_PATH&gt;/SYMCOpsCenterServer/bin/opsadmin.sh stop</code>

**4 Start all of the OpsCenter Server services using the following command:**

Windows	<code>&lt;INSTALL_PATH&gt;\OpsCenter\server\bin\opsadmin.bat start</code>
UNIX	<code>&lt;INSTALL_PATH&gt;/SYMCOpsCenterServer/bin/opsadmin.sh start</code>

## New Media Server option for restoring to an alternate location

The NetBackup Backup, Archive, and Restore dialogs include a new restore option called **Media Server**. You can use this option to select a media server that has access to the storage unit that contains the backup image. An example of such an environment is a Media Server Deduplication Pool (MSDP) with multiple media servers.

---

**Note:** If the storage unit that contains the backup image is not shared with multiple media servers, this option is grayed out.

---

# Operational notes

This chapter includes the following topics:

- [About NetBackup 7.6.1 operational notes](#)
- [NetBackup installation and upgrade operational notes](#)
- [NetBackup administration and general operational notes](#)
- [NetBackup Accelerator operational notes](#)
- [NetBackup Bare Metal Restore operational notes](#)
- [NetBackup database and application agent operational notes](#)
- [NetBackup deduplication operational notes](#)
- [NetBackup documentation notes](#)
- [NetBackup for NDMP operational notes](#)
- [NetBackup OpsCenter operational notes](#)
- [NetBackup Replication Director operational notes](#)
- [NetBackup Snapshot Client operational notes](#)
- [NetBackup virtualization operational notes](#)

## About NetBackup 7.6.1 operational notes

NetBackup operational notes describe and explain important aspects of various NetBackup operations that may not be documented elsewhere in the NetBackup documentation set or on the Symantec Support website. The operational notes can be found in the *NetBackup Release Notes* for each version of NetBackup. Typical

operational notes include known issues, compatibility notes, and additional information about installation and upgrade.

Operational notes are often added or updated after a version of NetBackup has been released. As a result, the online versions of the *NetBackup Release Notes* or other NetBackup documents may have been updated post-release. You can access the most up-to-date version of the documentation set for a given release of NetBackup at the following location on the Symantec Support website:

<http://www.symantec.com/docs/DOC5332>

See “[About related NetBackup documents](#)” on page 89.

## NetBackup installation and upgrade operational notes

NetBackup can be installed and upgraded in heterogeneous environments using a variety of methods. NetBackup is also compatible with a mixture of servers and clients that are at various release levels in the same environment. This topic contains some of the operational notes and known issues that are associated with the installation, upgrade, and software packaging of NetBackup 7.6.1.

See “[About NetBackup release types and versioning](#)” on page 74.

### Special full installation packages for NetBackup server and client on Windows 8.1/Server 2012 R2

Master and media server support on Windows Server 2012 R2 begins with NetBackup 7.6.0.3. However, NetBackup server installations on this platform require a special full installation package. Symantec has provided full installation packages for both server and client. These packages bring a NetBackup server or client directly to version 7.6.0.3 without the need to first install any previous versions of NetBackup 7.6.

**Table 3-1** NetBackup 7.6.0.3 installation and upgrade packages available for Windows

NetBackup 7.6.0.3 Windows package	Compatible Windows OS
NB_7.6.0.3.winnt.x64.Server.Win2012R2.exe <b>Special full server installation package</b>	<b>*Required*</b> for NetBackup 7.6 master and media server installations on Windows Server 2012 R2

**Table 3-1** NetBackup 7.6.0.3 installation and upgrade packages available for Windows (*continued*)

NetBackup 7.6.0.3 Windows package	Compatible Windows OS
NB_7.6.0.3.winnt.x64.Client.Win2012R2.exe <b>Special full client installation package</b>	Compatible only with new installations of the NetBackup client on Windows 8.1/Server 2012 R2  <b>*Recommended*</b> for new client push installations of NetBackup on Windows 8.1/Server 2012 R2 because of the following issue:  <a href="http://www.symantec.com/docs/TECH222231">http://www.symantec.com/docs/TECH222231</a>
NB_7.6.0.3.winnt.x64.exe NB_7.6.0.3.winnt.x86.exe Traditional maintenance packages (patches)	Compatible with all supported Windows client and server platforms except master and media server installations on Windows Server 2012 R2

For more information about supported Windows platforms, refer to the NetBackup compatibility lists on the Symantec Support website:

<http://www.symantec.com/docs/TECH59978>

### Notes about the NetBackup 7.6.0.3 full installation package for Windows

- The special full NetBackup 7.6.0.3 packages have the same installation requirements and relative binary sizes as NetBackup 7.6 GA. Refer to the *NetBackup Installation Guide* and the *NetBackup Upgrade Guide* for complete installation instructions.
- Until the next full media release, the NetBackup 7.6.0.3 server full installation package provides the only supported method for installing a base level of NetBackup server software on Windows Server 2012 R2.

## About support for HP-UX Itanium vPars SRP containers

HP introduced a new type of container for HP-UX Virtual Partitions (vPars)-enabled servers called Secure Resource Partitions (SRPs). As part of the security changes introduced by SRPs, native HP-UX install tools such as `swinstall` and `swremove` are disabled from being executed within the SRP environment. The `swinstall` and `swremove` tools can only be called from the global host running vPars, which then pushes the native packages to the SRP containers.

Starting with version 7.6.1, NetBackup installation aborts if you try to install into an HP Itanium SRP container (private file system, shared file system, or workload). If you install into the global container, a parameter is added to all `swremove` and `swinstall` commands to install only to the global view.

## Additional steps required for AIX

The installation or upgrade of NetBackup 7.5 or NetBackup 7.6 may stop responding on some versions of AIX. This problem is the result of changes in the AIX operating system to `vswprintf`. The changes break the undefined behavior in the `libACE` component that shipped with the MSDP package. This problem is found on:

- AIX 6.1 TL9
- AIX 7.1 TL3

More information is available.

<http://www.symantec.com/docs/TECH214505>

# NetBackup administration and general operational notes

NetBackup provides a complete, flexible data protection solution for a variety of platforms. The platforms include Windows, UNIX, and Linux systems. In addition to a standard set of data protection features, NetBackup can also utilize several other licensed and non-licensed components to better protect a variety of different systems and environments. This topic contains some of the general operational notes and known issues that are associated with the administration of NetBackup 7.6.1.

## Restore issues may occur with differing versions of AIX and GPFS

The behavior of AIX 6.1 with GPFS 3.4 (before 3.4.0.28) is different from the behavior of other versions of AIX with GPFS. When these versions are used together and a file with ACLs is restored, the group permission is set to the value of the ACL mask, regardless of the setting upon backup. This issue is internal to AIX 6.1 and GPFS 3.4.

For more information, refer to the following tech note on the Symantec Support website:

<http://www.symantec.com/docs/TECH223310>



## Unable to properly add the NEC\_HYDRA storage server type

When you try to add NEC\_HYDRA as the **Storage server type** during the **Add Storage Server** step of the **Storage Server Configuration Wizard**, the text autocomplete feature causes the storage to be added as NeC\_HYDRA. When you type NEC\_HYDRA into the **Storage server type** field, the second letter (E) is replaced with a lowercase e after the interface tries to autocomplete the server type to NetApp OnCommand server. The NeC\_HYDRA entry is unusable in the NetBackup environment and causes storage server creation to fail.

To work around this issue, type aNEC\_HYDRA into the **Storage server type** field and use the arrow keys to move back and delete the extraneous leading lowercase a character. This action leaves NEC\_HYDRA alone in the text field. Alternatively, you can use the `nbdevconfig -creatests` and `tpconfig -add -storage_server` commands. For more information, refer to the *NetBackup Commands Reference Guide*.

## The backup script path field is not active for an automatic backup schedule

When you configure an MS-SQL-Server policy with the **Backup Policy Configuration Wizard** and select the **Backup Type**, the field to specify the backup script path is not active after you select **Automatic Backup**. This issue only affects the NetBackup-Java Administration Console.

For more information and workarounds for this issue, refer to the following tech note on the Symantec Support website:

<http://www.symantec.com/docs/TECH222312>

## NetBackup Accelerator operational notes

NetBackup Accelerator increases the speed of full backups. The increase in speed is made possible by change detection techniques on the client. The client uses the change detection techniques and the client's current file system to identify the changes that occurred since the last backup. This topic contains some of the operational notes and known issues that are associated with NetBackup Accelerator in version 7.6.1.

## Accelerator backups for VMware intermittently fail with an incorrect checksum error

Accelerator backups for VMware intermittently fail with status code 84 and an `incorrect checksum` error when you use the hotadd transport method on a Windows proxy.

Further information and potential workarounds for this issue can be found at the following location on the Symantec Support website:

<http://www.symantec.com/docs/TECH222588>

## NetBackup Bare Metal Restore operational notes

NetBackup Bare Metal Restore (BMR) automates and streamlines the server recovery process, making it unnecessary to reinstall operating systems or configure hardware manually. This topic contains some of the operational notes and known issues that are associated with BMR in NetBackup 7.6.1.

### Support notes

- NetBackup 7.6.0.2 Windows x86-32 clients cannot be used as Virtual Instance Converters (VICs) for BMR physical to virtual (P2V) conversions. Note that NetBackup 7.6.0.2 uses VMware VDDK 5.5 libraries, which do not support the Windows x86-32 bit platform.
- BMR does not fully support the Resilient File System (ReFS) for the Windows 8/Server 2012 line of releases.

For Windows 8/Server 2012, ReFS-formatted client volumes are restored back as NTFS-formatted volumes with data files recovered. The following message displays during a prepare-to-restore operation:

```
The configuration contains volume(s) with ReFS file system.
```

---

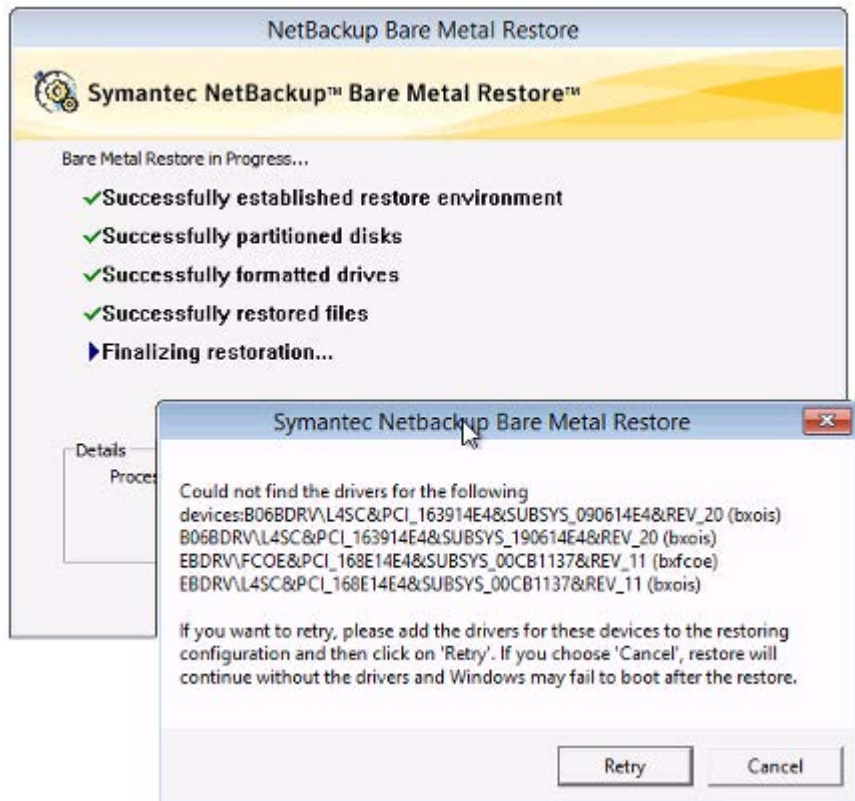
**Note:** ReFS-formatted client volumes are restored back as NTFS-formatted volumes with data files recovered.

---

- Legacy Restore is not supported on Windows 8/Server 2012 and later.
-

## A driver unavailability message may appear during a BMR restore due to WinPE changes

During a BMR automated (generic) restore using a copied client configuration, a pop-up message may appear during the **Finalizing restoration** step regarding driver unavailability. In this situation, you should check in the NetBackup Administration Console to see if the driver(s) are available in the affected client configuration. If they are not, insert the required driver(s) into the BMR database using the Driver Package Wizard.



For more information, refer to the following tech note on the Symantec Support website:

<http://www.symantec.com/docs/TECH223305>

---

**Note:** For some devices, such as the Broadcom device `Cisco 10GigE BCM57810` (NDIS VBD client driver), you might see the pop-up message even though the driver is present in the affected client configuration. This issue occurs because the operating system views such devices as both Network and Storage class devices.

In such a scenario, you should click **Cancel** and the restore should proceed seamlessly. If the recovery still fails, please contact Symantec Support.

---

## A PIT restore of a replicated BMR image within an alternate domain may fail

When a Bare Metal Restore (BMR) image is replicated to an alternate NetBackup domain using Auto Image Replication, attempts to perform a point in time (PIT) restore of that image within the alternate domain may fail.

For more information and workarounds for this issue, refer to the following tech note on the Symantec Support website:

<http://www.symantec.com/docs/TECH218244>

## Inconsequential message may appear during BMR recovery of an RHEL client that has RAID1 volumes

During a Bare Metal Restore (BMR) recovery of a Red Hat Enterprise Linux (RHEL) client that has RAID1 volumes configured, you may receive the following message on the client screen:

```
INFO: task mdadm:<pid> blocked for more than 120 seconds
```

You can safely ignore this message. The message is the result of the `mdadm` utility taking longer than expected. However, the utility eventually finishes and the restore completes successfully.

## An extra step is required after restoring a Windows client with EFI boot system

Restoring Windows clients with EFI boot system is currently only supported using the Fast Restore SRT option and not with the Legacy Restore option. However, to restore the EFI boot system using Fast Restore SRT during BMR client recovery, you must temporarily change the boot manager to BIOS. At the end of the recovery process during the first boot, change the boot manager back to UEFI mode.

# NetBackup database and application agent operational notes

NetBackup offers several methods of protecting various database and application technologies, such as Oracle, Microsoft SQL Server, and Microsoft Exchange Server. This topic contains some of the operational notes and known issues that are associated with the protection of database technologies in NetBackup 7.6.1.

## NetBackup for Exchange and NetBackup for SharePoint operational notes

NetBackup for Exchange Server and NetBackup for SharePoint Server extend the capabilities of NetBackup to include online backups and restores of Exchange and SharePoint databases. This topic contains some of the operational notes and known issues that are associated with NetBackup for Exchange and NetBackup for SharePoint in NetBackup 7.6.1.

### Support notes

- The SharePoint 2013 site template "Community Site" is not supported with SharePoint 2013 restores that use Granular Recovery Technology (GRT).
- NetBackup does not currently support SharePoint 2013 GRT restores of deleted lists and PerformancePoint Dashboards. For example, Microsoft OneDrive sync fails after you perform the GRT restore of the list or the OneDrive web app that is deleted.
- With SharePoint 2013 backups that use GRT, a redirected restore to a file system is not supported.
- The SharePoint 2013 site template "Product Catalog" is not supported with SharePoint 2013 restores that use GRT.

### Granular restores skip versioned documents or files that are checked out

With SharePoint 2010 and SharePoint 2013, when a document or file is enabled for versioning and is checked out at the time of backup, granular restore of such documents or files is skipped.

To work around this issue, restore the SharePoint web application content database. For more information, refer to the *NetBackup for Microsoft SharePoint Server Administrator's Guide*.

## Modified but unpublished list items may appear after a restore

With SharePoint 2010 and SharePoint 2013, multiple entries of the same version appear for a versioned uncustomized list item after restore if that item was modified but not published. However, if the modified file was published, this problem is not observed.

To work around this issue, restore the SharePoint web application content database. For more information, refer to the *NetBackup for Microsoft SharePoint Server Administrator's Guide*.

## Modified system files or ghosted files are not cataloged or restored during a site collection restore

Modified system files or modified ghosted files are neither cataloged nor restored during a site collection restore. This issue is observed in SharePoint 2013.

To work around this issue, restore the SharePoint web application content database. For more information, refer to the *NetBackup for Microsoft SharePoint Server Administrator's Guide*.

## Restored wiki page content may be incorrect

An issue occurs when you use Granular Recovery Technology (GRT) to restore a page in the Wiki site template in Microsoft SharePoint 2013. The restored contents might be incorrect if the page has changed after the backup was taken.

To work around this issue, restore the SharePoint web application content database. For more information, refer to the *NetBackup for Microsoft SharePoint Server Administrator's Guide*.

## A GRT restore of the .CSS file from the documents library fails, but appears successful

When you use Granular Recovery Technology (GRT) to restore the .css file from the documents library, the restore appears successful, but the .css file is not restored.

To work around this issue, restore the SharePoint web application content database. For more information, refer to the *NetBackup for Microsoft SharePoint Server Administrator's Guide*.

## A SharePoint GRT restore seems successful, but restored pages appear blank

When you use Granular Recovery Technology (GRT) to restore a deleted page from the SharePoint 2013 publishing portal that contained audio or video contents, the restore can seem successful, but the restored pages appear blank.

The restore operation may sometimes fail with the following error message:

```
The restore failed to recover the requested files. MS-SharePoint policy restore error (2804).
```

To work around this issue, restore the SharePoint web application content database. For more information, refer to the *NetBackup for Microsoft SharePoint Server Administrator's Guide*.

## A SharePoint GRT restore of a blog post results in orphaned comments

When you use Granular Recovery Technology (GRT) to restore a blog post on SharePoint 2013, comments are restored, but they are not linked to the appropriate blog post.

To work around this issue, restore the SharePoint web application content database. For more information, refer to the *NetBackup for Microsoft SharePoint Server Administrator's Guide*.

## After a SharePoint GRT restore of My Site, some information is not restored accurately

When you use Granular Recovery Technology (GRT) to restore items for My Site (personal site) of SharePoint 2013, some of the information including profile details, tags, People I'm following, and personal information is not restored accurately.

To work around this issue, restore the SharePoint web application content database. For more information, refer to the *NetBackup for Microsoft SharePoint Server Administrator's Guide*.

## Non-default themes are not restored with the site collection

When you restore a site collection for SharePoint, any non-default theme you applied is not restored with the site collection. You must reapply the theme manually after the restore. This limitation does not affect restores of sub sites.

## Web Parts do not retain their formatting

Web Parts on the home page of the site collection and subsite do not retain their formatting when you restore with Granular Recovery Technology (GRT) at the site collection and subsite level.

## Dependent items of blog posts are not restored

For SharePoint 2013, dependent items of blog posts (including comments and images) are not restored with restores that use Granular Recovery Technology (GRT).

## Attempts to restore an Exchange 2010 Public Folder item to a subfolder can fail with a status 5

If you attempt to restore an Exchange 2010 Public Folder item to a subfolder that has not been previously created, the restore fails with a status 5. The following error appears in the progress log:

```
MNR - error writing file: %1
```

Use one of the following workarounds to resolve this issue:

- Retry the restore operation. NetBackup receives an error when it attempts to create the new subfolder. However, the subfolder is created. A second restore attempt to the same subfolder location will be successful.
- Create the subfolder manually before you attempt the restore. If the subfolder exists, the restore will be successful.

## Restores between Public Folders and private mailboxes can fail with status 5

For Exchange 2010, the following situations cause a restore to fail with a status 5:

- Restores of a private mailbox item to a Public Folder
- Restores of a Public Folder item to a private mailbox

In the `ncfgr` log, the following error appears:

```
EWS Failed to get mailbox properties
```

## NetBackup for Microsoft SQL Server operational notes

NetBackup for SQL Server extends the capabilities of NetBackup for Windows to include backups and restores of SQL Server databases. These capabilities are provided for a Windows client using either a UNIX or Windows NetBackup master



server. This topic contains some of the operational notes and known issues that are associated with NetBackup for Microsoft SQL Server in NetBackup 7.6.1.

## SQL Server log truncation can fail during VMware backups of SQL Server

SQL Server transaction log truncation may fail during VMware backups of SQL Server if a database name contains special characters or if the %TEMP% directory path is too long. During SQL Server log truncation, the NetBackup for SQL Server agent creates a temporary log backup. This backup specifies the current user's configured %TEMP% directory and database name as part of the destination backup device. SQL Server limits the path that can be used for backup devices to 259 characters. Under certain circumstances the SQL Server agent may generate a backup device that is longer than 259 character and cause log truncation to fail.

The following conditions can cause failure:

- A configured %TEMP% directory that is longer than 259 characters.
- When the combined length of the database name and %TEMP% directory path is longer than 259 characters.
- The database name contains any special characters that are percent encoded in the backup device name.

One workaround for this issue is to configure the %TEMP% directory so that the path is substantially shorter than 259 characters long.

## NetBackup for Oracle operational notes

NetBackup integrates the database backup and recovery capabilities of the Oracle Recovery Manager (RMAN) with the backup and recovery management capabilities of NetBackup. This topic contains some of the operational notes and known issues that are associated with NetBackup for Oracle in NetBackup 7.6.1.

### Support notes

- Script-based Block-Level Incremental (BLI) Backups without Oracle Recovery Manager (RMAN) are not supported for Oracle 12c.

### NetBackup debug log files are not created for Oracle 12c on Windows

A situation can occur during backup and restore jobs of Oracle 12c for Windows where no debug log files are created in the `dbclient` and `bpdbsbora` folders.

In the Oracle 12c release, an Oracle user can be a Windows built-in account (`LocalSystem` or `LocalService`) or a standard Windows user account. This issue is the result of security permissions for standard (non-administrator) Windows user accounts.

If a standard (non-administrator) Windows user account is used, the Oracle user may not have the proper privileges to write to the `dbclient` and `bpdbsbora` folders. To work around this issue, change the Windows security permissions of the `dbclient` and `bpdbsbora` folders to give the Oracle user **Full control** permissions.

For more information, refer to the following tech note on the Symantec Support website:

<http://www.symantec.com/docs/TECH52446>

## To use the NetBackup SAN Client to protect Oracle on Windows, the Oracle user must have administrator privileges

Starting with Oracle Database 12c Release 1 (12.1), Oracle Database on Windows supports the use of Oracle Home User. The Oracle Home User is specified at the time of Oracle Database installation and is used to run the Windows services for the Oracle home. The Oracle Home User that is used to run Windows services is similar to the Oracle user for Oracle Database on Linux.

For more information, refer to the Oracle document "Supporting Oracle Home User on Windows" at the following location:

[http://docs.oracle.com/cd/E16655\\_01/win.121/e10714/oh\\_usr.htm](http://docs.oracle.com/cd/E16655_01/win.121/e10714/oh_usr.htm)

To use NetBackup SAN Client, make sure to select **Use Windows Built-in Account** during Oracle Database installation. Making this selection enables the Windows services for the Oracle home to run as `LocalSystem` or `LocalService`.

## Upgrade of an Oracle database causes instance information saved by NetBackup to become invalid

Upgrade of an Oracle database causes instance information for the upgraded database to become invalid. If this instance is associated with one or more current NetBackup for Oracle Intelligent Policies, run-time failures can occur. The issue occurs when an Oracle database is upgraded to a new version. The new version is likely to have a different `ORACLE_HOME`, `ORACLE_SID`, or Oracle User. If any of these values have changed, the existing instance information in the NetBackup instance repository and in the current Oracle Intelligent Policies becomes invalid. When the discovery service (`nbdisco`) polls the clients again, it discovers the database as a new instance. Consequently, there is no way to associate the new instance to the old instance.

This issue is not version-specific and applies to each of the following valid Oracle upgrade paths:

- Oracle 10 to version 11
- Oracle 10 to version 12
- Oracle 11 to version 12

For more information about the valid Oracle upgrade paths, review the following documentation on the Oracle Support website:

<http://www.oracle.com/technetwork/database/upgrade/upgrading-oracle-database-wp-12c-1896123.pdf>

Workaround: When an existing Oracle database is upgraded and the ORACLE\_HOME, ORACLE\_SID, or Oracle User are modified, remove the existing instance in the instance repository. After the existing instance is removed, update the instance repository with the new instance information. Make sure to update any policies with the newly-discovered instances.

## NetBackup for SAP operational notes

NetBackup for SAP integrates the database backup and recovery capabilities of SAP with the backup and the recovery management capabilities of NetBackup. This topic contains some of the operational notes and known issues that are associated with NetBackup for SAP in NetBackup 7.6.1.

### SAP HANA database recovery fails with a name server error

When you attempt to recover a SAP HANA database backup from the SAP HANA Studio interface, the recovery can fail with the following error message:

```
Failed: start of nameserver failed.
```

This issue occurs when you attempt to recover a backup from the multiple database backups that are taken along with some intermittent log backups.

For more information about this issue, refer to the following tech note on the Symantec Support website:

<http://www.symantec.com/docs/TECH223358>

## NetBackup deduplication operational notes

NetBackup provides several deduplication options that let you deduplicate data everywhere, as close to the source of data as you require. Deduplication everywhere lets you choose at which point in the backup process to perform deduplication.

NetBackup can manage the deduplication of environments that use the NetBackup Deduplication Engine. This topic contains some of the operational notes and known issues that are associated with the NetBackup Deduplication Engine in NetBackup 7.6.1.

- New versions of NetBackup may occasionally introduce significant changes to the underlying MSDP technologies. These types of changes often result in major modifications to the MSDP deduplication database during and after upgrade. Examples of these types of changes include the switch over to LZO compression in NetBackup 7.1 and the database conversions that occurred in NetBackup 7.6 and 7.6.1.

## The deduplication catalog policy jobs might show status 0 but not protect the deduplication catalog

A scenario can occur in which the NetBackup deduplication catalog backup policy does not back up the deduplication catalog files. The policy configuration appears to be correct, and the backup jobs show that it was successful (status code 0); however, no deduplication catalog files are backed up. This issue occurs after reinstalling NetBackup (on the storage server).

If you reinstall NetBackup 7.6.1 on a media server with the Deduplication Option or if you encounter this issue in another circumstance, remove the client name from the policy, and if the policy is empty, delete that policy. Next, either update the policy or create a new one (using the `drcontrol` utility). For instructions on how to create or update a deduplication catalog backup policy, see the “Configuring (Updating) an MSDP catalog backup” topic in the *NetBackup Deduplication Guide*.

## Occasional failures occur during backups to MSDP on Windows Server 2012 R2 due to Teredo tunneling

Backups intermittently fail with status code 83 when writing to an MSDP storage unit that is hosted on a Windows Server 2012 R2 media server. This issue can occur if the media server has Teredo enabled and the Windows firewall disabled.

For more information about this issue, refer to the following tech note on the Symantec Support website:

<http://www.symantec.com/docs/TECH223550>

## NetBackup documentation notes

Symantec provides a full set of technical documentation that covers the installation, administration, and management of each component of NetBackup. The

documentation set is published in several forms including guides (print and PDF), online topics, and the built-in NetBackup software Help system. New documentation is published at each release depending on the release type. This topic contains some of the corrections and other notes that are associated with specific NetBackup documentation since the last time it was published.

See [“About NetBackup release types and versioning”](#) on page 74.

See [“About related NetBackup documents”](#) on page 89.

## NetBackup Commands Reference Guide notes

This topic contains some of the documentation corrections and notes that are associated with the *NetBackup Commands Reference Guide* in the latest version of the document.

### Inaccurate example for the nbstl command

In the *NetBackup Commands Reference Guide*, Example 3 in the "Examples" topic for the `nbstl` command contains the following inaccurate command:

```
# nbstl LCPolicy -dc Gold -uf 0,1,2 -residence DskStU,TpSTU,__NA__  
-pool NetBackup,DLP_Pool1,__NA__ -managed 0,0,0 -rel 6,12,1
```

The command should include the `-add` option and should include `-rl` as an option instead of `-rel`. The corrected command is as follows:

```
# nbstl LCPolicy -add -dc Gold -uf 0,1,2 -residence  
DskStU,TpSTU,__NA__ -pool NetBackup,DLP_Pool1,__NA__ -managed 0,0,0  
-rl 6,12,1
```

## NetBackup for Microsoft Exchange Server Administrator's Guide notes

This topic contains some of the documentation corrections and notes that are associated with the *NetBackup for Microsoft Exchange Server Administrator's Guide* in the latest version of the document.

### Topics do not reflect updated CAS requirements

You no longer need to install NetBackup or Network File System (NFS) client services on a Client Access server (CAS) to perform Granular Recovery Technology (GRT) restores for Exchange Server 2010 or Exchange Server 2013. You also do not need to make any other configuration settings on the CAS for NetBackup.

The following topics in the *NetBackup for Exchange Server Administrator's Guide* mention configuration for the CAS, but the configuration is no longer required for the CAS with NetBackup 7.6.0.3 and later.

- NetBackup client requirements for NetBackup for Exchange
- About the Exchange credentials in the client host properties
- About configuring the account for NetBackup Exchange operations
- About NetBackup and Microsoft Exchange Web Services (Exchange 2010 and 2013)
- Creating a privileged NetBackup user account for EWS access (Exchange 2010 and 2013)
- Creating a minimal NetBackup account for Exchange operations (Exchange 2010 and 2013)
- Configuring the Exchange hosts
- Exchange granular clients and non-VMware backups
- Exchange granular clients and VMware backups
- Exchange granular operations and the NetBackup media server
- Configuring an Exchange backup that uses Granular Recovery Technology (GRT) (non-VMware backups)
- About configuring Services for Network File System (NFS) on Windows 2012
- About configuring Services for Network File System (NFS) on Windows 2008 and Windows 2008 R2
- About selecting a destination client for an Exchange restore operation
- Redirecting a Database Availability Group (DAG) snapshot backup to another database or to the recovery database (RDB)
- About configuring a VMware backup that protects Exchange Server
- Configuring Granular Recovery Technology (GRT) with a VMware backup that protects Exchange
- About configuring a VMware backup that protects Exchange Server, using Replication Director to manage snapshot replication
- Configuring Granular Recovery Technology (GRT) with a VMware backup that protects Exchange, using Replication Director to manage snapshot replication
- Configuring NetBackup with access to the CIFS share on the NetApp disk array
- About restoring Exchange data from a VMware backup

- Troubleshooting an Exchange mailbox operation with a status 5 error with bprestore
- Configuring the logon account for the NetBackup Legacy Network Service (Exchange 2010)

## NetBackup for Microsoft SharePoint Server Administrator's Guide notes

This topic contains some of the documentation corrections and notes that are associated with the *NetBackup for Microsoft SharePoint Server Administrator's Guide* in the latest version of the document.

### **Incorrect statement of support for Veritas Cluster Server**

The NetBackup 7.6 and 7.5 versions of the *NetBackup for Microsoft SharePoint Server Administrator's Guide* incorrectly stated support for Veritas Cluster Server (VCS) in the topic titled "Requirements for installing the SQL back-end servers in a cluster".

As of NetBackup 7.5, the SharePoint Agent no longer supports protection of SharePoint farms with a clustered SQL Server backend on a Veritas Cluster Server.

NetBackup 7.1.0.4 is the last version to support VCS with the SharePoint Agent. For more information, refer to the following tech note on the Symantec Support website:

<http://www.symantec.com/docs/TECH216356>

## NetBackup Snapshot Client Administrator's Guide notes

This topic contains some of the documentation corrections and notes that are associated with the *NetBackup Snapshot Client Administrator's Guide* in the latest version of the document.

### **Incomplete information for rollback with the FlashSnap method of snapshot**

The NetBackup 7.6.1 version of the *NetBackup Snapshot Client Administrator's Guide* contains incomplete information for rollback with the FlashSnap method of snapshot. The fifth bullet point in the topic "About Instant Recovery: point in time rollback" should contain the following note:

- 
- **Note:** When you have used the FlashSnap method of snapshot, before performing instant recovery: point in time rollback, ensure that no I/O is being performed on the mounted primary file system.
- 

## NetBackup Status Codes Reference Guide notes

This topic contains some of the documentation corrections and notes that are associated with the *NetBackup Status Codes Reference Guide* in the latest version of the document.

### Additional action for status codes 25 and 50

If index jobs fail when you use the NetBackup Search feature, use the `nbsetconfig` command to increase the `max_timeout` parameter of the `VNET_OPTIONS`. For example:

```
# nbsetconfig VNET_OPTIONS = 300 3600 200 40 3 1 30 5 1793 32 0 0
```

The `max_timeout` is the first parameter in the series (300).

## NetBackup for VMware Administrator's Guide notes

This topic contains some of the documentation corrections and notes that are associated with the *NetBackup for VMware Administrator's Guide* in the latest version of the document.

### Incomplete list of disk types

The troubleshooting topic "VMware virtual machine does not restart after restore" in the *NetBackup for VMware Administrator's Guide* includes an incomplete list of disk types. The list of disk types that are described in that topic should include SATA (along with SCSI and IDE).

### Incomplete information about the SAN transport mode

A bullet point in the topic "Restore notes and restrictions" in the *NetBackup for VMware Administrator's Guide* for version 7.6 contains incomplete information about the SAN transport mode. The bullet should read as follows:

- For the SAN transport mode and a restore host on Windows 2008 R2 or 2012, the restore fails if the datastore's lun is offline. The detailed status log contains messages similar to the following:



```
5/22/2013 4:10:12 AM - Info tar32(pid=5832) done. status: 24:  
socket write failed  
5/22/2013 4:10:12 AM - Error bpbrm(pid=5792) client restore EXIT  
STATUS 24: socket write failed
```

- Make sure the status of the SAN disk on the restore host is online (not offline). Disk status can be checked or changed using the Windows diskpart.exe utility or the Disk Management utility (diskmgmt.msc). When the disk status reads online, retry the restore.
- If multipathing is enabled, make sure all the paths are online.

## Incomplete information about hotadd transport mode

The topic “Notes on the hotadd transport mode” in the *NetBackup for VMware Administrator’s Guide* for version 7.5 and 7.6 contains incomplete information about the hotadd transport mode. The topic should have identified disk signature collisions as a cause of a VM restore problem when VMs in the backup are clones of the backup host.

Complete information about this issue can be found under “Hotadd backup issues caused by Windows disk signature collisions” in the following NetBackup compatibility document:

<http://www.symantec.com/docs/TECH127089>

## Inaccurate statement for SAN connection recommendation

In the topic “Performance recommendations for Instant Recovery for VMware,” the *NetBackup for VMware Administrator’s Guide* for version 7.6 contains the following inaccurate statement about SAN connections:

- A SAN connection from the NetBackup media server and its disk storage unit to the ESX host.

The bulleted statement should be corrected to read:

- A SAN connection from the NetBackup media server to its disk storage unit.

## NetBackup Plug-in for VMware vCenter Guide notes

This topic contains some of the documentation corrections and notes that are associated with the *NetBackup Plug-in for VMware vCenter Guide* in the latest version of the document.

## Step missing for enabling web services in regard to the Microsoft Cluster Service

For enabling web services for the NetBackup plug-in for vCenter, the *NetBackup Plug-in for VMware vCenter Guide* omits a step regarding the Microsoft Cluster Service (MSCS). If the NetBackup master server is in an MSCS cluster, you must verify the domain user configuration.

For updated instructions, see the following Symantec online topic:

<http://www.symantec.com/docs/HOWTO92103>

## NetBackup Plug-in for vSphere Web Client Guide notes

This topic contains some of the documentation corrections and notes that are associated with the *NetBackup Plug-in for vSphere Web Client Guide* in the latest version of the document.

### Incorrect directory path listed for configuring ports for the NetBackup Web Services

Step 3 of the "Configuring ports for the NetBackup Web Services" topic (for master servers in a clustered environment) in the *NetBackup Plug-in for vSphere Web Client Guide*, contains the following incorrect path:

```
/usr/opensv/netbackup/var/global/wsl/portfile
```

The path should be:

```
/usr/opensv/var/global/wsl/portfile
```

### Incorrect directory path listed for creating an authentication token

Step 1 of the "Creating an authentication token for the NetBackup plug-in for vSphere Web Client" topic in the *NetBackup Plug-in for vSphere Web Client Guide*, contains the following incorrect path:

```
/usr/opensv/wmc/bin/install ./manageClientCerts -create  
vCenter_plugin_host
```

The path should be:

```
/usr/opensv/wmc/bin/install/manageClientCerts -create  
vCenter_plugin_host
```

## NetBackup for NDMP operational notes

NetBackup for NDMP is an optional NetBackup application. It enables NetBackup to use the Network Data Management Protocol (NDMP) to initiate and control backups and restores of Network Attached Storage (NAS) systems. This topic contains some of the operational notes and known issues that are associated with NetBackup for NDMP in NetBackup 7.6.1.

### NDMP backups can fail with status code 106 when you use a wildcard

NDMP backups fail with status code 106 (`invalid file pathname found, cannot process request`) when you use a wildcard (\*) to specify a folder or a volume in a backup selection for a NetApp cDOT version 8.2 filer that is configured in node scope mode (NSM). For example, an NDMP backup policy with the following backup selection for a cDOT filer fails:

```
/vol/MyVolume/myDir*
```

To work around this issue, do not use wildcard characters to specify folder or volumes in backup selections of NDMP backup policies for cDOT filers.

## NetBackup OpsCenter operational notes

NetBackup OpsCenter is a web-based software application that helps organizations by providing visibility into their data protection environment. By using NetBackup OpsCenter, you can track the effectiveness of backup operations by generating comprehensive reports. This topic contains some of the operational notes and known issues that are associated with OpsCenter in NetBackup 7.6.1.

---

**Note:** OpsCenter is a convergence of NetBackup Operations Manager (NOM) and Veritas Backup Reporter (VBR) and is available in the following two versions: Symantec NetBackup OpsCenter and Symantec NetBackup OpsCenter Analytics. Starting with NetBackup 7.0, NOM has been replaced with OpsCenter. If your current NetBackup environment includes NOM or VBR, you must first upgrade to OpsCenter 7.0 or 7.1 before you can upgrade to a later version of OpsCenter.

For more information about upgrading OpsCenter, refer to the *NetBackup OpsCenter Administrator's Guide*.

---

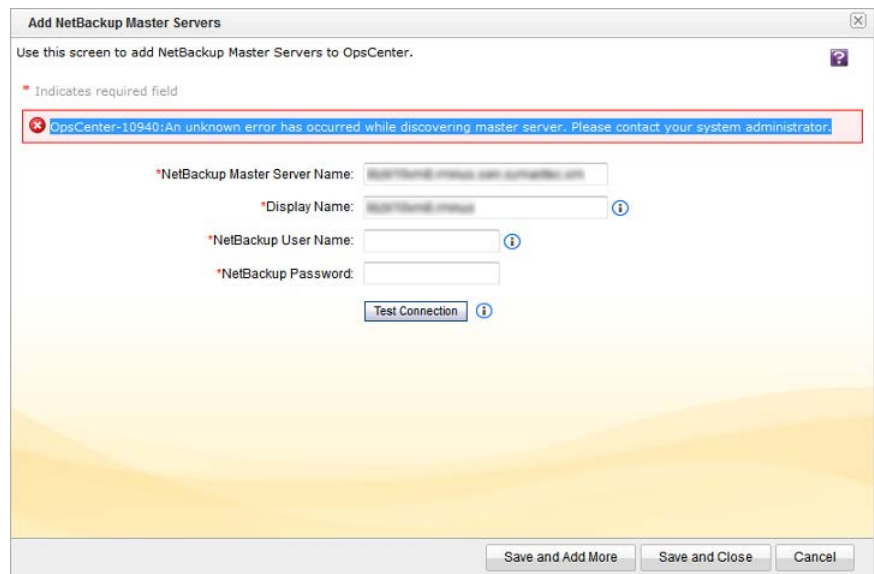
### Support notes

- Starting with version 7.6.1, NetBackup OpsCenter no longer supports NetBackup 6.x.

- During an upgrade to NetBackup OpsCenter 7.6 or 7.6.1, if you want to use a non-default location for installation, make sure that the installation directory that you choose is different than the backup directory. If both directories are the same, the `database.conf` (a backup file) is overwritten and the OpsCenter services do not start.

## OpsCenter interface returns non-specific error after it fails to connect to a master server

If the NetBackup OpsCenter server cannot connect to the specified master server under **Getting Started > Add NetBackup Master Servers**, OpsCenter returns an unknown error.



The screenshot shows a dialog box titled "Add NetBackup Master Servers". At the top, it says "Use this screen to add NetBackup Master Servers to OpsCenter." Below this, there is a red error message box that reads: "OpsCenter-10940:An unknown error has occurred while discovering master server. Please contact your system administrator." The error message is highlighted with a red border. Below the error message, there are four required fields: "NetBackup Master Server Name", "Display Name", "NetBackup User Name", and "NetBackup Password". Each field has a small information icon (i) to its right. Below the fields is a "Test Connection" button with an information icon. At the bottom of the dialog box, there are three buttons: "Save and Add More", "Save and Close", and "Cancel".

Make sure that you have specified the correct **NetBackup Master Server Name** and that the master server is connected to the network.

## The NetBackup Disk Pool Size vs. Percentage Full report may show incorrect data

OpsCenter's NetBackup Disk Pool Size vs. Percentage Full report may show incorrect data when OpsCenter does not have disk pool size data for one or more days.

This issue occurs because the report calculates disk pool sizes every day and shows the average values in report. Missing data for any day that falls within the selected report time frame generates incorrect average data.

## OpsCenter reports display IP addresses for some VMs

OpsCenter reports display IP addresses for some of the listed virtual machines (VMs). OpsCenter tries to alias these IP addresses with their respective VM names and host names when that information is available. For this aliasing to reflect in the reports, OpsCenter services need to be restarted. Please note that if a VM's name and host name are not available in the OpsCenter database, then that VM's IP will still appear in the reports.

## OpsCenter displays incorrect OS level for Windows Server 2012 R2

NetBackup OpsCenter displays an incorrect operating system for a Windows Server 2012 R2 master server host. Instead of Windows Server 2012 R2, OpsCenter displays "Windows Server 2012" in the **Operating System** column under **Settings > Configuration > NetBackup**.

## The hold operation in the OpsCenter Search functionality may fail

The hold operation in the NetBackup OpsCenter **Search & Hold** functionality may fail if there are retired NetBackup master servers present in OpsCenter.

This issue may occur when the following are true:

- You create and run search criteria for NetBackup backup images in OpsCenter.
- A master server that you have added in OpsCenter and subsequently retired in NetBackup is included in the search results.

If you try to run the hold operation, the operation fails and the following error is displayed under **Hold error details**:

```
Master Server Not Connected
```

## Issues accessing an OpsCenter Server from the remote OpsCenter View Builder on a Windows computer

If you use a remote OpsCenter View Builder on a Windows computer that does not host the OpsCenter database, you may encounter database connection issues.

This problem can arise in any of the following scenarios:

- When the network name and the host name of the OpsCenter Server do not match

- When the OpsCenter Server host and the remote View Builder host are in different domains

To work around this issue, do the following:

1. Add the OpsCenter Server host name to the View Builder's `etc/hosts` file.
2. Add the View Builder host name to the OpsCenter Server's `etc/hosts` file.

---

**Note:** Ensure that you add both the short name and the fully qualified domain name (FQDN) of the host to the `etc/hosts` file.

---

## NetBackup Replication Director operational notes

Replication Director is the implementation of NetBackup OpenStorage-managed snapshots and snapshot replication, where the snapshots are stored on the storage systems of partnering companies. Replication Director uses an OpenStorage plug-in on the media server to communicate with the disk array (through the storage server) and to make requests to move data. The OpenStorage partner also hosts a software plug-in that allows communication between NetBackup and the disk array. This topic contains some of the operational notes and known issues that are associated with Replication Director and its associated plug-ins in NetBackup 7.6.1.

## NetApp Plug-in for Symantec NetBackup operational notes

The NetApp Plug-in for Symantec NetBackup (NBUPugin) is the software plug-in that allows communication between NetBackup and the NetApp disk arrays. This topic contains some of the NetBackup-related operational notes and known issues that are associated with the NBUPugin in NetBackup 7.6.1. More information about the NBUPugin can be found in the [NetApp Plug-in for Symantec NetBackup Release Notes](#) on the NetApp Support website.

### The NBUPugin can crash if there are more than 270 qtrees on the filer

In versions before NetApp Plug-in for Symantec NetBackup (NBUPugin) 1.1, problems can arise if a large number of qtrees are used in the NetBackup policy **Backup Selections** list. The NBUPugin can crash if there are more than 270 qtrees on the filer.

To resolve the problem, upgrade to the latest version of the NBUPugin, available from the NetApp Support website.

# NetBackup Snapshot Client operational notes

NetBackup Snapshot Client provides a variety of snapshot-based features for NetBackup. It supports clients on UNIX, Linux, and Windows platforms, on Fibre Channel networks (SANs) or traditional LANs. This topic contains some of the operational notes and known issues that are associated with NetBackup Snapshot Client in version 7.6.1.

## Support notes

- NetBackup does not currently support extended volume table of contents (VTOCs) or EFI labels when `nbu_snap` is used with the UNIX file system (UFS). NetBackup supports an effective limit of 1TB disks (regardless of partition size) when UFS and `nbu_snap` are used together.  
To use `nbu_snap` with a larger disk (greater than 1TB), you must use VxVM instead of UFS.

# NetBackup virtualization operational notes

NetBackup offers several methods of protecting virtual environments. The two primary virtualization technologies that NetBackup can protect are VMware and Hyper-V, although NetBackup can protect other virtualization technologies as well. This topic contains some of the operational notes and known issues that are associated with the protection of virtualization technologies in NetBackup 7.6.1.

## NetBackup for VMware operational notes

NetBackup for VMware provides backup and restore of the VMware virtual machines that run on VMware ESX servers. Additionally, the NetBackup plug-in for VMware vCenter (vCenter plug-in) allows the vSphere Client to monitor virtual machine backups and recover a virtual machine from a backup. This topic contains some of the operational notes and known issues that are associated with NetBackup for VMware and the vCenter plug-in in NetBackup 7.6.1.

## Support notes

- Restoring a virtual machine with a transport mode of NBD or NBDSSL may be slow in the following cases:
  - The virtual machine had many small data extents due to heavy fragmentation. (A file system extent is a contiguous storage area defined by block offset and size.)
  - The restore is from a block-level incremental backup and the changed blocks on the disk were heavily fragmented when the incremental backup occurred.

For faster restores in these cases, use the hotadd transport mode instead of NBD or NBDSSL.

- Starting with NetBackup 7.6.0.1, the instant recovery of VMware virtual machines now supports the following storage unit types (disk only): BasicDisk, AdvancedDisk, Media Server Deduplication Pool (MSDP), and PureDisk Deduplication Pool (PDDO), and qualified third-party OpenStorage devices. Note: Snapshot-only backups are not supported.
- VMware VDDK 5.5 does not support the hotadd transport mode with SATA virtual disks.  
To back up SATA virtual disks, use a different transport mode (not hotadd).

---

**Note:** If the SATA disks are in SCSI, iSCSI, or FC-connected storage arrays, hotadd is supported.

---

For more information about this issue, refer to the VMware VDDK 5.5 release notes at the following location:

<https://www.vmware.com/support/developer/vddk/vddk-550-releasenotes.html>

- VMware vSphere 5.5 uses the Space Efficient Virtual Disk (SEsparse) for snapshots of disks that are larger than 2TB. VDDK 5.5 however does not support backup or restore of SEsparse disks with host-based file transport.

---

**Note:** Replication Director for VMware requires host-based file transport. As a result, Replication Director for VMware cannot support vmdk files that are larger than 2TB.

---

To back up vmdk files that are larger than 2TB, use NetBackup for VMware without Replication Director.

For more information about this issue, refer to the VMware VDDK 5.5 release notes at the following location:

<https://www.vmware.com/support/developer/vddk/vddk-550-releasenotes.html>

## Restoring a virtual machine with a transport mode of NBD or NBDSSL may be slow

Restoring a virtual machine with a transport mode of NBD or NBDSSL may be slow in the following cases:

- The virtual machine had many small data extents due to heavy fragmentation. (A file system extent is a contiguous storage area defined by block offset and size.)



- The restore is from a block-level incremental backup and the changed blocks on the disk were heavily fragmented when the incremental backup occurred.

For faster restores in these cases, use the hotadd transport mode instead of NBD or NBDSSL.

### **For a VMware VM with Windows dynamic disks, a restore from incremental backup fails with a Windows restore host and the hotadd transport mode**

A restore of a Windows virtual machine by means of the hotadd transfer mode may fail in the following case:

- A backup is taken of a Windows virtual machine that has a dynamic disk group.
- After the backup, another dynamic disk is added to the virtual machine's disk group.
- After the dynamic disk is added, an incremental backup is taken of the virtual machine.
- A Windows restore host is used with the hotadd transport mode to restore the virtual machine from the incremental backup.

For more information and potential workarounds, refer to the following tech note on the Symantec Support website:

<http://www.symantec.com/docs/TECH224707>

### **A restored VM may not boot up or its file system(s) may not be accessible**

A restored VM may not boot up or its file system(s) may not be accessible in the following case:

- The VM's guest operating system is Windows 8,
- The VM is restored from a block-level incremental backup image,
- And the restore uses the hotadd transport mode.

As a result of a VMware issue in VDDK 5.5.x, the Windows NTFS Master File Table on the restored VM may be corrupted. Symantec has opened a VMware support request (14479923705) for this issue.

As a workaround, use a different transport mode to restore the VM (not hotadd).

## The Enable Publishing catalog property prevents the restore of a vApp template

An issue in vCloud Director 5.5 prevents the restore of a vApp template when you use the NetBackup **Capture vApp as a template** option. If the vCloud Director "Enable Publishing" option was set for the catalog that contains the vApp template, the restore fails with status code 1. (In the vCloud Director user interface, "Enable Publishing" is under Catalog Properties, on the External Publishing tab.)

As a workaround, do the following: After the restore job finishes with status 1, right-click the vApp template in the vCloud Director interface and select **Add to Catalog**. This option is the equivalent of NetBackup's **Capture vApp as a template** option.

## Changed boot settings may prevent a VM from powering on

If the VM's default boot settings had been changed, the restored VM may not power on correctly. For more details and a workaround, refer to the following tech note on the Symantec Support website:

<http://www.symantec.com/docs/HOWTO95250>

## Selecting ports for the vCenter plug-in to ensure proper functionality

When you install the vCenter plug-in, you are asked to specify port numbers for the vCenter server and for the vCenter plug-in web server. In most cases, the default ports (443 and 9445 respectively) are available and allow the plug-in to function correctly. If you select a port that another service requires, the plug-in may not operate correctly. For example, the Secure Shell (ssh) network service default port is 22. If you select port 22 for the plug-in web server and a user enables ssh on the plug-in virtual appliance, a conflict occurs. As a result, the plug-in may malfunction.

During plug-in installation, accept the default port numbers, or select a non-standard port that other services do not require.

## Backups of VMware Windows Server 2008 R2 VMs may fail with status code 156

Because of a Microsoft Volume Shadow Copy Service (VSS) error, backups of VMware Windows Server 2008 R2 VMs may fail with status code 156 (snapshot error encountered). The `install_path\NetBackup\logs\bpfis` log may contain a message similar to the following:

```
12:08:50.920 [20787] <2> onlfi_vfms_logf: INF - VMware_freeze:  
FTL - VMware error received: An error occurred while quiescing the  
virtual machine. See the virtual machine's event log for details.
```

The event logs of the virtual machine may contain the following message:

```
The guest OS has reported an error during quiescing. The error code  
was: 5 The error message was: 'VssSyncStart' operation failed:  
Unspecified error (0x80004005)
```

To fix this problem and create a successful backup, do the following:

- Update VMware Tools on the VM to the latest version.
- Update the ESX server to the latest version.

For more information on this issue, refer to the following VMware Knowledge Base article:

[http://kb.vmware.com/selfservice/microsites/search.do?  
language=en\\_US&cmd=displayKC&externalId=2006849](http://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2006849)

## NetBackup for Hyper-V operational notes

NetBackup for Hyper-V provides snapshot-based backup of the virtual machines that run on various versions of Windows Server. This topic contains some of the operational notes and known issues that are associated with NetBackup for Hyper-V in NetBackup 7.6.1.

### Support notes

- For Hyper-V policies that include the “Enable file recovery from VM backup” option, non-ASCII characters are not supported in the vhd or vhdX name. Examples of non-ASCII characters are Japanese or Chinese characters (multi-byte). If the vhd or vhdX name contains non-ASCII characters, the backup job completes but the VM's files cannot be individually restored from the backup. As an alternative, you can restore the entire VM.
- Hyper-V off-host backup is not supported in NetBackup 7.6.0.3.

### Restoring a VM may fail if the CSV is a reparse point that is specified as the restore destination

If a Hyper-V VM is on a Cluster Shared Volume (CSV), restoring the VM may fail if the CSV is a reparse point that is specified as the restore destination. NetBackup may incorrectly assume that the restore destination is not large enough to contain the VM, and the restore does not start.

For further information and workarounds, refer to the following NetBackup compatibility document on the Symantec Support website:

<http://www.symantec.com/docs/TECH127089>

### **The Backup, Archive, and Restore interface may list Hyper-V snapshot files when you browse to restore VM files**

For virtual machines (VMs) on a Windows Server 2012 R2 Hyper-V server, the Backup, Archive, and Restore (BAR) interface may list Hyper-V snapshot files when you browse to restore VM files. In some cases, the data in the snapshot file is not application-consistent and the file should not be restored.

For information about how to identify the snapshot file and whether to restore it, see the following tech note on the Symantec Support website:

[www.symantec.com/docs/HOWTO95063](http://www.symantec.com/docs/HOWTO95063)

### **For a successful backup of a VM that shares CSV volumes, the VM must use CSV volumes only**

Windows Server 2008 R2 introduced Hyper-V Cluster Shared Volumes (CSV). CSV allows clustered virtual machines to share volumes.

For a successful backup of a VM that shares CSV volumes, the VM must use CSV volumes only. If a local disk (not a shared CSV volume) is added to the VM, the backup fails with status code 156 (`snapshot error encountered`).

Reconfigure the VM to use CSV volumes only, and retry the backup.

# Resolved operational notes

This chapter includes the following topics:

- [About resolved operational notes](#)
- [NetBackup for VMware resolved operational notes](#)

## About resolved operational notes

Resolved operational notes represent the operational notes that are set to be removed from the *NetBackup Release Notes*. When an operational note is resolved, it gets documented in the resolved operational notes section along with a description of the resolution and the release version in which it was resolved. Resolved operational notes are documented in the *NetBackup Release Notes* through at least one single-dot release.

An operational note is resolved in several ways. A note is most commonly resolved by a bug fix or a new feature that is incorporated into NetBackup. However, operational notes are sometimes resolved with other documentation or workarounds. In all cases, each resolved operational note includes a description of the resolution and the release version in which it was resolved.

## NetBackup for VMware resolved operational notes

[Table 4-1](#) describes the resolutions to some of the previously-documented operational notes and known issues that are associated with NetBackup for VMware and the vCenter plug-in.

For information about some of the unresolved operational notes and known issues that are associated with NetBackup for VMware and the vCenter plug-in in NetBackup 7.6.1:

See [“NetBackup for VMware operational notes”](#) on page 55.

**Table 4-1** NetBackup for VMware resolved operational notes

Original operational note	NetBackup version that introduces resolution	Resolution
See <a href="#">“Issue using the hotadd transport mode to back up vmdk files that are 2 TB or larger”</a> on page 62.	7.6.0.3	NetBackup 7.6.0.3 incorporates VMware VDDK 5.5 U1, which contains the fix for this issue.
<ul style="list-style-type: none"> <li>VMware vSphere 5.5 adds support for vmdk files that are larger than 2TB. When you restore these files, select a datastore of the following type: VMFS-5, or possibly NFSv3 (support for NFSv3 depends on your NAS vendor). Do not select a datastore of type VMFS-3 or NFSv2.</li> </ul> <p>For more information about this issue, refer to the VMware VDDK 5.5 release notes at the following location:  <a href="https://www.vmware.com/support/developer/vddk/vddk-550-releasenotes.html">https://www.vmware.com/support/developer/vddk/vddk-550-releasenotes.html</a></p>	7.6.0.3	NetBackup 7.6.0.3 incorporates VMware VDDK 5.5 U1, which contains the fix for this issue.

## Issue using the hotadd transport mode to back up vmdk files that are 2 TB or larger

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**Note:** This issue is resolved in NetBackup 7.6.0.3.

See [“NetBackup for VMware resolved operational notes”](#) on page 61.

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A problem in VMware’s VDDK 5.5 prevents use of the hotadd transport mode to back up vmdk files that are 2 TB or larger. The backup fails but the job status may report successful completion.

To back up vmdk files that are 2 TB or larger, use a different transport mode (not hotadd).

The following VMware article contains more information about this issue:

<http://kb.vmware.com/kb/2068424>

# NetBackup release content

This appendix includes the following topics:

- [About NetBackup release content](#)

## About NetBackup release content

Each release of NetBackup incorporates fixes to several known issues that affected previous versions of NetBackup. Some of these fixes are associated with the customer-specific issues that have been documented in the form of Titan or Salesforce.com (SFDC) cases. Several of the customer-related fixes that are incorporated into each release are also made available as emergency engineering binaries (EEBs).

Listings of the Etracks and EEBs that document the known issues that have been fixed in NetBackup 7.6.1 can be found on the Symantec Operations Readiness Tools (SORT) website using the NetBackup Hot Fix and EEB Release Auditor widget, and in the [NetBackup Emergency Engineering Binary Guide](#).

See “[About Symantec Operations Readiness Tools](#)” on page 82.

# NetBackup installation requirements

This appendix includes the following topics:

- [Required operating system patches and updates for NetBackup](#)
- [NetBackup 7.6.1 binary sizes](#)

## Required operating system patches and updates for NetBackup

NetBackup server and client installations are only supported on a defined set of operating systems (OSs) that are listed in the NetBackup compatibility lists. Most OS vendors provide patches, updates, and service packs (SPs) for their products. The best practice of NetBackup Quality Engineering is to test with the latest SP or update level of the OS when a platform is tested. Therefore, NetBackup is supported on all vendor GA updates (n.1, n.2, etc.) or SPs (SP1, SP2, etc.). However, if a known compatibility issue exists on a specific SP or updated OS level, this information is identified in the compatibility lists. If no such compatibility issues are noted, Symantec recommends that you install the latest OS updates on your servers and clients before you install or upgrade NetBackup.

The compatibility lists include information about the minimum OS level that is required to support a minimum NetBackup version in the latest major release line. In some cases, new releases of NetBackup may require specific vendor OS updates or patches. [Table B-1](#) includes the OS updates and patches that are required for NetBackup 7.6.1. However, this information may sometimes change in between releases. The most up-to-date required OS patch information for NetBackup 7.6.1 and other NetBackup releases can be found on the Symantec Operations Readiness Tools (SORT) website.



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**Note:** An OS vendor may have released a more recent update or patch that supersedes or replaces a patch that is listed in [Table B-1](#). The OS patches that are listed here and in SORT should be considered at the minimum patch level that is required to install and run NetBackup. Any OS updates, patches, or patch bundles that supersede or replace those listed in [Table B-1](#) are supported unless otherwise specified. Symantec recommends that you visit the Support website of your particular OS vendor for their latest patch information.

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**Note:** Any required patch that is listed in [Table B-1](#) for the NetBackup client should also be installed on your master servers and media servers to ensure proper client functionality.

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See [“About NetBackup compatibility lists and information”](#) on page 78.

See [“About Symantec Operations Readiness Tools”](#) on page 82.

**Table B-1** Required operating system patches and updates for NetBackup 7.6.1

Operating system type and version	NetBackup role	Patch	Notes
AIX 6.1	Master, media, client	AIX 6.1 TL5 SP2 (6100-05-02-1034)	NetBackup requires the AIX 6.1 TL5 SP2 (6100-05-02-1034) Maintenance Pack as a minimum. (Higher patch levels should also work.)  You can use the <code>oslevel -s</code> command to verify what Maintenance Pack level you have installed.
	Master, media, client	AIX run-time libraries 9.0.0.3 or later	The run-time libraries need to be at 9.0.0.3 or later. You may need to restart after you change to version 9.0.0.3.
	Master, media, client	AIX 6.1 TL7 (6100-07)	This patch is required for the NetBackup-Java Administration Console to function properly.  <a href="https://www-304.ibm.com/support/docview.wss?uid=isg1fixinfo134913">https://www-304.ibm.com/support/docview.wss?uid=isg1fixinfo134913</a>

**Table B-1** Required operating system patches and updates for NetBackup 7.6.1 (continued)

Operating system type and version	NetBackup role	Patch	Notes
AIX 7.1	Master, media, client	AIX 7.1 TL1 SP2 (7100-01-02-1150)	This patch is required for the NetBackup-Java Administration Console to function properly.  <a href="https://www-304.ibm.com/support/docview.wss?uid=isg1fixinfo134913">https://www-304.ibm.com/support/docview.wss?uid=isg1fixinfo134913</a>
HP-UX	Master, media, client	COMPLIBS.LIBM-PS32	If you install AT on an HP-UX platform, this patch is required.
HP-UX IA-64	Master, media, client	Networking.NET-RUN: /usr/lib/libip6.sl	
	Master, media, client	Networking.NET-RUN-64: /usr/lib/pa20_64/libip6.1	
	Master, media, client	Networking.NET-RUN-64: /usr/lib/pa20_64/libip6.sl	
	Master, media, client	Networking.NET2-RUN: /usr/lib/hpux32/libip6.so	
	Master, media, client	Networking.NET2-RUN: /usr/lib/hpux32/libip6.so.1	
	Master, media, client	Networking.NET2-RUN: /usr/lib/hpux64/libip6.so	
	Master, media, client	Networking.NET2-RUN: /usr/lib/hpux64/libip6.so.1	
	Master, media, client	Networking.NET2-RUN: /usr/lib/libip6.1	
HP-UX 11.31	Media	QPK1131 (B.11.31.1003.347a) patch bundle	This patch bundle is required for NetBackup media server support. It is an HP-UX March 2010 patch bundle.
Red Hat Enterprise Linux 6	Master, media, client	glibc-2.12-1.107 or higher	

**Table B-1** Required operating system patches and updates for NetBackup 7.6.1 *(continued)*

Operating system type and version	NetBackup role	Patch	Notes
Solaris 10 SPARC 64-bit	Master, media, client	Recommended patch set - dated June 2011 or newer	<p>Symantec recommends that you download the patch set dated June 2011 (or newer) from the Oracle Support website.</p> <p><a href="https://support.oracle.com">https://support.oracle.com</a></p> <p>The patch set contains the following minimum recommended patches:</p> <ul style="list-style-type: none"> <li>■ 118777-17 (SunOS 5.10: Sun GigaSwift Ethernet 1.0 driver patch)</li> <li>■ 139555-08 (Kernel patch with C++ library updates).</li> <li>■ 142394-01 (Internet Control Message Protocol (ICMP) patch)</li> <li>■ 143513-02 (Data Link Admin command for Solaris (DLADM) patch)</li> <li>■ 141562-02 (Address Resolution Protocol (ARP) patch)</li> </ul> <p>The following patches are for Solaris 10 SPARC with NXGE cards:</p> <ul style="list-style-type: none"> <li>■ 142909-17 (SunOS 5.10: nxge patch)</li> <li>■ 143897-03 (Distributed Link Software patch)</li> <li>■ 143135-03 (Aggregation patch)</li> <li>■ 119963-21 (Change Request ID - 6815915)</li> </ul>

**Table B-1** Required operating system patches and updates for NetBackup 7.6.1 (continued)

Operating system type and version	NetBackup role	Patch	Notes
Solaris 10 x86-64	Master, media, client	Recommended patch set - dated 12/28/2011 or newer	<p>Symantec recommends that you download the patch set dated 12/28/2011 (or newer) from the Oracle Support website.</p> <p><a href="https://support.oracle.com">https://support.oracle.com</a></p> <p>The patch set contains the following minimum recommended patches:</p> <ul style="list-style-type: none"> <li>■ 118778-15 (SunOS 5.10_x86: Sun GigaSwift Ethernet 1.0 driver patch)</li> <li>■ 139556-08 (Kernel patch with C++ library updates)</li> <li>■ 142395-01 (SunOS 5.10_x86: ICMP patch)</li> <li>■ 143514-02 (SunOS 5.10_x86: Data Link Admin command for Solaris patch)</li> <li>■ 147259-02 (SunOS 5.10_x86: Aggregation patch)</li> <li>■ 142910-17 (SunOS 5.10_x86 kernel patch to include NXGE fixes)</li> <li>■ 143136-03 (SunOS 5.10_x86: Aggregation patch)</li> <li>■ 119964-21 (Change Request ID - 6815915)</li> </ul>
Windows XP x86-32	Client	KB936357	Microsoft microcode reliability update.
Windows XP x86-64	Client	KB928646	Hot fix for hangs of connection attempts by PBX.
Windows Vista x86-32	Client	KB936357	Microsoft microcode reliability update.
	Client	KB952696	Contains the necessary updates to ensure that you can back up encrypted files.

**Table B-1** Required operating system patches and updates for NetBackup 7.6.1 (continued)

Operating system type and version	NetBackup role	Patch	Notes
Windows Vista x86-64	Client	KB936357	Microsoft microcode reliability update.
	Client	KB952696	Contains the necessary updates to ensure that you can back up encrypted files.
Windows Server 2003 x86-32 (SP1 & SP2)	Client	KB913648	Contains the necessary updates to run Volume Shadow Copy.
	Client	KB936357	Microsoft microcode reliability update.
Windows Server 2003 x86-64 (SP1 & SP2)	Media	KB883646	Microsoft Storport hot fix.
	Client	KB913648	Contains the necessary updates to run Volume Shadow Copy.
	Master, media, client	KB928646	Hot fix for hangs of connection attempts by PBX.
	Master, media, client	KB936357	Microsoft microcode reliability update.
Windows Server 2003 x86-64 (SP2)	Master, media	KB971383	TCP/IP protocol driver triggers a disconnect event randomly.
Windows Server 2008 x86-32	Client	KB952696	Contains the necessary updates to ensure that you can back up encrypted files.
Windows Server 2008 x86-64	Client	KB952696	Contains the necessary updates to ensure that you can back up encrypted files.
Windows Server 2008 (SP2)	Master, media, client	KB979612	Hot fix to improve TCP loopback latency and UDP latency
Windows Server 2008 R2	Master, media, client	KB2265716	Hot fix for when a computer randomly stops responding.  Note that this patch is also contained in Windows Server 2008 R2 SP1.

**Table B-1** Required operating system patches and updates for NetBackup 7.6.1 (continued)

Operating system type and version	NetBackup role	Patch	Notes
	Master, media, client	KB982383	Hot fix for a decrease in I/O performance under a heavy disk I/O load.  Note that this patch is also contained in Windows Server 2008 R2 SP1.
	Master, media, client	KB983544	Update for the "Modified time" file attribute of a registry hive file.  Note that this patch is also contained in Windows Server 2008 R2 SP1.
	Master, media, client	KB979612	Hot fix to improve TCP loopback latency and UDP latency  Note that this patch is also contained in Windows Server 2008 R2 SP1.

## NetBackup 7.6.1 binary sizes

Table B-2 contains the approximate binary sizes of the NetBackup master server, media server, and client software for the various operating systems that are compatible with NetBackup 7.6.1. This information is meant to help you determine if you have allocated enough disk space on your computers to safely and efficiently back up and restore all of the data in your NetBackup environment.

Binary size information is also available through the Installation and Upgrade Checklist on the Symantec Operations Readiness Tools (SORT) website.

See [“About Symantec Operations Readiness Tools”](#) on page 82.

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**Note:** Disk space requirements for the vCenter plug-in can be found in the [NetBackup Plug-in for VMware vCenter Guide](#).

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**Table B-2** NetBackup binary sizes for compatible platforms

OS/Version	CPU Architecture	32-bit client	64-bit client	32-bit server	64-bit server	Notes
AIX 6.1, 7.1	POWER		2673MB		6967MB	
Asianux 3	x86-64		1450MB		5704MB	
Canonical Ubuntu 9.04, 9.10, 10.04, 11.10, 12.04	x86-64		1450MB			
CentOS 5, 6	x86-64		1450MB		5704MB	Media server or client compatibility only.
Debian GNU/Linux 5, 6	x86-64		1450MB			
FreeBSD 6.1, 6.2, 6.3, 7.x, 8.x, 9.x	x86-32	292MB				
FreeBSD 6.3, 7.x, 8.x, 9.x	x86-64	292MB				
HP-UX 11.31	IA-64		2408MB		6976MB	
Mac OS X 10.6	x86-32	278MB				
Mac OS X 10.6, 10.7, 10.8, 10.9	x86-64	278MB				
Novell Open Enterprise Server 2, 11	x86-64		1441MB		5692MB	
OpenVMS 8.2, 8.3, 8.3-1H1, 8.4	HP IA-64		128MB			The listed sizes are for the NetBackup 7.5 binaries. No NetBackup 7.6.1 binaries for OpenVMS are provided.
Oracle Linux 5	x86-64		1450MB		5704MB	
Oracle Linux 6	x86-64		1450MB		5704MB	
Red Hat Enterprise Linux 5	x86-64		1450MB		5704MB	
Red Hat Enterprise Linux 6	x86-64		1450MB		5704MB	
Red Hat Enterprise Linux 7	x86-64		1450MB			
Red Hat Enterprise Linux Desktop 5	x86-64		1450MB			
Red Hat Enterprise Linux 5	z/Architecture		1021MB		5052MB	Media server or client compatibility only.

**Table B-2** NetBackup binary sizes for compatible platforms (*continued*)

OS/Version	CPU Architecture	32-bit client	64-bit client	32-bit server	64-bit server	Notes
Red Hat Enterprise Linux 6	z/Architecture		1021MB		5052MB	Media server or client compatibility only.
Solaris 10	SPARC		1503MB		4778MB	
Solaris 11	SPARC		1503MB		4778MB	
Solaris 10	x86-64		1565MB		5038MB	
Solaris 11	x86-64		1565MB		5038MB	
SUSE Linux Enterprise Server 10 (SP2)	x86-64		1441MB		5692MB	
SUSE Linux Enterprise Server 11	x86-64		1441MB		5692MB	
SUSE Linux Enterprise Server 12	x86-64		1441MB			
SUSE Linux Enterprise Server 10 (SP2)	z/Architecture		1005MB		4338MB	Media server or client compatibility only.
SUSE Linux Enterprise Server 11	z/Architecture		1005MB		4338MB	Media server or client compatibility only.
SUSE Linux Enterprise Server 12	z/Architecture		1005MB			
Windows	x86-32	662MB				Covers all compatible Windows x86 platforms
Windows	x86-64		1278MB		2349MB	Covers all compatible Windows x64 platforms

The following space requirements also apply to some NetBackup installations on Windows:

- If you install NetBackup in a custom location on a Windows system, some portions of the software are installed on the system drive regardless of the primary application folder location. The space that is required on the system drive generally accounts for 40 to 50 percent of the total binary size that is listed in [Table B-2](#).
- If you install NetBackup server on a Windows cluster, some portions of the software are installed on the cluster shared disk. Note, the space that is required



on the cluster shared disk is in addition to the binary size that is listed in [Table B-2](#). The additional required space is equivalent to 15 to 20 percent of the total binary size.

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**Note:** Unless otherwise stated in [Table B-2](#), NetBackup is supported on all editions (Advanced, Base, DC, etc.) and on all vendor GA updates (n.1, n.2, etc.) or service packs (SP1, SP2, etc.) for the following Linux platforms: Asianux, CentOS, Debian GNU/Linux, Novell Open Enterprise Server, Oracle Linux, Red Flag Linux, Red Hat, and SUSE.

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## OpsCenter

[Table B-3](#) contains the approximate binary sizes of the OpsCenter Agent, Server, and **ViewBuilder** for the various operating systems that are compatible with NetBackup OpsCenter 7.6.1.

**Table B-3** NetBackup OpsCenter binary sizes for compatible platforms

OS/Version	CPU Architecture	Agent	Server	ViewBuilder
Oracle Linux 5, 6	x86-64		785MB	
Red Hat Enterprise Linux Server 5 (Kernel 2.6.18+)	x86-64		785MB	
Red Hat Enterprise Linux Server 6	x86-64		785MB	
SUSE Linux Enterprise Server 10 (SP2) (Kernel 2.6.16+)	x86-64		785MB	
SUSE Linux Enterprise Server 11 (SP2)	x86-64		785MB	
Solaris 10	SPARC	496MB	966MB	
Solaris 10	x86-64		972MB	
Windows Server 2003, 2008 R2, 2012	x86-64	263MB	700MB	175MB

# NetBackup compatibility requirements

This appendix includes the following topics:

- [About NetBackup release types and versioning](#)
- [About compatibility between NetBackup versions](#)
- [About NetBackup compatibility lists and information](#)
- [About NetBackup end-of-life notifications](#)

## About NetBackup release types and versioning

Symantec maintains a policy by which NetBackup can deliver various release levels to accommodate customer needs. This topic defines the various release types and the version number schemes that are associated with each type.

The NetBackup family of software and appliance products uses the following release types and version number schemes:

- A major release is the first in a series of releases. This release type contains new features, enhancements, platform support, and a complete set of the latest product documentation.
- A minor release is a single-dot release that follows a major release, for example 2.6 or 7.6. This release type contains much of the same requirements as a major release. It contains a smaller set of new features and enhancements, new platform support, and a complete set of the latest product documentation.
- A software update release is a double-dot release, for example 2.6.1 or 7.6.1. This release type may contain a few new features and enhancements along

with many product fixes. Only those documents that are applicable to the new features or enhancements are updated and republished.

- A maintenance release is a triple-dot release, for example 2.6.0.2 or 7.6.0.2. This release type is primarily comprised of a number of fixes that are developed to address issues in major, minor, and software update releases. It may also contain a small number of new features, enhancements, and platform support. The only documentation that is provided for this release type is a readme text file and a new version of the *NetBackup Release Notes*. Both files are online-only and are made available on the Symantec Support website.

## About compatibility between NetBackup versions

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**Note:** The statements that are made in this topic do not override Symantec's standard End of Life and End of Support Life policies. Once a NetBackup version reaches its End of Support Life, no release of that product version is supported in any configuration.

Symantec recommends that you review the NetBackup End of Support Life information available online.

<http://www.symantec.com/docs/TECH74757>

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You can run mixed versions of NetBackup between master servers, media servers, and clients. This back-level support lets you upgrade NetBackup one server at a time, which minimizes the effect on overall system performance.

For compatibility between major versions, the latest available release of NetBackup is compatible with media servers and clients that run a release of NetBackup that is up to one major version behind. However, this compatibility ceases to be supported in any configuration once the previous major version has reached its End of Support Life.

The master server within a NetBackup environment must be at a version level that is equal to or greater than the version levels of the media servers and clients within that environment. However, NetBackup offers the flexibility of an environment where the clients and the media servers run different triple-dot releases than the master server. For example you can upgrade a media server or client to version 7.6.0.2 in an environment where the master server is running version 7.6 GA. Symantec recommends that you keep your entire NetBackup environment up-to-date with the latest maintenance (triple-dot) releases.

See “[About NetBackup release types and versioning](#)” on page 74.

NetBackup does not support any scenario where a media server or client runs a minor release version or software release update version that is higher than that of the parent server. For example:

- If a master server is at version 7.6, then the media servers and clients cannot be at a single-dot version level that is higher than 7.6, such as 7.7.
- If a master server is at version 7.6, then the media servers and clients cannot be at a double-dot version level that is higher than 7.6, such as 7.6.1.
- If a master server is at version 7.6.1, then the media servers and clients cannot be at a double-dot version level that is higher than 7.6.1, such as 7.6.2.

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**Note:** NetBackup versions 7.6.1.1, 7.6.2, and 7.7 are used in this topic as examples. These versions of NetBackup do not exist at the time of this topic's publication.

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[Table C-1](#) shows the various compatibility schemes that are supported with the current NetBackup product line.

**Table C-1** Release compatibility for the NetBackup product line

NetBackup master server	NetBackup media server	NetBackup client
7.6	7.0	7.0
7.6	7.0.1	7.0, 7.0.1
7.6	7.1	7.0, 7.0.1, 7.1, 7.1.0.x
7.6	7.1.0.x	7.0, 7.0.1, 7.1, 7.1.0.x
7.6	7.5	7.0, 7.0.1, 7.1, 7.1.0.x, 7.5, 7.5.0.x
7.6	7.5.0.x	7.0, 7.0.1, 7.1, 7.1.0.x, 7.5, 7.5.0.x
7.6	7.6	7.0, 7.0.1, 7.1, 7.1.0.x, 7.5, 7.5.0.x, 7.6, 7.6.0.x
7.6	7.6.0.x	7.0, 7.0.1, 7.1, 7.1.0.x, 7.5, 7.5.0.x, 7.6, 7.6.0.x
7.6.1	7.0	7.0
7.6.1	7.0.1	7.0, 7.0.1
7.6.1	7.1	7.0, 7.0.1, 7.1, 7.1.0.x
7.6.1	7.1.0.x	7.0, 7.0.1, 7.1, 7.1.0.x

**Table C-1** Release compatibility for the NetBackup product line (*continued*)

NetBackup master server	NetBackup media server	NetBackup client
7.6.1	7.5	7.0, 7.0.1, 7.1, 7.1.0.x, 7.5, 7.5.0.x
7.6.1	7.5.0.x	7.0, 7.0.1, 7.1, 7.1.0.x, 7.5, 7.5.0.x
7.6.1	7.6	7.0, 7.0.1, 7.1, 7.1.0.x, 7.5, 7.5.0.x, 7.6, 7.6.0.x
7.6.1	7.6.0.x	7.0, 7.0.1, 7.1, 7.1.0.x, 7.5, 7.5.0.x, 7.6, 7.6.0.x
7.6.1	7.6.1	7.0, 7.0.1, 7.1, 7.1.0.x, 7.5, 7.5.0.x, 7.6, 7.6.0.x, 7.6.1

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**Note:** Support for the NetBackup 6.x product line has ended as of October, 2012. See [“About NetBackup end-of-life notifications”](#) on page 80.

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### Other NetBackup mixed version compatibility notes

The following list includes additional compatibility details you should take into consideration:

- The NetBackup catalog resides on the master server. Therefore, the master server is considered to be the client for a catalog backup. If your NetBackup configuration includes a media server, it must use the same NetBackup version as the master server to perform a catalog backup.
- All NetBackup components (server, client, and console) on an individual system must be at the same version.
- The backup images that are created under an older version of NetBackup are recoverable with newer versions.

For more information about NetBackup compatibility, refer to the following tech notes on the Symantec Support website:

- NetBackup compatibility with the NetBackup appliances:  
<http://www.symantec.com/docs/TECH136970>
- NetBackup version compatibility:  
<http://www.symantec.com/docs/TECH29677>

# About NetBackup compatibility lists and information

The *NetBackup Release Notes* document contains a great deal of the compatibility changes that are made between NetBackup versions. However, the most up-to-date compatibility information on platforms, peripherals, drives, and libraries can be found on the Symantec Operations Readiness Tools (SORT) for NetBackup website.

See “[About Symantec Operations Readiness Tools](#)” on page 82.

For NetBackup, SORT provides an Installation and Upgrade Checklist report as well as the ability to collect, analyze, and report on host configurations across your environments. In addition, you can determine which release contains the hot fixes or EEBs that you may have installed in your environment. You can use this data to assess whether your systems are ready to install or upgrade to a given release.

## NetBackup compatibility lists

In addition to SORT, Symantec has made available a variety of compatibility lists to help customers quickly reference up-to-date compatibility information for NetBackup. These compatibility lists can be found on the Symantec Support website at the following location:

[www.netbackup.com/compatibility](http://www.netbackup.com/compatibility)

The following items describe each of the compatibility lists that are available:

- *NetBackup Enterprise Server and Server 7.x OS Software Compatibility List*  
 This list contains information about the operating system (OS) level and the version that is required to be compatible with a NetBackup master server or media server. It also describes the OS level and the version that is required to be compatible with a NetBackup client. Predecessors and successors to the documented operating system levels may function without difficulty, as long as the release provides binary compatibility with the documented operating system.  
 This list contains compatibility information about several NetBackup Enterprise features, including the following:
  - NetBackup Enterprise server and client
  - Bare Metal Restore (BMR)
  - NetBackup Access Control (NBAC)
  - Network Data Management Protocol (NDMP)
  - NetBackup OpsCenter
  - NetBackup SAN media server and SAN client
  - Fibre Transport (FT) media server
  - NetBackup Media Server Deduplication Option

- File system compatibility
- NetBackup virtual system compatibility
- NetBackup Media Server Encryption Option (MSEO)  
 NetBackup compatibility for a platform or OS version requires platform vendor support for that product. The platform compatibility lists that NetBackup maintains are subject to change as vendors add and drop platforms or OS versions.
- *NetBackup Enterprise Server and Server 7.x Hardware Compatibility List*  
 This list includes information for compatible drives, libraries, virtual tape devices, robot-types, fibre-channel HBAs, switches, routers, bridges, iSCSI configurations, and encryption devices. Other compatibility information includes the following:
  - NetBackup appliances
  - AdvancedDisk arrays
  - OpenStorage (OST) solutions
  - Tape drives
  - Fibre Transport media server host bus adapters (HBAs)
  - Virtual tape libraries (VTLs)
  - Network Data Management Protocol (NDMP) devices
  - Tape libraries
  - Encryption and security solutions
- *NetBackup 7.x Database and Application Agent Compatibility List*  
 This list contains the most current compatibility information for the database agents and application agents that are supported on specific operating systems and CPU architectures.
- *NetBackup 7.x Snapshot Client Compatibility List*  
 This list contains the most current server and client snapshot compatibility information, sorted by arrays, agents, operating systems, and VSS providers.
- *NetBackup 7.x Cluster Compatibility List*  
 This list contains the most current compatibility information for the cluster types and versions that are supported on specific operating systems and CPU architectures.
- *Statement of support for the importing of Backup Exec images in NetBackup 7.x using the Backup Exec Tape Reader*
- *Support for NetBackup 7.x in virtual environments*  
 This list contains the most current compatibility information for NetBackup in virtual environments.

# About NetBackup end-of-life notifications

Symantec is committed to providing the best possible data protection experience for the widest variety of systems: platforms, operating systems, CPU architecture, databases, applications, and hardware. Symantec continuously reviews NetBackup system support. This review ensures that the proper balance is made between maintaining support for existing versions of products, while also introducing new support for the following:

- General availability releases
- Latest versions of new software and hardware
- New NetBackup features and functionality

While Symantec continually adds support for new features and systems, it may be necessary to improve, replace, or remove certain support in NetBackup. These support actions may affect older and lesser-used features and functionality. The affected features and functionality may include support for software, OS, databases, applications, hardware, and 3rd-party product integration. Other affected items may include the products that are no longer supported or nearing their end-of-support life with their manufacturer.

Symantec provides advance notification to better help its customers to plan for upcoming changes to the support status of the various features in NetBackup. Symantec intends to list older product functionality, features, systems, and the 3rd-party software products that are no longer supported in the next release of NetBackup. Symantec makes these support listings available as soon as possible with a minimum of 6 months where feasible before major releases.

## Using SORT

Advance notification of future platform and feature support including end-of-life (EOL) information is available through a widget on the Symantec Operations Readiness Tools (SORT) for NetBackup home page. The NetBackup Future Platform and Feature Plans widget on the SORT for NetBackup home page can be found directly at the following location:

<https://sort.symantec.com/nbufutureplans>

NetBackup end-of-support-life (EOSL) information is also available at the following location:

[https://sort.symantec.com/eosl/show\\_matrix](https://sort.symantec.com/eosl/show_matrix)

See “About Symantec Operations Readiness Tools” on page 82.



## About changes in platform compatibility

The NetBackup 7.6.1 release may contain changes in support for various systems. In addition to using SORT, you should make sure to review the *NetBackup Release Notes* document and the NetBackup compatibility lists before installing or upgrading NetBackup software.

See [“About new enhancements and changes in NetBackup”](#) on page 14.

See [“About NetBackup compatibility lists and information”](#) on page 78.

# About SORT for NetBackup Users

This appendix includes the following topics:

- [About Symantec Operations Readiness Tools](#)
- [Recommended SORT procedures for new installations](#)
- [Recommended SORT procedures for upgrades](#)

## About Symantec Operations Readiness Tools

Symantec Operations Readiness Tools (SORT) is a robust set of standalone and web-based tools that support Symantec enterprise products. For NetBackup, SORT provides the ability to collect, analyze, and report on host configurations across UNIX/Linux or Windows environments. This data is invaluable when you want to assess if your systems are ready for an initial NetBackup installation or for an upgrade.

Access SORT from the following webpage:

<https://sort.symantec.com/netbackup>

Once you get to the SORT page, more information is available as follows:

- **Installation and Upgrade Checklist**  
Use this tool to create a checklist to see if your system is ready for a NetBackup installation or an upgrade. This report contains all the software and the hardware compatibility information specific to the information provided. The report also includes product installation or upgrade instructions, as well as links to other references.
- **Hot fix and EEB Release Auditor**

Use this tool to find out whether a release that you plan to install contains the hot fixes that you need.

- **Custom Reports**

Use this tool to get recommendations for your system and Symantec enterprise products.

- **NetBackup Future Platform and Feature Plans**

Use this tool to get information about what items Symantec intends to replace with newer and improved functionality. The tool also provides insight about what items Symantec intends to discontinue without replacement. Some of these items include certain NetBackup features, functionality, 3rd-party product integration, Symantec product integration, applications, databases, and the OS platforms.

Help for the SORT tools is available. Click **Help** in the upper right corner of the SORT home page. You have the option to:

- Page through the contents of the help similar to a book
- Look for topics in the index
- Search the help with the search option

## Recommended SORT procedures for new installations

Symantec recommends new NetBackup users perform the three procedures that are listed for an initial introduction to SORT. The tool has many other features and functions, but these serve as a good introduction to SORT. In addition, the procedures provide a helpful base of knowledge for other SORT functionality.

**Table D-1**

Procedure	Details
Create a SymAccount profile on the SORT webpage	See <a href="#">"To create a SymAccount profile on the SORT page"</a> on page 84.
Create generic installation reports	See <a href="#">"To create a generic installation checklist"</a> on page 84.
Create system-specific installation reports	See <a href="#">"To create a system-specific installation report for Windows"</a> on page 85. See <a href="#">"To create a system-specific installation report for UNIX or Linux"</a> on page 86.

### To create a SymAccount profile on the SORT page

- 1 In your web browser, navigate to:  
<https://sort.symantec.com/netbackup>
- 2 In the upper right corner, click **Register**.
- 3 Enter the requested login and contact information:

<b>Email address</b>	Enter and verify your email address
<b>Password</b>	Enter and verify your password
<b>First name</b>	Enter your first name
<b>Last name</b>	Enter your last name
<b>Company name</b>	Enter your company name
<b>Country</b>	Enter your country
<b>Preferred language</b>	Select your preferred language
<b>CAPTCHA text</b>	Enter the displayed CAPTCHA text. If necessary, refresh the image.

- 4 Click **Submit**.
- 5 When you receive your login information, you can log into SORT and begin uploading your customized information.

### To create a generic installation checklist

- 1 In your web browser, navigate to:  
<https://sort.symantec.com/netbackup>
- 2 Find the **Installation and Upgrade Checklist** widget.

### 3 Specify the requested information

<b>Product</b>	Select the appropriate product from the drop-down menu. For NetBackup select <b>NetBackup Enterprise Server</b> or <b>NetBackup Server</b> .
<b>Product version you are installing or upgraded to</b>	Select the correct version of NetBackup. The most current version is always shown at the top of the list.
<b>Platform</b>	Select the operating system that corresponds to the checklist you want generated.
<b>Processor</b>	Select the correct processor type for your checklist.
<b>Product version you are upgrading from (optional)</b>	For new installations, do not make any selections. For upgrades, you can select the currently installed version of NetBackup.

### 4 Click **Generate Checklist**.

- 5 A checklist corresponding to your choices is created. You can modify your selections from this screen, and click **Generate Checklist** to create a new checklist.

You can save the resulting information as a PDF. Numerous options are available for NetBackup and many of them are covered in the generated checklist. Please spend time reviewing each section to determine if it applies to your environment.

### To create a system-specific installation report for Windows

- 1 Go to the SORT website:  
<https://sort.symantec.com/>
- 2 Select **SORT > SORT for NetBackup**
- 3 In the **Custom Reports Using Data Collectors**, select the **Data Collector** tab.
- 4 Select the radio button for **Graphical user interface** and download the correct data collector for your platform.

The data collector is OS-specific. To collect information about Windows computers, you need the Windows data collector. To collect information about UNIX computers, you need the UNIX data collector.

- 5 Launch the data collector after it finishes downloading.

- 6 On the **Welcome** screen, select **NetBackup** from the product family section and click **Next**.
- 7 On the **System Selection** screen, add all computers you want analyzed. Click **Browse** to see a list of computers you can add to the analysis. Symantec recommends starting the tool with an administrator or a root account.
- 8 When all systems are selected, review the **System names** section and click **Next**.
- 9 In the **Validation Options** screen, under **Validation options**, select the version to which you plan to upgrade.
- 10 Click **Next** to continue
- 11 The utility performs the requested checks and displays the results. You can upload the report to My SORT, print the results, or save them. Symantec recommends that you upload the results to the My SORT website for ease of centralized analysis. Click **Upload** and enter your My SORT login information to upload the data to My SORT.
- 12 When you are finished, click **Finish** to close the utility.

**To create a system-specific installation report for UNIX or Linux**

- 1 Go to the SORT website:  
<https://sort.symantec.com/>
- 2 Select **SORT > SORT for NetBackup**
- 3 Change to directory that contains downloaded utility.
- 4 In the **Custom Reports Using Data Collectors**, select the **Data Collector** tab.
- 5 Download the appropriate data collector for your platform.  

The data collector is OS-specific. To collect information about Windows computers, you need the Windows data collector. To collect information about UNIX computers, you need the UNIX data collector.
- 6 Run `./sortdc`  

The utility performs checks to confirm the latest version of the utility is installed. In addition, the utility checks to see it has the latest data. The utility then lists the location of the log file for this session.
- 7 If requested, press **Enter** to continue.
- 8 Select the **NetBackup Family** at the **Main Menu**.

**9 Select **Installation/Upgrade report** when prompted **What task do you want to accomplish?****

You can select multiple options by separating your response with commas.

**10 Specify the system or systems you want included in the report.**

If you previously ran a report on the specified system, you may be prompted to run the report again. Select **Yes** to re-run the report.

The utility again lists the location of the log files for the session.

The progress of the utility is displayed to the screen.

**11 Specify **NetBackup** when prompted for the product you want installation or upgrade reports.**

**12 Enter the number that corresponds to the version of NetBackup you want to install.**

The utility again lists the location of the log files for the session.

The progress of the utility is displayed to the screen.

**13 The utility prompts you to upload the report to the SORT website if you want to review the report online. The online report provides more detailed information than the text-based on-system report.**

**14 When your tasks are finished, you can exit the utility. You have the option to provide feedback on the tool, which Symantec uses to make improvements to the tool.**

## Recommended SORT procedures for upgrades

Symantec recommends current NetBackup users perform the three procedures that are listed for an initial introduction to SORT. The tool has many other features and functions, but these serve as a good introduction to SORT for users who already use NetBackup. In addition, the procedures provide a helpful base of knowledge for other SORT functionality.

**Table D-2**

Procedure	Details
Create a SymAccount profile on the SORT webpage	See <a href="#">"To create a SymAccount profile on the SORT page"</a> on page 84.

**Table D-2** (continued)

Procedure	Details
Create a system-specific upgrade report	See <a href="#">"To create a system-specific installation report for Windows"</a> on page 85. See <a href="#">"To create a system-specific installation report for UNIX or Linux"</a> on page 86.
Review the future platform and feature plans. Review the hot fix and emergency engineering binary release auditor information.	See <a href="#">"To review future platform changes and feature plans"</a> on page 88. See <a href="#">"To review hot fix and emergency engineering binary information"</a> on page 88.

**To review future platform changes and feature plans**

- 1 In your web browser, navigate to:  
<https://sort.symantec.com/netbackup>
- 2 Find the **NetBackup Future Platform and Feature Plans** widget.
- 3 Click **Display Information**.
- 4 Review the information provided
- 5 Optional - sign in to create notification - Click **Sign in and create notification**.

**To review hot fix and emergency engineering binary information**

- 1 In your web browser, navigate to:  
<https://sort.symantec.com/netbackup>
- 2 Find the **NetBackup Hot Fix and EEB Release Auditor** widget.
- 3 Enter the hot fix or emergency engineering binary (EEB) information.
- 4 Click **Search**.
- 5 The new page shows a table with the following columns:

<b>Hot fix of EEB Identifier</b>	Shows the hot fix or EEB number that was entered on the previous screen.
<b>Description</b>	Displays a description of the problem that is associated with the hot fix or EEB.
<b>Resolved in Versions</b>	Provides the version of NetBackup where this issue is resolved.



# Other NetBackup documentation and related documents

This appendix includes the following topics:

- [About related NetBackup documents](#)
- [About NetBackup release notes documents](#)
- [About NetBackup administration documents](#)
- [About NetBackup installation documents](#)
- [About NetBackup configuration documents](#)
- [About NetBackup troubleshooting documents](#)
- [About other NetBackup documents](#)

## About related NetBackup documents

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**Note:** All references to UNIX also apply to Linux platforms unless otherwise specified.

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Symantec releases various guides and technical manuals that relate to NetBackup software. These documents are published for new versions of NetBackup based on release type.

See [“About NetBackup release types and versioning”](#) on page 74.

Unless otherwise specified, the NetBackup documents can be downloaded in PDF format from the following location:

<http://www.symantec.com/docs/DOC5332>

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**Note:** Symantec assumes no responsibility for the correct installation or use of PDF reader software.

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## About NetBackup release notes documents

The following release notes documents are published for NetBackup software:

- *NetBackup Release Notes*  
This document contains a great deal of assorted information about particular releases of NetBackup for both UNIX and Windows platforms. This information includes, but is not limited to, new features, platform compatibility changes, patch requirements, documentation corrections, and known issues. This document also contains any operational notes that may not be found elsewhere in the NetBackup manuals or the online Help.
- *NetBackup Emergency Engineering Binary Guide*  
This document contains listings of some of the known issues that were identified, fixed, and available to NetBackup customers in the form of an Emergency Engineering Binary (EEB). It also lists a certain number of the issues that were fixed in a given release, but that may not have resulted in an EEB.

## About NetBackup administration documents

The following administrator guides are published for NetBackup software:

- *NetBackup Administrator's Guide, Volume I*  
This guide explains how to configure and manage NetBackup on a UNIX or Windows server. This guide describes the NetBackup interfaces and how to configure hosts, storage devices and media, storage lifecycle policies (SLPs), backups, replication, and monitoring and reporting.
- *NetBackup Administrator's Guide, Volume II*  
This guide explains additional configuration and interface options for NetBackup. This guide also contains reference topics and information about NetBackup licensing.

## About administration of NetBackup options

The following administrator guides for NetBackup options are published for NetBackup software:

- *NetBackup AdvancedDisk Storage Solutions Guide*  
This guide explains how to configure, manage, and troubleshoot the NetBackup AdvancedDisk storage option. This guide describes how to use the disk storage that is exposed to NetBackup as a file system for backups.
- *NetBackup Bare Metal Restore Administrator's Guide*  
This guide explains how to install, configure, and manage NetBackup Bare Metal Restore (BMR) boot servers and clients to automate and streamline the server recovery process.
- *NetBackup Cloud Administrator's Guide*  
This guide explains how to configure and manage NetBackup to back up and restore data from cloud Storage as a Service (STaaS) vendors through Symantec OpenStorage.
- *NetBackup Deduplication Guide*  
This guide explains how to plan, configure, migrate, monitor, and manage data deduplication in a NetBackup environment using the NetBackup Media Server Deduplication Option.
- *NetBackup OpenStorage Solutions Guide for Disk*  
This guide describes how to configure and use an intelligent disk appliance in NetBackup for backups.
- *NetBackup for VMware Administrator's Guide*  
This guide describes how to configure NetBackup to perform such functions as off-host backups of VMware virtual machines that run on VMware ESX servers.
- *NetBackup Plug-in for VMware vCenter Guide*  
This guide explains how to install and use the NetBackup vCenter plug-in to monitor virtual machine backups and restore virtual machines.
- *NetBackup for Hyper-V Administrator's Guide*  
This guide explains how to configure and manage snapshot-based backup policies for the virtual machines that run on Windows Hyper-V servers.
- *NetBackup for NDMP Administrator's Guide*  
This guide explains how to install, configure, and use NetBackup for Network Data Management Protocol (NDMP) to initiate and control backups and restores of Network Attached Storage (NAS) systems.
- *NetBackup SAN Client and Fibre Transport Guide*

This guide describes how to set up, configure, and manage the NetBackup SAN Client feature to use the Fibre Transport method for high-speed client backups.

- *NetBackup Search Administrator's Guide*  
This guide explains how to install, configure, and use NetBackup Search to index backups, edit and save queries, search across multiple domains, and perform search actions in NetBackup OpsCenter.
- *NetBackup Snapshot Client Administrator's Guide*  
This guide explains how to install, configure, and use NetBackup Snapshot Client to enable a variety of snapshot-based features, including integration with VMware, Hyper-V, and Replication Director.
- *NetBackup Replication Director Solutions Guide*  
This guide describes how to implement NetBackup OpenStorage-managed snapshots and snapshot replication, where the snapshots are stored on the storage systems of partnering companies.
- *NetBackup Vault Administrator's Guide*  
This guide explains how to install, configure, and use NetBackup Vault to automate selection and duplication of backup images for off-site media storage.
- *NetBackup Vault Operator's Guide*  
This guide explains how to use NetBackup Vault to vault media as part of two major task areas: Administration and operation. Some of the described tasks include procedures for sending tapes off site, receiving tapes on site, and running reports on off-site media and vault jobs.
- *NetBackup OpsCenter Administrator's Guide*  
This document describes how to use the NetBackup OpsCenter user interface to provide reporting, monitoring, and alerts for NetBackup and its agents and options.
- *NetBackup OpsCenter Reporting Guide*  
This guide explains how to use NetBackup OpsCenter to generate and use comprehensive business-level reports to track the effectiveness of data backup and archive operations.

## About administration of NetBackup database agents

The following administrator guides for NetBackup database agents are published for NetBackup software:

- *NetBackup for DB2 Administrator's Guide*  
This guide explains how to install, configure, and use the NetBackup for DB2 database agent.
- *NetBackup for Enterprise Vault Agent Administrator's Guide*

This guide explains how to install, configure, and use the NetBackup for Enterprise Vault agent to protect Symantec Enterprise Vault configuration information and archived data.

- *NetBackup for Informix Administrator's Guide*  
This guide explains how to install, configure, and use the NetBackup for Informix agent to back up and restore the Informix databases that are on a UNIX NetBackup client.
- *NetBackup for Lotus Notes Administrator's Guide*  
This guide explains how to configure and use the NetBackup for Lotus Notes agent to back up and restore Lotus Notes databases and transaction logs on NetBackup clients.
- *NetBackup for Microsoft Exchange Server Administrator's Guide*  
This guide explains how to configure and use the NetBackup for Exchange Server agent to perform online backups and restores of Microsoft Exchange Server.
- *NetBackup for Microsoft SQL Server Administrator's Guide*  
This guide explains how to configure and use the NetBackup for Microsoft SQL Server agent to back up and restore Microsoft SQL Server databases and transaction logs.
- *NetBackup for Microsoft SharePoint Server Administrator's Guide*  
This guide explains how to configure and use the NetBackup for SharePoint Server agent to back up and restore the SharePoint databases that are on a Windows NetBackup client.
- *NetBackup for Oracle Administrator's Guide*  
This guide explains how to configure and use the NetBackup for Oracle agent to back up and restore the Oracle databases that are on a NetBackup client.
- *NetBackup for SAP Administrator's Guide*  
This guide explains how to configure and use the NetBackup for SAP agent to back up and restore SAP and SAP HANA databases that are on a NetBackup client.
- *NetBackup for Sybase Administrator's Guide*  
This guide explains how to configure and use the NetBackup for Sybase agent to back up and restore Sybase databases that are on a NetBackup client.

## About NetBackup installation documents

The following installation documents are published for NetBackup software:

- *NetBackup Upgrade Guide*

This guide is provided to help assist you plan and accomplish your upgrade of NetBackup software. This guide is updated periodically to provide you with the most up-to-date information.

- *NetBackup Installation Guide*  
This guide explains how to install NetBackup server, client, and administrative software on UNIX and Windows platforms.
- *NetBackup LiveUpdate Guide*  
This guide explains how to set up a NetBackup LiveUpdate server to provide a policy-driven method of distributing NetBackup software releases within your environment.

## About NetBackup configuration documents

The following configuration guides for NetBackup options are published for NetBackup software:

- *NetBackup Device Configuration Guide*  
This guide describes how to set up and configure the operating systems of the storage device hosts you use for NetBackup servers.

## About NetBackup troubleshooting documents

The following troubleshooting guides are published for NetBackup software:

- *NetBackup Troubleshooting Guide*  
This guide provides general troubleshooting information and explains the various troubleshooting methods that can be used for NetBackup products and features.
- *NetBackup Status Codes Reference Guide*  
This guide provides a complete list of the status codes for NetBackup, Media Manager, device configuration, device management, and robotic errors. Each status code listing includes an explanation and the recommended actions.

## About other NetBackup documents

The following documents are published for NetBackup software:

- *NetBackup Commands Reference Guide*  
This guide contains detailed information on the commands that run on UNIX systems and Windows systems, including all of the NetBackup man page commands.
- *NetBackup Clustered Master Server Administrator's Guide*

This guide provides information on how to install and configure a NetBackup master server in a cluster.

- *NetBackup in Highly Available Environments Guide*  
This guide discusses various methods for using NetBackup in highly available environments and provides guidelines for protecting NetBackup against single points of failure.
- *NetBackup Security and Encryption Guide*  
This guide provides information about on how to secure NetBackup using access control, enhanced authorization and authentication, and encryption.
- *NetBackup Network Ports Reference Guide*  
This guide provides a reference to NetBackup network ports, including master server and media server ports, client ports, default ports, and other ports that NetBackup uses.
- *NetBackup Getting Started Guide*  
This guide provides a high-level description of preinstallation information that is related to this release of NetBackup. The guide also includes descriptions of the NetBackup media kit, the NetBackup Electronic Software Distribution (ESD) images, and the NetBackup license key requirements.
- *NetBackup Backup, Archive, and Restore Getting Started Guide*  
This guide provides basic information about backup and restore procedures for new users of NetBackup. These procedures include how to back up, archive, and restore files, folders or directories, and volumes or partitions that reside on a computer.
- *NetBackup Third-party Legal Notices*  
This document contains proprietary notices for the Third-Party Programs and the licenses for the Third-Party Programs, where applicable, that pertain to the Symantec NetBackup and OpsCenter products.