Veritas NetBackup™ Release Notes

Release 7.7.3

Document Version 1

VERITAS™

Veritas NetBackup™ Release Notes

Legal Notice

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Veritas Services and Operations Readiness Tools (SORT)

Veritas Services and Operations Readiness Tools (SORT) is a website that provides information and tools to automate and simplify certain time-consuming administrative tasks. Depending on the product, SORT helps you prepare for installations and upgrades, identify risks in your datacenters, and improve operational efficiency. To see what services and tools SORT provides for your product, see the data sheet:

https://sort.veritas.com/data/support/SORT_Data_Sheet.pdf

Contents

About NetBackup 7.7.3

This chapter includes the following topics:

- About the NetBackup 7.7.3 release
- About NetBackup Late Breaking News
- About NetBackup third-party legal notices

About the NetBackup 7.7.3 release

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 13.

About EEBs and release content

NetBackup 7.7.3 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 7.7.3 can be found on the Veritas Operations Readiness Tools (SORT) website and in the NetBackup Emergency Engineering Binary Guide.

See "About Veritas Services and Operations Readiness Tools" on page 70.

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.veritas.com/docs/000002217

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.veritas.com/docs/000040237

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

https://www.veritas.com/support/en_US/15143.html

About NetBackup third-party legal notices

NetBackup products may contain third-party software for which Veritas 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:

https://www.veritas.com/about/legal/license-agreements

New features, enhancements, and changes

This chapter includes the following topics:

- About new enhancements and changes in NetBackup

- NetBackup 7.7.3 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, Veritas 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.

See "About the NetBackup 7.7.3 release" on page 11.

See "About NetBackup compatibility lists and information" on page 85.

NetBackup 7.7.3 new features, enhancements, and changes

New features in NetBackup 7.7.3.

NetBackup 7.7.3 support additions

The following products and services are supported starting with NetBackup 7.7.3:

- Bare Metal Restore (BMR) support for client and boot server on Oracle Linux 7.2 (x86-64)
- Bare Metal Restore (BMR) support for client and boot server on SUSE Linux Enterprise Server (SLES) 11 SP4 (x86-64)
- Bare Metal Restore (BMR) support for client and boot server on Red Hat Enterprise Linux (RHEL) 7.2 (x86-64)
- General Parallel File System (GPFS) 4.1.1 support on Red Hat Enterprise Linux (RHEL) 7
- Added support for SAN client for Hyper-V clusters. Valid only for Hyper-V intelligent policy.

More information about supported products and services is available:

See "About NetBackup compatibility lists and information" on page 85.

About security certificates for NetBackup hosts

Veritas recommends that you deploy a security certificate on a NetBackup host after you finish installing or upgrading that host to 7.7.3. It is mandatory to have the security certificate while connecting to a NetBackup host through the NetBackup Administration Console or the Java Backup, Archive, and Restore user interface. A NetBackup host security certificate is issued by the NetBackup Certificate Authority (CA) on the NetBackup master server.

Refer to the *NetBackup Administrator's Guide, Volume I* for information about NetBackup host's security certificates and deploying these certificates:

NetBackup Release Notes, Administration, Installation, Troubleshooting, Getting Started, and Solutions Guides

Product Improvement Program is no longer optional

Starting with NetBackup 7.7.3, participating in the NetBackup Product Improvement Program is no longer optional. Veritas will attempt collection and transmission of telemetry data on every server at NetBackup version 7.7.3 or higher.

OpsCenter interface requires HTTPS protocol

Starting in NetBackup 7.7.3 the OpsCenter interface must be accessed through https://serverr:port/opscenter instead of through http://serverr:port/opscenter. For security reasons, OpsCenter no longer supports access to the GUI through the HTTP protocol. HTTPS must be used instead.

Enhanced alert types in NetBackup 7.7.3

Alerting is enhanced in OpsCenter 7.7.3 for the following alert types:

- High Job Failure Rate

- High Drive Down

- High Suspended Media

These alerts apply to a single master server. An alert is raised if the job failure rate for any master server in the group is greater than the user-defined threshold. Only one alert is raised for the entire group of master servers.

Web services enabled in NetBackup 8.0

Beginning in NetBackup 8.0, web services (Tomcat) will be enabled on the Master Server. To properly secure these web services, they will run under a user account that has limited system privileges. The creation of this user account will be a required prerequisite to installation of a Master Server. We will document procedures for creating this account, and they will be available well in advance of the 8.0 release. Please plan for creation and maintenance of this user account as part of the deployment of your Master Server.

Additional support for backup and restore of VMware tag associations

NetBackup now supports the backup and restore of VMware tag associations with virtual machines when you use VMware Intelligent Policies. The tag association metadata for all tags that are associated with a virtual machine are backed up with that virtual machine. If those tags exist on the vCenter Server, they are recreated when the virtual machine is restored.

For more information, see the *NetBackup for VMware Administrator's Guide* for the 7.7.3 release of NetBackup: NetBackup Release Notes, Administration, Installation, Troubleshooting, Getting Started, and Solutions Guides

Support for individual VMware virtual machine disk restores

NetBackup supports the restore of individual VMware virtual machine disks. Some limitations apply. For descriptions of the limitations, see See "VMware individual virtual machine disk restore limitations" on page 63.

See the *NetBackup for VMware Administrator's Guide* for the 7.7.3 release of NetBackup for more information: NetBackup Release Notes, Administration, Installation, Troubleshooting, Getting Started, and Solutions Guides

Several shutdown commands will be deprecated in a future release

A new, fully documented command for shutting down NetBackup processes and daemons will be provided in an upcoming release. At that point, the following commands will no longer be available:

- `bp.kill_all`

- `bpdown`

- `bpclusterkill`

Please plan accordingly. The new command will be announced in future release notes and in the *NetBackup Commands Reference Guide*.

bpmedialist -count option will be deprecated in a future release

The `-count` option has been removed from the `bpmedialist` command.

To work around this issue, use a different means to get this information, such as `vmoprcmd`. See the *NetBackup Commands Reference Guide* for more information on `vmoprcmd` or other commands

For example:

```
root@myhost # /usr/volmgr/bin/vmoprcmd -dp ds -h myhost

                            DRIVE STATUS

Drv DrivePath                          Status   Label   Ready
  0 /dev/nst0                            UP       -       No
  1 /dev/nst1                            UP       -       No
```

BACKUP_FIFO_FILES configuration option to back up contents of named pipe files

This option indicates that the contents of a named pipe are to be backed up. A named pipe–also known as a FIFO–is a method of Inter-Process Communication that uses the file system interface to transfer data.

By default, BACKUP_FIFO_FILES is not present in the client configuration file. When the option is not enabled, only the metadata of the named pipe files is backed up, but not the data in the files.

When the option is present and enabled (1) on a client, the contents of the named pipe files on the client are backed up.

Use the nbgetconfig and the nbsetconfig commands to view, add, or change the option in the bp.conf file or the Windows registry on the client.

Use the following format:

BACKUP_FIFO_FILES = 1

For the contents of the files to be backed up, the write process must close the pipe. As long as data is passing through the pipe, the backup continues.

If the third-party process writing to the named pipe file does not close the pipe, NetBackup fails the backup job with a non-zero status code (typically 13 or 41). Server resources are then allocated to other jobs. In the case of restore jobs, the job fails with status code 2800. In either case, the client processes continue waiting until they are terminated.

To back up the script or executable that is responsible for writing to the named pipe, add the program file instead of the named pipe file to the **Backup Selections** list. To avoid backing up named pipes, but still having the contents of other pipes read, add the named pipe to an exclude list or avoid the files entirely in the **Backup Selections** list.

Logging the RMAN input and output on a client

NetBackup has the ability to log the RMAN input and output that is logged locally on the client and also sent to the Activity Monitor. The RMAN_OUTPUT_DIR entry specifies which directory to place the RMAN input and output locally on the client for Oracle Intelligent Policy backups. The log is only created when a backup is run using an Oracle Intelligent Policy (OIP) and the file is continuously updated during the RMAN backup. Only one RMAN_OUTPUT_DIR entry per client is allowed in a Windows environment. In a UNIX environment, each user can place the output in a different location by adding the RMAN_OUTPUT_DIR entry to $HOME/bp.conf file.

The value in the `$HOME/bp.conf` file takes precedence if it exists. NetBackup does not clean up the log files so the Oracle user has to clean up the log files manually.

You must use the `nbgetconfig` and the `nbsetconfig` commands to view, add, or change the option. The directory that is specified must exist and the Oracle user needs to have permission to create files within the directory.

Use the following format:

`RMAN_OUTPUT_DIR` = *directory_name*

The *directory_name* is a directory to which the Oracle user has permission to create files within the directory.

For information about these commands, see the NetBackup Commands Reference Guide.

The file name has a specific format that includes the client name, policy name (OIP), schedule type, date stamp (yyyymmdd), and timestamp (hhmmss). The following is an example of how the file name looks in the directory:

`orac121_`*`backuppolicyname`*`_full_20160201_184157_GMT.log`

The following are examples of `RMAN_OUTPUT_DIR` entires:

Windows: *`install_path`*`\oracle\oracle_logs\RMAN`

UNIX: `/oracle/oracle_logs/rman`

Updates to the nboraadm command

The base functionality of the `nboraadm` command has an added prompt when you change instances. The `nboraadm` command can add, modify, list, and remove instances and instance groups as part of an Oracle backup policy. If you modify an instance that is not local to the host where you ran `nboraadm`, a prompt asks you if you want to change the instance.

Java user interface (UI) enhancements

This release of NetBackup includes the following Java user interface (UI) enhancements:

- Enabling viewing Error Logs from the Activity Monitor
  Error logs can be viewed by enabling the **Error Logs** tab view in the **Activity Monitor** using **View > Options**. Error Logs can be enabled on the **Activity Monitor** as a tab as well as on the **Job Details** window. The individual errors that are associated with a specific Job ID are viewable in the **Job Details** tab which an Administrator can enable from the **Activity Monitor > View > Options**.

Errors are categorized as Critical logs, Errors, Warnings, and Information logs and can be selected for view as per the category.

■ Activity Monitor Custom Filtering

The following operations can be performed with custom filters:

■ Show/Hide Custom Filter Panel

■ Create/Edit/Delete the Custom Filters

■ Import/Export filters

■ Search within the table to filter the rows

New cloud features in NetBackup 7.7.3

Beginning with this NetBackup release, you can compress your backup data before you send it to cloud storage server. You can enable data compression on the NetBackup media server while you configure your cloud storage server.

Note: The compression option is available only for Amazon S3-compatible cloud providers.

Changes to some of the Linux client installation packages

As part of an overall update strategy, Veritas has modified some client installation packages and client installation behavior. These changes affect all Linux client installations except those that use the Debian package. The changes include modification of the Veritas client RPM packages to conform with the existing RPM best practices. These changes let you use your preferred installer method (`yum`, `chef`, etc.) in addition to the NetBackup install scripts. For customers who prefer the NetBackup install scripts for Linux clients, these scripts continue to work. Veritas has updated the behavior of the NetBackup installation script. The script no longer copies the installation package contents into the `/usr/openv/pack/` directory on the client.

For more information, refer to the *NetBackup Installation Guide* for Version 7.7.3:

NetBackup Release Notes, Administration, Installation, Troubleshooting, Getting Started, and Solutions Guides

Operational notes

This chapter includes the following topics:

- About NetBackup 7.7.3 operational notes

- NetBackup installation and upgrade operational notes

- NetBackup administration and general operational notes

- NetBackup administration interface operational notes

- NetBackup Accelerator operational notes

- NetBackup Bare Metal Restore operational notes

- NetBackup Cloud operational notes

- NetBackup cluster operational notes

- NetBackup database and application agent operational notes

- Internationalization and localization operational notes

- NetBackup LiveUpdate operational notes

- NetBackup Logging Assistant operational 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 7.7.3 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 Veritas 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 Veritas Support website:

http://www.veritas.com/docs/000003214

See "About related NetBackup documents" on page 88.

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 7.7.3.

Do not install from the menu that appears when the installation DVD is inserted

The operating system may open a user interface window (such as File Manager on Solaris) when the installation DVD is inserted into the disc drive. Veritas recommends that you do not use this window to install NetBackup products because unpredictable results may occur. Make sure to follow the installation instructions that are found in the *NetBackup Installation Guide*.

About support for HP-UX Itanium vPars SRP containers

Hewlett Packard Enterprise (HPE) 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 HPE 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.

A Java error can occur on AIX 7.1

On AIX 7.1, the following message may appear in the installer:

```
WARNING: Installation of Java LiveUpdate agent failed.
Refer to file /tmp/JLU-Log/JavaLiveUpdate-Install.log on bmraix57 for more information.
```

If you encounter the message, run the following Java command and verify the error output:

```
#  /usr/openv/java/jre/bin/java
Error: Port Library failed to initialize: -125
Error: Could not create the Java Virtual Machine.
Error: A fatal exception has occurred. Program will exit.
```

If this error output is generated, refer to the following IBM support article to resolve the issue:

http://www-01.ibm.com/support/docview.wss?uid=swg1IV12285

Note: Other errors can cause the warning message to appear. The output from the Java command can determine if the fix from IBM can resolve the issue.

Character restrictions for database server name

An upgrade to SQL Anywhere 11.0.1 was made in NetBackup 7.0. However, there is a restriction within that version that requires the database server name to be less or equal to 31 characters. NetBackup has been modified to change the server name, from *VERITAS_NB_hostname.domain_name* to *NB_hostname* in /usr/openv/db/bin/servername. NetBackup also trims the name to 31 characters if necessary.

Considerations for Oracle backup policies when upgrading from NetBackup 7.1 and earlier

For upgrades from NetBackup 7.1 or earlier to NetBackup 7.5 or later, special care may be required for the Oracle backup policies before the upgrade is performed.

Consideration is required if an Oracle policy uses snapshots and directs the backup to a storage lifecycle policy: The SLP processing for all of the images that are associated with that policy must be brought to a complete state before the upgrade.

See the *NetBackup Upgrade Guide* for more information.

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 7.7.3.

Enhanced Auditing settings cache on media servers

This release of NetBackup implements a cache on media servers for the Enhanced Auditing authentication setting. Enhanced Auditing operations on media servers obtain the `USE_AUTHENTICATION` value from the cache rather than querying the master server.

Media servers update their cache hourly with the value of the master server's `USE_AUTHENTICATION` setting. A new option to the `bpclntcmd` command, `-refresh_use_at`, lets you update the cache manually. Use the command and option to refresh the cache before the next automatic update occurs.

Enhanced Auditing should not be configured or enabled on a NetBackup appliance

The Enhanced Auditing feature that was released in NetBackup version 7.7 is not currently supported for use on NetBackup appliances. This feature should not be configured or enabled on a NetBackup appliance.

Using X forwarding to launch the NetBackup Administration Console can fail on certain Linux platforms

Using X forwarding to launch the NetBackup Administration Console can fail on certain Linux platforms, particularly Red Hat Enterprise Linux 6.0 (RHEL 6.0) on VMware. The issue is a result of incompatibilities between the default GNU C Library (`glibc`) and Advanced Vector Extensions (AVX) on newer hardware. The issue should be fixed in a future release of `glibc`.

Workaround: Run the `export LD_BIND_NOW=1` command before you execute `runInstaller`.

NetBackup limitations when using IPv6 address as client name or image name

The following two NetBackup limitations can occur if an IPv6 address is used as a client name or an image name:

- Using IPv6 addresses as client names in a policy do not work with Instant recovery (IR) snapshots on Windows systems. That can cause a backup to fail. Specify a host name instead of an IPv6 address.

  Image names are created automatically in NetBackup, and consist of a combination of the client name and a timestamp. If the client name is configured in the policy as the IPv6 address, the result is an image name (in the image catalog) that includes the IPv6 address. That causes the backup to fail.

- Using IPv6 addresses as image names under the catalog do not work with Instant recovery (IR) snapshots on Windows systems.

Intermittent issues with X forwarding of NetBackup Java Administration Console

Intermittent issues may occur with X forwarding of the NetBackup Java Administration Console. This behavior only occurs when you use X forwarding. This issue does not occur at the local console. The issue is most commonly seen on Linux servers, but not exclusively. The issue generally occurs when older versions of X viewers are used, such as Xming and XBrowser.

The use of MobaXterm seems to minimize or eliminate the issue. If you experience issues with X forwarding, consider upgrading your X viewer and retrying the operation or access the server from the local console.

Reduced functionality during the initialization of the NetBackup-Java Administration Console

Reduced functionality during the initialization of the NetBackup-Java Administration Console.

Reduced functionality (only the Backup, Archive, and Restore component available) or **Cannot Connect** errors during initialization of the NetBackup-Java Administration Console occurs if one or more of the NetBackup services or daemons on the host that is specified in the logon dialog is not running.

Memory requirements to run the NetBackup Administration Console

Veritas recommends that you run the console (`jnbSA`, `jbpSA`, or the Remote Administration Console) on a computer with at least 1 gigabyte of physical memory and 256 megabytes of memory available to the application.

Issues with SUSE 11 running on kernel versions later than 2.6

Live browse and backup problems can occur on SUSE 11 operating systems that have a kernel version later than 2.6. The issues occur because the `nbfirescan` process in NetBackup 7.7.3 does not support kernel versions later than 2.6.

To work around this issue, revert to kernel version 2.6 and perform the snapshot.

NetBackup administration interface operational notes

The NetBackup administrator has a choice of several interfaces to use to administer NetBackup. All of the interfaces have similar capabilities. This topic contains some of the operational notes and known issues that are associated with these interfaces in NetBackup 7.7.3.

For more information about the specific NetBackup administration interfaces, refer to the *NetBackup Administrator's Guide, Volume I*. For information about how to install the interfaces, refer to the *NetBackup Installation Guide*. For information about platform compatibility with the administration consoles, refer to the various NetBackup compatibility lists available on the Veritas Support website.

See "About NetBackup compatibility lists and information" on page 85.

- NetBackup Administration Console
- Remote Administration Console
- Character-based, menu interfaces for device management

■ Command line

Incorrect Operating System version displayed in Administration Console

In the NetBackup Administration Console, the **Applications > Microsoft SQL Server > All Instances** node may not show the correct OS version for an instance. For example, "Windows 2016" may display as "Windows 2012."

Java Administration Console may encounter a core dump issue when the Simplified Chinese UTF-8 locale is used on a Solaris SPARC 64-bit system with Solaris 10 Update 2 or later

The NetBackup Java Administration Console may encounter a core dump issue when the Simplified Chinese UTF-8 locale is used on a Solaris SPARC 64-bit system with Solaris 10 Update 2 and later installed. For more information, refer to Bug ID 6901233 at the following URL on the Oracle Technology Network website:

http://bugs.sun.com/bugdatabase/view_bug.do?bug_id=6901233

If you encounter this issue, apply the appropriate Solaris patches or upgrades that Oracle provides for this issue.

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 7.7.3.

Accelerator version requirements for master, media, client, and media servers

NetBackup Accelerator requires master servers, media servers, and client servers to be at NetBackup 7.5 or higher. NetBackup appliance media servers require NetBackup Appliance 2.5 or higher for Accelerator support.

Accelerator and Replication Director support for virtualized servers cannot be configured together

NetBackup Accelerator and Replication Director support for virtualized servers cannot be configured together. The Block Level incremental backup settings do not currently allow the combination.

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 7.7.3.

BTRFS file system is not supported with sub-volumes and its snapshots

For BMR clients, BTRFS file system is not supported with sub-volumes and its snapshots.

If the boot server has a base installation of Solaris 10 update 11, the creation of SRTs can fail

If the boot server has a base installation of Solaris 10 update 11, the creation of Bare Metal Restore (BMR) shared resource trees (SRTs) that have a lower OS update can fail due to a kernel patch ID check. The issue occurs because Solaris 10 update 11 has a kernel patch ID that is lower than the ID for previous Solaris 10 updates.

Workaround: Update the kernel patch on the Solaris 10 update 11 BMR boot server. You can update the kernel by applying any of the provided kernel bug fix patches from Oracle Solaris. The kernel bug fix patches to Solaris 10 update 11 correct this issue by modifying the patch number to be higher than the other patches.

A devfsadmd error may occur on Solaris 11 and newer

During a BMR restore on Solaris 11 and newer, the following error message may be displayed:

```
devfsadmd not responding. /dev may not be correct
```

During a BMR restore, the service that is related to the `devfsadmd` daemon is stopped temporarily to manipulate the `/dev` and `/devices` links. As a result, when

the operating system wants to do internal communication with the `devfsadmd` daemon it generates the error message.

This message is not for BMR and it does not have any effect on a BMR restore or on the overall system. The message can be ignored. Once the system boots up after the BMR restore, the `devfsadmd` daemon restarts and the message does not display again.

Many services on Solaris 11 print warning messages during a system boot and during BMR first boot

After a BMR restore during first boot on Solaris 11 and newer, error messages that are related to several services are seen.

Many services (such as `sendmail`) print warning messages during a system boot and during BMR first boot, such as:

```
sendmail/filesys_update failed
```

These messages are also seen during normal operating system installation on the system and therefore can be ignored.

Another set of messages that is seen on the console during BMR first boot are related to `zpool` and the Solaris Zones reconfiguration. All of these messages are harmless and have no effect on System Restore, and the zpools and the zones coming to the correct state

These messages come from SMF services and have no effect on system recovery.

Solaris Zone recovery on Solaris 11 and newer takes time to reconfigure after a BMR restore during first boot

During first boot after a Bare Metal Restore (BMR) restore operation, BMR reconfigures the zones using detach-attach commands. These commands may take some time to run if there are a large number of zones that need to be configured. After the BMR first boot command execution completes, the zpool, zones, and ZFS configurations may take some time to settle down with the new configuration.

Wait about 10 minutes after first boot (more depending on the number of zones) so that the system returns to the correct configuration state. You should not restart the system or log into any zones until that time to ensure a complete recovery.

A Solaris BMR restore operation fails if the text-installer package is not present in the customized AI ISO

A Solaris Bare Metal Restore (BMR) restore operation fails if the text-installer package is not present in the customized Automated Installer (AI) ISO that was created using the distribution constructor.

For shared resource tree (SRT) creation, if you use a customized AI ISO that was created using distribution constructor, then the text-installer package should not be removed from the AI manifest file.

For Solaris x86, this text-installer package is mandatory because the BMR restore makes use of a file from that package.

The OS takes time for configuration after a client to virtual machine conversion

This issue occurs on Windows when the Bare Metal Restore (BMR) client to virtual machine backup conversion occurs and the converted VM boots up for the first time. During this time, Windows automatically configures OS settings for the new hardware. This auto-configuration activity requires approximately 1-4 minutes.

You should not restart the OS on the VM until after waiting for some time until Windows configuration is complete. This activity can be seen in a Windows dialog or status pane.

When the /etc/mke2fs.conf file is restored, the restore task is shown as partially completed in the Activity Monitor

When the `/etc/mke2fs.conf` file is restored, the restore task is shown as partially completed in the **Activity Monitor**. The issue occurs on Red Hat Enterprise Linux (RHEL) 6 Update 2 and later even though the Bare Metal Restore (BMR) recovery of the client completes successfully. The issue occurs because the security properties contain some incorrect settings for the `/etc/mke2fs.conf` file in a BMR environment after the file is restored.

ZFS temporary mount can fail during a BMR restore

During a Bare Metal Restore (BMR) restore, the Zeta file system (ZFS) temporary mount fails. This issue occurs if any ZFS is not mounted or the `canmount` value is set to `OFF` during a backup.

To restrict the disk or the disk pool, edit the BMR configurations. The edits ensure that the disk is not overwritten and the data that it contains is not erased during the restore process.

For more information on how to edit the configurations, refer to the following sections of the *Bare Metal Restore Administrator's Guide*:

- Managing Clients and Configurations
- Client Configuration Properties

Issues may occur after a BMR restore is performed on RHEL 6

After the completion of a Bare Metal Restore (BMR) Linux restore task, the system may display "Kernel Panic" when it looks for a grub menu. The system may also go into maintenance mode during the first restart. These issues occur because the UDEV daemon dynamically detects devices, causing discrepancies with disk names and ordering in various configuration files across restarts.

If you encounter this issue, please contact Veritas Support and have your support representative reference the following tech notes: TECH201332 and TECH179048.

BMR fails to create a media SRT when a Basic Server installation is performed on an RHEL system

A Basic Server installation of Bare Metal Restore (BMR) on a Red Hat Enterprise Linux (RHEL) system fails to create a media shared resource tree (SRT). This issue occurs because the package that contains a command that is used for ISO creation is missing. This issue does not occur with a normal Desktop installation on RHEL clients.

To resolve this issue, you must manually install the missing package. The package should resemble a file similar to `genisoimage-1.1.9-11.el6.x86_64`. After this file is installed, you can use the `bmrsrtadm` command to create the media SRT.

The system relabels all of the file systems after a BMR restore during the first startup

After a BMR restore and during the first startup, the system relabels all of the file systems and then the Linux operating system restarts the computer again.

That is a necessary process that is related to SELinux:

- The labels are how security contexts are associated with files and are stored as part of a file's extended attributes. If the system is started with SELinux disabled these labels can be inadvertently removed or become out of sync.

- That usually occurs only when you label a file system for SELinux for the first time. During a BMR restore, and as file systems are newly created, it is the first time that the file systems are labeled during the first startup.

The /boot partition must be on a separate partition for a multiple device-based OS configuration

If the client is configured as root (/) under a multi-device, then for a successful BMR restore, the /boot partition must be on a separate partition. That means, if / and /boot are on the same partition, they are not supported for a multiple device-based OS configuration.

Multiple error messages might be displayed during the first boot after the restoration of a client with ZFS storage pools

During the first boot after the restoration of a client with ZFS storage pools, multiple error messages might be displayed. The following is an example:

```
SUNW-MSG-ID: ZFS-8000-D3, TYPE: Fault, VER: 1, SEVERITY: Major
EVENT-TIME: Mon May 23 13:10:09 CDT 2011
PLATFORM: SUNW,Sun-Fire-V215, CSN: -, HOSTNAME: bmrsol101.vxindia.veritas.com
SOURCE: zfs-diagnosis, REV: 1.0
EVENT-ID: c257eb38-495e-cdb6-9a52-a4d9c2ae38be
DESC: A ZFS device failed.  Refer to http://sun.com/msg/ZFS-8000-D3 for more information.
AUTO-RESPONSE: No automated response will occur.
IMPACT: Fault tolerance of the pool may be compromised.
REC-ACTION: Run 'zpool status -x' and replace the bad device.
```

For each disk in the computer you may see the error message. However, when you log on and run the zpool status -x command, you see the following message:

```
all pools are healthy
```

That is because of the ZFS import operation that is done during the first boot sequence. Bare Metal Restore (BMR) restores storage pools and contents in the BMR restoration environment and later imports to the client environment during first boot. That can cause an error message or a warning message during the first boot operation.

These messages only occur during the first boot operation and you can safely ignore them.

BMR may not format or clear the ZFS metadata

If you opt for the creation of a ZFS storage pool on small number of disks during a dissimilar disk restore (DDR), Bare Metal Restore (BMR) does not format or clear the ZFS metadata on the disks that remain. Because of that, if you attempt to use those disks to create other storage pools, you may see an error message that states a disk is in use under the ZFS storage pool.

To work around this issue, use the `-f` option to create a new storage pool on those disks.

Coexistence of two BMR-supported multi-path solutions can cause issues

Coexistence of two Bare Metal Restore (BMR)-supported multi-path solutions (EMC PowerPath and Linux native multi-path) with both actively configured on a client can cause issues and is not supported by BMR.

A BMR issue can result if a multi-device that is configured over a SAN disk using the EMC PowerPath name, and the SAN disk is under both EMC PowerPath and the Linux Native multi-path. In addition, this configuration is unsupported. However, if the same multi-device is configured over a SAN disk using the Linux native multi-path name then it works with BMR.

BMR backups may fail on Citrix XenCenter virtualization due to disk naming

Bare Metal Restore (BMR) can only support disk naming conventions such as `hdX`, `sdX`, `cXDn`, and so forth.

BMR backups can fail on Citrix XenCenter virtualization for the following reasons:

- BMR does not recognize disk names such as `xvdX`, which are newly introduced on Citrix XenCenter virtualization. This issue is due to the Xen para-virtual drivers that are introduced in this type of virtual environment.

- For modern versions of BMR that Linux systems such as SLES 11 SP1 support, the client computers show `hda` and `sda` disk naming conventions at the same time. BMR does not support this behavior.

  To work around this issue, make sure that you use the **Other** media install because it is the only template that BMR supports for a Citrix XenCenter virtual machine. Do not use the systems that BMR does not support. For example, BMR does not support SLES 11 SP1 and RHEL6.1 and onwards on Citrix XenCenter virtualization.

A NetBackup system state backup can fail on certain Windows Server 2008 R2 systems with SFW

A NetBackup system state backup can fail on certain Windows Server 2008 R2 systems with Storage Foundation for Windows (SFW) 5.1 SP1. This issue occurred on a system where the System Reserved partition did not have an assigned drive letter. The following SFW 5.1 SP1 hot fix resolves the issue:

sfw-Hotfix_5_1_10064_584_2496270

https://sort.veritas.com/patch/detail/5438

This issue is also resolved in SFW 5.1 SP2 CP7.

Specifying the short name of the client to protect with Auto Image Replication and BMR

You must specify the short name of the client when you install NetBackup client packages on the computer that you want to protect with Auto Image Replication and Bare Metal Restore (BMR). You must also specify the short name of the client in the backup policy that you created on the primary domain. That policy backs up all of the client's local drives and gathers the client configuration that BMR requires. The DNS of the secondary or the tertiary domain cannot resolve the fully qualified name during a BMR recovery of that client at the disaster recovery site.

A restore task may remain in a finalized state in the disaster recovery domain even after the client restores successfully

In the case of a dissimilar domain restore where the primary and the disaster recovery domain names are different, the restore task remains in a finalized state in the disaster recovery domain even after the client restores successfully. The Bare Metal Restore (BMR) restore is successful in the disaster recovery domain and only the restore task update fails.

The update fails because of an invalid network configuration in the client. This behavior is expected because the restore does not modify the configuration files that are related to the DNS of the disaster recovery domain.

You must manually modify the following network configuration files to back up and restore the client in a disaster recovery domain:

- Solaris:
  - `/etc/hosts`
  - `/etc/resolv.conf`
  - `/etc/nodename`
  - `/etc/bge0.hostname`

- AIX:
  Use `smitty` to modify the network configuration.

- HP-UX:
  Use the HP System Management home page (SMH) to modify network configuration.

- Linux:

  ```
  /etc/hosts
  /etc/resolv.conf
  /etc/sysconfig/network-scripts/ifcfg-eth*
  ```

- Windows:

  See the following URLs to modify the domain name in Windows:

  - http://windows.microsoft.com/en-US/windows7/Connect-your-computer-to-a-domain

  - http://support.microsoft.com/kb/295017

IPv6 support for BMR

Bare Metal Restore (BMR) provides protection to clients that can communicate over an IPv4-only network, an IPv6-only network, or a dual stack IPv4-IPv6 network. BMR recovery is yet supported only over IPv4 network as many NW boot protocols are not supported over IPv6 channel. In addition, when you configure a BMR database with the `bmrsetupmaster` command, the BMR master server IPv4 address needs to be enabled and able to resolve with the master server host name. Once `bmrsetupmaster` runs successfully, you can bring the IPv4 address down if you only want to use the IPv6 address.

During the BMR restore time, the master server and the media servers need to have IPv4 addresses up.

Example

A `bmrsetupmaster` may fail while BMR resolves its master's IPv4 address during its record creation into BMR database. As the BMR database creation fails, the BMR master does not function.

To resolve this issue, make sure an IPv4-based IP of the master server is enabled and can be resolved using the NetBackup master server name before you run the `bmrsetupmaster` command.

Note, the BMR backup is supported on IPv6 network channel, however, the BMR restore works only with IPv4 channel.

A failure may occur during a VxFS7-based file creation

During a Bare Metal Restore (BMR) restore, a failure can occur during a VxFS7-based file creation process. To work around this issue, use `bmrsrtadm` to patch VxFS version with version 5.0 to edit the SRT. Attempt to restore again and start a client restore.

Automatic boot may fail for HP-UX after a restore

Sometimes after a Bare Metal Restore (BMR) restore and during the first boot of the client computer, the operating system automatic boot may fail. The HP BIOS then fails to identify the boot drive.

To resolve this issue, use the **HPBIOS > EFI** shell and select a hard drive that you can boot from (for example, `fs0:`) by looking at the device mapping table.

Change the directory (`cd`) to `\EFI\HPUX\` and run **HP-UX** to boot the operating system manually.

Note: Refer to the HP EFI manuals for more details on how to handle the EFI shell.

Once the client computer comes up, log on to the computer as `root` and run the following command to enable auto-booting.

```
setboot -p <hardware_path_of_boot_harddrive>
```

Prepare to Restore may not work for a Solaris client

A Bare Metal Restore (BMR) prepare-to-restore of a Solaris client computer may not work because the BMR boot server failed to resolve the IPv4 address of the client computer.

To work around this issue, perform the following:

■ Make sure the IPv4 address, `client_host_name` mapping entry exists first in `/etc/hosts` before the IPv6 mapping entry.
On the Solaris BMR boot server, if the `/etc/hosts` directory contains the IPv6 address `client_host_name` entry first, then the BMR boot server fails to identify client IPv4 address.

■ Run **Prepare to Restore** again.

The first boot after a successful restore may fail on a Linux client if the disk order in the BIOS is not correct

The first boot after a successful restore may fail on a Linux client if the disk order in the BIOS is not the following:

Primary Master > Primary Slave > Secondary Master > Secondary Slave

For example, the order of the disks on a live client might be the following:

■ `/dev/sdd (hd0) [ Secondary Slave ]`

■ `/dev/sda (hd1) [ Primary Master ]`

- `/dev/sdb (hd2) [ Primary Slave ]`

- `/dev/sdc (hd3) [ Secondary Master ]`

However, the disk order in the restore environment may look like the following:

- `/dev/sda (hd0)`

- `/dev/sdb (hd1)`

- `/dev/sdc (hd2)`

- `/dev/sdd (hd3)`

Thus, during a restore, boot loader may be installed on `/dev/sda`, assuming it to be `hd0`. Then during the first boot, `/dev/sdd` would be mapped to `hd0` because of the disk order that is specified in the BIOS and cause the first boot to fail.

To avoid this issue, set the disk order in the BIOS to reflect **Primary Master > Primary Slave > Secondary Master > Secondary Slave** before you attempt a restore.

Restoring back-level clients

You can use a shared resource tree (SRT) that contains a version of the NetBackup client of 7.x or higher to restore back-level NetBackup clients.

NetBackup Cloud operational notes

NetBackup Cloud Storage enables you to back up and restore data from cloud Storage as a Service (STaaS) vendors. NetBackup Cloud Storage is integrated with Veritas OpenStorage. This topic contains some of the operational notes and known issues that are associated with the NetBackup Cloud in NetBackup 7.7.3.

Master server installation on platforms not supported by NetBackup Cloud may result in cloud storage server configuration issues

If the master server is installed on a platform that NetBackup Cloud does not support (such as Solaris x86 or Windows 2008), you may observe the following issues during cloud storage server configuration.

For the operating systems that NetBackup supports for cloud storage, see the NetBackup operating system compatibility list available through the following URL:

- Backup, restores, storage server properties settings, and other operations on existing Amazon S3AT&T, and Rackspace cloud storage servers using NetBackup 7.7 media server are not successful.

However, all NetBackup backups, restores, storage server properties settings, and other operations on the existing Amazon S3, AT&T, and Rackspace cloud storage servers are successful using media servers with the version older than NetBackup 7.7.

- Cloud storage server configuration for any cloud provider is not successful.

In the case of Solaris x86 master server, carry out the following steps to work around this problem:

- Identify one of the NetBackup 7.7 cloud supported media servers as *cloud_master_server_host*.

- Note that going forward, this media server does not hold the master copy of the CloudProvider.xml file (contains details of all supported cloud storage providers), which all media servers require while configuring the cloud storage and running operations such as backup, restore, and so on.

- Run the following command on all NetBackup 7.7 cloud supported media servers including the one that is selected as *cloud_master_host*:

  nbcssc-t-a NetBackup

  nbcssc-s-a NetBackup-m*cloud_master_host*-f

- Make sure that the values of CSSC_PORT and CSSC_IS_SECURE as mentioned in cloudstore.conf file from *cloud_master_host* are copied as CSSC_MASTER_PORT and CSSC_MASTER_IS_SECURE in cloudstore.conf file on all other NetBackup 7.7 cloud supported media servers.

- Note that once you select *cloud_master_host*, you should not change the name again to point to another media server. If in certain scenarios, you need to do so, you should contact Veritas Technical Support.

Caution: There is no workaround for Windows 2008 to enable the support for cloud storage. You must choose a master server that has the supported cloud platform.

Network connection issues may occur when the Rackspace plug-in is used on a host running Windows Server 2008 R2 with IPv6 enabled

When the Rackspace plug-in is used on a host running Windows Server 2008 R2 with IPv6 enabled, NetBackup may experience network connection issues. Veritas recommends that you disable IPv6 on Windows Server 2008 R2 hosts that use the Rackspace plug-in.

NetBackup cluster operational notes

Clusters provide high availability of applications and data to users. In a cluster, two or more servers (called nodes) are linked in a network. These servers run the cluster software that allows each node access to the shared disks. This topic contains some of the operational notes and known issues that are associated with cluster technologies in NetBackup 7.7.3.

A virtual name cannot resolve to both IPv4 and IPv6 addresses in clustered environments

If you have a clustered environment, the clustered environment defines a highly available resource with a virtual name that is only a single address. You can make that address an IPv4 address that is highly available or an IPv6 address is highly available. You cannot have a virtual name that resolves to both.

NetBackup cluster installation notes

Log on to server using virtual name

When you launch the NetBackup Administration Console, you should log into the server using the virtual name that is associated with NetBackup.

NetBackup Access Control can be configured in a clustered server environment

NetBackup Access Control (NBAC) can be configured in a clustered server environment. For more information, refer to the following tech note on the Veritas Support website:

http://www.veritas.com/docs/000088363

Increase resource offline timeout after installing or upgrading on non-Solaris UNIX clusters

After you install or upgrade NetBackup on UNIX clusters other than Solaris Cluster, you should increase the NetBackup resource offline timeout to at least 600 seconds.

Normal error messages when upgrading clustered servers to 7.0

When you upgrade clustered NetBackup servers to version 7.0, you may encounter Windows Event Log messages that indicate the Sybase service (SQLANYs) failed

to start. These messages are generated in a short period of time – normally a window of two to three seconds. These messages coincide with the cluster configuration portion of the upgrade. You should expect these messages and know that they do not reflect a problem with the upgrade.

NetBackup resource group tuning parameters for Solaris Cluster

When you install or upgrade NetBackup on Solaris Clusters, make the following changes to the NetBackup resource group tuning parameters to ensure a successful failover:

- Increase the `STOP_TIMEOUT` parameter from the default of 300 seconds to at least 600 seconds.

- Set the `pmf Retry_count` parameter to 0.

To accomplish these changes, use the following commands:

- `# scrgadm -c -j scnb-hars -y Retry_count=0`

- `# scrgadm -c -j scnb-hars -y STOP_TIMEOUT=600`

- `# scswitch -n -j scnb-hars`

- `# scswitch -e -j scnb-hars`

Note: Running these commands causes shutdown and restart of NetBackup.

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 7.7.3.

NetBackup for DB2 operational notes

NetBackup for DB2 integrates the database backup and recovery capabilities of DB2 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 DB2 in NetBackup 7.7.3.

ROLLFORWARD **operation may fail for DB2 version 10 and newer if** bprestore **log directory does not exist**

If the NetBackup bprestore log directory does not exist, a ROLLFORWARD operation may fail for DB2 version 10 and newer.

If you use the USEREXIT program to protect the DB2 archive logs and attempt to perform a restore and a ROLLFORWARD operation, the roll-forward may fail.

Workaround: Manually create the NetBackup bprestore log directory (/usr/openv/netbackup/logs/bprestore).

NetBackup for Exchange operational notes

NetBackup for Exchange Server extends the capabilities of NetBackup to include online backups and restores of Exchange databases. This topic contains some of the operational notes and known issues that are associated with NetBackup for Exchange in NetBackup 7.7.3.

The status of a DAG backup can be empty if the restore is initiated from a node in the DAG

When you restore databases or granular items of a database availability group (DAG) backup, the restore status may appear empty from the Backup, Archive, and Restore (BAR) interface. The status is empty if the restore is initiated from a node in the DAG. You should initiate the restore from the active DAG node or a NetBackup server to properly see the activity status.

User-initiated backups in a DAG environment fail if initiated from a node in the DAG that is not currently active

User-initiated backups in a database availability group (DAG) environment fail if initiated from a node in the DAG that is not currently active for the virtual DAG name.

Workaround: Initiate the user backup from the active DAG node, or manually start the backup from the NetBackup master to properly start the backup.

NetBackup for SharePoint operational notes

NetBackup for SharePoint Server extend the capabilities of NetBackup to include online backups and restores of SharePoint databases. This topic contains some of the operational notes and known issues that are associated with NetBackup for SharePoint in NetBackup 7.7.3.

Editing a list item title creates a new version of the item

If you edit the title of a list item, SharePoint creates a new version of that item. When you select all list item versions for a restore in a SharePoint 2016 environment, NetBackup creates a new list item for only those items whose titles are different than the original list item title. As a workaround, restore the list.

Restore job fails if selected list item title does not match original title

A restore job in a SharePoint 2016 environment fails with an error message if the list item selected for restore has a different title than the original list item, and if the **Restore over existing items** option is enabled. As a workaround, restore the list.

Granular restores skip versioned documents or files that are checked out

The following known issues relate to the restore of a document or a file that is enabled for versioning and is checked out at the time of backup:

- For SharePoint 2010, the granular restore of such documents or files is skipped. The restore fails with the error: "Additions to this website have been blocked."

- For SharePoint 2016, an additional version is present after restore. If the parent list contains a column that has a validation formula that might fail, the restore job might fail but the file content and other valid metadata are restored. The "checked-out" tag is also removed from the item.

To work around this issue, you can restore a checked-out item and its versions by selecting a list as the restore target. However, note that in this case, the "checked-out" tag is removed from the item. 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 2013/2016.

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 pages may not be correct

When you use Granular Recovery Technology (GRT) to restore a page in the wiki site, the restored content may be incorrect.

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*.

When you use Granular Recovery Technology (GRT) to restore ghosted or uncustomized ASPX pages from any template of SharePoint 2016, the restore job is successful, but the restored pages appear with the default content when it was created. This issue is not seen if the ASPX pages are uploaded to SharePoint. Such pages are treated as customized pages.

To work around this issue, restore the SharePoint web application content database. See "Redirecting the restore of a SharePoint Server Web application content database to an alternate SQL instance" in the *NetBackup for Microsoft SharePoint Server Administrator's Guide*.

Internationalization and localization operational notes

This topic contains some of the operational notes and known issues that are associated with internationalization, localization, and non-English locales in NetBackup 7.7.3.

Certain NetBackup user-defined strings must not contain non-US ASCII characters

Specific NetBackup user-defined strings must not contain non-US ASCII characters.

The following NetBackup user-defined strings must not contain non-US ASCII characters:

- Host name (master server, media server, Enterprise Media Manager (EMM) server, volume database host, media host, client)

- Policy name

- Policy KEYWORD (Windows only)

- Backup, Archive, and Restore KEYWORD (Windows only)

- Storage unit name

- Storage unit disk pathname (Windows only)

- Robot name

- Device name

- Schedule name

- Media ID
- Volume group name
- Volume pool name
- Media description
- Vault policy names
- Vault report names
- BMR Shared Resource Tree (SRT) name

Restricted support for localized environments in database and application agents for all supported platforms

Database and application agents have restricted support of localized environments for all supported platforms.

When you use any of these agents, the use of non-US ASCII characters is not supported in the following:

- Any database object names. For example, database, tablespace, file group, data files, portals, etc.
- Any path names of database files, directories, transaction logs, or other database storage locations.
- Any path names that are specified in the policy backup selection. For example, notification script, template, or batch file.

Do not run language packs that are not at the same version level as the English version

Veritas does not recommend running any language packs that are not at the same level as the English version. For example, do not run the NetBackup 7.6 Language Pack with the English version of NetBackup 7.7. Please remove any previously installed language packs before updating the English version.

NetBackup LiveUpdate operational notes

NetBackup LiveUpdate provides a cross-platform, policy-driven method to distribute NetBackup Release Updates and hot fix downloads to NetBackup hosts at version 6.5 and later. Starting with NetBackup 7.1, NetBackup LiveUpdate also supports upgrades to major releases and minor releases for NetBackup clients. This topic

contains some of the operational notes and known issues that are associated with LiveUpdate in NetBackup 7.7.3.

Windows upgrade attempt with LiveUpdate policy is successful, but master server shows NetBackup Status Code 29 (failed trying to execute a command)

If you upgrade a Windows computer from NetBackup 7.7.2 to NetBackup 7.7.3 or later with a LiveUpdate policy, the job completes successfully. The master server, however, reports a NetBackup Status Code 29, failed trying to execute a command. The upgrade generates this error because it incorrectly stops the `nbliveup.exe` process. Veritas recommends that you confirm there were no other issues with the upgrade. You can then safely ignore this message.

Attempts to use LiveUpdate to install or upgrade to NetBackup 7.7.3 can fail because the target host has an incompatible version of Java JRE installed

Attempts to use LiveUpdate to install or upgrade to NetBackup 7.7.3 can fail because the target host has an incompatible version of Java JRE installed.

The Java LiveUpdate (JLU) agent requires that a minimum version of Java JRE be installed. For most UNIX platforms, NetBackup delivers a Java JRE version that meets or exceeds this minimum requirement. However, Java is no longer included in the NetBackup installation packages for a few specific UNIX platforms. Upgrading NetBackup with one of these packages results in the removal of Java versions that NetBackup might have been previously installed.

The push and silent installation methods do not install the LiveUpdate agent as part of the package

The push and silent installation methods do not install the LiveUpdate agent as part of the package. To install the LiveUpdate agent, Veritas recommends that you copy the LiveUpdate binaries to the local host and install the LiveUpdate agent manually. The LiveUpdate binaries are available at the following location:

`\\<dvd_root>\Addons\<platform>\LiveUpdate`

For more information about how to install LiveUpdate, refer to the *NetBackup LiveUpdate Guide*.

Note: If this issue affects a large number of computers, you can use a third-party application such as Altiris to install the LiveUpdate agent.

Error during upgrade of an HP PA-RISC client to NetBackup 7.6 using LiveUpdate

When using NetBackup LiveUpdate to upgrade an HP PA-RISC client to NetBackup 7.6, you can encounter an error if that client has the following configuration:

- The directories `/dev/random` and `/dev/urandom` exist.

- The default system Java JDK/JRE level is between version 1.6.0 and 1.6.0.16. To verify the current JDK/JRE version level, run the following command:

  `java -version`

If you want to use LiveUpdate to upgrade an HP PA-RISC client to NetBackup 7.6, you can perform either of the following two options to avoid this issue:

- Option 1:
  In the default system java security file (for example, `/opt/java6/jre/lib/security/java.security`), change the following:

  `securerandom.source=file:/dev/urandom`

  To:

  `securerandom.source=file:/dev/random`

- Option 2:
  Upgrade the default system Java JDK/JRE level to version 1.6.0.16 or later.

If you have encountered this issue, the following error text can exist in the `/opt/Symantec/LiveUpdate/liveupdt.log` file:

```
<date> <time> Attempt to load guard and signature files failed
because initialization of the security libraries failed
<date> <time>
<date> <time> The Java LiveUpdate session did not complete
successfully.
<date> <time> Return code = 233
```

You should make sure that `/usr/openv/java/jre/bin/java` is a symbolic link to the default system Java binary. Then perform one of the two previous options or rerun the failed NetBackup LiveUpdate job.

NetBackup Logging Assistant operational notes

This topic contains some of the operational notes and known issues that are associated with the Logging Assistant in this release of NetBackup.

Modifying logging levels in the NetBackup Administration Console can change the global logging level and VxUL debug levels

Under certain conditions in NetBackup 7.6, modifying logging levels in the NetBackup Administration Console can result in unintentional changes to the global logging level and VxUL debug levels. These changes can cause information not to be logged as expected.

Note: If you upgrade to NetBackup 7.6, logging continues to work normally. An upgrade by itself does not change logging levels and you should encounter no issues.

For more information and workarounds for this issue, see the following tech note on the Veritas Support website:

http://www.veritas.com/docs/000020026

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 7.7.3.

NDMP multiplexed (MPX) restores may generate excessive log messages and cause Activity Monitor to hang

NetBackup NDMP multiplexed (MPX) restores may generate excessive numbers of messages to the `bptm` log and cause the `bptm` program and the Activity Monitor to hang. This issue can occur when a `NON_MPX_RESTORE` touch file exists on the NetBackup master server. This issue applies only to NDMP MPX restores on both UNIX and Windows platforms.

For information on a workaround for this issue, please see the following tech note on the Veritas Support website:

http://www.veritas.com/docs/000018280

Parent directories in the path of a file may not be present in an NDMP incremental image

An issue can occur if a NetBackup Network Data Management Protocol (NDMP) backup policy is configured with the directive `set type=tar` in the backup selection. Parent directories in the path of a file that an incremental NDMP backup saves may not be present in the backup image. For more information on this issue, refer to the following tech note on the Veritas Support website:

http://www.veritas.com/docs/000095049

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 7.7.3.

Note: OpsCenter is a convergence of NetBackup Operations Manager (NOM) and Veritas Backup Reporter (VBR) and is available in the following two versions: Veritas NetBackup OpsCenter and Veritas 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*.

---

database.conf overwritten by non-default installation location

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.

Unable to set different alert.conf water mark thresholds

The water mark threshold in the `alert.conf` file is a global setting and is applicable for all disk pools for all selected NetBackup master servers in Disk Full alert policies. You cannot set up different thresholds for different master servers or different alert policies.

For more information, refer to the following article:

http://www.veritas.com/docs/000075229

Note: If you select individual disk pools when you configure a Disk Pool Full alert policy, no alerts are generated. You should select a master server instead of individual disk pools.

Report export location determined by web browser

The **Settings > Configuration > Report Export Location** determines where scheduled reports are saved. However, when you select **Export Report** in the OpsCenter console, your web browser settings determine the export location. For example: The location that is specified in **Firefox > Options > General > Save files to** determines where non-scheduled reports are saved.

Ampersand prevents user from being edited

OpsCenter user names that contain an ampersand (&) cannot be edited after an upgrade to version 7.6. After upgrade, user edits such as reset password, enable and disable, and change user role can fail. For fresh installations of version 7.6, the issue only prohibits resetting the user's password. In both cases, the edits fail with the following message:

```
Error performing User action.
```

During a password reset operation, the user name only displays with the characters before the ampersand.

Unable to log in to OpsCenter on UNIX system if Korn shell is not installed

During OpsCenter 7.6 installation or upgrade on a UNIX system, ensure that the Korn shell (ksh) is installed on the host where you want to install or upgrade OpsCenter 7.6 Server.

Warning: If you fail to install ksh before installation or upgrade, you may not be able to log in to the OpsCenter web interface.

Cloud metering data collection failure due to unreachable server

A cloud metering data collection failure can occur if one or more media servers with credentials to access a cloud storage server (data movers) is unreachable for some reason.

Workaround: From the unreachable media server, use `tpconfig` to remove the credentials of that media from all cloud storage servers on the master. Cloud metering data collection should then succeed. All the cloud metering data from the media servers that were missed earlier can now be collected.

Nodes with attached objects in View Builder temporarily disappear when moved

In the OpsCenter Analytics View Builder, if you move a node that has any objects that are assigned to it within a view, the object may seem to appear missing after the move operation. In this case, the object is temporarily invisible and becomes visible over time.

To work around the issue, Veritas recommends that you wait for some time and then log back in to the view builder to see the updated view.

Note: Objects may take several hours or a couple of days to reappear in the view builder.

Data collection fails if storage unit path is more than 256 characters

In NetBackup OpsCenter 7.6 and earlier releases, data collection by OpsCenter fails if the specified basic-disk storage unit (STU) path is more than 256 characters. To work around the issue, you must create a storage unit path that has 256 characters or less.

Blank report when only Include Accelerator Job Only is selected

Certain reports do not show any data when the **Include Accelerator Job Only** filter is applied for a NetBackup master server at Version 7.5 or 7.5.0.x. These reports include any Tabular Backup reports or any Custom reports that include accelerator data-related columns. The reports do not show any data because NetBackup Accelerator support is enabled in NetBackup OpsCenter 7.6.

To work around the issue, do not apply **Include Accelerator Job Only** on NetBackup OpsCenter 7.6 reports for a master server that runs NetBackup 7.5 or NetBackup 7.5.0.x.

Browse functionality is not supported on IE8

The Browse functionality in Operational Restore is not usable with some variants of the Internet Explorer 8 browser. To use the Browse functionality in Operational Restore, Veritas recommends Internet Explorer 9 or newer, or Firefox.

Browse and Select client functionality displays NetApp volume as client name for Replication Director VM backups

For OpsCenter restore, the **Browse and Select client** functionality result displays the NetApp volume as the client name for Replication Director VM backups. This selection does not display any files. For browsing the files and directories and for performing an operational restore, it is necessary to select the actual VM client name.

Report emails fail to deliver if attachments are too large

The reports email may not be received when the reports are scheduled in bulk.

If the size of the attachment in the report email exceeds the SMTP server limit, you cannot receive the report email.

Cannot assign alerts to new users until they log on

In OpsCenter 7.6, you cannot assign any alerts to a newly added OpsCenter user. The new users are not listed on the **Monitor** > **Alerts** page in the **Assigned To** column. New users must log on to OpsCenter first before they appear in the **Assigned To** column. Once a user appears in the column, you can then assign the alerts to that specific user.

New users not visible in Copy User Profile

A newly created user is not listed in the drop-down list for **Copy User Profile**

As a new user, to work around this issue you need to log into OpsCenter with the newly-created user name and then log out. The new user name is registered with **Copy User Profile** after it has logged on at least once. The user name should then appear in the **Copy User Profile** drop-down list.

Backup Exec data collection fails if server password contains HTML characters

If the Backup Exec server password contains HTML characters such as &, <, >, or /, and you make edits to the Backup Exec data collector on OpsCenter, it causes the data collection to fail.

To resolve the issue, you can use one of the following workarounds:

- Change the password of the Backup Exec server to a non-HTML character password.

- Delete the existing entry of the Backup Exec data collector and add a new entry.

OpsCenter Monitor File List tab shows empty for active jobs

When jobs are viewed from OpsCenter Monitor, the **File List** tab shows up empty for active jobs.

In OpsCenter 7.5 and forward, the **File List** tab appears to be empty when the job is in progress. The **File List** tab gets populated only when the job is successfully completed.

Special characters in subgroup name prevent users from being authorized

Users that are part of a subgroup with special characters do not get authorized.

If a subgroup name has special characters, then the authorization fails to return the parent or chain-of group names. The parent or chain-of group names are required to determine if any of the parents is an OpsCenter user. Therefore, users who are part of subgroup that contains special characters like "PD_#QE%" do not get authorized.

Undefined JAVA_HOME or JRE_HOME variables after you run a third-party utility

After you install OpsCenter, if you run a third-party utility, such as `version.sh` in Tomcat, you get the following error message:

'Neither the JAVA_HOME nor the JRE_HOME environment variable is defined'

If you encounter this issue, use the following workarounds:

- For Windows: After you install OpsCenter, you have to first execute the command `setEnv.bat` and then run any third-party utility.

  The path for `setEnv.bat` is *INSTALL_PATH*\OpsCenter\server\bin.

■ For UNIX: After you install OpsCenter you have to first execute the command `setEnv.sh` and then run any third-party utility.

The path for `setEnv.sh` is `<INSTALL_PATH>/SYMCOpsCenterServer/bin`.

Note: The `version.sh/bat` file is a Tomcat script and it is advised that you not modify it. You have to run the `setEnv.sh/bat` file and run the `version.sh/bat` file to find the Tomcat and JRE versions.

Duplicate entries in Monitor and Views interfaces

In certain scenarios, duplicate entries of a client are displayed on the **Monitor** and **Views** interfaces.

This issue is seen in any of the following scenarios:

■ A NetBackup master server is used as a client in one or more policies.

■ Some NetBackup policies refer to a NetBackup master server with a fully qualified domain name (FQDN) while others refer to it with a short name.

■ The actual name of the master server does not match its network name or display name that is used in OpsCenter.

The following is an example scenario of the issue:

The actual name of the NetBackup master server is `abc.xyz.com`. The network name or display name that is used in OpsCenter is `xyz`.

In this scenario, if `abc.xyz.com` is used as a client in one or more NetBackup policies, duplicate entries of this client are displayed on the following OpsCenter screens:

■ **Monitor > Host > Client**

■ **Settings > Views > Manage Nodes and Objects > Objects not in selected view**

Job collection fails on master server if port 1556 is not open bi-directionally

OpsCenter job collection from master servers could fail if port 1556 is not opened bi-directionally on both the NetBackup and OpsCenter sides.

Running Capacity Licensing reports

To run a Capacity Licensing report in NetBackup 7.7.3, a user name and password are required for each master server. To successfully run a report for any master

servers that were added to OpsCenter in versions previous to 7.5.0.5, an extra step is required. The user name and password credentials for each master server must be entered manually in the NetBackup configuration settings. If the credentials are not added in the configuration settings, a user name and password error is returned when the report is run.

Additionally, for Capacity Licensing to work correctly, please refer to the following tech note and install the specified EEBs:

http://www.veritas.com/docs/000081541

Data format in SFR Timeline shown as "unknown"

In the SFR Timeline View, for the images that are collected in OpsCenter, the data format is shown as `unknown` because of the lack of data.

OpsCenter does not support creating or editing multiple reports simultaneously for the same user session from different tabs or windows

OpsCenter does not support creating or editing multiple reports simultaneously for the same user session from different tabs or windows. You cannot open the same OpsCenter console in two or more browser tabs or windows and create or edit standard and custom reports simultaneously. That causes an exception to occur.

Deduplication reports show no data when Report On is set as Storage unit Name

The Deduplication reports do not show any data when you select the **Report On** parameter as **Storage Unit Name**.

Search and Restore operations in VMware and Hyper-V

For VMware or Hyper-V clients, the search and restore operations work only if the client name is the same as host name. If the client name is the same as display name, UUID, or DNS name then only the Search functionality is available. You cannot perform restore operations in this case. The following table provides details on whether Search and Restore functionality is available when the client name is the host name, display name, etc.:

```
Client Name Type        Search          Restore
Host Name               Yes             Yes
Display Name            Yes             No
```

```
UUID                     Yes              No
DNS Name                 Yes              No
```

File selection lists with more than 50 items do not appear in OpsCenter

A file selection list that contains more than 50 items does not appear in OpsCenter.

For a specific job ID in an OpsCenter Analytics custom report, breakup job data is available only for 50 job directories. That is because when a NetBackup policy or job is associated with more than 50 backup selections, data is available for only 50 backup selections. The NetBackup user interface truncates data for the subsequent backup selections (greater than 50).

With VBR, you can view the breakup job information for all of the job directories that are associated with a job or policy. That is because data collection in VBR happened through CLI's (and not through `nbsl`).

OpsCenter does not provide the option to purge breakup jobs

Unlike VBR, OpsCenter does not provide the option to purge breakup jobs. In the VBR console, you can purge specific breakup jobs from the **Settings** > **Global Settings** > **Data Retention** section.

Some result sets for a stored procedure that has multiple result sets may not appear

When you run a stored procedure that has multiple result sets, the output of only the first result set is displayed on the interface. The output of other result sets is not shown on the interface.

Character limitation for virtual host names on Windows

The number of characters for a virtual name by the clustering technology on Windows is limited.

The virtual host name must be the short name (not FQDN) and must contain fewer than 15 characters.

Some reports may only consider Full and Incremental schedule type jobs

When the user applies a Schedule/Level Type filter with value **All**, the following reports consider only Full and Incremental schedule type jobs:

- Advanced Success Rate
- All Failed Backups
- Consecutive Failures Report
- Success Rate Line

OpsCenter object merger utility fails on master server

The object merger utility in OpsCenter fails on the master server.

The object merger utility in OpsCenter (**Settings > Configuration > Object merger**) does not work (fails) for a master server. The object merger utility works for clients and media servers.

OpsCenter server stops receiving events from master server after NetBackup upgrade

The OpsCenter server can stop receiving events from the master server after a NetBackup upgrade.

If all following conditions are applicable, add the **OPS_CENTER_SERVER_NAME** entry to the bp.conf file on UNIX or the registry on Windows to set OpsCenter's server name. Veritas recommends that you do add the entry before you attempt to upgrade.

- The **REQUIRED_INTERFACE** is configured on the master server.
- The OpsCenter server monitors the master server.
- The **OPS_CENTER_SERVER_NAME** entry is not configured on the master server.

  If you do not add this entry, the OpsCenter server stops receiving events from the master server after the upgrade.

Users can now search for clients from the Monitor>Hosts>Clients page (but not by attribute)

An enhancement has been made in OpsCenter to maintain VBR parity.

You can now search for clients from the **Monitor** > **Hosts** > **Clients** page. You can use host names or substrings to accomplish that.

However, you can only search for clients and not other attributes such as, **CPU Count**, **CPU Speed**, **Discovered Agent Server**, and others.

Job Count Workload Analyzer summation rules

An issue occurs in the **Job Count Workload Analyzer**: For each cell, the sum of occurrences differs from the total in the first column when the time basis that is selected is Active. That is expected because a job can be active and span across a multiple-hours time frame. Hence, the same job is counted for all the hours. But the count in the first column shows the exact count of jobs that were active for these 7 days. That is different from the implementation of Time basis=**Start** or **End**. In these cases, the sum of the occurrences in the cell match with the number displayed in first column.

Daylight Savings Time support for historical reports in OpsCenter

Daylight savings time (DST) support for Historical reports in OpsCenter

If data for the historical reports is synchronized during the hour when daylight savings time begins, it can cause problems in a distributed database system. The user can also lose data.

A workaround is to use Universal Time (UTC) as the time zone, or use a time zone that does not have daylight savings time.

To set the time zone, refer to the *Veritas OpsCenter Administrator's Guide*.

OpsCenter cannot monitor IPv6-only servers

OpsCenter cannot monitor an IPv6-only server. Each server must have an available IPv4 address for it to be monitored. However, OpsCenter supports a dual-stack server. For a dual stacked server, the available IPv4 address is used.

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.

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 7.7.3.

Replications fail after point-in-time restore with NBUPlugin 1.1

Replication Director replications may fail after a Point-in-time restore is performed.

This issue relates to replication job failures for the policies that are configured for Replication Director. This issue occurs when NBUPlugin 1.1 is used under the following circumstances:

- First, the Replication Director policy runs successfully. The policy uses an SLP that contains a Snapshot operation of the primary data, as well as a Replication (SnapVault) operation in the topology.

- Next, one or more Point-in-time (PIT) restores are performed successfully from the volumes in the policy with the following option enabled: **Force rollback even if it destroys later snapshots**.

The replication jobs fail the next time that the policy runs. The DataFabric Manager server produces the following error message:

```
DFM Job (On-demand Protection) is failing with Error base
snapshot for transfer no longer exists on the source.
```

The replication jobs fail because the PIT restore deletes the base snapshot (given that the specified option was enabled for the restore). The Replication operation did not have the base snapshot to replicate.

To return to successful replication jobs, resynchronize the relationship between the primary volumes and the target volumes using the NetApp CLI.

NBUPlugin 1.1 replication fails with error code 84

For NBUPlugin 1.1, replication can fail with error code 84 (media write error) if both of the following conditions are true:

- The NetBackup policy has backup selections that are volumes coming from multiple DFMs (configured in NetBackup as a storage unit group).

- The SLP has a fan-out topology (multiple replications coming from the same source). The following is an example of fan-out topology:

```
Snapshot
 |
 -------------- Replication (SnapVault)
 |
 -------------- Replication (SnapMirror)
```

Workaround: If you have a fan-out topology, configure policies so that they have volumes from a single DFM (split the policy into multiple policies).

Database system error when browsing files in "Backup, Archive, and Restore" interface

When you browse the files in the **Backup, Archive, and Restore** user interface, the following error may be reported:

```
ERROR: database system error
```

This message can indicate a variety of issues, such as an unsupported file system, a snapshot mount failure, or other hardware or networking problems.

Indexing logs grow very large when log level set to 4 or higher

The size of the `ncflbc` and `ncfnbhfr` logs that are generated as a result of an indexing job can be very large. The size of the log files can grow rapidly when the log level is set to 4 or higher.

To work around this issue, you can lower the NCF logging level (to 3 or less). In addition, you can adjust the log file rollover mode, maximum log file size, or number of log files if you want to continue to accommodate a higher NCF logging level.

Discovery fails on VMs running vCenter 2.5 or ESX 3.5 and older

Discovery can fail on virtual machines running vCenter 2.5 or ESX 3.5 and older. Note that vCenter versions before version 4 are not officially supported.

Backup in SLP using NetBackup Accelerator fails with status code 13 if storage read speed is very slow

A NetBackup Accelerator-enabled Backup operation in an SLP can fail with status code 13 (file read failed) if it encounters very slow storage read speeds. In particular, the issue occurs when NetBackup cannot read at least 500 MB of data in five minutes.

Workaround: Adjust the global client timeout value from the default five minutes (300 seconds) to a larger value, such as 10 minutes (600 seconds). You can make the adjustments in the NetBackup Administration Console (**Host Properties > Timeouts > Client read timeout**) or in the `bp.conf` file (`CLIENT_READ_TIMEOUT = 600`).

Snapshot of NFS mount fails with status code 20 on Linux

A snapshot job of an NFS mount can fail with status code 20 on Linux due to an NFS remount failure. However, subsequent runs of the snapshot job may succeed.

NetApp Plug-in for NetBackup 1.0.1 crashes under certain circumstances

The NetApp Plug-in for Veritas NetBackup version 1.0.1 can crash under the following circumstances:

- Running an NDMP storage lifecycle policy
- Export workflow (indexing, backup, restore, or browse)
- Export for copy 2 or 3 (not for copy 1)

To work around this issue, upgrade to the latest version of the NetApp Plug-in for Veritas NetBackup that contains a fix to this issue.

Replication may fail on NetApp Plug-in for NetBackup 1.0.1 under certain conditions

You may experience replication failures if you use the NetApp Plug-in for Veritas NetBackup version 1.0.1. Replication can fail if all the following conditions are met:

- Multiple volumes are present in the backup selections

- The destination is SnapMirror

- At least 60% of the volume is full

- NAS storage is used

The following are some of the symptoms that may indicate failures:

- In the NetBackup Activity Monitor:

```
Replicate failed for backup id <backup id>
with status 174 failed waiting for child process  (34)
```

- In the `bpdm` logs:

```
Error bpdm (pid=19319) <async> wait failed:
 error 2060001: one or more invalid arguments
```

- In the NetApp Management Console:

```
destination volume too small; it must be equal to
or larger than the source volume
```

Snapshot leaks when cleaning up all images for policies with Primary > Mirror topologies

For NetApp, there is an issue when you clean up **ALL** images for a policy that has a Primary > Mirror topology. You may experience snapshot leaks where the snapshots are deleted from the NetBackup catalog but not deleted from storage.

To delete the snapshots and reclaim storage, execute the following command on the DataFabric Manager (DFM) server:

```
snapmirror release <src_vol> <dst_filer>:<dst_vol>
```

Restoring from a differential incremental backup at the volume level can result in data loss

Normally, when a single file is restored from an incremental backup, only the file that is selected from that backup is restored. In certain situations using Replication Director, however, not only is the selected file restored, but all of the other files in the backup are restored as well. The restore can possibly overwrite the files that have changed since the incremental backup was performed, leading to data loss.

To avoid unintentionally overwriting the files that have changed since the last incremental backup, do not select the entire volume in the **Backup, Archive, and Restore** interface. Instead, select only the file that you want to restore. In the following example, testfile1 is correctly selected for restore.
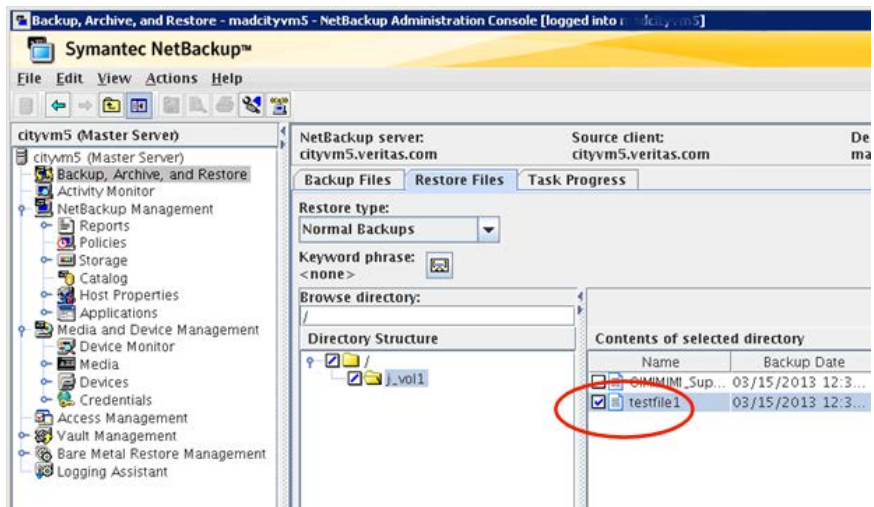
SnapVault replication may result in data loss if the qtree has not been updated in the DFM server

A qtree that has been newly added to a volume may not be protected by a Replication Director policy if the storage lifecycle policy indicates a **Snapshot**-to-**Replication** (SnapVault) topology.

Before the Replication Director policy runs, use the DataFabric Manager server interface to verify that any new qtrees in a volume have been updated. The new qtrees in the volume are not updated frequently due to a restriction on the NetApp DFM server.

The Replication Director policy may run without incident, but the qtree may not appear in the vaulted replica when browsing with the NetBackup **Backup, Archive, and Restore** interface.

For more information, see the *NetApp Plug-in 1.1 for Symantec NetBackup*:

https://library.netapp.com/ecm/ecm_download_file/ECMP1140478

(Access to the NetApp site requires a logon.)

Replication Director policy validation takes a long time to complete

The Replication Director policy validation can take a long time to complete. You cannot perform other operations until this operation completes. Open a new instance of the NetBackup Administration Console to perform other operations.

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. Each snapshot method relies on the snapshot technology that is built into the storage subsystem where the data is stored. This topic contains some of the operational notes and known issues that are associated with Snapshot Client in NetBackup 7.7.3.

Cannot create a disk array snapshot if a VxVM disk group on the array contains a software-based snapshot of the VxVM volume

NetBackup does not support creating a disk array snapshot if a VxVM disk group on the array contains a software-based snapshot of the VxVM volume.

If a software-based snapshot (such as from the VxVM method) already exists of a VxVM volume on the disk array, NetBackup cannot create a disk array snapshot of a file system that is configured on the VxVM volume. Snapshot creation fails (with final status 156), and the `bpfis` log contains a message that reports a `vxmake` command failure.

You must delete the existing VxVM snapshot from the VxVM disk group before you run a backup with a disk array snapshot method.

Examples of disk array snapshot methods are EMC_CLARiiON_SnapView_Snapshot, HP_EVA_Snapshot, Hitachi_CopyOnWrite, and IBM_StorageManager_FlashCopy. All disk array methods are described in the *NetBackup Snapshot Client Administrator's Guide*, in the chapter titled "Configuration of snapshot methods for disk arrays."

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 7.7.3.

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 7.7.3.

VMware individual virtual machine disk restore limitations

The following items describe limitations for VMware individual virtual machine disk restore:

- NetBackup does not back up the data on independent disks. Therefore, do not include independent disks in the JavaScript Object Notation (JSON) file that describes the restore parameters. If you use the `nbrestorevm -restorespecout` command to generate the JSON file, remove any independent disks from the file before you use it for a restore operation.

  Delete the entire disk specification including the curly brackets. The following is an example of a virtual machine disk specification:

  ```
  {
   "VirtualDisk": "/DS2/BackedupVM/BackedupVM_1.vmdk",
   "Datastore": "",
   "Path": "[datastore_name] MyVm/MyVM_1.vmdk",
   "Provisioning": "eagerzeroed"
   "Controller": "scsi0-1"
  }
  ```

- To restore a VMware virtual machine disk and specify the complete path to the `.vmdk` file on a standalone ESX, the directories in the path must exist. In the JSON file that describes the restore parameters, the `Path` line includes the directory path to the `.vmdk` file. For example, in the following virtual machine disk specification the `MyVM` directory must exist before the restore:

```
{
 "VirtualDisk": "/DS2/BackedupVM/BackedupVM_1.vmdk",
 "Datastore": "",
 "Path": "[datastore_name] MyVm/MyVM_1.vmdk",
 "Provisioning": "eagerzeroed",
 "Controller": "scsi0-1"
}
```

Full VMware restore with NetBackup 7.7.3 standalone client can exit with a NetBackup Status Code 1

If a standalone NetBackup 7.7.3 recovery host is used for a full VMware restore and the NetBackup Java Remote Admin Console is not installed on the recovery host, the job may exit with a NetBackup Status Code 1 instead of 0 (zero). This error is because NetBackup cannot determine if there is valid VMware tag metadata for that backup image. The restore of the virtual machine is not affected and should continue as before.

You may observe one of the warning messages:

Message 1

```
WRN - vmwareLogger: Failure during creation of tag associations: EC
Error: 4267 : Failed to initialize Java runtime environment, msg=Error
code 1, returned from JniDllManager::open while trying to open:
jvm.dll
```

Message 2

```
WRN - vmwareLogger: Failed to backup VMware tag associations due to
following erro: [status:4266, msg:Tag operations are only supported
for vCenter version 6.0 or later, display name = [name], server =
[name]].
```

Veritas has identified two ways to resolve this issue:

1. Use a NetBackup 7.7.2 recovery host for the restore.

2. Install the NetBackup Java Remote Admin Console on the recovery host.

Full VMware virtual machine restore may trigger alarm in vSphere 6.0 U1b and later

In VMware vSphere 6.0 U1b and later releases, a full restore of a virtual machine may trigger an alarm if the original VM was not deleted. The alarm is a VM MAC address conflict alarm. This VMware alarm behavior is by design. If there is a MAC address conflict, VMware eventually changes the MAC address of the new VM. If

you do not want to receive alarms, disable the VM MAC address conflict alarms in vCenter.

New options in the recovery wizards of the NetBackup Plug-in for VMware vSphere Web Client

For NetBackup 7.7.3, the following options have been added to the NetBackup Plug-in for VMware vSphere Web Client:

On the **Virtual Machine Options** dialog of the plug-in's NetBackup Recovery Wizard, the new option is **Remove tag associations**. When this option is selected, NetBackup does not restore tag associations when it restores the virtual machine. If this option is not selected, NetBackup attempts to restore all tag associations from the backup. If NetBackup cannot restore one or more of the tag associations, the restore exits with status code 1.

On the **Virtual Machine Options** dialog of the plug-in's NetBackup Instant Recovery Wizard, the new options are the following:

- **Retain tag associations**

  When this option is selected, NetBackup restores tag associations when it restores the virtual machine. If NetBackup cannot restore one or more of the tag associations, the restore exits with status code 1. If this option is not selected, NetBackup does not restore any tag associations from the backup.

- **Retain hardware version**

  When this option is selected, NetBackup restores the virtual machine with its original hardware version (such as 4). It retains the original version even if the target ESXi server by default uses a later hardware version (such as 7 or 8). If this option is not selected, the restored virtual machine is converted to the default hardware version that the ESXi server uses.

Note: The *NetBackup Plug-in for VMware vSphere Web Client Guide* will be updated at the next major release of NetBackup.

VDDK 6.0 duplicate BIOS UUIDs cause hotadd transport backup failure

In VDDK 6.0 if the backup host BIOS UUID is the same as any other VM or VMs in the same vCenter, backups fail.

Until VMware resolves this issue, you can do the following:

- Change the BIOS UUID of all of the VMs in the vCenter that have the same BIOS UUID of the backup host VM. Hotadd transport backups then succeed. (You do not need to change the BIOS UUID of the backup host.)

- Use a different backup method.

Veritas has reported this issue to VMware Incorporated. For more information about a resolution, contact your VMware support representative.

VMware web client does not allow SAN restores

The 6.0 release of the Virtual Disk Development Kit (VDDK) introduced an issue with SAN backups and restores and the BIOS UUID. With SAN transport mode, VDDK 6.0 tries to find requested virtual machines by looking up their BIOS UUID. See "SAN mode VDDK 6.0 searches for virtual machines by BIOS UUID" in the Virtual Disk Development Kit 6.0 Release Notes:

https://www.vmware.com/support/developer/vddk/vddk-600-releasenotes.html

To prevent data loss because of this VDDK 6.0 issue, NetBackup 7.7 fails the backup and the restore jobs that meet all of the following conditions:

- Use only the SAN transport mode.

- Target a VM for which a duplicate BIOS UUID exists.

- Restore the BIOS UUID.

NetBackup 7.7 also removes the SAN transport mode as an option in this situation when multiple transport modes are selected.

NetBackup recognizes the name case of VMs

In VMware vSphere, virtual machine (VM) display names, resource pool names, and vApp names are case-sensitive. For example, vm1 is a different virtual machine from one that is named VM1. In version 7.5 and earlier, NetBackup does not recognize case when it selects virtual machines for backup automatically through a query. It considers VM1 and vm1 to be the same virtual machine.

Starting with version 7.6, NetBackup recognizes case in VM display names, resource pool names, and vApp names. A backup policy that uses automatic selection through a query is now case-sensitive. The same is true of the new **Search Virtual Clients** function in the Backup, Archive, and Restore interface. Now, vm1 is identified as a different virtual machine than VM1.

Note: When you upgrade to NetBackup 7.6 and later, policies that identify virtual machines through a query may select a different set of virtual machines for backup. You may need to edit the policy query rules to reflect the new case-sensitive behavior.

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 Veritas Support website:

http://www.veritas.com/docs/000023491

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.

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

NetBackup Add-in for Microsoft System Center Virtual Machine Manager (SCVMM) Console operational notes

NetBackup Add-in for Microsoft System Center Virtual Machine Manager (SCVMM) Console lets you recover virtual machines from NetBackup backup images. This topic contains some of the operational notes and known issues that are associated with the NetBackup Add-in for Microsoft SCVMM Console in NetBackup 7.7.3.

Next button in Recovery Wizard is enabled even though required input has not been entered

In the Recovery Wizard of the NetBackup Add-in for SCVMM, the Next button is enabled even though required input has not been entered. In the following case, the Recovery Wizard of the NetBackup Add-in for SCVMM enables the Next button prematurely:

■ On the Add-in's Manage Master Servers screen, an authentication token was added for an invalid master server. For example: the token was generated for an existing master server, but the server name was entered incorrectly on the Manage Master Servers screen.

■ A second master server and its authentication token are added, and the master server's name is entered correctly.

When you select the second master server in the wizard's Virtual Machine Selection screen, you can click Next without selecting a VM identifier. The wizard lets you progress from screen to screen without completing the input for each screen. If you continue without making the required input, the Recovery button on the wizard's last screen is grayed out.

Note: The wizard's Next button should remain grayed out until the input for each screen is completed.

To run the restore, go back through the wizard and make the required entries. You should also delete the invalid master server.

VM Identifier field mislabeled as Display Name

On the **Restore Options** screen of the Add-in's **Recovery Wizard**, the **Display Name** field should instead be labeled **VM Identifier**.

The Recovery Wizard of the NetBackup Add-in for SCVMM does not prompt to overwrite the VM, and the recovery fails

The NetBackup Add-in for Microsoft SCVMM Console does not complete a VM recovery in the following situation:

■ On the Virtual Machine Selection screen of the Add-in Recovery Wizard, the VM is identified by its GUID or host name (not its display name).

■ On the Restore Options screen of the wizard, the Overwrite existing virtual machine option is not selected.

■ The same VM exists at the recovery destination.

When you click Recover, the wizard should detect the VM at the recovery destination and then prompt you to select the overwrite option. However, the prompt does not appear; the recovery job starts but then fails with status 2821.

To recover the VM, select Overwrite existing virtual machine on the Restore Options screen and rerun the recovery.

SCVMM Rollup 5 and 6 cannot restore VM to alternate location on Hyper-V server

The NetBackup Add-in for Microsoft SCVMM supports restore of a VM to its original location or to an alternate location. The Add-in supports the System Center 2012 R2 Virtual Machine Manager, including Rollups 1 to 6. If your SCVMM version is Rollup 5 or 6 however, the Add-in cannot restore the VM to an alternate location on the target Hyper-V server. When you click Browse to specify the restore location on the Add-in's Restore Options screen, the following message appears:

```
Exception has been thrown by the target of an invocation.
```

The NetBackup administrator can restore the VM to an alternate location by means of the NetBackup Backup, Archive, and Restore interface.

About SORT for NetBackup Users

This appendix includes the following topics:

- About Veritas Services and Operations Readiness Tools

- Recommended SORT procedures for new installations

- Recommended SORT procedures for upgrades

About Veritas Services and Operations Readiness Tools

Veritas Services and Operations Readiness Tools (SORT) is a robust set of standalone and web-based tools that support Veritas 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.veritas.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 Veritas enterprise products.

- **NetBackup Future Platform and Feature Plans**

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

Veritas 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 A-1

Procedure	Details
Create a Veritas Account on the SORT webpage	See "To create a Veritas Account on the SORT page" on page 72.
Create generic installation reports	See "To create a generic installation checklist" on page 72.
Create system-specific installation reports	See "To create a system-specific installation report for Windows" on page 73. See "To create a system-specific installation report for UNIX or Linux" on page 74.

To create a Veritas Account on the SORT page

1   In your web browser, navigate to:

https://sort.veritas.com/netbackup

2   In the upper right corner, click **Register**.

3   Enter the requested login and contact information:

Email address	Enter and verify your email address
Password	Enter and verify your password
First name	Enter your first name
Last name	Enter your last name
Company name	Enter your company name
Country	Enter your country
Preferred language	Select your preferred language
CAPTCHA text	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.veritas.com/netbackup

2   Find the **Installation and Upgrade Checklist** widget.

3 Specify the requested information

Product	Select the appropriate product from the drop-down menu. For NetBackup select **NetBackup Enterprise Server** or **NetBackup Server**.
Product version you are installing or upgraded to	Select the correct version of NetBackup. The most current version is always shown at the top of the list.
Platform	Select the operating system that corresponds to the checklist you want generated.
Processor	Select the correct processor type for your checklist.
Product version you are upgrading from (optional)	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.veritas.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. Veritas 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. Veritas 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.veritas.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 Veritas uses to make improvements to the tool.

Recommended SORT procedures for upgrades

Veritas 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 A-2

Procedure	Details
Create a Veritas Account on the SORT webpage	See "To create a Veritas Account on the SORT page" on page 72.

Table A-2   *(continued)*

Procedure	Details
Create a system-specific upgrade report	See "To create a system-specific installation report for Windows" on page 73.
	See "To create a system-specific installation report for UNIX or Linux" on page 74.
Review the future platform and feature plans. Review the hot fix and emergency engineering binary release auditor information.	See "To review future platform changes and feature plans" on page 76.
	See "To review hot fix and emergency engineering binary information" on page 76.

To review future platform changes and feature plans

1   In your web browser, navigate to:

https://sort.veritas.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.veritas.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:

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

NetBackup installation requirements

This appendix includes the following topics:

■ About NetBackup installation requirements

■ Required operating system patches and updates for NetBackup

■ NetBackup 7.7.3 binary sizes

About NetBackup installation requirements

This release of NetBackup may contain changes to the minimum system requirements and procedures that are required for installation. These changes affect the minimum system requirements for both Windows and UNIX platforms. Much of the installation instructional information in the *NetBackup Release Notes* is provided for convenience. Detailed installation instructions are found in the *NetBackup Getting Started Guide* and the *NetBackup Installation Guide*.

See "NetBackup installation and upgrade operational notes" on page 21.

■ Before you upgrade the NetBackup server software, you must back up your NetBackup catalogs and verify that the catalog backup was successful.

■ Database rebuilds are likely to occur in each major, minor (single-dot), and release update (double-dot) version of NetBackup. Therefore, before upgrading to NetBackup 7.7.3, you must ensure that you have an amount of free disk space available that is equal to or greater than the size of the NetBackup database. That means for default installations, you are required to have that amount of free space on the file system containing the `/usr/openv/db/data` (UNIX) or `<install_path>\Veritas\NetBackupDB\data` (Windows) directories. If you have changed the location of some of the files in either of these directories, free

space is required in those locations equal to or greater than the size of the files in those locations. Refer to the *NetBackup Administrator's Guide, Volume I* for more information about storing NBDB database files in alternate locations.

Note: This free disk space requirement assumes that you have already performed the best practice of completing a successful catalog backup before you begin the upgrade.

- Master and media servers must have a minimum soft limit of 8000 file descriptors per process for NetBackup to run correctly.
  For more information about the effects of an insufficient number of file descriptors, refer to the following tech notes on the Veritas Support website:
  http://www.veritas.com/docs/000013512

- To install NetBackup on Windows 2008/Vista/2008 R2/7 UAC-enabled environments, you must log on as the official administrator. Users that are assigned to the Administrators Group and are not the official administrator cannot install NetBackup in UAC-enabled environments.
  To allow users in the Administrators Group to install NetBackup, disable UAC.

- NetBackup master and media servers exchange server version information at startup, and every 24 hours. This exchange occurs automatically. During startup after an upgrade, the upgraded media server uses the `vmd` service to push its version information to all of the servers that are listed in its server list.

- Veritas recommends that you have the master server services up and available during a media server upgrade.

- All compressed files are compressed using gzip. The installation of these files requires gunzip and gzip, so make sure that they are installed on the computer before you attempt to install NetBackup. For all UNIX platforms except HP-UX, the binaries are expected to be in `/bin` or `/usr/bin` and that directory is a part of the root user's `PATH` variable. On HP-UX systems, the `gzip` and `gunzip` commands are expected to be in `/usr/contrib/bin`. Installation scripts add that directory to the `PATH` variable. These commands must be present to have successful UNIX installations.

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, and so on). 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, Veritas 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. includes the OS updates and patches that are required for NetBackup 7.7.3. However, this information may sometimes change in between releases. The most up-to-date required OS patch information for NetBackup 7.7.3 and other NetBackup releases can be found on the Veritas Services and Operational Readiness Tools (SORT) website and in the NetBackup compatibility lists.

See "About NetBackup compatibility lists and information" on page 85.

See "About Veritas Services and Operations Readiness Tools" on page 70.

Note: An OS vendor may have released a more recent update or patch that supersedes or replaces a patch that is listed in . 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 are supported unless otherwise specified. Veritas recommends that you visit the Support website of your particular OS vendor for their latest patch information.

Note: Any required patch that is listed in for the NetBackup client should also be installed on your master servers and media servers to ensure proper client functionality.

Table B-1   Required operating system patches and updates for NetBackup 7.7.3

Operating system type and version	NetBackup role	Patch	Notes
AIX 6.1	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.

Table B-1		Required operating system patches and updates for NetBackup 7.7.3 *(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. https://www-304.ibm.com/support/docview.wss?uid=isg1fixinfo134913
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/libipv6.sl	
	Master, media, client	Networking.NET-RUN-64: /usr/lib/pa20_64/libipv6.1	
	Master, media, client	Networking.NET-RUN-64: /usr/lib/pa20_64/libipv6.sl	
	Master, media, client	Networking.NET2-RUN: /usr/lib/hpux32/libipv6.so	
	Master, media, client	Networking.NET2-RUN: /usr/lib/hpux32/libipv6.so.1	
	Master, media, client	Networking.NET2-RUN: /usr/lib/hpux64/libipv6.so	
	Master, media, client	Networking.NET2-RUN: /usr/lib/hpux64/libipv6.so.1	
	Master, media, client	Networking.NET2-RUN: /usr/lib/libipv6.1	
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	
Windows Vista x86-32	Client	KB936357	Microsoft microcode reliability update.

Table B-1 Required operating system patches and updates for NetBackup 7.7.3 *(continued)*

Operating system type and version	NetBackup role	Patch	Notes
	Client	KB952696	Contains the necessary updates to ensure that you can back up encrypted files.
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 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.
	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.

Table B-1   Required operating system patches and updates for NetBackup 7.7.3 *(continued)*

Operating system type and version	NetBackup role	Patch	Notes
	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.

- Veritas recommends the following Microsoft updates when you run NetBackup on Windows operating systems:
  - Microsoft `storport` hot fix. This fix applies to Windows x86 and x64, on both SP1 and SP2: (required) http://support.microsoft.com/?id=932755
  - Microsoft microcode reliability update. This fix applies to 32-bit and 64-bit versions of Windows Server Vista: (suggested) http://support.microsoft.com/?kbid=936357
  - Veritas AntiVirus. Update to latest version and latest update (required).
  - The `Symevent` driver updates (required). Update to latest driver version.

NetBackup 7.7.3 binary sizes

Table B-2 contains the approximate binary sizes of the NetBackup 7.7.3 master server, media server, and client software for the various supported operating systems. 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.

Note: Table B-2 and Table B-3 only list the supported operating systems. For up-to-date information about the specific operating system versions that NetBackup currently supports, check the Installation and Upgrade Checklist on the Symantec Operations Readiness Tools (SORT) website, or the *NetBackup Operating System Compatibility List* document at http://www.netbackup.com/compatibility.

See "About Veritas Services and Operations Readiness Tools" on page 70.

Table B-2   NetBackup binary sizes for compatible platforms

OS	CPU Architecture	32-bit client	64-bit client	64-bit server	Notes
AIX	POWER		2646MB	7267MB	
Canonical Ubuntu	x86-64		1678MB		
CentOS	x86-64		1102MB	5324MB	Media server or client compatibility only.
Debian GNU/Linux	x86-64		1724MB		
HP-UX	IA-64		2906MB	7966MB	
OpenVMS	IA-64		128MB		The listed sizes are for the NetBackup 7.5 binaries. No NetBackup 7.7.3 binaries for OpenVMS are provided.
Oracle Linux	x86-64		1102MB	6285MB	
Red Hat Enterprise Linux Server	x86-64		1102MB	6285MB	
Red Hat Enterprise Linux Server	z/Architecture		859MB	3745MB	Media server or client compatibility only.
Solaris	SPARC		1732MB	5509MB	
Solaris	x86-64		1831MB	5574MB	
SUSE Linux Enterprise Server	x86-64		1043MB	6062MB	
SUSE Linux Enterprise Server	z/Architecture		820MB	3735MB	Media server or client compatibility only.
Windows	x86-32	694MB			Covers all compatible Windows x86 platforms
Windows	x86-64		1056MB	3467MB	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.

NetBackup 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 7.7.3.

Table B-3 NetBackup OpsCenter binary sizes for compatible platforms

OS	CPU Architecture	Agent	Server	ViewBuilder
Oracle Linux	x86-64		760MB	
Red Hat Enterprise Linux Server	x86-64		760MB	
SUSE Linux Enterprise Server	x86-64		670MB	
Windows Server	x86-64	223MB	689MB	199MB

NetBackup plug-ins

Disk space requirements for the NetBackup vCenter Web Client Plug-in and the NetBackup System Center Virtual Machine Manager Add-in can be found in the *NetBackup Plug-in for VMware vSphere Web Client Guide* and the *NetBackup Add-in for Microsoft SCVMM Console Guide*, respectively.

NetBackup compatibility requirements

This appendix includes the following topics:

- About NetBackup compatibility lists and information
- About NetBackup end-of-life notifications

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 Veritas Operations Readiness Tools (SORT) for NetBackup website.

See "About Veritas Services and Operations Readiness Tools" on page 70.

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, Veritas 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 Veritas Support website at the following location:

http://www.netbackup.com/compatibility

Note: Select "Compatibility Between NetBackup Versions" from the compatibility lists for information about which versions of NetBackup are compatible with each other.

About NetBackup end-of-life notifications

Veritas 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. Veritas 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 Veritas 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.

Veritas provides advance notification to better help its customers to plan for upcoming changes to the support status of the various features in NetBackup. Veritas 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. Veritas 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 Veritas 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.veritas.com/nbufutureplans

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

https://sort.veritas.com/eosl/show_matrix

See "About Veritas Services and Operations Readiness Tools" on page 70.

About changes in platform compatibility

The NetBackup 7.7.3 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 13.

http://www.netbackup.com/compatibility

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

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

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

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

http://www.veritas.com/docs/000003214

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

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 Veritas 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 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 Veritas 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 Veritas NetBackup and OpsCenter products.