

Symantec NetBackup™ PureDisk 6.6.5 Release Notes

Software Release 6.6.5



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Symantec Corporation
350 Ellis Street
Mountain View, CA 94043

<http://www.symantec.com>

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Technical Support

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

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

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Symantec Operations Readiness Tools (SORT) is a set of Web-based tools that supports Symantec enterprise products. For NetBackup, SORT provides the ability to collect, analyze, and report on host configurations across UNIX/Linux or Windows environments. This data helps to assess whether your systems are ready for an initial NetBackup installation or for an upgrade from your current version.

To access SORT, go to the following Web page:

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

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

- **Installation and Upgrade Checklist**

Use this tool to create a checklist to see if your system is ready for a NetBackup installation or an upgrade.

- **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**

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

www.symantec.com/business/support/

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- Product release level
- Hardware information
- Available memory, disk space, and NIC information
- Operating system
- Version and patch level
- Network topology
- Router, gateway, and IP address information
- Problem description:
 - Error messages and log files
 - Troubleshooting that was performed before contacting Symantec
 - Recent software configuration changes and network changes

Licensing and registration

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- Information about the Symantec Buying Programs
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- Nontechnical presales questions
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If you want to contact Symantec regarding an existing support agreement, please contact the support agreement administration team for your region as follows:

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customercare_apac@symantec.com

Europe, Middle-East, and Africa

semea@symantec.com

North America and Latin America

supportsolutions@symantec.com

PureDisk 6.6.5 release notes

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About PureDisk 6.6.5

The PureDisk 6.6.5 release is available as patch upgrade `NB_PDE_6.6.5.tar` from the following Symantec Corporation Technical Support Web site:

<http://www.symantec.com/docs/TECH205534>

Symantec publishes release note updates and other product updates to the following PureDisk Late Breaking News Web site:

<http://www.symantec.com/docs/TECH74774>

PureDisk end-of-life notification

PureDisk 6.6.5 is the final release of PureDisk software. The PureDisk end-of-life does not affect the future deduplication appliance releases that are based on this software technology.

PureDisk software will be supported by Symantec until the last day of September, 2014.

Users seeking an exception or extension should move to PureDisk 6.6.5 software release and contact your Symantec support or sales representative.

Users seeking a replacement will be required to migrate to a 52xx appliance and NetBackup software. Contact your Symantec support or sales representative for more information about the migration procedure.

Prerequisites

You can only apply PureDisk 6.6.5 to systems currently at PureDisk 6.6.4 or PureDisk 6.6.3. If any of the systems use a PureDisk release earlier than 6.6.3, they must be upgraded to PureDisk 6.6.3 before you apply the PureDisk 6.6.5 patch. More information about the PureDisk 6.6.5 patch is available.

PureDisk 6.6.5 release notes:

<http://www.symantec.com/docs/DOC6432>

PureDisk 6.6.5 patch:

<http://www.symantec.com/docs/TECH205534>

Component upgrades

All the packages that are shown are updated in PureDisk 6.6.5:

- bind-9.6ESVR7P4-0.7.1.x86_64.rpm
- bind-libs-32bit-9.6ESVR7P4-0.7.1.x86_64.rpm
- bind-libs-9.6ESVR7P4-0.7.1.x86_64.rpm
- bind-utils-9.6ESVR7P4-0.7.1.x86_64.rpm
- compat-openssl097g-0.9.7g-13.23.1.x86_64.rpm
- compat-openssl097g-32bit-0.9.7g-13.23.1.x86_64.rpm
- freetype2-2.1.10-18.31.1.x86_64.rpm
- freetype2-32bit-2.1.10-18.31.1.x86_64.rpm
- glibc-2.4-31.107.1.x86_64.rpm
- glibc-32bit-2.4-31.107.1.x86_64.rpm
- glibc-html-2.4-31.107.1.x86_64.rpm
- glibc-i18ndata-2.4-31.107.1.x86_64.rpm
- glibc-info-2.4-31.107.1.x86_64.rpm
- glibc-locale-2.4-31.107.1.x86_64.rpm
- glibc-locale-32bit-2.4-31.107.1.x86_64.rpm
- glibc-profile-2.4-31.107.1.x86_64.rpm
- glibc-profile-32bit-2.4-31.107.1.x86_64.rpm
- jre-6u45-linux-amd64.rpm
- kernel-smp-2.6.16.60-0.101.0.x86_64.rpm
- libtiff-32bit-3.8.2-5.32.1.x86_64.rpm
- libtiff-3.8.2-5.32.1.x86_64.rpm
- libxml2-2.6.23-15.35.1.x86_64.rpm
- libxml2-32bit-2.6.23-15.35.1.x86_64.rpm
- openssh-5.1p1-41.14.1.rpm

New features and enhancements

The following are the new features and enhancements in PureDisk 6.6.5:

CRQP performance improvement

Very frequently occurring segments, also known as "hot" segments, are now handled more efficiently during Content Router Queue Processing.

Storage capacity alert email

PureDisk 6.6.5 has been enhanced to include an alert email that notifies the system administrator when storage usage reaches a critical level. The alert email will suggest that the administrator adds more storage nodes.

A new configuration item, `advisingLimit` has been added to the config file `agent.cfg`. This configuration item triggers when the email is sent to the administrator. The default value of 65 can be configured within a valid range from 50 to 70 based on the administrator's requirements.

Enhanced integration with NetBackup

PureDisk 6.6.5 has been enhanced to provide better integration with NetBackup 7.5.0.6 and beyond. These enhancements include:

- An abnormal state event will be written to the NetBackup error log when a PureDisk storage pool enters an abnormal state.
- Better job scheduling for PDDO -> PDDO Auto Image Replication and optimized duplication. Jobs are prevented from starting until the source storage pool is no longer overloaded.

Problems fixed

The following issues are resolved in PureDisk 6.6.5:

- 2132813: The `topology_nodes.ini` file is truncated or corrupted.
- 2573341: Intermittent issue where a new active node cannot be added when there are three PureDisk node clusters.
- 2886900: Server DB maintenance workflow fails on **DSIDDEL** step if there are entries in the `deleteddds` table if node is not in a Content Router.
- 2974544: Fixed an issue where `DeferCR.php` only processes the first data store and skips all other data stores.
- 2974549: Rebase does not update the `del_space` for the source containers.
- 2974577: The `spoold` process does not release session context, which causes more memory usage.

- 3008692: Rerouting a job loops due to a corrupt CRDB data.
- 3059514: Data that is generated using `/dev/urandom` is unable to be decrypted using `dcpcrypt`.
- 3060238: Intermittent issue where configuring the CR node causes an error establishing a connection.
- 3064036: Full backups, and all image read operations failed whenever there were client or policy names that had variations of the same name with case differences
- 3065252: During an upgrade, there were some instances where `logrotate` fails.
- 3071147: Configuration of multi-node storage may fail due to connection to CR port timeout.
- 3091944: Intermittent occurrence where one of the SNMP trap receivers was not able to load the MIB file.
- 3122833: Restore from a Full DR backup using NetBackup failed under certain conditions.
- 3148620: Under certain conditions, marking PDDO images `expired` caused the data of the expired images to not be released to storage.

Resolved vulnerabilities

The following security vulnerabilities are resolved in PureDisk 6.6.5:

CVE-2009-1494, CVE-2010-1152, CVE-2011-1044, CVE-2011-1089, CVE-2011-1473, CVE-2011-4110, CVE-2012-1667, CVE-2012-2110, CVE-2012-2136, CVE-2012-2663, CVE-2012-2744, CVE-2012-2870, CVE-2012-3406, CVE-2012-3480, CVE-2012-3499, CVE-2012-3510, CVE-2012-3817, CVE-2012-4244, CVE-2012-4447, CVE-2012-4530, CVE-2012-4558, CVE-2012-4564, CVE-2012-5166, CVE-2012-5581, CVE-2012-5668, CVE-2012-6139, CVE-2013-0160, CVE-2013-0166, CVE-2013-0169, CVE-2013-0213, CVE-2013-0214, CVE-2013-0216, CVE-2013-0231, CVE-2013-0268, CVE-2013-0871, CVE-2013-1518, CVE-2013-1537, CVE-2013-1540, CVE-2013-1557, CVE-2013-1558, CVE-2013-1563, CVE-2013-1569, CVE-2013-1667, CVE-2013-2383, CVE-2013-2384, CVE-2013-2394, CVE-2013-2417, CVE-2013-2418, CVE-2013-2419, CVE-2013-2420, CVE-2013-2422, CVE-2013-2424, CVE-2013-2429, CVE-2013-2430, CVE-2013-2432, CVE-2013-2433, CVE-2013-2435, CVE-2013-2439, CVE-2013-2440.

Known problems and limitations

The following are the known problems and limitations of PureDisk 6.6.5:

Additional steps needed before using the Storage Pool Configuration Wizard to upgrade a clustered storage pool

If you want to use the Storage Pool Configuration Wizard to upgrade a clustered storage pool from PureDisk 6.6.4 to PureDisk 6.6.5, verify the contents of file `/opt/pdinstall/topology_nodes.ini` first. If this file is or was corrupted during a failover, a patch upgrade/rollback/commit cannot be performed.

For each node in the `topology.ini` file, check the following three fields:

- `status`. If the `status` field is `active`, check the `virtualip` field and the `services` field for that particular node. Check the `virtualip` and `services` fields for each active node.
- `virtualip`. The `virtualip` field is expected to be valid after a failover. Use this field's content to determine the correctness of the `services` field.
- `services`. The `services` field can contain incorrect content after a failover. For example, assume that there are two sets of `virtualip` and `services` fields. The correct content is as follows:

```
virtualip=a.b.c.d
services=spa,mbe
-----
virtualip=a2.b.c.d
services=cr <-the correct one
```

After a failover, the content in the `services` field is no longer correct. The changed content is as follows:

```
virtualip=a.b.c.d
service=cr <- incorrect according to its virtualip
-----
virtualip=a2.b.c.d
service=spa,mbe <- incorrect according to its virtualip
```

If the `topology.ini` file is corrupted, please contact Symantec Technical Support before you perform the upgrade.

PureDisk certificate requires Web browser refresh

The PureDisk certificate is renewed automatically before expiration. In some instances after a certificate is renewed, the icon or link on the PureDisk Administrative Web UI is not displayed properly.

Refresh the PureDisk Administrative Web UI one or more times by using **Ctrl + F5** (force refresh), or delete the local Web browser temporary files and restart the browser.

Duplication to PDDO fails when the MBS is on a separate node

Optimized duplication fails from MSDP to PDDO or PDDO to PDDO when the Metabase Server (MBS) is running on any node besides the SPA node.

To prevent this issue from occurring, only add the MBS on the SPA node.

Backup fails during the start of rerouting

In the beginning of the rerouting process, there are several moments where already running backup, restore, and duplication jobs can be aborted. Once the rerouting workflow is reached, the **Content Router is rerouting data**, jobstep, backups, restores, duplications, etc. continue to work.

The **Content Router is rerouting data** step is the main rerouting step that can run for several hours or longer on large environments. The preparing steps can take a few minutes up to a few hours to complete. The time depends on whether the CR Queue is empty or if there are a lot of `tlogs` in the CR Queue to be processed.

Optimized duplication hangs with NetBackup 7.0.1

Optimized duplication between PDDO storage units hangs on NetBackup 7.0.1 with PureDisk 6.6.5. The same issue also occurs on NetBackup 7.0.1 with PureDisk 6.6.4.

Deduplication notes

This section contains the operational notes and known issues that are associated with NetBackup deduplication features (such as MSDP and PureDisk) in this release.

- Before NetBackup 7.5.0.6, there was an issue with running multiple Accelerator backups to an MSDP or PureDisk storage unit. In this case, the jobs would appear to hang, the media server deduplication service would become unresponsive, and the Content Router daemon `spoold` (deduplication engine) would stop responding. This issue has been fixed in NetBackup 7.5.0.6 with the exception of a few rare cases. Should you encounter this issue, change the `PREFETCH_SIZE` and the `RESTORE_DECRYPT_LOCAL` settings in the `pd.conf` file to the following:

```
# Buffer size to use when prefetching data for restore operations (B)
PREFETCH_SIZE = 16777216

# Agent side decryption and decompression on restore (0=off, 1=on)
RESTORE_DECRYPT_LOCAL = 1
```

About upgrading MSDP and PureDisk deduplication solutions

Note: If all of your NetBackup media servers are running Windows, and you do not plan to add UNIX servers running MSDP, you may safely ignore the rest of this topic.

This section applies to the following deduplication solutions:

- NetBackup Media Server Deduplication Option (master server, media server, client, or VMware backup host)
- NetBackup Appliance deduplication (master server, media server, or VMware backup host)
- PureDisk deduplication
- PureDisk Appliance deduplication

In versions before NetBackup 7.5.0.6, a problem can occur where NetBackup cannot read an image that is stored on an MSDP or PureDisk storage unit. The issue results from the deduplication engine improperly storing client and policy names in the deduplication database on case-sensitive file systems. The types of operations that might exhibit failure due to a read error that is associated with this issue include verify, restore, duplication, and replication. For MSDP, the issue is fixed starting in NetBackup 7.5.0.6 (appliance 2.5.3). For PureDisk, the issue is fixed starting in Version 6.6.5 (appliance 1.4.4).

Table 1-1 Examples of the failed operations that can result from the case sensitivity issue

Operation	Activity Monitor status	Activity Monitor job details	Status in <code>bpdm</code> and <code>bptm</code> log files
Verify	(191) no images successfully processed	image open failed: error 2060018: file not found	sts_open_image failed: error 2060018
Restore	(83) media open error	Image open failed: error 2060018: file not found	sts_open_image failed: error 2060018

Example scenario of the client name case sensitivity issue

Suppose that there is a NetBackup client named `my_client` running a version of NetBackup previous to Version 7.5.0.6 and that there is a corresponding policy named `my_policy`. Suppose also that `my_client` performs client-side deduplication to a UNIX-based MSDP or PureDisk storage unit. Next, suppose that the following steps occur:

1. A successful backup for `my_policy` is made to an MSDP or PureDisk storage unit.
2. The name of the client in the policy `my_policy` is changed from `my_client` to `MY_CLIENT`.
3. Another successful backup for `my_policy` is made to an MSDP or PureDisk storage unit.

The data for both backups is saved. However, the operations that attempt to read the data from the second backup fail if the deduplication engine is on a case-sensitive file system. The failures occur because the deduplication database entry `my_client` differs from `MY_CLIENT`.

Determining the servers and clients that can encounter the issue

The case sensitivity issue can occur if your environment performs any of the following MSDP functions on UNIX operating systems that run on NetBackup media servers or PureDisk servers (including NetBackup Appliances and PureDisk Appliances).

1. Media server deduplication to attached storage
2. Media server deduplication to another media server
3. Media server deduplication to a PureDisk server
4. Client-side deduplication to a media server
5. Client-side deduplication to a PureDisk server

Note: All of the listed operations apply to the VMware backup hosts that run the deduplication engine.

All of the listed operations also apply to the master servers that function as media servers and run the deduplication engine.

Symantec recommends that you upgrade all of the servers, clients, and VMware backup hosts in your environment that are involved in the listed operations. Starting with NetBackup 7.5.0.6 (appliance 2.5.3) and PureDisk 6.6.5 (appliance

1.4.4), writing to the deduplication database has been updated to fix the issue. The database writes are fixed so that a change in the case of the characters that are used for the NetBackup client name and policy do not cause a read of the backup images to fail. If you do not upgrade to these versions, there is a possibility that you may encounter read errors with future backup images due to this issue.

Note: Consistent with NetBackup upgrade policy your media servers and clients must be running a minimum of NetBackup 7.5 before you can attempt to upgrade to 7.5.0.6.

Fixing the name case issues that exist in the MSDP and PureDisk databases

If you have already encountered image read failures due to client name or policy name case sensitivity issues, your first step should be to upgrade the affected hosts to NetBackup 7.5.0.6 or newer. After the upgrade, the name case issue still affects the images that were created before the upgrade by versions of NetBackup previous to Version 7.5.0.6. Use the following table to select the correct approach to repair client and policy name case sensitivity issues with existing NetBackup images.

Table 1-2

Problematic name type	Storage unit type	Required action
Client	MSDP	Repair the MSDP database
Client	PureDisk	Repair the PureDisk database
Policy	MSDP	Contact Symantec Technical Support
Policy	PureDisk	Contact Symantec Technical Support

A special procedure to repair an MSDP or PureDisk is available on the Symantec Support website at the following URL:

<http://www.symantec.com/docs/TECH207194>

Upgrade process overview

The following information pertains to the upgrade process:

- Symantec supports two installation methods. A command-driven installation and a mostly wizard-driven installation that uses system commands for some tasks.

Symantec recommends using the mostly wizard-driven installation that uses system commands for some tasks and then uses the Storage Pool Configuration Wizard to install the upgrade. For more information about the wizard-driven installation method, see "*Chapter 3 - Applying patches*" of the *Symantec NetBackup PureDisk Administrator's Guide, Release 6.6.5*. This information explains how to use the Storage Pool Configuration Wizard to upgrade a storage pool.

The command-driven installation that uses the system commands is described in these release notes.
- Note your passwords before an upgrade. The upgrade process does not change existing passwords, but a rollback changes all passwords back to the values they had before the upgrade. You can perform a rollback if you use the wizard-driven installation method.
- All nodes must be accessible at the time of the storage pool upgrade. If any node is inaccessible, the upgrade fails. For example, if a content router node is not accessible, the entire upgrade fails.
- If the `topology.ini` file is encrypted, the installer prompts you for the password to decrypt this file. The password for the `topology.ini` is the same as the password for the Storage Pool Configuration Wizard.
- The installation process stops all PureDisk services on all nodes in the storage pool. When the installation finishes, the installer restarts all services.
- You perform the upgrade from the storage pool authority node, and during the upgrade, the installer automatically pushes the software to all nodes in the storage pool.
- The upgrade software affects clients as follows:
 - On backup and restore clients, the software creates jobs to upgrade the PureDisk agent software. You can specify whether you want these jobs to start automatically or whether you want to start these jobs manually.
 - On PureDisk deduplication option (PDDO) media server clients, the software does not create jobs to upgrade the PureDisk agent software. For NetBackup media servers at the NetBackup 7.0.x.x release level or later, you do not have to upgrade the media servers manually because the NetBackup software includes a PureDisk agent. For NetBackup media servers at the NetBackup 6.5.x.x level, use the instructions in this release note to perform a manual media server upgrade. For information about the media server upgrade, see the following:

See [“\(Conditional\) Upgrading PureDisk deduplication option \(PDDO\) agents on media server clients”](#) on page 26.

- In a multinode storage pool, each node in the storage pool needs to be at the same PureDisk release level. If you add a node after the storage pool is configured, make sure to verify the PureDisk release level on that node before you add the node to the storage pool. Upgrade the new node, if necessary, before you run the Storage Pool Configuration Wizard to add the node to the storage pool's topology.
- If you need to apply multiple upgrades to a storage pool in one session, make sure that you completely finish each upgrade before you start another upgrade. The installers do not operate correctly if you download more than one upgrade tar file to the storage pool authority node, extract the files from each tar file, and start the upgrade. Complete each upgrade before you download and extract files from another upgrade.
- While upgrading the PureDisk storage pool to 6.6.5 through the command line interface, you may notice two different versions are listed. The upgrade patch upgrades the current storage pool to 6.6.5.xxxxx, where xxxxx is the version of PureDisk. The patch upgrade, `NB_PDE_6.6.5-yyyyy`, is the upgrade patch version. This affects the upgrade script name `apply-NB_PDE_6.6.5-yyyyy.sh` as well as upgrade comments and logs.

The following topics contain upgrade procedures:

- See [“Preparing the storage pool, downloading the upgrade, and extracting the upgrade”](#) on page 18.
- See [“\(Conditional\) Using commands to install the storage pool upgrade”](#) on page 22.
- See [“Applying the kernel upgrade”](#) on page 23.
- See [“Finishing the storage pool upgrade”](#) on page 24.
- See [“\(Conditional\) Upgrading PureDisk deduplication option \(PDDO\) agents on media server clients”](#) on page 26.

Preparing the storage pool, downloading the upgrade, and extracting the upgrade

The following procedure explains how to prepare the storage pool for the upgrade, download the upgrade, and extract the upgrade.

To prepare, download, and extract

- 1 (Conditional) Download and apply `NB_PDE_6.6.5.tar` to any PureDisk servers using Veritas Cluster Server (VCS). More information about this bundle is available.

<http://www.symantec.com/docs/TECH185659>

- 2 (Conditional) Change the state of the disk pool to `DOWN`.

Perform this step if the storage pool is connected to a NetBackup media server as part of a PureDisk deduplication option (PDDO) deployment. You do not need to perform this step if the storage pool is not connected to a media server.

Complete the following steps:

- Log into the NetBackup media server.
- Use the `nbdevconfig` command to change the disk pool state to `DOWN`.
On Linux and UNIX systems, type the following command:

```
/usr/openv/netbackup/bin/admincmd/nbdevconfig -changestate
-stype PureDisk -dp disk_pool_name -state DOWN
```

On Windows systems, type the following command:

```
install_path\NetBackup\bin\admincmd\nbdevconfig -changestate
-stype PureDisk -dp disk_pool_name -state DOWN
```

For *disk_pool_name*, specify the name of the disk pool.

- 3 (Conditional) If the storage pool is an auto image replication target, disable all storage lifecycle policies on the source master that use the storage pool.
Confirm that no replication jobs are currently active. If there are active jobs after disabling the storage lifecycle policies, allow them to complete.
- 4 (Conditional) If you use PDDO, confirm the **MB Garbage Collection** policy ran within the last 48 hours. Perform the following steps
 - Log in to the PureDisk administrative Web UI.
 - Select **Monitor > Jobs > Policy Types**.
 - Review the latest job status. If **MB Garbage Collection** policy has not run in the last 48 hours, run the **MB Garbage Collection** policy manually and wait for it to complete.
- 5 Confirm that no PureDisk jobs are currently running or are scheduled to be run.

Perform the following steps:

- Log in to the PureDisk administrative Web UI.
- Select **Monitor > Jobs**.
- In the right pane, select the jobs you want to terminate. If the **CR Queue Processing** job is active, do not stop it. Wait until the **CR Queue Processing** job is finished.
- Select **Stop job gracefully** or **Stop job immediately**.
You might lose data if you select **Stop job immediately**.
- Confirm the termination in the pop-up window that appears.

For more information about how to stop jobs, see "Terminating a job that is running" in the *PureDisk Backup Operator Guide*, or see the online Help .

- 6 While in the PureDisk administrative Web UI, confirm the most recent two content router queue processing jobs finished successfully within the last 36 hours.

Perform the following steps:

- Select **Monitor > Jobs > CR Queue Processing** and review the job status. Determine if the most recent two jobs completed successfully within the last 36 hours.
- (Conditional) If the content router queue processing jobs were not successful or did not run in the last 36 hours, run the **CR Queue Processing** policy manually. The **CR Queue Processing** policy may take several hours to finish.

- 7 Disable the **Default policy for Server DB Maintenance**.

- In the administrative Web UI, select **Manage > Policies**.
- In the left pane, navigate to **Policies > Storage Pool Management Policies > Server DB Maintenance**.
- Expand **Server DB Maintenance** if necessary.
- In the left pane, click on **Default policy for Server DB Maintenance**.
- In the right pane, select **Disabled** to disable the **Default policy for Server DB Maintenance**.
- Click **Save** to save the changes to the **Default policy for Server DB Maintenance**.

- 8 Log out from the PureDisk administrative Web UI.

- 9 Log on as `root` to the node that hosts the storage pool authority.

- 10** (Conditional) If you have `/Storage` partitions that are mounted on an NFS share, verify that an entry exists for each partition in the `/etc/fstab` file.

Note: NFS is supported in a PureDisk environment only with specific limitations and requirements. See the topic “Limitations for PureDisk with NFS” in the *PureDisk Getting Started Guide, Release 6.6.5*, or contact technical support for more information about NFS support in PureDisk.

- 11** (Conditional) Freeze the PureDisk service groups.

Perform this step if the storage pool is installed with Veritas Cluster Server (VCS) software.

For example, for each active node, you have service groups, such as `pd_group1`, `pd_group2`, and so on. From the storage pool authority node, type the following command for each of these groups:

```
/opt/VRTS/bin/hagrps -freeze pd_group
```

For `pd_group`, specify the name of the service group you want to freeze.

For information about how to freeze and unfreeze clustered storage pools, see the *PureDisk Storage Pool Installation Guide*.

- 12** Use `scp` to copy the tar file, `NB_PDE_6.6.5.tar` to the `/root` directory of the PureDisk node that hosts the storage pool authority.
- 13** Type the following command to verify the integrity of the upgrade:

```
# md5sum /root/NB_PDE_6.6.5.tar
```

This command computes the MD5 checksum of the upgrade. The MD5 checksum of the upgrade must match the MD5 checksum that is found here:

<http://www.symantec.com/docs/TECH205534>

If you obtain a different checksum, the upgrade was corrupted during download. Download the upgrade again.

- 14** Type the following command to extract the files from the upgrade tar file:

```
# tar -C / -xf /root/NB_PDE_6.6.5.tar ./opt
```

(Conditional) Using commands to install the storage pool upgrade

- 15** (Conditional) Type the following commands to change to the installation directory and prepare the system:

Perform this step if you want to use the wizard-driven installation method.

```
# cd /opt/pdinstall
# sh ./change_upload_size.sh
```

- 16** Proceed as follows:

- If you want to perform the command-driven upgrade, proceed to the following:
See [“\(Conditional\) Using commands to install the storage pool upgrade”](#) on page 22.
- If you want to perform the wizard-driven upgrade, use the instructions in the chapter called "Applying patches" in the *PureDisk Administrator's Guide*. After you finish the wizard session, test your system and commit the patch. After you commit the patch, use the instructions in the following topic to apply the kernel upgrade:
See [“Applying the kernel upgrade”](#) on page 23.

(Conditional) Using commands to install the storage pool upgrade

Perform this procedure if you want to use commands to install the storage pool upgrade. Do not perform this procedure if you want to use the Storage Pool Configuration Wizard to install the storage pool upgrade.

The following procedure explains how to use commands to install the upgrade.

Installing the patch

- 1 Log out from the PureDisk administrative Web UI.
- 2 Type the following command to install the upgrade:

```
# /opt/pdinstall/apply-NB_PDE_6.6.5.sh
```

If the `topology.ini` file is encrypted, the software prompts you for the password to decrypt this file.

The upgrade automatically pushes the software to all nodes in the storage pool and to all clients.

Note: The Veritas Cluster Server (VCS) software might detect some faults during the upgrade process. If any upgrade actions generate a VCS fault, use the Cluster Manager Java Console to clear the fault and probe that resource group before you unfreeze the cluster.

At the end of a successful installation, the software prompts you to encrypt the `topology.ini` file.

When the upgrade script completes successfully, the script also unfreezes the PureDisk service groups for the clustered PureDisk server.

- 3 After the upgrade jobs have finished on all nodes, proceed to the following:
See [“Applying the kernel upgrade”](#) on page 23.

Applying the kernel upgrade

The following procedure explains how to apply the kernel upgrade. Both the command-driven and the wizard-driven upgrade methods require that you complete this procedure.

Warning: If you used the wizard-driven method to install the upgrade, commit the checkpoint for PureDisk 6.6.4 or 6.6.3 before you apply the kernel upgrade. To complete the PureDisk 6.6.5 upgrade, you must perform the kernel upgrade procedure in this topic.

After you apply the kernel upgrade, Symantec no longer supports the ability to roll back PureDisk 6.6.5. Symantec does not support the ability to use older PureDisk versions with the kernel upgrade provided in the PureDisk 6.6.5 release.

To apply the kernel upgrade

- 1 Log on to each active node and each passive node, and type the following command:

```
# /opt/pdinstall/apply-665kernel-patch.sh --upgrade
```

If the kernel upgrade fails because some services do not stop, wait until the services stop and rerun the preceding command.

- 2 After the kernel upgrade jobs have finished on all nodes, restart all of the nodes.

Make sure that the storage pool upgrade jobs and the kernel upgrade jobs are finished, successfully or not, before you restart the nodes. Symantec recommends that you restart all active nodes and all passive nodes at the same time.

After the restart, the upgrade software unfreezes the clustered service groups.

- 3 Proceed to the following:

See [“Finishing the storage pool upgrade”](#) on page 24.

Finishing the storage pool upgrade

The following procedure explains how to finish the storage pool upgrade.

To finish the upgrade

- 1 (Conditional) Restart VCS.

Perform this step if this upgrade is part of a process to add a new node to a cluster.

Complete the following steps:

- Type the following command to stop the `had` and `hashadow` processes:

```
# pkill had; pkill hashadow
```

- Wait for 10 seconds.

- Type the following command to start processes:

```
# hstart
```


For information about adding a new node to a cluster, see the *PureDisk Administrator's Guide*.

- 2 (Conditional) Reconnect with the Veritas Enterprise Administrator (VEA).
Perform this step if the storage pool is clustered.
Type the following commands:

```
# /etc/init.d/vxpal.StorageAgent start  
# /etc/init.d/isisd start
```
- 3 Log in as root to the PureDisk administrative Web UI.
- 4 Enable the **Default policy for Server DB Maintenance**:
 - In the administrative Web UI, select **Manage > Policies**.
 - In the left pane, navigate to **Policies > Storage Pool Management Policies > Server DB Maintenance**.
 - Expand **Server DB Maintenance** if necessary.
 - In the left pane, click on **Default policy for Server DB Maintenance**.
 - In the right pane, select **Enabled** to enable the **Default policy for Server DB Maintenance**.
 - Click **Save** to save the changes to the **Default policy for Server DB Maintenance**.
- 5 Complete the following steps to monitor the client agent update jobs:
 - Clear the browser's cache and temporary Internet files.
 - Start the administrative Web UI.
 - Click **Monitor > Jobs**.
 - Set the **View jobs by** drop-down to **Policy types**.
 - Select the **Agent Update** workflow under **Miscellaneous Workflows**.

If one of the client agent upgrade jobs fails, PureDisk deactivates those client agents. Complete the following steps to activate and upgrade these agents:

 - Start the administrative Web UI.
 - Click **Manage > Agents**.
 - In the left pane, select the deactivated agent you want to reactivate. To activate all agents in the storage pool, select the storage pool.
 - In the right pane, select **Activate Agent(s)**.

(Conditional) Upgrading PureDisk deduplication option (PDDO) agents on media server clients

- A new agent update job is scheduled for those agents that are not upgraded yet.
 - Monitor these upgrade jobs again. Start them over if they fail out or time out.
- 6 (Conditional) Change the state of the NetBackup disk pool to UP.

Perform this step if the storage pool is connected to a NetBackup media server as part of a PureDisk deduplication option (PDDO) deployment. You do not need to perform this step if the storage pool is not connected to a media server.

Complete the following steps:

- Log into the NetBackup media server.
- Use the `nbdevconfig` command to add the media server back to the disk pool.

On Linux and UNIX systems, type the following command:

```
/usr/opensv/netbackup/bin/admincmd/nbdevconfig -changestate
-stype PureDisk -dp disk_pool_name -state UP
```

On Windows systems, type the following command:

```
install_path\NetBackup\bin\admincmd\nbdevconfig -changestate
-stype PureDisk -dp disk_pool_name -state UP
```

For *disk_pool_name*, specify the name of the disk pool.

- 7 Review the following sections to determine if they apply to your environment:
- See [“\(Conditional\) Upgrading PureDisk deduplication option \(PDDO\) agents on media server clients”](#) on page 26.

(Conditional) Upgrading PureDisk deduplication option (PDDO) agents on media server clients

Perform the procedure in this topic if the following are both true:

- You have PDDO enabled in your backup environment.
- The PDDO agent is installed on a NetBackup media server that is running a NetBackup 6.5.x.x release.

You do not need to install a new PDDO client on the media server if your media server is running NetBackup 7.0.x.x or later. Perform the procedure in this topic only if the media server is running a NetBackup 6.5.x.x version.

The upgrade software removes the old PDDO agent software automatically, but the upgrade does not upgrade PDDO agents on media server clients automatically.

The following procedure explains how to upgrade the PDDO agents in your environment. Repeat this procedure for each NetBackup 6.5.x.x media server in your environment.

To upgrade PDDO agents

- 1 Log into the NetBackup media server.
- 2 From the NetBackup media server, type the following URL into a browser window to start the PureDisk administrative Web UI:

```
https://spa_address/
```

For *spa_address*, type the fully qualified domain name, host name, or the IP address of the PureDisk storage pool authority.

- 3 Download the new PDDO agent software from the PureDisk Web UI to the NetBackup media server.
- 4 Stop all NetBackup services on the NetBackup media server.
On Windows systems, click **Program Files > NetBackup > bin > bpdown.exe**.
On Linux or UNIX systems, type `/usr/opensv/netbackup/bin/bp.kill_all`
- 5 Install the agent software.
 - On Windows systems, double-click the PureDisk agent icon to start the Windows Installation Wizard.
 - On Linux or UNIX systems, you can use either the attended or the unattended installation method. The installer prompts you to confirm the upgrade.
- 6 Start all the NetBackup services on the NetBackup media server.
On Windows systems, click **Program Files > NetBackup > bin > bpup.exe**.
On Linux or UNIX systems, type `/usr/opensv/netbackup/bin/bp.start_all`.

For more information about how to install the PDDO agent, see the *Symantec NetBackup PureDisk Deduplication Option Guide*.

Documentation and related information

The following documentation supports the PureDisk 6.6.5 release:

- *Symantec NetBackup PureDisk Administrator's Guide*, release 6.6.5
- *Symantec NetBackup PureDisk Backup Operator's Guide*, release 6.6.5

- *Symantec NetBackup PureDisk Best Practices Guide*, release 6.6.5
- *Symantec NetBackup PureDisk Client Installation Guide*, release 6.6.5
- *Symantec NetBackup PureDisk Getting Started Guide*, release 6.6.5
- *Symantec NetBackup PureDisk Deduplication Option Guide*, release 6.6.5
- *Symantec NetBackup PureDisk Storage Pool Installation Guide*, release 6.6.5
- *Symantec NetBackup PureDisk Cluster Planning Spreadsheet*, release 6.6.5

For PDFs of all the PureDisk documentation, see the following Web site:

<http://www.symantec.com/docs/DOC6431>

For information about the third-party intellectual property that is included in this product and the attributions for those products, see the following Web site:

<http://www.symantec.com/docs/DOC3775>

Symantec revises documentation on an as-needed basis. Please check the preceding Web site for updated PDFs.