

Symantec NetBackup™ Deduplication Appliance Software 1.4.5 Release Notes

Software release 1.4.5

NetBackup 50xx



Documentation version: 1.4.5

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Deduplication Appliance Software 1.4.5 release notes

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About the Deduplication Appliance Software Release 1.4.5

The Deduplication Appliance Software 1.4.5 release is available as patch upgrade `NB_Appliance_D_1.4.5-revision.tar` from the following Symantec Corporation Technical Support website:

<http://www.symantec.com/docs/TECH224577>

Symantec publishes release note updates and other product updates to the following NetBackup 5xxx appliance series Late Breaking News website.

<http://www.symantec.com/docs/TECH145136>

Note: The patch upgrade file name includes a revision number. For *revision*, specify the revision number of the patch.

Prerequisites

You can apply the Deduplication Appliance Software 1.4.5 release to your appliance storage pool if the appliance storage pool currently runs one of the following releases:

- Deduplication Appliance Software 1.4.4
- Deduplication Appliance Software 1.4.3.1

For more information about the Deduplication Appliance Software releases, see the following Web site:

<http://www.symantec.com/business/support/index?page=landing&key=58991>

Checking RAID-6 status before upgrade

Before performing the upgrade to 1.4.5, Symantec highly recommends checking the status of the RAID-6 disk. If the **Write Policy** of RAID-6 disk is `Write Through` the upgrade can take a very long time to complete.

Note: Check the RAID-6 status on every node in the storage pool and make updates where needed.

- 7 Type `support>megacli run`
Set the following options: `MegaCli64 -LDSetProp WB -L<LD_ID> -A<ADP_ID>`.
For example, if the name content is 0-1, the options are: `-LDSetProp WB -L1 -A0`.
- 8 Type the `hwmon show raidgroup` command to verify **Write Policy** for RAID-6 changed to `WriteBack`.

Component upgrades

All the packages that are shown are updated in the Deduplication Appliance Software 1.4.5 release:

- `bind-libs-9.6ESVR7P4-0.9.1.x86_64.rpm`
- `bind-libs-32bit-9.6ESVR7P4-0.9.1.x86_64.rpm`
- `bind-utils-9.6ESVR7P4-0.9.1.x86_64.rpm`
- `cifs-mount-3.0.36-0.13.28.1.x86_64.rpm`
- `compat-openssl1097g-0.9.7g-13.23.1.x86_64.rpm`
- `compat-openssl1097g-32bit-0.9.7g-13.23.1.x86_64.rpm`
- `curl-7.15.1-19.30.1.x86_64.rpm`
- `curl-32bit-7.15.1-19.30.1.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-2.4-31.109.1.x86_64.rpm`
- `glibc-32bit-2.4-31.109.1.x86_64.rpm`
- `glibc-i18ndata-2.4-31.109.1.x86_64.rpm`
- `glibc-info-2.4-31.109.1.x86_64.rpm`
- `glibc-locale-2.4-31.109.1.x86_64.rpm`
- `glibc-locale-32bit-2.4-31.109.1.x86_64.rpm`
- `gpg-1.4.2-23.27.1.x86_64.rpm`
- `jre-7u65-linux-x64.rpm`
- `kernel-smp-2.6.16.60-0.107.1.x86_64.rpm`
- `krb5-1.4.3-19.49.53.1.x86_64.rpm`

- ksh-93u-0.27.5.x86_64.rpm
- libtiff-32bit-3.8.2-5.36.1.x86_64.rpm
- libtiff-3.8.2-5.36.1.x86_64.rpm
- libxml2-2.6.23-15.39.1.x86_64.rpm
- libxml2-32bit-2.6.23-15.39.1.x86_64.rpm
- libxml2-python-2.6.23-15.39.1.x86_64.rpm
- libxslt-1.1.15-15.22.1.x86_64.rpm
- libxslt-32bit-1.1.15-15.22.1.x86_64.rpm
- lvm2-2.02.17-7.40.1.x86_64.rpm
- nfs-utils-1.0.7-36.52.1.x86_64.rpm
- openssh-5.1p1-41.14.1.x86_64.rpm
- openssl-0.9.8a-18.82.4.x86_64.rpm
- openssl-32bit-0.9.8a-18.82.4.x86_64.rpm
- perl-32bit-5.8.8-14.21.3.x86_64.rpm
- perl-5.8.8-14.21.3.x86_64.rpm
- sudo-1.6.9p23-0.18.1.x86_64.rpm
- supportutils-1.20-0.73.1.noarch.rpm
- timezone-2014a-0.5.1.x86_64.rpm
- util-linux-2.12r-35.52.1.x86_64.rpm
- VRTSperl-5.14.2.21-SLES10.x86_64.rpm

The following components have been upgraded:

- PHP upgraded to 5.4.28
- PostgreSQL upgraded to 9.2.8
- libcurl upgraded to 7.32.0
- libssh2 upgraded to 1.4.3
- ncurses upgraded to 5.9
- PCRE upgraded to 8.34
- Apache upgraded to 2.2.27
- libxml2 upgraded to 2.9.1

- VxSF upgraded to 6.0.5

The following Intel utilities have been upgraded:

- One-Boot Flash Utility (OFU) upgrade to v11.0 Build 15.
- Save and Restore System Configuration Utility (syscfg) upgrade to v12.0 Build 8.
- System Information Retrieve Utility (sysinfo) upgrade to v12.0 Build 10.

In addition, the following driver upgrades apply to the NetBackup Appliance 5030:

- RAID controller driver upgrade to 06.600.18.00.
- RAID driver upgrade to 15.04.2013.1016.
- Intel(R) Gigabit Ethernet Network Driver upgrade to 4.3.1.
- Intel(R) 10 Gigabit PCI Express Network Driver upgrade to 3.17.3.

New features and enhancements

The following are the new features and enhancements for Deduplication Appliance Software version 1.4.5:

Optimized Deduplication from PDDO to MSDP

The Deduplication Appliance Software release 1.4.5 includes the ability to perform optimized deduplication from PureDisk Deduplication Option (PDDO) to Media Server Deduplication Option (MSDP). With this enhancement, you can now migrate data from a 50xx appliance to a 52xx or 5330 appliance without any data loss. Optimized deduplication from PDDO to MSDP between a 50xx appliance and a 52xx or 5330 appliance is triggered automatically without any intervention by the user.

Note: This enhancement requires NetBackup 7.6.1 or later or NetBackup Appliance 2.6.1 or later to function properly.

Configurable Fibre Channel buffer size for replication

The Deduplication Appliance Software version 1.4.5 includes the ability to change the Fibre Channel buffer size. The new buffer size configuration item is accessible in both the PureDisk User Interface and in the Command Line Interface. When replication is performed over Fibre Channel, this configuration item is used to set the buffer size.

To access the configuration item in the GUI, navigate to: **Settings > Configuration > Configuration file templates > PureDisk Server Agent > Default ValueSet > replication section > repchunksize**

New commands

- Set the buffer size:
`FC > repchunksize set <buffersize>`
- Show the buffer size:
`FC > repchunksize show`

Problems fixed

The Deduplication Appliance Software release 1.4.5 contains the following fixes:

- 3127302: Prompt messages don't show when clicking **Tab** for command `scsp -> serverinfo`.
- 3217437: Enhance BBU Monitoring Logic.
- 3251453: Occasionally patch detect may get an error message: ERROR: URL is undefined.
- 3259205: Applying the 1.4.4 patch on HS 5020 fails with: Checking if required disk space for checkpoint can be supplied Upgrade Failed!! Need to restart PD services to apply successfully.
- 3299535: Kernel upgrade failure message needs updating.
- 3300820: nodeinfo not correct displayed on CR.
- 3316032: Monitor CPU temperature for Dedup Appliances.
- 3335627: Prevent 50x0 series software from being installed on non-appliance hardware.
- 3343366: Prevent D1.x code from being installed on a 5200 series appliance.
- 3352871: Components upgrade missing in patch.
- 3364131: There should be warning messages during the upgrade to 1.4.5 telling customers that some OS agents will not be supported after the upgrade, and ask for customer's confirmation before continuing.
- 3367827: Message correction in pre-scripts.
- 3373948: Adapter failing criteria for 5030 appliance (supercap).
- 3377570: Eliminate error message from ISO installation logs.
- 3394655: NFS/CIFS logic improvement.

- 3398679: Add PDFC test tools.
- 3466743: Applying eeb from 3336829 can take many hours.
- 3507404: Apply patch(6.6.7.54719) on node 1.4.3.1 failed.
- 3523905: Remove Apache installed with OS.
- 3531348: Upgrade openssl to 0.9.8a-18.82.4 for both ISO and patch.
- 3534829: No install successful message shown after installation.
- 3542634: Upgrade kernel to the latest version.

Known problems and limitations

The following are known problems and limitations in Deduplication Appliance Software version 1.4.5:

Warning message is printed while performing a soft reset

When performing a soft reset, the following warning message is printed:

```
Reset timeout has been reached. SPA stopped waiting for uncompleted...
```

This warning message does not affect the success of a soft reset.

PureDisk agent installation to custom location can cause failed backups

Backups can fail if the PureDisk agent was installed to a custom location that uses unicode characters in the name of the directory.

Upgrade may fail at kernel upgrade

During an upgrade, the upgrade may fail at the kernel upgrade phase due to a /Storage unmount failure. The following error message is displayed if this failure occurs:

```
ERROR: Failed to umount /Storage  
Error: failed to apply kernel patch on node h216.symcbj-29.net!
```

Use the following procedure to recover if the failure occurs:

/Storage unmount failure recovery

- 1 Restart all nodes in the storage pool.
- 2 Roll back the upgrade.
- 3 Perform the upgrade again.

Upgrade can fail during the PD upgrade phase

The upgrade to 1.4.5 can fail when the following criteria are met:

- The original version of the appliance software is 1.3.0.1 or earlier.
- The storage pool host name was configured to the IP address.
- The change FQDN utility was used to change the IP to the FQDN.

The upgrade fails in the PD UPGRADE phase and shows an error similar to the following:

```
+ Updating server side configuration files
+++ Executing 'generic/updateconfigfiles.xml' on separate nodes
+++ Performing step 1/1 on each node.
    Action: --script "UpdateConfigFiles.sh" --scripttype bash
== Start executing script 'UpdateConfigFiles.sh' on node nbappoc15.engba.symantec.com
    +++ Updating local Configuration Files
+ Updating configfiles
*** Error Message ***
shared.webserviceclient.2128
severity: 6
server: 1780000000
source: GetConfigFiles_GetConfigFiles
date: 2014-Dec-15 06:12:39 UTC
description:
Webservice could not be queried. URL: https://xx.xxx.xx.xxx/spa/ws/ws_configfile.php (35).
*** End ***
```

The upgrade log can be checked by navigating to:

`/var/log/puredisk/upgrade/NB_Appliance_D_1.4.5-<revision>/*.main.log`

If you experience this issue, please see the information at the following tech note for a solution: [TECH227340](#)

Upgrade may take long amount of time when upgrading to 1.4.5

Data migration of the PDDB database during the upgrade to 1.4.5 may take longer than previous releases. The PDDB is upgraded with this patch due to an update to the Linux PostgreSQL package to version 9.2.8.

During the PDDB upgrade, the database data is also migrated to the new PDDB. Depending on the size of the database, the migration may take a very long time to complete.

An upgrade time estimation is displayed in the following warning message before the upgrade is applied:

WARNING:

```
The PureDisk Database Server(PDDB) is upgraded with this patch.
During the PDDB upgrade, the database data is also migrated to
the new PDDB.
```

```
Depending on the data size of the database, the migration may
take a very long time to complete.
```

```
According to the database size in this appliance, the upgrade
may take more than 3 hours to complete.
```

```
Before proceeding, please make sure to schedule enough time to
perform the upgrade!!!
```

```
Are you sure you want to proceed with the upgrade?[YES/NO]
```

Type **YES** to continue the upgrade, or type **NO** to abort the upgrade.

For details of the patch upgrade, please refer to:

```
/var/log/puredisk/upgrade/NB_Appliance_D_1.4.5-<revision>/<yyyy-mm-dd_HHhMM>-main.log
```

For details of the PDDB upgrade, please refer to:

```
/var/log/puredisk/upgrade/NB_Appliance_D_1.4.5-<revision>/yyy-mm-dd_HHhMM>-db_backup/
<yyyy-mm-dd_HHhMM>-dbupgrade.log
```

For more information on how to estimate time for the upgrade, please see [TECH227553](#).

Compatibility information for NetBackup deduplication appliances

The Deduplication Appliance Software 1.4.5 release supports Fibre Channel communication, optimized duplication, and PureDisk deduplication option (PDDO)

backups. These features require the NetBackup deduplication appliance to interoperate with other products in the NetBackup product family. The following topics contain compatibility information:

- See “[About Fibre Channel communication](#)” on page 16.
- See “[About optimized duplication and the PureDisk deduplication option \(PDDO\)](#)” on page 16.

About Fibre Channel communication

With the Deduplication Appliance 1.4.5 release, the NetBackup deduplication appliance can send and receive information over a Fibre Channel connection to the following NetBackup products:

- NetBackup 7.5 and later
- NetBackup 5220 appliances that host NetBackup Appliance Software 2.0.3 and later
- NetBackup 5230 appliances that host NetBackup Appliance Software 2.5.2 and later
- NetBackup 5020 and 5030 deduplication appliances that host Deduplication Appliance Software 1.4.5 and later

Note: If you plan to upgrade your NetBackup deduplication appliances to Deduplication Appliance Software 1.4.5 or later, make sure to upgrade your NetBackup media servers, NetBackup master servers, NetBackup 5220/5230 appliances, and NetBackup 5020/5030 deduplication appliances at the same time. Failure to upgrade your complete NetBackup environment to supported compatibility levels causes the Fibre Channel communication to fail. The preceding list shows compatible release levels.

For more information about Fibre Channel communication in the NetBackup product family, see the following technical article:

<http://www.symantec.com/docs/HOWTO73167>

About optimized duplication and the PureDisk deduplication option (PDDO)

Optimized duplication sends unique, deduplicated backup segments from a NetBackup media server deduplication pool to another NetBackup media server deduplication pool within the same NetBackup domain. PDDO sends backup data from a NetBackup media server to a PureDisk storage pool to be deduplicated.

The following technical article explains how you can configure optimized duplication and PDDO in a NetBackup environment:

<http://www.symantec.com/docs/TECH175013>

Upgrade process overview

The following information pertains to the upgrade process:

- Symantec recommends that you perform the Deduplication Appliance Software upgrade from a console (IPMI or direct access) and not from an SSH session or a PuTTY session.

Warning: The upgrade session will fail if the SSH or PuTTY session is disconnected.

If you attempt an upgrade through a SSH, the system issues the following message:

```
WARNING: This upgrade is being run in a network access session, and upgrade will fail if this session got disconnected. Symantec strongly recommends that this upgrade should be run from the appliance console.
```

```
Are you sure you want to continue? [(Y)/n]
```

- Note your passwords before an upgrade. The upgrade process does not change existing passwords, but a rollback changes passwords back to the values they had before the upgrade.
- 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 information about how to upgrade these clients, see the following:
See “(Conditional) Upgrading PureDisk deduplication option (PDDO) agents on media server clients” on page 29.
- In a multinode storage pool, each node in the storage pool needs to be at the same Deduplication Appliance Software release level. If you add a node after the storage pool is configured, make sure to verify the Deduplication Appliance Software 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.
- While upgrading the Appliance storage pool to 1.4.5 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_Appliance_D_1.4.5-yyyyy`, is the upgrade patch version. This affects the upgrade script name `apply-NB_Appliance_D_1.4.5-yyyyy.sh` as well as upgrade comments and logs.

The following topics contain the upgrade procedures:

- See “Preparing the storage pool, downloading the upgrade software, and installing the upgrade software” on page 18.
- See “About checkpoints” on page 23.
- See “Upgrading a standalone appliance manually” on page 27.
- See “Recovering from an upgrade failure” on page 28.
- See “(Conditional) Upgrading PureDisk deduplication option (PDDO) agents on media server clients” on page 29.

Preparing the storage pool, downloading the upgrade software, and installing the upgrade software

The following procedure explains how to download and install the upgrade software.

Note: The patch upgrade includes a revision number. For *revision*, specify the revision number of the patch.

To prepare the storage pool, download the patch, and install the patch

- 1 Change the state of the disk pool to `DOWN`.

Perform this step if the deduplication appliance 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 deduplication appliance 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.

- 2 (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.

- 3 (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.
- 4 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 .

- 5 Confirm the most recent two content router queue processing jobs finished successfully within the last 36 hours in the PureDisk administrative Web UI.

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.

- 6 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**.
- Click **Default policy for Server DB Maintenance** in the left pane
- 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**.

- 7 From a console (IPMI or direct access), log in as `sysadmin` to the appliance node that hosts the storage pool authority.

By default, the password is `P@ssw0rd`.

The system issues a warning message if you attempt the upgrade from a Secure Shell or PuTTY connection.

Warning: The upgrade process will fail if the SSH or PuTTY session is disconnected.

Preparing the storage pool, downloading the upgrade software, and installing the upgrade software

- 8 Type `nodeinfo` at the appliance shell menu and examine the output.
Make sure that all nodes are up, running, and accessible from the storage pool authority. The status of all nodes should be `active`.
- 9 Type `admin` to access the administrator commands.
- 10 Type `su` to access the root menu.
- 11 Use `scp` to copy the tar file (`NB_Appliance_D_1.4.5-revision.tar`) to the `/root/pd-patches` directory.
If the directory does not exist, you must create it.
- 12 Type the following command to verify the integrity of the upgrade:

```
# md5sum /root/pd-patches/NB_Appliance_D_1.4.5-revision.tar
```

This command computes the MD5 checksum of the upgrade. The MD5 checksum of the upgrade must match the MD5 checksum information that is found here:
<http://www.symantec.com/docs/TECH224577>

If you obtain a different checksum, the upgrade was corrupted during download. Download the upgrade again.
- 13 Type `exit` to log out of root mode.
- 14 Log in as `sysadmin` on the appliance node that hosts the storage pool authority.
- 15 Type `PureDisk` at the appliance shell menu prompt.
- 16 Type `patch list-downloaded` and examine the output.
The output should include the patch `NB_Appliance_D_1.4.5-revision.tar`.
- 17 Type `patch apply NB_Appliance_D_1.4.5-revision.tar` to install the downloaded patch.
- 18 Type `patch list-applied` and examine the output.
The newly applied patch, `NB_Appliance_D_1.4.5-version` (not committed) should appear.
- 19 Type `status all` and examine the output.
All the services' statuses are running if the patch was successfully applied.
- 20 Type `exit` to exit from `PureDisk` mode.
- 21 Type `support` to enter `support` mode.

22 Type `applianceversion` and examine the output.

If the patch was applied successfully, the version is 1.4.5.

Note: After you apply the upgrade, the storage pool is in checkpoint mode. Checkpoint mode lets you review the functionality of the patch in the storage pool and perform a patch rollback if necessary. While in checkpoint mode, some functionality is disabled.

For more information about checkpoint mode, see the following topic:

See [“About checkpoints”](#) on page 23.

23 (Conditional) Change the state of the disk pool to `UP`.

Perform this step if the deduplication appliance 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 deduplication appliance 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/openv/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.

24 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**.
- Click **Default policy for Server DB Maintenance** in the left pane
- 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**.
- 25 Commit or roll back the patch.
- When you are confident that the patch is functioning properly on the storage pool, use the procedure in the following topic to commit the patch:
- See [“Committing a patch”](#) on page 24.
- If you need to roll back the patch, use the procedure in the following topic:
- See [“Rolling back a patch”](#) on page 25.
- 26 (Conditional) Review the following sections if you use PDDO to determine if you need to update the software on PDDO media server clients.
- See [“\(Conditional\) Upgrading PureDisk deduplication option \(PDDO\) agents on media server clients”](#) on page 29.

About checkpoints

When you apply an upgrade patch to a deduplication appliance storage pool, the upgrade software automatically creates a checkpoint on the storage pool, which saves the appliance status before the upgrade. If a checkpoint exists, the PureDisk administrative Web UI displays the message `Storage pool is in checkpoint mode`.

Do not attempt to remove a checkpoint manually. Use the information in the patch's release notes to commit or to roll back the patch. Both the commit action and the rollback action remove the checkpoint.

Note: Please be aware that once you have committed a patch, you cannot perform a rollback.

The checkpoint and the rollback features that are implemented in PureDisk for the deduplication appliances differ from the checkpoint and the rollback features that are implemented in the PureDisk Remote Office Edition.

The following topics describe checkpoints and rollbacks:

- See [“Storage pool functionality while in checkpoint mode”](#) on page 24.
- See [“Committing a patch”](#) on page 24.
- See [“Rolling back a patch”](#) on page 25.

Storage pool functionality while in checkpoint mode

PureDisk functionality is reduced when the storage pool is in checkpoint mode. Specifically, checkpointing has the following effects on the storage pool:

- You can start the Configuration Wizard user interface, but the Network Configuration Wizard and the Storage Pool Configuration Wizard are disabled. You cannot use the wizards to perform any configuration or any reconfiguration tasks. For example, you cannot add a new node to the storage pool while the storage pool is in checkpoint mode. In addition, you cannot configure or reconfigure an appliance's network while the storage pool is in checkpoint mode.
- To prevent performance degradation and data loss, PureDisk prevents certain storage pool operations from occurring when the storage pool is in checkpoint mode. PureDisk rerouting, replication, disaster recovery restores, and garbage collection cannot run when the storage pool is in checkpoint mode. Because of a known problem with some early NetBackup releases, PDDO operations may continue when a storage pool is in checkpoint mode.

After your test period is over, you can commit the patch, or you can roll back the patch.

Note: If the storage pool is used in a NetBackup environment as a PureDisk deduplication option (PDDO) storage unit, make sure to notify the NetBackup administrator that the storage pool is in checkpoint mode and is unavailable to NetBackup during the checkpoint period.

Committing a patch

After you are confident that the patch works correctly in your environment, use the following procedure to commit the patch.

Note: Please be aware that once you have committed a patch, you cannot perform a rollback.

To commit patches

- 1 Log into the appliance with the `sysadmin` account.
- 2 Type `PureDisk` at the appliance shell menu.
- 3 Type the following command:

```
patch commit NB_Appliance_D_1.4.5-revision
```

For more information about checkpoint mode and further details about what occurs when you commit a patch, see the following:

See [“About checkpoints”](#) on page 23.

Rolling back a patch

The following procedure explains how to roll back an installed patch that is not committed.

To roll back a patch

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

Perform this step if the deduplication appliance 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 deduplication appliance is not connected to a media server.

Complete the following steps:

- Log into the NetBackup media server.
- Use the `nbdevconfig` command to remove the media server from 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 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.

- 2 Make sure that no PureDisk jobs are currently running or are scheduled to be run.

Log into the PureDisk administrative Web UI, and click **Monitor > Jobs**. Visually inspect the display to make sure that no PureDisk jobs are running or are scheduled to run.

- 3 Use a Secure Shell connection to log in as `sysadmin` on the appliance node that hosts the storage pool authority.

By default, the password is `P@ssw0rd`.

- 4 Type `nodeinfo` at the appliance shell menu and examine the output.

Make sure that all nodes are up, running, and accessible from the storage pool authority. The status of all nodes should be `active`.

- 5 Type `PureDisk` to access the `patch` subcommands.

- 6 Type `patch list-applied` to verify that the patch has been applied.

The applied patch, `NB_Appliance_D_1.4.5-revision` (not committed) should appear.

- 7 Type `patch rollback NB_Appliance_D_1.4.5-revision` to roll back the software to the previous version.

- 8 Type `patch list-applied` to verify that the patch was removed.

The patch name `NB_Appliance_D_1.4.5-revision` should no longer appear.

- 9 (Conditional) Change the state of the disk pool to `UP`.

Perform this step if the deduplication appliance 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 deduplication appliance 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.

Upgrading a standalone appliance manually

When you upgrade the storage pool authority in a multinode storage pool, the upgrade software automatically upgrades all appliance nodes in the storage pool. If you have unconfigured appliances, unattached appliances with older software versions, or decommissioned appliances you want to add to an upgraded environment, upgrade them before you add them to the existing environment. Use the procedure in this topic if you want to upgrade the software level of an appliance and add the appliance to a storage pool.

To upgrade an unconfigured appliance

- 1 Turn on the appliance.
- 2 From a console (IPMI or direct access), log in as `sysadmin` to the appliance node that hosts the storage pool authority.

By default, the password is `P@ssw0rd`.

The system issues a warning message if you attempt the upgrade from a Secure Shell or PuTTY connection.

Warning: The upgrade process will fail if the SSH or PuTTY session is disconnected.

- 3 Configure the TCP/IP address for the network interface card in the appliance.

Complete the following steps:

- Type `network`.
- Type the `config show` command to display available interfaces.

For example:

```
app01.network> config show  
Node IP Address  Interface  IP Address  Netmask  
192.168.1.26*   eth0       192.168.1.1 255.255.255.0  
192.168.1.26*   eth1       N/A         N/A
```

- Type `config addr` to specify the interface number, TCP/IP address, and subnet mask of your network.

For example, to configure port `eth1` with the TCP/IP address of `192.168.1.57` and a subnet mask of `255.255.255.0` on the `192.168.1.26` appliance, type the following command:

```
config addr 192.168.1.26 eth1 192.168.1.57 255.255.255.0
```

- 4 Download and install the patch on the appliance.

Perform the procedure in the following topic:

See [“Preparing the storage pool, downloading the upgrade software, and installing the upgrade software”](#) on page 18.

- 5 Log into the storage pool authority and add the new appliance.

See *Adding additional appliance nodes to the storage pool* in the *Symantec NetBackup Deduplication Appliance Software Getting Started Guide*.

Recovering from an upgrade failure

If the upgrade process is accidentally interrupted, it might be necessary to remove the patch before you can reinstall the patch. For example, if there is a power failure or a loss of network connectivity during the upgrade, these conditions can corrupt the upgrade and require the patch to be removed.

The following procedure explains how to examine your environment and correct the upgrade.

To troubleshoot an upgrade failure

- 1 From a console (IPMI or direct access), log in as `sysadmin` to the appliance node that hosts the storage pool authority.

By default, the password is `P@ssw0rd`.

- 2 Type `PureDisk` at the appliance shell menu.
- 3 Type `patch list-applied` to list the patches that are applied.
- 4 Note the output from the `patch list-applied` command and take one of the following actions:

- If `NB_Appliance_D_1.4.5-revision` (not committed) is displayed, you need to roll back the patch and reapply the patch.

Type the following command to roll back the patch:

```
patch rollback NB_Appliance_D_1.4.5-revision
```

After the rollback completes, type the following command to reapply the patch:

```
patch apply NB_Appliance_D_1.4.5-revision.tar
```

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

- If the `patch list-applied` command returns no output, type the following command to reapply the patch:

```
patch apply NB_Appliance_D_1.4.5-revision.tar
```

For more information about how to reapply a patch, see the following:

See [“Preparing the storage pool, downloading the upgrade software, and installing the upgrade software”](#) on page 18.

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

The upgrade software includes upgraded PDDO agents for Linux, Solaris, and Windows clients. 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.

To upgrade PDDO agents

- 1 Make sure that the storage pool software for the PDDO clients has been upgraded.
- 2 Type the following URL into a browser window to restart 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 Log in to each PDDO media server client.
- 4 From the PDDO media server client, download the new PDDO agent software.

- 5 Stop all NetBackup services on the NetBackup media server.
On Windows systems, click **Program Files > NetBackup > bin > bpdwn.exe**.
On Linux or UNIX systems, type `/usr/openv/netbackup/bin/bp.kill_all`
- 6 Install the agent software that is included with this release update.
 - On Windows systems, double-click the PureDisk agent icon to start the Windows Installation Wizard.
 - On Linux or Solaris systems, you can use either the attended or the unattended installation method. The installer prompts you to confirm the upgrade.
- 7 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/openv/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 Deduplication Appliance Software 1.4.5 release:

- *Symantec NetBackup Deduplication Appliance Software Getting Started Guide*, release 1.4.5
- *Symantec NetBackup Deduplication Appliance Software Administrator's Guide*, release 1.4.5

The PureDisk component of the Deduplication Appliance Software has its own documentation set. The PureDisk documentation that supports this release is as follows:

- *Symantec NetBackup PureDisk Administrator's Guide*
- *Symantec NetBackup PureDisk Backup Operator's Guide*
- *Symantec NetBackup PureDisk Best Practices Guide*
- *Symantec NetBackup PureDisk Client Installation Guide*
- *Symantec NetBackup PureDisk Deduplication Option Guide*
- *Symantec NetBackup PureDisk Getting Started Guide*

For PDF copies of the Deduplication Appliance Software 1.4.5 release documentation, see the following Web site:

<http://www.symantec.com/docs/DOC7662>

For PDF copies of the PureDisk documentation, see the following Web site:

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