

Symantec NetBackup™ Deduplication Appliance Software 1.4.3.1 Release Notes

Software release 1.4.3.1
Documentation revision 3

NetBackup 5020
NetBackup 5000



The software described in this book is furnished under a license agreement and may be used only in accordance with the terms of the agreement.

Documentation version: 1.4.3.1, revision 3

Legal Notice

Copyright © 2012 Symantec Corporation. All rights reserved.

NetBackup, PureDisk, Symantec, and the Symantec Logo are trademarks or registered trademarks of Symantec Corporation or its affiliates in the U.S. and other countries. Other names may be trademarks of their respective owners.

This Symantec product may contain third party software for which Symantec is required to provide attribution to the third party ("Third Party Programs"). Some of the Third Party Programs are available under open source or free software licenses. The License Agreement accompanying the Software does not alter any rights or obligations you may have under those open source or free software licenses. Please see the Third Party Legal Notice Appendix to this Documentation or TPIP ReadMe File accompanying this Symantec product for more information on the Third Party Programs.

The product described in this document is distributed under licenses restricting its use, copying, distribution, and decompilation/reverse engineering. No part of this document may be reproduced in any form by any means without prior written authorization of Symantec Corporation and its licensors, if any.

THE DOCUMENTATION IS PROVIDED "AS IS" AND ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT, ARE DISCLAIMED, EXCEPT TO THE EXTENT THAT SUCH DISCLAIMERS ARE HELD TO BE LEGALLY INVALID. SYMANTEC CORPORATION SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH THE FURNISHING, PERFORMANCE, OR USE OF THIS DOCUMENTATION. THE INFORMATION CONTAINED IN THIS DOCUMENTATION IS SUBJECT TO CHANGE WITHOUT NOTICE.

The Licensed Software and Documentation are deemed to be commercial computer software as defined in FAR 12.212 and subject to restricted rights as defined in FAR Section 52.227-19 "Commercial Computer Software - Restricted Rights" and DFARS 227.7202, "Rights in Commercial Computer Software or Commercial Computer Software Documentation", as applicable, and any successor regulations. Any use, modification, reproduction release, performance, display or disclosure of the Licensed Software and Documentation by the U.S. Government shall be solely in accordance with the terms of this Agreement.

Symantec Corporation
350 Ellis Street
Mountain View, CA 94043
<http://www.symantec.com>

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.

Symantec's support offerings include the following:

- A range of support options that give you the flexibility to select the right amount of service for any size organization
- Telephone and/or Web-based support that provides rapid response and up-to-the-minute information
- Upgrade assurance that delivers software upgrades
- Global support purchased on a regional business hours or 24 hours a day, 7 days a week basis
- Premium service offerings that include Account Management Services

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

www.symantec.com/business/support/

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

Contacting Technical Support

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

www.symantec.com/business/support/

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

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

- Product release level

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

Licensing and registration

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

www.symantec.com/business/support/

Customer service

Customer service information is available at the following URL:

www.symantec.com/business/support/

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

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

Support agreement resources

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

Asia-Pacific and Japan customercare_apac@symantec.com

Europe, Middle-East, and Africa semea@symantec.com

North America and Latin America supportsolutions@symantec.com

Symantec NetBackup Deduplication Appliance Software 1.4.3.1 release notes

This document includes the following topics:

- [About the Deduplication Appliance Software release 1.4.3.1](#)
- [Prerequisites](#)
- [Component upgrades](#)
- [New features and enhancements](#)
- [Problems fixed](#)
- [Known problems and limitations](#)
- [Compatibility information for NetBackup deduplication appliances](#)
- [Upgrade process overview](#)
- [Preparing the storage pool, downloading the upgrade software, and installing the upgrade software](#)
- [About checkpoints](#)
- [Upgrading a standalone appliance manually](#)
- [Recovering from an upgrade failure](#)

- (Conditional) Improved PureDisk deduplication option (PDDO) performance available in NetBackup 7.5.0.4.
- (Conditional) Upgrading PureDisk deduplication option (PDDO) agents on media server clients
- Documentation and related information

About the Deduplication Appliance Software release 1.4.3.1

The Deduplication Appliance Software 1.4.3.1 release is available as patch upgrade `NB_Appliance_D_1.4.3.1.tar` from the following Symantec Corporation Technical Support Web site

<http://www.symantec.com/docs/TECH194055>

Symantec publishes release note updates and other product updates to the following NetBackup 5xxx appliance series Late Breaking News Web site:

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

Prerequisites

You can apply the Deduplication Appliance Software 1.4.3.1 release to your appliance storage pool if the appliance storage pool currently runs one of the following releases:

- Deduplication Appliance Software 1.4.3
- Deduplication Appliance Software 1.4.2
- Deduplication Appliance Software 1.4.1.1
- Deduplication Appliance Software 1.4.1.1 + ET2701800-bundle
- Deduplication Appliance Software 1.4
- Deduplication Appliance Software 1.3.0.2
- Deduplication Appliance Software 1.3.0.1 + the rehydration EEB
- Deduplication Appliance Software 1.3.0.1

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>

Component upgrades

Symantec includes the following component upgrades in the Deduplication Appliance Software 1.4.3.1 release:

- Deduplication Appliance Software release 1.4.3.1 introduces several changes to the administrative shell menu. These changes include:
 - The `system` view is changed to the `support` view.
 - The `hardware test withIO` command has been changed to `hwmon diag`.
 - The `hwmon show` command has been enhanced to include all functions of `hardware test withoutIO` command. The `hardware test withoutIO` command has been removed.
 - A single email command replaces the `hwmon email` command. The command is moved to the `support` view.
 - New test functions are added to the `email`, `callhome`, and `snmp` commands.
 - A new command is added to the `network` view. The `property` command is used to show and set network interface properties.
 - The `ErrorStatus` field in the output of the `hwmon show` command is changed to `State`. The possible values for this field are: `OK`, `Warning`, `Critical Warning`, and `Failure`.
Refer to the *Symantec NetBackup Deduplication Appliance Software Administrator's Guide* for details on the changes to the appliance shell menu.
- The kernel is upgraded to `2.6.16.60-0.97.1-smp`.
- 1G NIC driver `igb` upgraded to `3.4.8`.
- 10G NIC driver `ixgbe` upgraded to `3.10.16`
- JRE upgraded to `jre-1.6.0_33-fcs`.
- The RAID controller firmware is upgraded to `1.40.322-1445`.
- The `recoverCR` package is updated to `recoverCR-v4.08-rev50444.tgz`.
- The `libxml` packages are updated to `libxml2-2.6.23-15.31.4` and `libxml2-32bit-2.6.23-15.31.4`
The `boost` package is upgraded to `boost-1.33.1-17.15.1`.
- Updated packages to fix vulnerabilities.

New features and enhancements

The following are the new features and enhancements for Deduplication Appliance Software version 1.4.3.1:

Enhanced hardware monitoring and improved IPMI support

Enhancements to the hardware monitoring and IPMI support are included with the Deduplication Appliance Software release 1.4.3.1. Symantec now monitors more hardware components. Functionality improvements for IPMI are included which facilitate growth and future releases.

Metabase scalability for improved job success rate

The included improvements address PDDO metabase performance issues that occur as the metabase grows larger. These changes can improve the PDDO job success rate in NetBackup, as performance issues can sometimes cause job failures. The new metabase removes file versioning and eliminates the need for aggregation in PDDO metabase queries. The changes to the metabase do not apply to non-PDD data selections. PureDisk Remote Office Edition data selections are unaffected by these changes.

Content router queue processing performance improvements

Three improvements to content router queue processing are included in Deduplication Appliance Software release 1.4.3.1. CPU usage is maximized. Data is imported to reduce the overhead that is associated with large updates and large data insertions. Jobs are batched to minimize network overhead. In addition, missing and corrupted transaction log files are automatically recovered from the corresponding journal files to enhance content router queue processing reliability.

Usability enhancements

Deduplication Appliance Software release 1.4.3.1 includes the following usability enhancements:

- A new policy to download the latest patch for the storage pool is included in the 1.4.3.1 release. You can enable this policy from the GUI or through the administrative shell menu.
- New administrative shell menu commands and parameters that are designed to expand the capability of the administrative shell menu.
- The **Audit Log** is expanded to display more information.

- You can now configure the SNMP notifications for critical issues from the administrative shell menu.

Problems fixed

The Deduplication Appliance Software 1.4.3.1 release contains the following fixes:

- 2496462: DHCP is disabled by default in ISO installations.
- 2616408: Test functionality is added to the hardware monitor in the administrative shell menu.
- 2631999: After a power outage, data corruption causes the content router to fail.
- 2648798: After the first backup of NTFS file system with a **Files and Folders Backup** policy, a change to the NTFS directory permissions causes subsequent PureDisk backups to skip the directory.
- 2684179: A new administrative shell menu command is added to reset all the Fibre Channel ports to correct mode.
- 2721558: When two email addresses are configured in the storage pool configuration wizard only the second address is successfully configured.
- 2734697: If the first Fibre Channel card has remote ports, the administrative shell menu does not show the second Fibre Channel card.
- 2739659: A `reset image` command incorrectly leaves behind checkpoints. The result is patches cannot be committed.
- 2752192: In the administrative shell menu, the `ifstat` command is renamed `NetworkStatus`.
- 2754038: Add the hardware platform information into the `serialno` command in administrative shell menu.
- 2754127: Add the `licenseinfo` command in administrative shell menu in the `system` menu.
- 2754149: Enabled email notification for critical software issues such as services down, storage pool full.
- 2763054: Implement alerts for disk full condition to enhance appliance system management.
- 2779082: The administrative shell menu command `puredisk > dsstat` command appears to hang indefinitely.
- 2781026: After the restore a PureDisk node by with the `DR_Restore_All.sh` script, the backup policy fails to run.

- 2786083: The `prepare_DR_Restore_All.sh` script fails to run.
- 2787941: The node does not restore when the data files under `/Storage/database` are corrupt.
- 2789309: The default TCP/IP address for `eth0` is changed to `169.254.1.1`.
- 2789330: Add the option to verify the Call Home configuration.
- 2789341: Applying the 1.4.3.1 patch upgrades the RAID card firmware to version 1.40.322-1445.
- 2793402: The PureDisk ContentRouter service cannot start after a full disaster recovery restore.
- 2794648: Added a new cron job to that renews AT credentials.
- 2796679: A metadata only disaster recovery restore fails if the `/Storage/databases/*` information is removed.
- 2808797: Enhancement to the show and the set network interface properties in the appliance shell menu.
- 2815506: Email is sent to the email address that is configured in the appliance shell menu when a new email address is added to hardware administrator group.
- 2822867: DNS server network configuration is lost after the system is restarted.
- 2827867: The default IPMI TCP/IP address is changed to `169.254.0.10`.
- 2832695: The storage pool fails to configure is the user clicks **Back** on the **Topology Discovery** page.
- 2843740: Improve the `hwmon show firmware` command.
- 2843832: Move the `log` command from the PureDisk view to the support view.
- 2846172: Rename the `system` view to the support view.
- 2849404: Add a wrapper in the administrative shell menu for MegaCli.
- 2852156: The `log collect all` command needs to collect the Storage Foundation logs.
- 2863497: Include the `syscfg` utility in the Deduplication Appliance Software release.
- 2863500: Include the `OFU` utility in the Deduplication Appliance Software release.
- 2867148: Create `admin` as an IPMI user and set it to default.

- 2909445: The rebase process does not update the deleted space for the source containers properly. The failed update causes the `/Storage` partition to appear full when there is still available space. The appearance of a full `/Storage` partition causes backups to fail.
- 2924563: The dereference data script (`/opt/pdmbe/cli/DerefCR.php`) fails with no error message and no retry attempts for the failed actions. This leads to a storage leak.
- 2924715: The dereference data script (`/opt/pdmbe/cli/DerefCR.php`) only processes the first data selection and skips all other data selections. This leads to a storage leak.
- 2941270: Exchange transaction logs are not properly removed which results in excessive `/Storage` usage.
- 2943669: A memory leak was discovered in the `spoold` process when it releases a session. This problem has the potential to cause system down time.
- 2945626: The `SpoolAbort()` process does not properly delete the journal file.
- 2954096: The root user sees a mail message in `/var/mail/root` every 15 minutes indicating there is an uninitialized value error in the `callhome_utils.pm` module.
- 2960138: Email alerts from the appliance are updated to include the FQDN instead of the short host name.
- 2963034: When importing images for a PDDO backup, some images fail to import in the destination environment. The import fails with an “entity already exists” error message.
- 2964171: The `spoold` process crashes if the container number is larger at the end of the rebase process than at the start of the process.
- 2965703: A restart of the `pdctrl` process with the `pdctrlmon` command leads to the `pdagent` being killed.
- 2966227: In some cases, when SNMP is not enabled, there is a missing `snmp_enable` key in the Call Home configuration file `/Storage/data/chinfo.txt`. Because of the missing key, one of the variables is not initialized. When the `callhome.pl` script runs, the root user of the appliance receives an email. You can view the emails with the `mail` command from the command line interface. The message is:

```
Argument "" isn't numeric in numeric ne (!=)
at /opt/pdappliance/scripts/hwmon//snmp_utils.pm line 70.
```

- 2966293: The `/Storage` volume fills to 100% while there is “Space needs compaction” available. This problem has the potential to cause system down time.
- 2968436: New fixes for uploading data to SORT server were incorporated into the 1.4.3.1 release. The fixed problems had the potential to cause system down time.
- 2973841: Timeouts can occur while the patch script waits for `spoold` to load cache. This timeout can cause the patch to fail to install.
- 2975318: Optimized duplication from an MSDP source to a PDDO destination fails for a backup that has the same client and policy name.
- 2991386: After the upgrade to PureDisk 6.6.4, every time you click a link in the PureDisk web interface, a certificate error is shown.

Known problems and limitations

The following are the known problems and limitations in Deduplication Appliance Software version 1.4.3.1:

Performance issues with a large number of transaction log files

A large number (millions) of small transaction log files has a negative effect on the content router queue processing performance in PureDisk 6.6.4. The performance issue is because PureDisk must iterate the directory and examine each transaction log file for sorting. The performance of PureDisk 6.6.4 is still expected to be better than PureDisk 6.6.3a when run against the same transaction log files. Encountering a situation where the appliance has millions of small transaction log files is unusual and should not happen during normal operation.

Content router queue processing fails during upgrade process

The PureDisk upgrade process stops all PureDisk activities, including content router queue processing. As a result of this stoppage, it is possible the content router queue processing job may fail with the following error message: `Failed to open input file: /Storage/tmp/workflow.19`. This error message is normal and expected behavior. The content router queue processing job restarts as expected the next time it is scheduled to run. This error can safely be ignored.

Rollback fails with a failed to restore /Storage message

As part of a rollback, a snapshot of `/Storage` is restored. For a rollback to succeed, `/Storage` must be unmounted. In some cases, even though no processes have a lock on `/Storage` and there is no I/O to the device, the rollback fails. The failure shows the following error message:

```
ERROR:[server_name]: Failed to restore storage.
```

To resolve the issue, restart all nodes in the PureDisk environment and retry the rollback from the administrative shell menu.

Compatibility information for NetBackup deduplication appliances

The Deduplication Appliance Software 1.4.3.1 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 15.
- See [“About optimized duplication and the PureDisk deduplication option \(PDDO\)”](#) on page 16.

About Fibre Channel communication

With the Deduplication Appliance 1.4.3.1 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 5020 deduplication appliances that host Deduplication Appliance Software 1.4.3.1 and later

Note: If you plan to upgrade your NetBackup deduplication appliances to Deduplication Appliance Software 1.4.3.1 or later, make sure to upgrade your NetBackup media servers, NetBackup master servers, NetBackup 5220 appliances, and NetBackup 5020 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. If you attempt an upgrade through a Secure Shell, 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 28.
- 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.

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 22.
- See [“Upgrading a standalone appliance manually”](#) on page 26.
- See [“Recovering from an upgrade failure”](#) on page 27.
- See [“\(Conditional\) Upgrading PureDisk deduplication option \(PDDO\) agents on media server clients”](#) on page 28.

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.

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

- 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 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 > MB Garbage Collection**.
 - 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.

- 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_1.4.3.1.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_1.4.3.1.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/TECH194055>

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_1.4.3.1.tar`.

- 17 Type `patch apply NB_Appliance_D_1.4.3.1.tar` to install the downloaded patch.

- 18 Type `patch list-applied` and examine the output.

The newly applied patch, `NB_Appliance_D_1.4.3.1` (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 `1.4.3.1`.

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 22.

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 23.
- If you need to roll back the patch, use the procedure in the following topic:
- See [“Rolling back a patch”](#) on page 24.
- 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 [“\(Conditional\) Improved PureDisk deduplication option \(PDDO\) performance available in NetBackup 7.5.0.4.”](#) on page 28.
- See [“\(Conditional\) Upgrading PureDisk deduplication option \(PDDO\) agents on media server clients”](#) on page 28.

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. 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 23.
- See “[Committing a patch](#)” on page 23.
- See “[Rolling back a patch](#)” on page 24.

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_1.4.3.1
```

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 22.

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_1.4.3.1` (not committed) should appear.

- 7 Type `patch rollback NB_Appliance_D_1.4.3.1` 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_1.4.3.1` 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/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.

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.

- 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_1.4.3.1 (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_1.4.3.1
```


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

```
patch apply NB_Appliance_D_1.4.3.1.tar
```
 - If the `patch list-applied` command returns no output, type the following command to reapply the patch:

```
patch apply NB_Appliance_D_1.4.3.1.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) Improved PureDisk deduplication option (PDDO) performance available in NetBackup 7.5.0.4.

NetBackup versions 7.5.0.4 and later contain updates designed to improve performance of PDDO backups. To take advantage of these updates, your environment must meet all of the following requirements:

- You have PDDO enabled in your environment.
- Your environment uses NetBackup 7.5.0.4.
- Your environment uses either PureDisk 6.6.4 or Deduplication Appliance Software version 1.4.3.1.

The update is packaged with NetBackup 7.5.0.4 and later. The related binaries optimize PDDO performance with PureDisk 6.6.4 or a Deduplication Appliance using the 1.4.3.1 software. The update optimizes queries between the PureDisk plugin in NetBackup and PDDO. The update delivers improved performance and job success rate when there is a large number of backups from a specific client and policy. The update is not required for use with PDDO, but Symantec does recommend it.

More information about NetBackup 7.5.0.4 is available.

<http://www.symantec.com/docs/TECH194138>

(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 > bpdown.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 1.4.3.1 release:

- *Symantec NetBackup Deduplication Appliance Software Getting Started Guide*, release 1.4.3.1

- *Symantec NetBackup Deduplication Appliance Software Administrator's Guide*, release 1.4.3.1

The PureDisk 6.6.4 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*, release 6.6.4, revision 1
- *Symantec NetBackup PureDisk Backup Operator's Guide*, release 6.6.4, revision 1
- *Symantec NetBackup PureDisk Best Practices Guide*, release 6.6.4 revision 1
- *Symantec NetBackup PureDisk Client Installation Guide*, release 6.6.4 revision 1
- *Symantec NetBackup PureDisk Deduplication Option Guide*, release 6.6.4, revision 1
- *Symantec NetBackup PureDisk Getting Started Guide*, release 6.6.4 revision 1

For PDF copies of the Deduplication Appliance Software 1.4.3.1 release documentation, see the following Web site:

<http://www.symantec.com/docs/DOC5795>

For PDF copies of the PureDisk 6.6.4 documentation, see the following Web site:

<http://www.symantec.com/docs/DOC5794>