

HP 3PAR OS 3.2.1

Upgrade Instructions

Abstract

The instructions in this guide are for qualified technicians authorized by HP to upgrade storage system software. Authorized technicians include HP field engineers, HP Partner and Channel Partners, certified self-maintaining customers, and authorized third-party field technicians. This document is for HP INTERNAL USE ONLY.



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WARRANTY STATEMENT

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Documentation

For the latest version of this document, go to the Services Access Workbench at <http://sawpro.atlanta.hp.com/km/saw/search.do>.

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1 Introduction

The purpose of this document is to provide instructions to complete a field upgrade to *HP 3PAR OS* version 3.2.1.46 with the *HP 3PAR OS Release 3.2.1* CD.



WARNING! Performing an online update requires extensive planning. Review the *HP 3PAR Upgrade Pre-Planning Guide* (PN QL226-96801) before performing an online update.

NOTE: The InServ Storage Server is rebranded as HP 3PAR Storage System. There are instances in this document where menu items and command output refer to the HP 3PAR Storage System as InServ or InServ Storage Server.

The HP 3PAR OS version running on a storage system can be upgraded onsite with a CD by a service technician. The service technician can remotely access the Secure Service Collector Server to deploy a selfinstall package and upgrade a storage system software.

NOTE: All references to SPMAINT are using SSH or serial port connectivity. SPMAINT on the web (SPOCC interface) might have different menu options.

The Service Processor (SP) updating the HP 3PAR OS on the storage system must be running SP level 4.3.0. If the SP level is below 4.3.0, use the *HP 3PAR Service Processor Software 2.5.2 Upgrade Instructions* (PN QR482-96084) to upgrade to SP 4.1.0 (MU2) first then follow the *HP 3PAR Service Processor Software 4.1.0 MU2 Upgrade Instructions* to update the SP software to SP level 4.3.0.



WARNING! For HP 3PAR OS 3.1.2 or later, Adaptive Optimization (AO) is implemented on the nodes together with an on-node version of System Reporter (SR). After upgrading to HP 3PAR OS to 3.1.2.278 (GA) or later, AO must be configured on the nodes; AO implemented by external SR does not work for systems running HP 3PAR OS 3.1.2. There is no direct conversion from external System Reporter-based AO configurations and HP 3PAR OS 3.1.2 AO. For additional information on how to configure AO on-node, see the *HP 3PAR CLI Administrator's Guide*.

NOTE: HP 3PAR Management Console must be at version 4.6.

NOTE: An SP enabled with Secure Network Mode can be updated onsite either by a CD-ROM or by a selfinstall package type available on the Secure Service Collector Server.

Updating the HP 3PAR OS must be performed only by trained service technicians familiar with the HP 3PAR Service Processor and the SPMAINT utility. The HP 3PAR OS 3.2.1.46 release is for use on production systems. This release can be directly installed on systems running HP 3PAR OS 3.1.2.484 (MU3) + P41, 3.1.2.484 (MU3) + P41 + patches, 3.1.2.592 (MU5), 3.1.2.592 (MU5) + Patches, 3.1.3.230 (MU1), and 3.1.3.230 (MU1) + Patches.

HP 3PAR OS update packages include updates for components including the OS, BIOS, cage firmware, and drive firmware. Individual component updates are applied if the current software and hardware configuration is operating below the version levels included in the update package. This OS update package includes the following versions of the OS and BIOS.

Table 1 Components and Versions

Component	Version
OS	3.2.1.46
BIOS	14.07.18
DC4 Firmware	2.64

Table 1 Components and Versions *(continued)*

Component	Version
NEMOE/MCU Firmware	4.61
DCN1/DCS1/DCS2 Firmware	3218

NOTE: After completing the OS update, apply any relevant patches.

For an installation update checklist included in this document, see [“HP 3PAR OS Update Checklist” \(page 31\)](#).

Any system using the CLI or SNMP clients must be upgraded to the new levels.

For information about using the Service Processor and the SPMAINT utility, see the *HP 3PAR Service Processor User Guide*.

2 Supported Update Types and Paths

HP 3PAR OS updates can be performed either online or offline. Online updates allow the hosts connected to the system to continue I/O activity, but for offline updates host I/O activity must be stopped. The following types of updates are supported:

- *Simple Update* - used when the OS maintenance level changes. An update is applied to all the nodes and nodes reboot, one at a time, automatically.
- *Advanced Update* - used when the OS maintenance level changes. An update is applied to all the nodes and user needs to reboot the node, one at a time, manually. Advanced update is only used in cases where a customer chooses to validate their environment before rebooting the next node. The duration of the pause between node reboots must be limited to 30 minutes.
- *Offline Update* - used when the customer requests an offline update, or when the system is operating several levels below the update package version. An offline update requires that all hosts connected to the Storage Server be shut down before the OS update. All nodes are updated and then rebooted at the same time. The system is unavailable to the hosts during this operation.

The following table lists the supported HP 3PAR OS level update paths.

Table 2 Update Types and Update Paths

Update from Current OS Level	Update to New OS Level
3.1.2.484 (MU3) + P41	3.2.1.46
3.1.2.484 (MU3) + P41 + Patches	3.2.1.46
3.1.2.592 (MU5)	3.2.1.46
3.1.2.592 (MU5) + Patches	3.2.1.46
3.1.3.230 (MU1)	3.2.1.46
3.1.3.230 (MU1) + Patches	3.2.1.46

NOTE: P41 is a mandatory patch that must be installed on HP 3PAR OS 3.1.2.484 (MU3) before upgrading to HP 3PAR OS 3.2.1.46. For more information, see *HP 3PAR OS 3.1.2 MU3 P41 Upgrade Instructions*.

NOTE: Upgrade to HP 3PAR OS 3.2.1 is supported on HP 3PAR StoreServ P10000 and 7000 systems only. HP 3PAR OS 3.2.1 is not supported on prior InServ systems.

NOTE: Direct upgrades from HP 3PAR OS earlier than HP 3PAR OS 3.1.2.484 (MU3) + P41 are not supported.

See the *HP 3PAR Service Processor Support Matrix* available at Single Point of Connectivity Knowledge (SPOCK) website <http://www.hp.com/storage/spock>. Select **3PAR** under the **Other Hardware** menu. Locate **Other HP 3PAR Support Matrices**. The *HP 3PAR Service Processor Support Matrix* is located under this menu.

NOTE: Software upgrades to HP 3PAR OS 3.2.1 GA for systems that are in a Remote Copy Synchronous Long Distance Replication relationships are currently not supported. HP 3PAR OS 3.2.1 support for these configuration will be enabled via P01.

NOTE: Software upgrades to HP 3PAR 3.2.1 GA for systems that use Remote Copy and CLX are currently not supported. HP 3PAR OS 3.2.1 support for these configuration will be enabled via P01.

To update a storage system using a console connection, proceed to [“Pre-Installation Requirements” \(page 8\)](#).

To update a storage system using SPOCC, proceed to [“Updating the HP 3PAR OS using SPOCC” \(page 27\)](#)

3 Pre-Installation Requirements

The following requirements must be satisfied before updating to HP 3PAR OS 3.2.1:

- Stop all system administration activities while performing an HP 3PAR OS online update. This includes any provisioning activity, physical or virtual copy activity, and snap removal and dynamic optimization. All active tasks must complete or be stopped before proceeding.
- The update path from HP 3PAR OS 3.1.2.484 (MU3) + P41, 3.1.2.484 (MU3) + P41 + Patches, 3.1.2.592 (MU5), 3.1.2.592 (MU5) + Patches, 3.1.3.230 (MU1), or 3.1.3.230 (MU1) + Patches directly to 3.2.1.46 is supported and an approved path.

Verifying the Service Processor Software Level

The Service Processor (SP) must be updated to the required SP software. To verify the level of SP software running on the SP for the system you are updating, log on to the SPMAINT utility to display the SP level.



WARNING! The SP level must be at SP 4.3.0.GA-17 or later to continue with this HP 3PAR OS update.

Check the SP Release Level

1. Connect to the SP.
2. From the SPMAINT main menu, enter: =1.1 (Display SP Version).
3. Verify that the SP version entry displays **SP-4.3.0.GA-17** or later.

An example output for SP software version 4.3.0.GA-17.

```
SP Software Version

SP-4.3.0.GA-17

SP Base Image Version:      Red Hat Enterprise Linux Server release 6.1
(Santiago)
SP Version:                 4.3.0.GA-17
SP Patches:
HP 3PAR OS release (3.1.2):  3.1.2.484
HP 3PAR OS patches (3.1.2):  41

More detail is available in the latest SPLOR or spconfig data.

Press <enter/return> to continue
```

If the SP software level does not meet the requirements for this HP 3PAR OS update, you must update the SP software before continuing with the HP 3PAR OS update installation.

4. From the SPMAINT main menu, enter: =1.13 (Display SP Status). Save the SP status output. You will require this output to compare it with the post upgrade SP status after you install the OS.
5. Confirm that the following basic processes are running.

Table 3 Example of Basic SP Processes

```
The following global procedures are running:
/sp/prod/code/csst/bin/spcollect
/sp/prod/code/csst/bin/SPcommctlr
```


Table 3 Example of Basic SP Processes *(continued)*

```
/sp/prod/code/csst/bin/spevent  
/sp/prod/code/csst/bin/SPnetmon  
/sp/prod/code/csst/bin/SPtransfer  
/sp/prod/code/csst/bin/stAnalyze  
/sp/prod/code/csst/bin/stBackDoor  
/sp/prod/code/csst/bin/stGrpNot  
/sp/prod/code/csst/bin/STlogger  
/sp/prod/code/csst/bin/stMonitor  
/sp/prod/code/csst/bin/stNotify
```

There are 10 httpd server processes running

spevent is running for the following clusters:
1699945 (s945)

spcollect processes are running as follows:

```
adlc      for 1699945 (s945)  
biosmsg   for 1699945 (s945)  
config    for 1699945 (s945)  
eeprom    for 1699945 (s945)  
environ   for 1699945 (s945)  
evtlog    for 1699945 (s945)  
memdata   for 1699945 (s945)  
perfdb    for 1699945 (s945)  
perform   for 1699945 (s945)  
status    for 1699945 (s945)
```

SSAgent run status -
agent is running

Press <enter/return> to continue

6. To return to the previous menu, press the **Enter** key.

Update the SP if Necessary

If you need to update the SP software level before installing the maintenance update, download the upgrade from the Secure Service Collector server or install it from a physical media.

4 Installing the HP 3PAR OS onto the Service Processor via CD

To install the HP 3PAR OS update from *HP 3PAR OS Release 3.2.1* CD onto the Service Processor:

1. Insert the HP 3PAR OS 3.2.1 Software CD into the SP media drive.
2. From the SPMAINT main menu, enter: `=1.16.2` (Update SP Software Revision).
3. Enter the number corresponding to CDROM.
4. After the message `Stage successfully completed` is displayed, press **Enter** to return to the SPMAINT main menu.
5. Enter: `=1.1` (Display SP Version).
6. Verify that the HP 3PAR OS release (3.2.1) entry displays **3.2.1.46-GA**.
7. Enter: `=1.13` (Display SP status)
8. Compare the postupgrade SP processes with the preupgrade SP processes listed before you applied the OS. For an example of the basic list, see the table [Example of Basic SP Processes \(page 8\)](#).

If the basic SP processes are running, you can now install the OS on the storage system.

If the basic SP processes differ after the installation, see the *HP 3PAR Service Processor Software Troubleshooting Guide*.

9. Remove the CD from the media drive and store it inside the cabinet.

You can now update the HP 3PAR OS software running on the storage system. Proceed to ["HP 3PAR OS Update Task Overview" \(page 13\)](#).

5 Deploying the HP 3PAR OS to the Service Processor via the Secure Service Collector

The following software upgrade can be applied to the service processor via the Secure Service Collector database.

- △ **CAUTION:** The SP level must be at SP-4.3.0.GA-17 before uploading a package. Using an earlier SP version to upload a package might cause a failure and require a rebuild of the SP software.
- △ **CAUTION:** Do not use a collector server SSH remote session to connect to the SP to perform an update. The connection resets during the update and update fails. The SP might require a rebuild of the software when an update fails.
- △ **CAUTION:** All SPmaint sessions must be stopped before deploying the package.

NOTE: The following procedure must be performed by an authorized administrator.

1. Establish a connection and log on to the Secure Service Collector.
2. Click the **Software** tab in the top right corner.
3. Click **Deploy packages to assets over the internet**.
4. Search and select the package for HP 3PAR OS 3.2.1.46 and click **Next**.
5. In the **Select Assets** table, select the MP device to which you want to download the package, and then click **Add Checked**.
6. Click **Next**.
7. Select **Schedule package for immediate deployment** option, and then click **Next**.

NOTE: Select **Schedule for later deployment** option only when specified by the customer. Ensure that a proper date and time values are specified.

8. To receive notifications as the package deploys, select the appropriate notification options, enter your contact information, and then click **Next**.
9. Review the confirmation information, and then click **Deploy**.
10. To check the status of the deployment, use the **Package Deployment Manager**. To refresh the page, press **F5**.

NOTE: It can take several hours to deliver the package from the Secure Service Collector to the SP.

11. After the deployment is complete, exit the session and log off.
12. From the SPMAINT main menu, enter: =1.1 (Display SP Version).
13. Verify that the HP 3PAR OS release (3.2.1) entry displays **3.2.1.46-GA**.
14. Enter: =1.13 (Display SP status).
15. Compare the postupgrade SP processes with the preupgrade SP processes listed before you applied the HP 3PAR OS package. For an example of the basic list, see the table [Example of Basic SP Processes \(page 8\)](#)

If the basic SP processes are running, you can now install the OS on the storage system.

If the basic SP processes differ after the HP 3PAR OS package installation, see the *HP 3PAR Service Processor Software Troubleshooting Guide*.

16. To return to the previous menu, press **Enter**.

17. Continue to [“HP 3PAR OS Update Task Overview”](#) (page 13)

6 HP 3PAR OS Update Task Overview

The HP 3PAR OS update process includes the following phases:

Pre-Update Tasks:

- [“Verifying the HP 3PAR OS Software Level” \(page 14\)](#)
- [“Verifying the Health of the Storage System” \(page 14\)](#)
- [“Performing Validation Routines” \(page 15\)](#)
- [“Staging the HP 3PAR OS from Service Processor” \(page 16\)](#)

Update Tasks:

- [“Updating the HP 3PAR OS Online” \(page 19\)](#)
- [“Updating the HP 3PAR OS Offline” \(page 22\)](#)

Post-Update Tasks:

- [“Verifying the Storage System Configuration” \(page 25\)](#)
- [“Updating Back-end Components” \(page 25\)](#)

A task checklist is available, see the [“HP 3PAR OS Update Checklist” \(page 31\)](#).

NOTE: Connections between CLI clients and the system might terminate during the update process. To maintain a CLI connection with the system during the update process, you must start an interactive CLI session with the SPMAINT utility.

7 Pre-Update Tasks

The following tasks must be performed before starting the HP 3PAR OS update process.

Verifying the HP 3PAR OS Software Level

The current HP 3PAR OS level must meet the supported update path requirements in [Table 2 \(page 6\)](#).

To verify the HP 3PAR OS level currently running on the storage system:

1. Start a CLI session from the SPMAINT main menu, enter: `=7` and then press **Enter**.
2. Select the desired storage system (StoreServ).
3. To display the HP 3PAR OS version, patch information, and the version numbers of other system components, enter: `showversion -a -b`. Verify that the HP 3PAR OS version in the output meets the supported update path requirements in [Table 2 \(page 6\)](#) Table 2.
4. Enter: `exit` and then press **Enter** to return to the SPMAINT main menu.

Verifying the Health of the Storage System

Before starting the HP 3PAR OS update, determine the current status and verify the overall health of the system with the SPMAINT utility.

Running a Health Check From the SPMAINT Utility

1. To start a health check from the SPMAINT main menu, enter: `=4 . 4` and then press **Enter**.
2. Enter the number corresponding to the storage system (StoreServ) you want to run the Health Check on and press **Enter**.
3. Enter: `y` to retrieve and transfer the check health data and press **Enter**.

```
Are you sure you want to retrieve and transfer
the check health data for StoreServ <StoreServ_Name>?
(y or n)
y
...

16:44.51 Checking health of alert
16:44.52 Checking health of cabling
16:44.52 Checking health of cage
16:44.53 Checking health of date
16:44.54 Checking health of file
16:44.55 Checking health of ld
16:44.56 Checking health of license
16:44.56 Checking health of network
16:44.57 Checking health of node
16:44.59 Checking health of pd
16:45.05 Checking health of pdch
16:45.06 Checking health of port
16:45.14 Checking health of rc
16:45.14 Checking health of snmp
16:45.15 Checking health of sp
16:45.15 Checking health of task
16:45.16 Checking health of vlun
16:45.16 Checking health of vv
```

4. After the health check completes gathering the data, the SP displays a list of files to view.

```
4.4.2 Show latest health check status from StoreServ
```

```
Available files

1      ==>    /sp/prod/data/files/1300338/status/110420.101029.all
2      ==>    /sp/prod/data/files/1300338/status/110420.101029.det
3      ==>    /sp/prod/data/files/1300338/status/110420.101029.err
4      ==>    /sp/prod/data/files/1300338/status/110420.101029.sum

0      ==>    Abort Operation

Please select a file to display
```

To view the available files, type the corresponding number and then press **Enter** to continue. Select the number corresponding to the data file with the .all extension and press **Enter**. After the file is reviewed, press **Enter** to continue, and then select option 0 to exit health check.

NOTE: The SPMAINT utility uses the `more` command to view files. Press the **spacebar** to move to the next page. After viewing the contents of the file, to exit press **Enter**. Then select 0 (Abort Operation) to return to the previous menu. After you return to the previous menu, the report is discarded. To view the health status again, run the health check again.

5. Review and correct any exceptions before performing an HP 3PAR OS update.

Performing Validation Routines

⚠ WARNING! In case of a failure of any test, it must be escalated to HP 3PAR Authorized Support Provider so that issues, if any, might be corrected before the HP 3PAR OS update. Failure to resolve an issue before the software update might cause unpredictable results.

To perform validation routines:

1. From the SPMAINT main menu, check the status of the system on which validation routines are to be performed. To check the status of the system, enter: **=4.7.1** on the SPMAINT main menu and press **Enter**.

```
4.7.1 StoreServ Upgrade Status
      Configured StoreSrvs
1      ==>    s945 --> 1699945
0      ==>    Abort Operation

Please select a StoreServ to operate on
```

2. Select the system and press **Enter**.

```
4.7.1 StoreServ Upgrade Status

StoreServ: s945
Current Version: 3.1.2.484

Upgrade Status:

System is not currently undergoing an online upgrade.
First node to be rebooted is node 3
Which will be followed by node 0
Which will be followed by node 2
Which will be followed by node 1
```

```
**MESSAGE: START State, No TPD upgrade in progress
**STATE:0
```

3. Press **Enter** to continue.
4. From the SPMAINT main menu, validate the system to ensure it is capable of performing an online update. To validate the system, enter: **=4.7.2** on the SPMAINT main menu and press **Enter**.

```
4.7.2   Validate Upgrade Status

          Configured StoreServs

1        ==>      s945 --> 1699945

0        ==>      Abort Operation

Please select a StoreServ to operate on
```

5. Select the system to perform the prevalidation scripts on, and then press **Enter**. Any problems discovered during the prevalidation checks must be resolved and then prevalidation checks must be repeated.

```
4.7.2   Validate Upgrade Status

-- Test Name ----- [ RESULT ]
-
Check Cluster Core Flags [ PASSED ]
Check License             [ PASSED ]
Check Local               [ PASSED ]
Check PD                  [ PASSED ]
check_rcopy               [ PASSED ]
Check VV                  [ PASSED ]
Check Upgrade             [ PASSED ]
Cleanup BIOS Symlinks     [ PASSED ]
Check Cluster Name Exists [ PASSED ]

<system_name> is in an acceptable state to perform a software upgrade
total_scripts: 9  passed: 9  failed: 0

Press <enter/return> to continue
```

6. Press **Enter** to continue.

Staging the HP 3PAR OS from Service Processor

This feature allows you to stage the specified HP 3PAR OS 3.2.1 package present on Service Processor to the specified Storage System.

NOTE: This feature can be used only if SP is at version 4.2 or later and the Storage System is running HP 3PAR OS 3.1.3 or later.

For instance, the Service Processor is at version SP-4.2 and the Storage System is not connected or the connected storage system is on 3.1.2. If HP 3PAR OS version 3.2.1 is staged at this time,

then it gets staged only on Service Processor. With this new feature, you can stage HP 3PAR OS 3.2.1 to the Storage System.

To perform staging on Storage System:

1. From the SPMAINT main menu, enter: **=4.7** and press **Enter**.

```
4.7    HP 3PAR Operating System Updates
StoreServ Product Maintenance Menu

Transfer media: ethernet Transfer status: Ok

Enter Control-C at any time to abort this process

1 ==> Storage System Upgrade Status
2 ==> Validate Upgrade Status
3 ==> Upgrade Storage System
4 ==> Pre-upgrade Stop Remote Copy Groups
5 ==> Post-upgrade Start Remote Copy Groups
6 ==> Pre-upgrade Defrag Check
7 ==> Post-upgrade Defrag Check
8 ==> Stage Update on Storage System

X ==> Exit to previous menu
```

2. Select menu option 8 and the press **Enter**.

```
4.7.8  Stage Update on Storage System

Configured StoreServes

1      ==>    s945 --> 1699945

0      ==>    Abort Operation

Please select a StoreServ to operate on
```

3. Select the appropriate Storage System and press **Enter**.

```
SPI0000C29C5F586

                4.7.8  Stage Update on Storage System

                Available OS Updates and Patches

1          ==>    OS-3.2.1.46-GA

Select 0 to abort

Please select an OS update or patch to stage on the Storage System
```

NOTE: If you select a Storage System which is running HP 3PAR OS version earlier than 3.1.3, staging cannot proceed and following error is displayed.

```
s945 is currently at OS level 3.1.2.278.  
s945 must be at OS level 3.1.3 or higher to stage software.  
  
Press <enter/return> to continue
```

-
4. Select the appropriate OS update or patch to stage on the Storage System and press **Enter**. The staging operation starts and displays the message when it is completed.

```
Staging OS-3.2.1.46-GA on s945...  
Staging completed successfully.
```

8 Updating the HP 3PAR OS Online

This procedure updates the HP 3PAR OS while the customer is actively using the storage system. A complete understanding of all the host connectivity is required and proper planning must be completed before performing an online update.

For planning assistance, review the *HP 3PAR Operating System Upgrade Pre-Planning Guide*. To obtain a copy of this documentation, go to <http://www.hp.com/go/3par>, navigate to your product page, click **Support** for your product, and then click **Manuals**.

See [Table 2 \(page 6\)](#) for supported HP 3PAR OS level update types and paths.

-
- ⚠ WARNING!** Performing an online update requires extensive planning. Review the *HP 3PAR Upgrade Pre-Planning Guide* (PN QL226-96801) before performing an online update.
-
- ⚠ WARNING!** All hosts must meet the online update requirements in the *HP 3PAR OS Upgrade Pre-Planning Guide* for 3.1.3 version. Any hosts not meeting the requirements must be shut down or logically disconnected before attempting an online update.
-
- ⚠ WARNING!** All hosts must be compatible to the current applicable *HP 3PAR Host Implementation Guide* and *HP 3PAR Configuration Matrix*.
-
- ⚠ WARNING!** For hosts using Veritas VxVM as the multi-pathing solution, the Veritas link restore interval needs to be set before attempting an online update. For more information about this, see *HP 3PAR Upgrade Pre-Planning Guide* (PN QL226-96801).
-
- ⚠ CAUTION:** Verify all Pre-Update Tasks on “[HP 3PAR OS Update Task Overview](#)” ([page 13](#)) are completed before proceeding with the online update.
-

The online update checks the HP 3PAR OS versions for update compatibility requirements and installs any required patches. The update script is interactive and requires user input before performing the update.

To update the HP 3PAR OS running on a storage system:

1. From the SPMAINT main menu, enter: **=4 . 7 . 3**, and select the storage system to be upgraded.
2. Select the appropriate option for Simple Upgrade or Advanced Upgrade, and then press **Enter**.
HP recommends that Advanced Upgrade be used only by qualified technicians authorized by HP to upgrade storage system software.
3. Select the new HP 3PAR OS version to use to update the system, select menu option for 3 . 2 . 1 . 46 -GA and press **Enter**. To proceed with the update, enter: **y** and enter the five digit number when prompted.
4. The online update tests run and display the results.
5. If any tests fail, you must enter the displayed five digit number to confirm and continue.

NOTE: Any test failure must be corrected before proceeding with the HP 3PAR OS upgrade. Bypassing any test error is not recommended, and may only be done if the test results, and any potential impact on the system upgrade and hosts is clearly understood and acknowledged.

6. Read all prompts. Answer **yes** at the final prompt to begin the update process.

- ⚠ CAUTION:** After you answer **yes** at the final prompt, you can not stop the update process.
-

NOTE: CLI connections are terminated in either of the following:

- A controller node with the active ethernet interface reboots and another controller node takes over the active ethernet interface
- Transition to a new workspace

CLI connectivity is automatically reestablished by the Service Processor.

NOTE: If onsite, monitor the controller node LED indicators for the cluster status.

7. After the update process is completed, press **Enter** to return to the SPmaint menu. Verify the health of the storage system. For more information, see [“Verifying the Health of the Storage System” \(page 14\)](#)
8. Start a CLI session from the SPMAINT main menu. To verify that all nodes are in an OK state and InCluster, enter: `shownode`.

```
cli% shownode
```

							Control	Data
	Cache							
Node	--Name---	-State-	Master	InCluster	-Service_LED	---LED---	Mem (MB)	Mem (MB)
	Available(%)							
0	1400227-0	OK	Yes	Yes	off	GreenBlk	4096	12288
	100							
1	1400227-1	OK	No	Yes	off	GreenBlk	4096	12288
	100							
2	1400227-2	OK	No	Yes	off	GreenBlk	4096	12288
	100							
3	1400227-3	OK	No	Yes	off	GreenBlk	4096	12288
	100							

9. Issue `showversion -a -b` command to verify the system is running HP 3PAR OS 3.2.1.46.

```
cli% showversion -a -b
Release version 3.2.1.46
Patches :

CLI Server          3.2.1.46
CLI Client          3.2.1.20
System Manager      3.2.1.46
Kernel              3.2.1.46
TPD Kernel Code     3.2.1.46
TPD Kernel Patch    3.2.1.46
...
```

NOTE: When displaying the `showversion` command output from the Service Processor, the CLI Client version is fixed in the SP code, and might differ from the output displayed on another system.

10. Enter: `exit`, and then press **Enter** to return to the SPMAINT main menu.
11. At this point, wait at least for five minutes before running the system health check process to ensure that the upgrade fully completes all associated tasks. For more information, [“Verifying the Health of the Storage System” \(page 14\)](#).

⚠ WARNING! For hosts using Veritas VxVM as the multi-pathing solution, the Veritas link restore interval can be set back to the original value. For more information about this, see *HP 3PAR Upgrade Pre-Planning Guide* (PN QL226-96801).

12. Post update task is run automatically after the upgrade for customer users on StoreServ 7000 series. For the other storage systems, Post update tasks are to be run manually. Check the status of post update task details in the upgrade log. In case of any errors, correct them and proceed to [“Post-Update Tasks” \(page 25\)](#).

9 Updating the HP 3PAR OS Offline

The offline update checks the HP 3PAR OS versions for update compatibility requirements and installs any required patches. The update script is interactive and requires user input before performing the update.

This is an offline update. All nodes are updated and then rebooted at the same time.

WARNING! No host I/O activity is permitted during an offline update.

CAUTION: See “Pre-Update Tasks” (page 14) and verify all tasks are completed before proceeding with the offline update.

To update the HP 3PAR OS running on the storage system:

1. To start a CLI session from the SPMAINT main menu, enter: **7** and press **Enter**.
2. To verify that the host is inactive, enter: **statport -host -ni**. There should not be any Host ports entry in the list.

```
cli% statport -host -ni
r/w   I/O per second      KBytes per sec      Svt ms      IOSz KB
Port  D/C      Cur   Avg   Max   Cur   Avg   Max   Cur   Avg   Cur   Avg Qlen
-----
total Data t      0    0          0    0          0.0  0.0  0.0  0.0  -
Press the enter key to stop...
```

3. To verify that physical copies are not in progress, enter: **showtask -all**.

```
cli% showtask -all
No tasks.
```

4. To return to the SPMAINT main menu, enter: **exit**.
 - a. Type **=4.5** and select the storage system (StoreServ) to reboot.
 - b. Type **a** to reboot all controller nodes and press **Enter**.
 - c. Type **y** to confirm system reboot and press **Enter**.
 - d. Type **y** to stop all I/O and reboot the system and press **Enter**.

NOTE: The CLI connection is terminated when the system reboots. Exit and restart the interactive CLI after the Storage Server reboots to establish a new session and then continue the process.

5. After the system successfully reboots, enter: **7** and press **Enter** to start a CLI session from the SPMAINT main menu.
6. Issue the **statport -host -ni** command to verify host is inactive. Host ports should not be listed.

```
cli% statport -host -ni
r/w   I/O per second      KBytes per sec      Svt ms      IOSz KB
Port  D/C      Cur   Avg   Max   Cur   Avg   Max   Cur   Avg   Cur   Avg Qlen
-----
```

```
total Data t      0      0      0      0      0.0 0.0 0.0 0.0 -
Press the enter key to stop...
```

7. Type `exit` and press **Enter** to exit the interactive CLI and return to SPMAINT main menu to begin an HP 3PAR OS offline update.
8. From the SPMAINT main menu, type `=4.7.3`, and select the menu number corresponding to the system to update then press **Enter**.
9. Choose the option 3 for offline upgrade type and press **Enter**.
10. Select the menu number corresponding to `3.2.1.46-GA` and press **Enter**.

```
4.7      StoreServ Upgrade

          Available OS levels

1         ==>    3.2.1.46-GA
2         ==>    3.1.3.202-GA
3         ==>    3.1.2.484
4         ==>    3.1.2.422
5         ==>    REVERT-3.1.2.484

Select 0 to abort

Please select an Software level to apply
```

11. The following confirmation message is displayed:

```
We are about to commence the offline upgrade on StoreServ s945 to 3.2.1.46-GA
Are you certain you wish to proceed?
(y or n)
y
```

Type **y** and then press **Enter**.

12. Type the five digit number that is displayed to confirm update and press **Enter**.
For example:

```
Please re-enter the following number - 35789 (x to quit) :35789
```

The duration of the update process varies depending on the system configuration.

13. When the update process is completed, press **Enter** to return to the SPMAINT main menu.
14. Verify the health of the storage system. For more information, see [“Verifying the Health of the Storage System” \(page 14\)](#).
15. From the SPMAint menu, enter: `=7` and then press **Enter** to start a CLI session from the SPMAINT main menu. Issue the `shownode` command to verify all controller nodes have rejoined the cluster.
16. Issue the `showversion -a -b` command to verify the system is running HP 3PAR OS 3.2.1.46.

```
<StoreServ_Name> cli% showversion -a -b
Release version 3.2.1.46
Patches:
...
```

17. Type `exit` and press **Enter** to exit the CLI session and return to the SPMAINT main menu.
18. At this point, wait five minutes before running the system health check process to ensure the upgrade fully completes all associated tasks, see [“Verifying the Health of the Storage System” \(page 14\)](#).

Post update task is run automatically after the upgrade for customer users on StoreServ 7000 series. For the other storage systems, Post update tasks are to be run manually. Check the status of post update task details in the upgrade log. In case of any errors, correct them and proceed to [“Post-Update Tasks” \(page 25\)](#).

10 Post-Update Tasks

The following tasks must be performed to complete the HP 3PAR OS update process.

Verifying the Storage System Configuration

⚠ WARNING! Communication errors between the SP and the StoreServ could result in the cluster being partially added to the SP. If this occurs, the cluster must be removed and added again for the SP to monitor and collect files from the system.

NOTE: This task is ONLY required if communication errors between the SP and the system are reported in the check health reports. A report is created at the end of the online or offline update tasks. This task will require the use of a storage system (StoreServ) Super user ID and password. Coordinate with the customer to obtain permission for usage of their login information.

At the end of the online or offline update tasks, if the check health or CLI access reports communication errors between the SP and the system, remove the added system from the SP cluster configuration and add it again.

1. From the SPMAINT main menu, type =3 . 1, and then press **Enter** to display cluster information.
2. Select the desired cluster and press **Enter**.
Record this information for future reference. The IP address is needed to add the storage system (StoreServ) to the SP configuration.
3. Type =3 . 4, and then press **Enter** on the SPMAINT main menu to remove a system from the SP cluster configuration.
4. Select the appropriate system and press **Enter**.
5. Type y and press **Enter** for confirmation.
6. Type =3 . 2 and press **Enter** on the SPMAINT main menu to add a system to the SP cluster configuration.
7. After providing user ID and password, when prompted for the system IP address, type the IP address for the system and press **Enter**.

```
...  
Cluster <StoreServ_Name> running code level 3.2.1.46  
Cluster add complete
```

Updating Back-end Components

Perform the back-end update tasks such as setting the sparing algorithm for the system or updating drive and cage firmware.

1. Start a CLI session from the SPMAINT main menu, type =7, select the storage system (StoreServ), and press **Enter**.
2. To view SparingAlgorithm settings of the storage system, enter: `showsys -param .`
3. If the SparingAlgorithm parameter of the `showsys` CLI command is set to Unknown, define the parameter the storage system will use for future hardware upgrades. To define the parameter, use the command `setsys SparingAlgorithm <value>` where <value> can be Default, Minimal, Maximal, or Custom. If the parameter is already defined, skip this step.
4. Issue the `starttask admithw -ni` CLI command to complete the back-end updates.
5. To monitor the progress and successful completion, issue the `showtask -d <task_ID>` command.

6. Run the check health process as described in [“Verifying the Health of the Storage System” \(page 14\)](#). Verify the system does not have any issues.

This concludes the HP 3PAR OS upgrade.

11 Updating the HP 3PAR OS using SPOCC

The HP 3PAR OS can be updated to version 3.2.1 by using Service Processor Onsite Customer Care (SPOCC). Supported browsers for SPOCC are Internet Explorer version 9, version 10 and Firefox version 28 and version 29.

1. Login to SPOCC with the SP IP address. Enter the SP IP address into a supported browser.
 - https://<SP_IP_address>
2. Click the **Support** tab and then click **Health Check**. A system health check is performed. View the report and resolve issues, if any.
3. To return to the SPOCC main page, click the **Home** tab.
4. Click the **Update** tab and then click **Update HP 3PAR OS**.
5. On the *Start* step click **Next**.

NOTE: To exit the update interface at any time, click any of the tabs in the left navigation pane, or click Cancel to return to the SPOCC home page.

6. On the *Select OS version* step, select one of the following options, depending on the location of the OS version that you want to upgrade to:
 - **Pre-loaded**—By default, this option is selected and populated with the latest OS version that is available. The list includes all loaded updates and patches in addition to a Revert last patch option.
 - **ISO image**—This option enables you to browse to a local ISO image file.
 - **Service Processor DVD drive**—This option enables you to import the update from the SP's physical media drive.
 - **Location path**—(HP authorized users only) This option enables HP authorized users to specify the location path of a directory that contains the software RPMs.

Click **Next**.

NOTE: If you selected the ISO image, Service Processor DVD drive, or Location path option, the load operation occurs automatically, and the OS software version is displayed as the Pre-loaded default option.

7. The Review documentation and responsibilities page appears with links to the current HP 3PAR OS release notes, and the HP Support Center. Review the recommended documentation and best practices information. After reviewing the information, click the acknowledgement check box and then click **Next**.
8. On the *Select update method* step, select either **Online** or **Offline**, and then click **Next**.

NOTE:

- HP recommends that you use the online update method. The offline update method will cause service to be interrupted.
 - The Offline option is unavailable, when applying a patch to the OS or reverting a patch. The Online option is unavailable, when reverting to the prior OS version.
-

9. On the *Check hosts* step, review the persistent ports setting to verify that it is configured, and then click **Next**.

NOTE:

- The persistent ports feature helps to ensure that connectivity is not lost as nodes are rebooted during the online upgrade process. HP recommends that this feature be configured.
- If the persistent ports feature is not configured correctly and you are performing an online update, you will need to compare your host configuration to the supported configurations that are listed on the Single Point of Connectivity Knowledge for HP Storage Products (SPOCK) website:

<http://www.hp.com/storage/spock>

- To export host data information in a CSV format that can be loaded into a spreadsheet, click **Export Host Data**.
- For more information about your persistent ports configuration, click **More on Persistent Ports**.

-
10. On the *Validate StoreServ readiness* step, allow the checks to run, and review the results. You can view detailed results of the checks by clicking the **details** links. If issues are detected, you can resolve them and then click **Re-run Validation** to run the checks again without exiting this update interface.

Click **Next**.

11. On the *Install update* step, review the update version and options you selected, and then click **Install**.

-
- ① **IMPORTANT:** An update procedure cannot be canceled after it starts.
-

NOTE: If an update installation is currently in progress, you will receive the following message:

The update process cannot proceed because an update is already in progress

In this case, click **OK** and you are redirected to the **Updating HP 3PAR OS** status page.

On the **Updating HP 3PAR OS** status page, you can monitor the status of the update: in progress, successful, or failed. If the update fails, contact HP Support.

This concludes the HP 3PAR OS upgrade.

NOTE: Post update task is run automatically after the upgrade for customer users on HP 3PAR StoreServ 7000 series. For the other storage systems, Post update tasks are to be run manually.

12 Known Issues

Potential sysmgr core at upgrade on systems with AIX and HP-UX hosts. (Issue ID 67582)

There is an issue with how AIX and HP-UX hosts are handled in managing their state between sysmgr and the kernel and it might result in unresponsive sysmgr. This can cause an issue during an upgrade.

Workaround: Examine `showhost` before the upgrade and confirm that all expected entries are present. For missing entries, use `controlport rst` on the port.

Tasks on the array can be ran by local users only. (Issue ID 69962)

Tasks like `tunesys` can be run by local users only since the system authenticates users before running these tasks. LDAP user credentials are not maintained locally on the array's persistent repository. Therefore, LDAP users fail authentication and tasks cannot run.

Workaround: Use a local user for tasks like `tunesys`.

Renaming a CPG when tunesys is running might cause tunes to fail. (Issue ID 101049)

The `tunesys` command can generate a large number of tune commands during the analysis phase. If a CPG is renamed before the generated tunes are executed, the tunes might fail.

Workaround: Do not change the name of CPGs when `tunesys` is running.

Upgrade issue (Issue ID 104955)

After upgrading to HP 3PAR OS 3.2.1, `admithw scheds` must be called to ensure that the scheduler is updated with the `schedule checkiperfserver`.

tunesys - inter-node tuning phase will skip small volumes (Issue ID 107400)

The analysis technique used to determine when inter-node tuning is required skips small volumes. These are volumes which if created in isolation would not spread to all possible nodes given the RAID type and set size of the volume. This is by design.

A full system might become unresponsive during a two node system online upgrade from HP 3PAR OS 3.1.2.GA to HP 3PAR OS 3.1.2.MU2 and HP 3PAR OS 3.1.2.MU3. (Issue ID 110704)

A full system might become unresponsive during a two node system online upgrade from HP 3PAR OS 3.1.2.GA to HP 3PAR OS 3.1.2.MU2 and HP 3PAR OS 3.1.2.MU3. This issue arises when the node to be upgraded is unresponsive or is rebooted without using the `upgradesys` command.

Workaround: Revert the upgraded node and restart the online upgrade.

MPIO errors (Issue ID 111310)

MPIO errors

Workaround: For Windows Peer Persistence support, the recovery procedure must be updated to include a manual disk rescan from Windows Disk Management. The manual disk rescan must be performed after the `setrcopygroup recover` command is issued and before the replication is switched back to its original direction.

13 Documentation feedback

HP is committed to providing documentation that meets your needs. To help us improve the documentation, send any errors, suggestions, or comments to Documentation Feedback (docsfeedback@hp.com). Include the document title and part number, version number, or the URL when submitting your feedback.

A HP 3PAR OS Update Checklist

This checklist is provided as an assurance tool for the service technician. This checklist does not include important information about the update process so do not attempt to update a storage system before reading the entire document.

Task	Description	Done
Update the Service Processor		
1	"Installing the HP 3PAR OS onto the Service Processor via CD" (page 10)	
Pre-Update Tasks		
2	"Verifying the HP 3PAR OS Software Level" (page 14)	
3	"Verifying the Health of the Storage System" (page 14)	
Update Tasks		
4	"Updating the HP 3PAR OS Online" (page 19)	
	"Updating the HP 3PAR OS Offline" (page 22)	
Post-Update Tasks		
5	"Verifying the Storage System Configuration" (page 25)	
6	"Updating Back-end Components" (page 25)	
Update Tasks		
7	"Updating the HP 3PAR OS using SPOCC" (page 27)	