



**Hewlett Packard  
Enterprise**

# **HPE 3PAR OS 3.3.1 Technology Release T05 Release Notes**

## **Abstract**

This document describes the features and issues included in HPE 3PAR OS 3.3.1 Technology Release T05 and is intended for use by Hewlett Packard Enterprise customers, partners and field representatives.

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# HPE 3PAR OS 3.3.1 Technology Release T05 Release Notes

## Summary

Technology Release is a new type of HPE 3PAR OS release built on an existing, active 3PAR OS release stream, intended to enable new technologies on current 3PAR platforms. Technology Releases ease deployment of new technologies in 3PAR arrays by eliminating the need to adopt a 3PAR OS major release. They separate updates and fixes (deployed in Maintenance Updates) from new technology enablement, allowing you to pick a path that suits your environment.

Technology Releases are only intended to be used on arrays where the newly enabled technologies will be deployed. Read the release notes carefully and only update to a Technology Release when deploying one or more of the technologies it supports. Other arrays will not benefit from updating to Technology Releases and should remain on a prior release until a new release is available.

Technology Releases are only supported until six months after a superseding Maintenance Update is available for the given 3PAR OS major release stream. Technology Releases are otherwise fully supported in the same way as all other regular releases.

3PAR OS 3.3.1 Technology Release T05 enables the following new technologies:

- NVMe Storage Class Memory (SCM) Module for Caching
- 32Gb Fibre Channel (Gen6) Add-on adapter for host connectivity

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**NOTE:** When the next 3.3.1 Maintenance Update (that supersedes 3.3.1 Technology Release T05) is available, HPE will require arrays running 3.3.1 Technology Release T05 to update to that Maintenance Update within six months.

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## Update Considerations

The HPE 3PAR OS should only be updated to T05 when deploying one of the newly supported technologies.

The HPE 3PAR OS can be updated concurrently with I/O activity on the attached hosts, provided certain conditions are met. For more information on planning for online upgrades, refer to the latest version of the *HPE 3PAR Operating System Upgrade Pre-Planning Guide*. To obtain a copy of this documentation, go to the [Hewlett Packard Enterprise Information Library](#).

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**!** **IMPORTANT:** If upgrading from an earlier version of 3.3.1 to 3.3.1 Technology Release T05, see the [HPE 3PAR OS and Service Processor Software Update Guide \(HPE 3PAR OS 3.3.1 HPE 3PAR Service Processor 5.x\)](#) for instructions on updating your specific software.

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**OS upgrade prerequisite:** The latest Upgrade Tool must be staged prior to the HPE 3PAR OS upgrade to 3.3.1 Technology Release T05. The Upgrade Tools are 3PAR OS upgrade enabling patches that do not affect array operation outside of the upgrade process. These tools are intended to improve the online or offline upgrade experience by performing preparatory steps to ensure the StoreServ is in a known state. These steps include prechecks, post-checks, and other validations.

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**⚠** **CAUTION:** It is highly recommended that the array has all available and applicable patches applied before beginning the upgrade to 3.3.1 Technology Release T05.

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# Supported Platforms

For information regarding the supported HPE 3PAR StoreServ Storage systems, see the HPE Single Point of Connectivity Knowledge (SPOCK) website:

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

The minimum Service Processor version that supports HPE 3PAR OS 3.3.1 Technology Release T05 is Service Processor (SP) 5.0.4.1.

## Perform the updates from 3.2.2, 3.2.1:

1. Load and update the SP to 4.5.MU4 (4.5.0.GA-107).
2. Perform an OS update to 3.3.1.MU4 T05.
3. Update the SP from 4.5.MU4 to SP-5.0.4.0-25509.
4. Apply SP-5.0.4.1-25801.
5. Run the post update tasks, such as `admi thw` and `checkhealth`.

## Perform the updates from 3.3.1:

1. Load and update the SP to SP-5.0.4.1-25801.
2. Perform OS update to 3.3.1.MU4 T05 with `admi thw` selection.
3. Run `checkhealth` and review the results.

## Notes

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# HPE 3PAR OS 3.3.1 Technology Release T05 Operating System Release Notes

## What's New in the OS

New and enhanced features include:

### HPE 3PAR OS 3.3.1 Technology Release T05

- **NVMe SCM module for caching:** HPE 3PAR leverages Storage Class Memory devices accessed over an NVMe interface to provide an application-centric acceleration layer that takes advantage of the

low-latency, high-performance nature of SCM, while allowing them to share the same underlying storage as other workloads.

- **32Gb Fibre Channel (Gen 6) Add-on Adapter:** Enables new 32Gb FC adapters to be used for host access, delivering higher bandwidth and lower latency than ever before.
- **VMWare VASA/VVol provider enhancements:**
  - Support for IPv6
  - Granular compression support on a per-VVol basis
  - Adaptive Flash Cache support on a per-VVol basis
  - Support for the brand-new NVMe SCM caching on a per-VVol basis
  - Increased scalability to 3,000 VVols VMs and 64 ESXi hosts
- **Remote Copy enhancements:** Add Volumes to existing Remote Copy Groups without disrupting the replication of existing volumes in the Group.
- **Security:** Storage administrators can now delegate the extended role, `security_admin`, to different 3PAR storage administrators. This role allows user management, such as creating and deleting of users, without having to be a Super User.
- 3PAR OS 3.3.1 introduced write-back mode for 2N systems running in single-node mode (during reboot or failure of a node). This avoids the large performance penalty associated with write-through mode. With T05, this policy is enabled by default for 2N systems.
- Adds Automatic Drive Log Collection (ADLC) for PM1643 drives.
- System parameters `AllowWrtbackSingleNode` and `AllowWrtbackUpgrade` can be set to continue caching when in a single node state for up to the specified number of days. Once past that, volumes will go into write-through. The default is seven days. This feature is supported on two node StoreServ 8000, 9000, 20000 and 20000 R2 systems.

## Modifications to the HPE 3PAR OS

The following issues have been addressed in this release.

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**Issue ID:** 156372

**Issue summary:** VASA Provider gateway fails to start.

**Affected platforms:** All StoreServ

**Affected software versions:** 3.2.2 MU2

**Issue description:** VASA Provider gateway lacks a certificate to use, and fails to start.

**Symptoms:** VASA Provider gateway does not start, which will appear as an alert in `checkalert`, indicating the `vasa_https_gw` was unable to start up.

**Conditions of occurrence:** The storage system has no VASA server certificate. The VASA provider is configured by default to server-managed configuration mode.

**Impact:** Low

**Customer circumvention:** None.

**Customer recovery steps:** Run `stopvasa`, generate a VASA server certificate using `createcert` (refer to the 3PAR ESX/ESXi Implementation guide), and run `startvasa`.

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**Issue ID:** 159366

**Issue summary:** Cloning a VVol-based Virtual Machine (VM) is slower than cloning one stored on traditional LUN-based storage.

**Affected platforms:** All StoreServ

**Affected software versions:** 3.2.1 MU2 - MU5, 3.2.2 GA - MU6, 3.3.1 GA - MU3

**Issue description:** When you clone VMs using a traditional VMFS file system on a storage LUN, all the data cloning operations are performed by the ESX through the host paths or through array-based SCSI XCOPY. While backed by VVols, the clone task is offloaded to the array.

**Symptoms:** Cloning a VM between within the same storage container, or between storage containers on the same array, can appear much slower, than if the VM were hosted on a VMFS datastore, or cloned between VVol datastores hosted on different arrays.

**Conditions of occurrence:** Using VVol backed storage and cloning VMs.

**Impact:** Low

**Customer circumvention:** None.

**Customer recovery steps:** After the task is initiated by the vSphere administrator, the storage administrator can identify the clone task using `showtask`, and then changing the task priority using `settask -pri high <task id>`. A unique task is initiated for every virtual disk associated with the VM.

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**Issue ID:** 216866

**Issue summary:** Syslog mirroring does not work for UDP servers.

**Affected platforms:** All StoreServ

**Affected software versions:** 3.3.1 MU1 - MU3

**Issue description:** Only the first of multiple UDP Syslog servers will be connected.

**Symptoms:** Configuring Multiple UDP syslog servers will result in a connection to only one.

**Conditions of occurrence:** Multiple UDP syslog servers are configured.

**Impact:** Low

**Customer circumvention:** Use multiple TCP or TLS syslog servers instead of UDP.

**Customer recovery steps:** None.

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**Issue ID:** 218883

**Issue summary:** 3PAR 16G Host Bus Adapters auto-negotiate to Brocade switches at 8G instead of 16G.

**Affected platforms:** All StoreServ

**Affected software versions:** 3.3.1 GA MU1 - MU3

**Issue description:** 3PAR 16G Host Bus Adapters auto-negotiate to Brocade switches at 8G instead of 16G.

**Symptoms:** Switch sometimes auto-negotiates to 8G when connected to StoreServ 16G HBA.

**Conditions of occurrence:** Since this issue is a timing issue, the occurrence could be intermittent or consistent to a few ports.

**Impact:** Medium

**Customer circumvention:** Configure 16G ports with the issue to enable TTS using the following command.

```
portcfgfec --enable -tts <port>
```

**Customer recovery steps:** None.

---

**Issue ID:** 224407, 241119

**Issue summary:** Quorum Witness is not in Started state. There is no alert.

**Affected platforms:** All StoreServ

**Affected software versions:** All

**Issue description:** When Quorum Witness is stopped due to online upgrade or user running manual command, and is not restarted, there is no warning that Quorum Witness is not in Started state. Automatic Transparent Failover (ATF) is not operational.

**Symptoms:** None.

**Conditions of occurrence:** Create Peer Persistence configuration, enable `auto_failover` policy, and start the groups, without creating and starting the Quorum Witness.

**Impact:** High

**Customer circumvention:** Check Quorum Witness status by running `showrcopy -qw`. Depending on the status, run the following commands on both arrays to bring QW to Started state.

To create QW:

```
# setrcopytarget witness create <IP of quorum witness> <target_name>
```

To start QW:

```
# setrcopytarget witness start <target_name>
```

**Customer recovery steps:** None.

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**Issue ID:** 235834

**Issue summary:** Certain drive models may lose writes which occurred prior to a self initiated reset.

**Affected platforms:** All StoreServ

**Affected software versions:** 3.2.2 MU4 - MU6, 3.3.1 GA - MU3

**Issue description:** Certain drive models are marked as failed to avoid data inconsistency due to dropped writes when drives undergo self-reset.

**Symptoms:** Data inconsistency.

**Conditions of occurrence:** Drives may reset themselves due to issues within the drive firmware.

**Impact:** High

**Customer circumvention:** None.

**Customer recovery steps:** Use `checkld`, `checkvv`, or any host-based consistency check if a physical disk has failed with a detailed state containing `Miscompare`.

---

**Issue ID:** 237034

**Issue summary:** SAS port resets when `admithw` is executed on an array.

**Affected platforms:** StoreServ 7000

**Affected software versions:** 3.3.1 GA - MU3

**Issue description:** SAS port hard resets are initiated when `admithw` is executed on an array with Gen2 SAS Host Bus Adapter (HBA) cards. This reset occurs even when the firmware is up-to-date.

**Symptoms:** SAS port resets.

**Conditions of occurrence:** `admithw` is run on an array running 3PAR OS 3.3.1 with non-9300 HBA cards.

**Impact:** Medium

**Customer circumvention:** None.

**Customer recovery steps:** None.

---

**Issue ID:** 237143

**Issue summary:** Data becomes unavailable during node down recovery.

**Affected platforms:** All StoreServ

**Affected software versions:** All

**Issue description:** When one node is in node down recovery, one of the other nodes tries an IPC request and does not succeed. This causes all the nodes to go down, and data becomes unavailable.

**Symptoms:** Data is unavailable during node down processing.

**Conditions of occurrence:** During a node down recovery, one of the other nodes retries an IPC request. A response is received before the send request is completed.

**Impact:** High

**Customer circumvention:** None.

**Customer recovery steps:** None.

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**Issue ID:** 238724, 239312

**Issue summary:** As the number of active vLUNs increases for traditional host-to-virtual-volumes, VVol-based Virtual Machine (VM) operations may fail, or vSphere may report the VASA provider as offline or disconnected.

**Affected platforms:** All StoreServ

**Affected software versions:** 3.2.1 MU2 - MU6, 3.2.2 GA - MU6, 3.3.1 GA - MU3

**Issue description:** When a vCenter first connects to the VASA provider, the VASA provider will process all the available vLUNs available for all the ESXi hosts managed by that data center. A large number of vLUNs can cause the VASA provider to stop responding, either because it takes too long to process all the vLUNs, or because the VASA provider runs out of memory due to fragmentation after processing many of the same requests.

**Symptoms:** VASA provider's memory usage may report above 3 GB as shown by `showvasa`.

VVol-based VM operations such as creation, cloning, snapshotting, power on, power off, or deletion may fail.

The VASA provider may appear as `offline` or `disconnected` in the vCenter's storage providers user interface.

Reregistering or registering a new vCenter with the VASA provider will take longer than 60 seconds.

**Conditions of occurrence:** There are at least (or more than) ~6,000 vLUNs (all paths, not just LUN templates) on the array. Use `showv1un -a` to determine the current number of active vLUNs.

**Impact:** Medium

**Customer circumvention:** If possible, reduce the number of paths per host (as shown by `showhost`), such as from 16 down to 8 or 8 down to 4. Or, if VV and/or Host sets are used, validate if connections between all hosts and VVs in those sets are required. If not, use more granular/smaller host and/or VV sets to create the vLUNs. Changes to host paths or vLUN templates should only be done by personnel with an intimate knowledge of the host to VV connectivity requirements.

**Customer recovery steps:** None.

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**Issue ID:** 239314

**Issue summary:** When the VASA provider runs out of memory while creating a session for a vSphere client (ESXi or vCenter), it can cause a block. This block prevents new connections from vSphere clients from being established. Existing VASA sessions continue to function, but VASA clients are unable to establish a new session. The VASA provider may appear as encountering a `Sync Error` or disconnected in the vCenter's storage provider's dialog. ESXi hosts may be unable to connect to VVol datastores preventing management of VVol-based VMs.

**Affected platforms:** All StoreServ

**Affected software versions:** 3.3.1 GA - MU3

**Issue description:** When the VASA provider runs out of memory while creating a session, it can cause a block. Existing VASA sessions will continue to function. VASA clients (ESXi or vCenter) will be unable to establish a new session.

**Symptoms:** While existing VVol-based VMs will continue to run, some ESXi hosts may not be able to perform new VM operations, such as VM-create or VM power-on. If an ESXi client reboots, it will not be able to manage VVol-based VMs. Additionally, the VASA provider may appear as Offline, with a sync-error, in the vCenters Storage Provider's user interface.

**Conditions of occurrence:** VASA provider runs out of memory.

**Impact:** Low

**Customer circumvention:** None.

**Customer recovery steps:** Run `stopvasa`, then `startvasa`.

---

**Issue ID:** 239621, 244597

**Issue summary:** iSCSI target ports incorrectly set a field in the iSCSI Protocol Data Unit (PDU) causing I/O stalls.

**Affected platforms:** All StoreServ

**Affected software versions:** 3.2.1, 3.2.2, 3.3.1 GA - MU2

**Issue description:** Under high CPU load, iSCSI target ports incorrectly set a field in the iSCSI PDU. This leads to I/O stalls.

**Symptoms:** I/O stalls.

LUN disconnects.

**Conditions of occurrence:** High CPU load on the Array.

**Impact:** Medium

**Customer circumvention:** None.

**Customer recovery steps:** None.

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**Issue ID:** 239690, 242520, 246393

**Issue summary:** An incomplete command from a server causes a 3PAR Fibre Channel port to reset.

**Affected platforms:** All StoreServ

**Affected software versions:** 3.3.1 EGA - MU3

**Issue description:** A 3PAR FC port resets if a faulty server port sends incomplete command requests. The server will be unable to access the 3PAR port, and ELS commands from the server are rejected.

**Symptoms:** FC port resets.

**Conditions of occurrence:** This occurs with a specific chassis and host bus adapter.

**Impact:** Low

**Customer circumvention:** None.

**Customer recovery steps:** None.

---

**Issue ID:** 242378, 244543

**Issue summary:** Data Inconsistencies may be seen during volume migration of non-ALUA hosts if proper migration procedure is not followed.

**Platforms affected:** All StoreServ

**Affected software versions:** 3.3.1 MU1 - MU3

**Issue description:** When migrating volumes which are exported to non-ALUA hosts, if unzoning the source array as required by the proper migration procedure is not followed, Data Inconsistencies may be seen on the volumes being migrated. Failure to perform the unzoning operation is not a supported procedure. The migration tools clearly prompt with the message to perform unzone operation, perform the same before proceeding with the subsequent migration steps.

**Symptoms:** The hosts or the applications at the hosts may not function as expected due to Data Inconsistency on the volumes.

**Conditions of occurrence:** Non-ALUA hosts are migrated and the proper procedure of unzone operation is not followed.

**Impact:** Medium

**Customer circumvention:** Follow the proper migration procedure by following the prompts from migration tools for the unzone operation when migrating non-ALUA hosts.

**Customer recovery steps:** None.

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**Issue ID:** 242656, 243675

**Issue summary:** Controller node restarts when Data Integrity Field (DIF) error results during write operation on compression volumes.

**Platforms affected:** StoreServ 8000, StoreServ 20000, StoreServ 20000 R2

**Affected software versions:** 3.3.1 GA - MU2

**Issue description:** Controller node restarts when DIF error results during write operation on compression volumes.

**Symptoms:** Controller node controller restart.

**Conditions of occurrence:** Presence of compression volumes.

**Impact:** Medium

**Customer circumvention:** None.

**Customer recovery steps:** None.

---

**Issue ID:** 245154

**Issue summary:** System Manager restarts while running `importvv` or online copy.

**Affected platforms:** All StoreServ

**Affected software versions:** 3.3.1 GA - MU3

**Issue description:** System Manager restarts while running `importvv` or online copy.

**Symptoms:** System Manager restarts.

**Conditions of occurrence:** This occurs while running `importvv` or online copy.

**Impact:** High

**Customer circumvention:** Avoid running `importvv` and `Onlinevvcopy`.

**Customer recovery steps:** Auto recover after restarting System Manager.

---

**Issue ID:** 245417, 246544

**Issue summary:** During an online upgrade, the first node to reboot fails to rejoin the cluster.

**Affected platforms:** All StoreServ

**Affected software versions:** 3.2.2 GA - MU6, 3.3.1 GA - MU3

**Issue description:** The Host Bus Adapter (HBA) port gets stuck in reset.

**Symptoms:** Port resets.

**Conditions of occurrence:** Online upgrade is being performed.

**Impact:** Medium

**Customer circumvention:** None.

**Customer recovery steps:** Perform a hard reset of the port and reboot the node.

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---

**Issue ID:** 247901, 202616

**Issue summary:** Firmware core dump and port reset.

**Affected platforms:** All StoreServ

**Affected software versions:** 3.2.2 GA - MU6, 3.3.1 GA - MU3

**Issue description:** Host abort sequences or I/Os time out. The port resets as part of firmware core dump. There is an unterminated exchange in the Host Bus Adapter firmware.

**Symptoms:** Port reset occurs.

**Conditions of occurrence:** Host ports are under high load, or high service time.

**Impact:** Medium

**Customer circumvention:** None.

**Customer recovery steps:** None.

---

**Issue ID:** 249430, 249429

**Issue summary:** The `startcopygroup` times out after three minutes.

**Affected platforms:** All StoreServ

**Affected software versions:** 3.3.1

**Issue description:** After a Remote Copy group failover, the `startcopygroup` command issues from the primary side times out after three minutes.

**Symptoms:**

**Conditions of occurrence:** Primary array is running 3.2.2, and secondary is running 3.3.1.

**Impact:** Medium

**Customer circumvention:** None.

**Customer recovery steps:** None.

---

---

**Issue ID:** 249472, 243914, 243915, 228811, 240811

**Issue summary:** Panic under specific workloads (combined with `updatevv` operations) in `tdvv3`, when a cache page ends up being shared by both the base and snap `vv`, but the dedup is initiated for the snapshot.

**Platforms affected:** All StoreServ

**Affected software versions:** 3.3.1 GA - MU3

**Issue description:** When a previously written data pattern is written for the second time, the DDS triggers a conversion request to the original data block to convert its exception entry from DDC to DDS. In specific workloads (combined with `updatevv` operations), the original DDC entry belongs to a snapshot but the cache page belonging to this DDC block is shared with the base virtual volume. In this condition, the dedupe handler wrongly processes the base `vv` and updates the base virtual volume's counters causing the panic.

**Symptoms:** Kernel panic with assertion, Kernel panic[4]: `tpd: Assertion point: file: hat_vol.c, line: 8326 Assertion failed: cnt >= 0.`

Kernel panic with stack trace, BUG: unable to handle kernel NULL pointer dereference IP: [`<fffffffffffa00b72b5>`] `cmp_do_dln_del+0x58/0x85 [tpd]`.

**Conditions of occurrence:** VVs with deduplicable data where snapshots are present and `updatevv` operations happen.

**Impact:** High

**Customer circumvention:** Stop `updatevv` operations.

**Customer recovery steps:** The system will recover once the controller nodes reboot.

---

**Issue ID:** 249602, 200337, 244955

**Issue summary:** Insufficient space causes deduplication conversion to time out.

**Affected platforms:** All StoreServ

**Affected software versions:** 3.3.1 GA - MU3

**Issue description:** Insufficient space causes deduplication conversion to time out.

**Symptoms:** The `tunevv` conversion task takes double space and does not complete.

**Conditions of occurrence:** There is insufficient space in the storage system to run TDVV.

**Impact:** High

**Customer circumvention:** Ensure that the required space is available before starting conversion.

**Customer recovery steps:** Roll back the `tunevv` conversion task.

---

## Known Issues with the OS

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**Issue ID:** 249687

**Issue summary:** Remote Copy groups can remain in the `Started` state in the online OS software update. One or more Remote Copy groups may stop unexpectedly during the update process.

**Platforms affected:** All StoreServ

**Affected software versions:** 3.3.1 MU3 - MU4

**Issue description:** Remote Copy groups can be kept online (in the `Started` state) when online software updates are performed. Under some conditions, one or more Remote Copy groups may stop unexpectedly during the software update. Those groups can be restarted after the update completes.

**Symptoms:** On arrays configured with Remote Copy, one or more started Remote Copy groups stops unexpectedly during an online OS software update.

**Conditions of occurrence:** Remote Copy links are down for an extended time when controller nodes are restarted during the update.

**Impact:** Medium

**Customer circumvention:** None.

**Customer recovery steps:** Check Remote Copy group status using `showrcopy groups`. If a group is stopped, it can be started with the `startrcopygroup` command.

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## HPE 3PAR OS 3.3.1 Technology Release T05 File Persona Release Notes

### Modifications to File Persona

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**Issue ID:** 112990

**Issue summary:** The Server Message Block (SMB) service health monitor restarts the SMB service because of slow system response. This restart interrupts existing SMB client sessions.

**Affected platforms:** StoreServ 7000c, 8000, 9000, 20000, 20000 R2

**Affected software versions:** 3.3.1 MU1 - MU3

**Issue description:** On a system with a heavy load, system calls that take more than 20 seconds can cause the SMB stack to restart, which interrupts SMB client sessions.

**Symptoms:** During times of heavy use on the cluster, SMB clients experience session interruptions. These interruptions recover automatically, and can appear as a momentary pause in connectivity.

**Conditions of occurrence:** Heavy I/O loads or slow authentication responses can cause the SMB service health monitor to restart the SMB service.

**Impact:** Medium

**Customer circumvention:** None.

**Customer recovery steps:** None.

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**Issue ID:** 118971

**Issue summary:** SMB protocol access and user authentication services are unavailable on startup.

**Affected platforms:** StoreServ 7000c, 8000, 9000, 20000, 20000 R2

**Affected software versions:** 3.3.1 MU1 - MU3

**Issue description:** Each time the protocol and authentication services start, the services enumerate the domain controllers in the Active Directory (AD) forest and add them to a list, even if the domain controllers are already listed. The duplicate entries do not immediately cause an issue, but if the list becomes sufficiently long, the services no longer start successfully. This issue is more likely to occur in systems connected to large AD forests.

**Symptoms:** High CPU utilization. Loss of access to SMB protocol and authentication services.

**Conditions of occurrence:** Restart of protocol services several times, accelerated in proportion to the number of domain controllers in the AD forest.

**Impact:** High

**Customer circumvention:** None.

**Customer recovery steps:** None.

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## HPE 3PAR OS 3.3.1 Technology Release T05 CLI Release Notes

### What's New in the CLI

- Enhanced the System Reporter CLI commands to display three decimal digit precision service times.
- Added system parameter to allow altering domain user allowed actions.
- Adds help text related to the enhancements to support display of shared VVols in `showvvolm`.

### Changed Commands

---

Command	Description
<code>admithw</code>	<code>-tune</code> added.
<code>AllowWrtbackSingleNode</code> <code>AllowWrtbackUpgrade</code>	Default changed from 0 days to 7.
<code>createflashcache</code>	SCM support added. <code>-nocheck_scm_size</code> added.
<code>setsys</code>	Added <code>AutoAdmitTune</code> <code>AllowDomainUsersAffectNoDomain</code> .
<code>setvasa</code>	<code>-copypri</code> added. <code>-tlsmethod</code> added.

---

*Table Continued*

Command	Description
showhost	Output format changed for <code>-agent</code> .
showpatch	Output format changed to add username, start, and end time.
showpd	Added support for NVMe SCM drives.
showport	Show nonvolatile memory express (NVMe) ports.
showportdev	Added support for NVMe.
showvasa	<code>-config</code> added to display <code>copypri</code> and <code>tlsmethod</code> configuration.
showvvolvm	Output changes: Adds support for display of VVols shared between VMs. Requires vSphere 6.5U2 or higher. Added columns to <code>-vv</code> to display deduplication and compression state ( <code>dedup</code> and <code>compr</code> columns), similar to <code>showvv</code> output.
statpd	Output changes extra decimal place to <code>servicetime</code> fields.
statport	Output changes extra decimal place to <code>servicetime</code> fields.

## Modifications to the CLI

**Issue ID:** 223246

**Issue summary:** A virtual volume set name is not recognized by the `removev1un` command.

**Affected platforms:** All StoreServ

**Affected software versions:** 3.2.2 GA - MU6, 3.3.1 GA - MU3

**Issue description:** When the `removev1un` option `-set` is used, the prefix is not required or expected. If the prefix is used, the VV set name will not be recognized.

**Symptoms:** Calling `removev1un -set set:<vvsetname>` on a valid VV set will return the message, `vvset set:<vvsetname> does not exist`.

**Conditions of occurrence:** Running the `removev1un` command with the `-set` option.

**Impact:** Low

**Customer circumvention:** Do not prepend the VV set name with the `set:` prefix.

**Customer recovery steps:** None.

# HPE 3PAR OS 3.3.1 Technology Release T05 WSAPI Release Notes

## What's New with the Web Services API Software

New and enhanced features include:

- Added NVMe support for port protocol and port hardware type
- Added SCM disk type support for system reporters (CPG space report, physical disk space report, and physical disk statistical data report)
- Added `noCheckSCMSize` support for Flash Cache creation
- Added `deviceType` property in Flash Cache query response objects

## Components

**Table 1: Components and Versions**

Component Name	Version
TECHNOLOGY RELEASE	3.3.1.493 (T05)
CLI Server	3.3.1.493 (MU4)
CLI Client	3.3.1.493
System Manager	3.3.1.493 (MU4)
Kernel	3.3.1.493 (MU4)
TPD Kernel Code	3.3.1.493 (MU4)
CIM Server	3.3.1.493 (MU4)
WSAPI Server	3.3.1.493 (MU4)
Console Menu	3.3.1.493 (MU4)
Event Manager	3.3.1.493 (MU4)
Internal Test Tools	3.3.1.493 (MU4)
LD Check Tools	3.3.1.493 (MU4)
Network Controller	3.3.1.493 (MU4)
Node Disk Scrubber	3.3.1.493 (MU4)
PD Scrubber	3.3.1.493 (MU4)

*Table Continued*

<b>Component Name</b>	<b>Version</b>
Per-Node Server	3.3.1.493 (MU4)
Persistent Repository	3.3.1.493 (MU4)
Powerfail Tools	3.3.1.493 (MU4)
Preserved Data Tools	3.3.1.493 (MU4)
Process Monitor	3.3.1.493 (MU4)
Software Updater	3.3.1.493 (MU4)
TOC Server	3.3.1.493 (MU4)
VV Check Tools	3.3.1.493 (MU4)
Upgrade Check Scripts	181128.U013
File Persona	1.5.3.2-20180914 (MU4)
SNMP Agent	1.13.0
SSH	7.5p1-5
VASA Provider	3.1.2 (MU4)
Firmware Database	3.3.1.493 (MU4)
Drive Firmware	3.3.1.493 (MU4)
Emulex Drive FW	3.3.1.493 (MU4)
Legacy HGST Drive FW	3.3.1.493 (MU4)
Samsung FIPS Drive FW	3.3.1.493 (MU4)
Samsung nonFIPS FW	3.3.1.493 (MU4)
Seagate FIPS Drive FW	3.3.1.493 (MU4)
Seagate nonFIPS FW	3.3.1.493 (MU4)
WDC FIPS 10K Drive FW	3.3.1.493 (MU4)
WDC FIPS 15K Drive FW	3.3.1.493 (MU4)
WDC FIPS SSD FW	3.3.1.493 (MU4)
WDC nonFIPS 10K FW	3.3.1.493 (MU4)

*Table Continued*

<b>Component Name</b>	<b>Version</b>
WDC nonFIPS 15K FW	3.3.1.493 (MU4)
WDC nonFIPS 7.2K FW	3.3.1.493 (MU4)
WDC nonFIPS SSD FW	3.3.1.493 (MU4)
Intel SCM FW	3.3.1.493 (MU4)
UEFI BIOS	05.05.04 (MU4)
MCU Firmware (OKI)	4.9.20 (MU4)
MCU Firmware (STM)	5.5.00 (MU4)
Cage Firmware (DC1)	4.44 (MU4)
Cage Firmware (DC2)	2.64 (MU4)
Cage Firmware (DC3)	08 (MU4)
Cage Firmware (DC4)	2.64 (MU4)
Cage Firmware (DCS5)	2.88 (MU4)
Cage Firmware (DCS6)	2.88 (MU4)
Cage Firmware (DCS7)	4096 (MU4)
Cage Firmware (DCS8)	4096 (MU4)
QLogic QLA4052C HBA Firmware	03.00.01.77 (MU4)
QLogic QLE8242 CNA Firmware	04.15.27
QLogic 260x HBA FC Firmware	174.03.70
QLogic 27xx/268x HBA FC Firmware	174.03.70
QLogic 83xx HBA FCoE Firmware	08.01.05
QLogic 8300 HBA iSCSI Firmware	05.07.51
Emulex LP11002 HBA Firmware	02.82.x10
Emulex LPe12002 HBA Firmware	02.10.x08
Emulex LPe12004 HBA Firmware	02.10.x08
Emulex LPe16002 HBA Firmware	11.4.415.0

*Table Continued*

Component Name	Version
Emulex LPe16004 HBA Firmware	11.4.415.0
3PAR FC044X HBA Firmware	200A8
LSI 9201-16e HBA Firmware	20.00.13
LSI 9205-8e HBA Firmware	20.00.13
LSI 9300-8e HBA Firmware	10.10.03

## Drive Firmware

**Table 2: Drives and firmware versions**

Model ID	Type	Capacity	V-Class	StoreSer v 7000	StoreSer v 8000	StoreSer v 20000	StoreSer v 9000	Firmware Version
HAKP200 0S5xeN7. 2	7.2K	2TB	Y	Y	Y	Y	N	3P03
HAKP400 0S5xeN7. 2	7.2K	4TB	Y	Y	Y	Y	N	3P03
HAKP600 0S5xeN7. 2	7.2K	6TB	Y	Y	Y	Y	N	3P03
HCBF060 0S5xeN0 10	10K	600GB	Y	N	Y	Y	N	3P05
STHB060 0S5xeN0 10	10K	600GB	Y	Y	Y	Y	N	3P02
HCBF120 0S5xeF01 0	10K	1.2TB	N	Y	Y	Y	N	3P05
HCBF120 0S5xeN0 10	10K	1.2TB	Y	Y	Y	Y	N	3P05
STHB120 0S5xeF01 0	10K	1.2TB	N	Y	Y	Y	N	3P00

*Table Continued*

Model ID	Type	Capacity	V-Class	StoreSer v 7000	StoreSer v 8000	StoreSer v 20000	StoreSer v 9000	Firmware Version
STHB120 0S5xeN0 10	10K	1.2TB	Y	Y	Y	Y	N	3P02
HCBF180 0S5xeN0 10	10K	1.8TB	Y	Y	Y	Y	N	3P05
STHB180 0S5xeN0 10	10K	1.8TB	Y	Y	Y	Y	N	3P02
AREA040 0S5xnNT RI	SSD	400GB	N	Y	Y	Y	Y	3P00
AREX040 0S5xnNT RI	SSD	400GB	Y	Y	Y	Y	Y	3P02
DDYE040 0S5xnNM RI	SSD	400GB	N	Y	Y	Y	Y	3P01
AREA048 0S5xnNT RI	SSD	480GB	N	Y	N	N	N	3P00
DOPE048 0S5xnNM RI	SSD	480GB	N	Y	Y	Y	N	3P08
AREA092 0S5xnNT RI	SSD	920GB	N	Y	N	N	N	3P00
AREA192 0S5xnNT RI	SSD	1.92TB	Y	Y	Y	Y	Y	3P00
AREX192 0S5xnNT RI	SSD	1.92TB	Y	Y	Y	Y	Y	3P06
DDYE192 0S5xnNM RI	SSD	1.92TB	N	Y	Y	Y	Y	3P01

*Table Continued*

Model ID	Type	Capacity	V-Class	StoreSer v 7000	StoreSer v 8000	StoreSer v 20000	StoreSer v 9000	Firmware Version
DOPE192 0S5xnNM RI	SSD	1.92TB	N	Y	Y	Y	N	3P08
AREA384 0S5xnNT RI	SSD	3.84TB	N	Y	Y	Y	Y	3P00
AREX384 0S5xnFT RI	SSD	3.84TB	N	Y	Y	Y	Y	3P02
AREX384 0S5xnNT RI	SSD	3.84TB	N	Y	Y	Y	Y	3P06
DDYE384 0S5xnNM RI	SSD	3.84TB	N	Y	Y	Y	Y	3P01
DOPM38 40S5xnN MRI	SSD	3.84TB	N	Y	Y	Y	N	3P05
AREA768 0S5xnFT RI	SSD	7.68TB	N	N	Y	Y	Y	3P01
AREA768 0S5xnNT RI	SSD	7.68TB	N	N	Y	Y	Y	3P04
DDYM76 80S5xnN MRI	SSD	7.68TB	N	N	Y	Y	Y	3P01
AREA15T 4S5xnFT RI	SSD	15.3TB	N	N	Y	Y	Y	3P01
AREA15T 4S5xnNT RI	SSD	15.3TB	N	N	Y	Y	Y	3P04
CSC0750 P5xnNSC M	SCM	750G	N	N	N	Y	Y	E2013P0 0



# Support and other resources

## Accessing Hewlett Packard Enterprise Support

- For live assistance, go to the Contact Hewlett Packard Enterprise Worldwide website:  
<http://www.hpe.com/assistance>
- To access documentation and support services, go to the Hewlett Packard Enterprise Support Center website:  
<http://www.hpe.com/support/hpesc>

### Information to collect

- Technical support registration number (if applicable)
- Product name, model or version, and serial number
- Operating system name and version
- Firmware version
- Error messages
- Product-specific reports and logs
- Add-on products or components
- Third-party products or components

## Accessing updates

- Some software products provide a mechanism for accessing software updates through the product interface. Review your product documentation to identify the recommended software update method.
- To download product updates:  
**Hewlett Packard Enterprise Support Center**  
[www.hpe.com/support/hpesc](http://www.hpe.com/support/hpesc)  
**Hewlett Packard Enterprise Support Center: Software downloads**  
[www.hpe.com/support/downloads](http://www.hpe.com/support/downloads)  
**Software Depot**  
[www.hpe.com/support/softwaredepot](http://www.hpe.com/support/softwaredepot)
- To subscribe to eNewsletters and alerts:  
[www.hpe.com/support/e-updates](http://www.hpe.com/support/e-updates)
- To view and update your entitlements, and to link your contracts and warranties with your profile, go to the Hewlett Packard Enterprise Support Center **More Information on Access to Support Materials** page:  
[www.hpe.com/support/AccessToSupportMaterials](http://www.hpe.com/support/AccessToSupportMaterials)

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❗ **IMPORTANT:** Access to some updates might require product entitlement when accessed through the Hewlett Packard Enterprise Support Center. You must have an HPE Passport set up with relevant entitlements.

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## Websites

Website	Link
Hewlett Packard Enterprise Information Library	<a href="http://www.hpe.com/info/enterprise/docs">www.hpe.com/info/enterprise/docs</a>
Hewlett Packard Enterprise Support Center	<a href="http://www.hpe.com/support/hpesc">www.hpe.com/support/hpesc</a>
Contact Hewlett Packard Enterprise Worldwide	<a href="http://www.hpe.com/assistance">www.hpe.com/assistance</a>
Subscription Service/Support Alerts	<a href="http://www.hpe.com/support/e-updates">www.hpe.com/support/e-updates</a>
Software Depot	<a href="http://www.hpe.com/support/softwaredepot">www.hpe.com/support/softwaredepot</a>
Customer Self Repair	<a href="http://www.hpe.com/support/selfrepair">www.hpe.com/support/selfrepair</a>
Single Point of Connectivity Knowledge (SPOCK) Storage compatibility matrix	<a href="http://www.hpe.com/storage/spock">www.hpe.com/storage/spock</a>
Storage white papers and analyst reports	<a href="http://www.hpe.com/storage/whitepapers">www.hpe.com/storage/whitepapers</a>

## Customer self repair

Hewlett Packard Enterprise customer self repair (CSR) programs allow you to repair your product. If a CSR part needs to be replaced, it will be shipped directly to you so that you can install it at your convenience. Some parts do not qualify for CSR. Your Hewlett Packard Enterprise authorized service provider will determine whether a repair can be accomplished by CSR.

For more information about CSR, contact your local service provider or go to the CSR website:

[www.hpe.com/support/selfrepair](http://www.hpe.com/support/selfrepair)

## Remote support

Remote support is available with supported devices as part of your warranty, Care Pack Service, or contractual support agreement. It provides intelligent event diagnosis, and automatic, secure submission of hardware event notifications to Hewlett Packard Enterprise, which will initiate a fast and accurate resolution based on your product's service level. Hewlett Packard Enterprise strongly recommends that you register your device for remote support.

For more information and device support details, go to the following website:

[www.hpe.com/info/insightremotesupport/docs](http://www.hpe.com/info/insightremotesupport/docs)

## Documentation feedback

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# Warranty and regulatory information

For important safety, environmental, and regulatory information, see *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products*, available at [www.hpe.com/support/Safety-Compliance-EnterpriseProducts](http://www.hpe.com/support/Safety-Compliance-EnterpriseProducts).

## Warranty information

HPE ProLiant and x86 Servers and Options

[www.hpe.com/support/ProLiantServers-Warranties](http://www.hpe.com/support/ProLiantServers-Warranties)

HPE Enterprise Servers

[www.hpe.com/support/EnterpriseServers-Warranties](http://www.hpe.com/support/EnterpriseServers-Warranties)

HPE Storage Products

[www.hpe.com/support/Storage-Warranties](http://www.hpe.com/support/Storage-Warranties)

HPE Networking Products

[www.hpe.com/support/Networking-Warranties](http://www.hpe.com/support/Networking-Warranties)