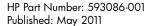# HP P6000 Enterprise Virtual Array release notes (XCS 10000000)

Abstract

This document applies to the HP 4400 Enterprise Virtual Array, HP 6400 Enterprise Virtual Array, HP 8400 Enterprise Virtual Array, HP P6300 Enterprise Virtual Array, and HP P6500 Enterprise Virtual Array.

Version:

XCS 10000000

Description

This document contains information specific to the release of XCS 10000000, which applies to the following array models:

Array model	Controller model	Disk enclosure model
HP 4400 Enterprise Virtual Array (EVA4400)	HSV300[1] or HSV300-S[1]	M6412 or M6412A
HP 6400 Enterprise Virtual Array (EVA6400)	HSV400	M6412A
HP 8400 Enterprise Virtual Array (EVA8400)	HSV450	M6412A
HP P6300 Enterprise Virtual Array (P6300 EVA)	HSV340[1]	M6612 (LFF) or M6625 (SFF)
HP P6500 Enterprise Virtual Array (P6500 EVA)	HSV360[1]	M6612 (LFF) or M6625 (SFF)

1   One enclosure contains two controllers.

The information in this document is not provided elsewhere. HP recommends that you read this information thoroughly.

⚠ **IMPORTANT:**   With the release of the P6300/P6500 EVA, the EVA family name has been rebranded to HP P6000 EVA. The names for all existing EVA array models will not change. The rebranding change also affects related EVA software. The following product names have been rebranded:

- HP P6000 Command View (formerly HP StorageWorks Command View EVA)
- HP P6000 Business Copy (formerly HP StorageWorks Business Copy EVA)
- HP P6000 Continuous Access (formerly HP StorageWorks Continuous Access EVA)
- HP P6000 Replication Solutions Manager (formerly HP StorageWorks Replication Solutions Manager)
- HP P6000 SmartStart (formerly HP StorageWorks SmartStart EVA Storage)

All rebranded software continues to support all existing EVA models (EVA3000/5000, EVA4000/6000/8000, EVA4100/6100/8100, EVA4400, and EVA6400/8400).

NOTE: M6612 and M6625 are the product names for the large form factor (LFF) and small form factor (SFF) disk enclosures for the P6300/P6500 EVA. However, the product name or model number could appear in HP P6000 Command View as D2600 or D2700.

Update recommendation

Recommended

Enhancements

XCS 10000000 contains the following functionality:

- **EVA management software support**—HP Command View EVA 9.4 or later (both server-based management and array-based management) is supported with XCS 10000000.

  The array-based management version is only supported on the EVA4400, P6300 EVA, and P6500 EVA and is installed on the management module in the controller enclosure, which reduces the need for a management server. (A management server is still required for HP P6000 Continuous Access support and certain other management tasks.) Without a management server in a direct connect environment, this allows for an additional Fibre Channel port, per controller, that you

can use to directly connect to a Windows, HP-UX, or Linux application server. For more information, see the *HP P6000 Command View Installation Guide.*

- **Replication software support**—HP P6000 Replication Solutions Manager 5.3 or later is supported with XCS 10000000. HP P6000 Replication Solutions Manager is an optional interface that offers enhanced management of local and remote replication and is offered at no charge. It includes the user interface for HP P6000 Business Copy and HP P6000 Continuous Access. For more information, see the *HP P6000 Replication Solutions Manager 5.3 Release Notes*.

  NOTE: HP P6000 Business Copy and HP P6000 Continuous Access are optional replication features. You must purchase a license to use these features. See the *HP P6000 Enterprise Virtual Array Compatibility Reference* for more information about local and remote replication support.

- **Management module software support**—Version 0001.4300 is supported with XCS 10000000. The management module applies to the EVA4400, P6300 EVA, and P6500 EVA only.
- **Thin provisioning**–Create and manage thin provisioned virtual disks. This feature dynamically increases the space allocated to a virtual disk.
- **Large LUN support**—Support for snapshot replication of LUNs greater than 2 TB. Expanding and shrinking of large LUNs is also supported.
- **Controller auto-boot on power cycle**—EVA4400, P6300 EVA and P6500 EVA arrays now provide a setting in the HP P6000 Web-based Operator Control Panel that enables the controllers to boot automatically when power is applied after a full shutdown.
- **Online virtual disk migration (change Vraid or disk group)**—Change a virtual disk's redundancy level (Vraid) or disk group membership without impacting host I/O.

Fixes

The following issues have been fixed in XCS 10000000:

Controller termination

This section describes issues that can result in termination of controller operation. A single controller termination will result in a reduction of redundancy. A dual controller termination indicates a possibility of a data unavailable condition. A recursive termination will require manual intervention to address.

- Fixed an issue where a controller can experience a processor exception termination (termination code `0x0442011f`) if there is not an active path to the destination drive at the time the I/O is being processed.
- Resolved issues with the use of a shared internal resource in the array's management interface that resulted in various controller termination codes (`0x0402011f`, `0x0204010a`, and `0x0204010c`). The shared resource can no longer be used by an incoming management command while simultaneously being used by the preceding management command.
- Fixed an issue where a controller could experience a controller termination (termination code `0x0205010a`) during failover while checking if a virtual disk is already presented to that controller.
- Fixed a controller restart issue (termination code `0x02210100`) that occurred when the controller received a sequence of verify commands.
- Fixed a termination (termination code `0x0c0a0106`) that could occur if the controller software improperly attempts to free a resource used by another LUN.
- Fixed an issue where an interrupted mirrorclone cache flush can result in a controller termination (termination code `0x021b0100`).
- Improved the quantity and accuracy of termination parameters for EVA6400/8400 controller termination events.

- Fixed an issue where a controller can terminate (termination code `42280102`) during a restart due to the receipt of an unknown completion message type.
- Fixed a controller restart issue (code `0x0442011f`) that could occur when unpresenting a LUN.
- Fixed an issue where a rare condition during host port abort processing caused an item being aborted to be processed twice, resulting in a controller termination (termination code `0x04d3011f`).
- Fixed an issue where multiple threads attempting to access a common mirroring structure could result in a controller termination (termination code `0x0204010a`).
- Fixed an issue where a controller operation would terminate (termination code `0x036c01c8`) and wait for user intervention instead of logging an event and continuing to execute after encountering an error during drive poll operations.
- Fixed an issue where I/Os could get stuck on a pending queue during a host port logout cleanup and cause the controller to experience a stalled state and eventually execute a Cell State Manager (CSM) Reset termination (termination code `0x4238011f`) to clear the stalled state.
- Fixed an issue where controllers can experience a termination (termination code `0x0775011a`) when `get_info` commands are called on a snapshot that is in the first stage of deletion.
- Fixed an issue that caused recursive terminations (termination code `0x020d0104`) due to mirrored cache inconsistency, which sometimes involved inoperative LUNs.
- Fixed an issue where a rare condition during a controller replacement or shutdown could allow the surviving controller to skip some virtual disk failover steps and encounter a `Unit Stalled Too Long` or `CSM Reset` termination.
- Fixed an issue where the controllers run out of buffer resources and terminate (termination code `0x02160102`) when flooded with write commands after a LUN becomes inaccessible due to lost cache data being acknowledged and cleared.
- Fixed an issue where a controller can experience a processor exception termination when two drive failures occur in a narrow window while executing a Vraid5 write with multiple failed drives.

  Fixed an issue that can result in a recursive controller termination (termination code `0x071a0100`) or incomplete leveling activity under rare circumstances.
- Fixed the cache prefetching algorithm to prevent multiple watchdog timer terminations (`0x0420011f`, `0x04800106`) from occurring.

Disks (disk groups, virtual disks)

This section describes issues affecting physical and virtual disks or disk groups, which can lead to a range of behaviors including a loss of redundancy, performance impact, or data unavailability.

- Added protection to prevent dual controller restarts when invalid mirror data is detected.
- An issue was fixed when the mirror connection breaks during certain operations. An outstanding proxy command to the other controller, targeting the unit being quiesced, made it possible to encounter a deadlock condition leading to an inoperative or unresponsive state.
- Improved data pre-fetch algorithm to address a problem where high I/O latencies result from sequential read streams involving non-uniform transfer requests.
- Fixed an issue which blocked I/O module status data from being reported during controller startup logging.
- Fixed an issue where the controller software did not handle Cache Data Lost (CDL) LUN failover correctly when a device data lost (DDL) condition was resolved.
- Fixed issue that allowed change tracking metadata to be set on four disks in a single disk enhanced disk group, resulting in a false inoperative condition after a power failure.

- Fixed an issue where the array failed to correctly split a background parity structure following the addition of a twelfth member.
- Fixed a resource contention deadlock that occurred when rebuilding parity.
- Fixed an issue where leveling would stall after two 1 TB drives are added to the system.
- Fixed a rare recursive controller resynchronization that could occur when a virtual disk being expanded had errors.
- Added functionality to ensure that the leveling process did not miss any outstanding work caused by a background parity structure reconfiguration.
- Fixed controller resource starvation issues that could occur under heavy workloads when disks failed.
- Fixed an issue that, in certain circumstances, occurred during a LUN shrink, expand, or delete operation, and cause the controllers to recursively resynchronize.

Hardware (replaceable parts, device ports, resynchronization)

This section describes issues affecting physical hardware, which can lead to incorrect condition handling, false condition reporting and similar events that may lead to incorrect device status reporting or replacement.

- Fixed a controller power up diagnostics issue that incorrectly logged a real time clock failure.
- Created a new critical event to alert field personnel to check or replace the disk enclosure power supply when a failure condition is encountered.
- Improved the back-end device discovery model to address several known issues, including a situation where controllers may terminate during back-end error handling (force LIP failure).
- Fixed an issue that blocked communication between the two I/O modules within a single disk enclosure.
- Fixed an issue where back-end transport errors caused the controller software to fail a disk drive unnecessarily.
- Fixed an issue where the array would not log any events to indicate the back-end disk enclosures were improperly cabled.
- Fixed an issue where the I/O module firmware upgrade gets blocked when a disk enclosure disappears and then remains blocked when the enclosure is accessible again.
- Fixed a problem that, in rare circumstances, occurred when I/O to a disk volume failed and a bad block replacement was not attempted. As a result, the controller could experience a stalled state and execute a CSM Reset termination to clear the stalled state.
- To eliminate unnecessary service actions, reporting of events `0D DE 95 06: A drive enclosure I/O module is not communicating with the other I/O module` and `09 CD C3 05: SCMI Fibre Channel port FAILED` have been discontinued.
- Fixed a rare controller restart that occurs when reading the link status from disk drives while workloads are in progress.
- Addressed several situations where drives could erroneously be reported as Single Port on Fibre (SPOF), indicating it is only connected to one of the two device side I/O loops, and has lost redundancy.
- Fixed an issue where some drive check conditions were not being handled as transport errors, resulting in drives being failed incorrectly.
- Fixed an issue where background processing can be blocked and cause a CSM Reset termination if a drive firmware SMART (Self Monitoring Analysis and Reporting) error is encountered while waiting for a drive quiesce to complete or when accessing disk media.

- Fixed an issue where the disk enclosure shutdown process would return a failure status even if the shutdown operation succeeded.
- Fixed an issue where some fields were missing or not completely populated in log events related to disk enclosure link module status or firmware upgrades.
- Fixed an issue where poorly seated back-end cables could result in too many dropped frame (code `0x061d4709`) and metadata error bit (e-bit) set (`0x070e0015`) events, flooding the logs.
- Corrected an issue where the incorrect WWID entered from the operator control panel of an EVA6400/8400 was accepted and stored with the secondary controller.
- Fixed an issue where internal parity generation and checking resources were not configured correctly.
- Added event logging to output the current controller hardware revision and control and cache memory configuration during boot.
- Fixed event strings related to System Inoperative events.
- Fixed an issue where the array logs a spontaneous power PC reset termination event instead of the power loss event when power fails during a restart.
- Fixed an issue where a controller host port could stop responding after a restart due to the improper processing of brief, recovered link failures.
- Fixed a controller restart that resulted from unexpected host mode sense requests.
- Fixed a rare condition involving duplicate entries in a host port transaction buffer time and organization queue. The problem appears to occur in all types of controllers and is not port specific. A rare condition results, which may cause the item being aborted to be completed twice.
- Fixed unnecessary failover/failback Unit Attention messages that are sent to hosts during controller reboot. The messages affect hosts configured with host modes HP-UX, Sun Solaris, Windows 2003, and Windows 2008.
- Fixed an issue where a controller can experience a watchdog timeout termination during host port LUN processing.
- Fixed an issue where `0x4207001b` and `0x420d001b` events were not being logged on EVA6400 and EVA8400 controllers.
- Added event logging to increase visibility to host port Fibre Channel nameserver logins during DR tunnel creation.
- Fixed a Direct Memory Access (DMA) error that occurred when an active controller was physically removed from an enclosure.
- Improved the robustness and event logging associated with array initialization requests including new events when initialization requests arrive, complete, or are malformed.
- Fixed an issue where the array failed to boot when a disk containing quorum data from a different array was inserted into the array.
- Fixed an issue where a controller resynchronization would occur during a change of mastership.
- Fixed a rare controller resynchronization that occurred when a controller mirror port disruption occurred during a controller failover.
- An issue was addressed that can arise when metadata instances from multiple storage systems are discovered.
- Fixed an issue on the EVA4400 that caused the `SCID_FCS_LOOP_CONFIG` (`0x06410017`) event to not be generated when changes occurred during discovery of device enclosures and disk drives.

- Improved on-demand allocation, rebuild, reconstruct, revert, and controller failover routines to resolve a problem where the controllers can experience a `Unit Stalled Too Long` condition and workload timeouts.

- Fixed an issue where the controller erroneously logs `Metadata Check 1 (0x07140715)` events spontaneously.

HP P6000 Business Copy

This section describes issues affecting HP P6000 Business Copy implementations of local replication, including snapshots, snapclones, and mirrorclones.

- Fixed incorrect event date reporting in the snapclone event data.

- Fixed an issue where controller software may not realize unpresented snapshots, snapclones, or mirrorclones when source virtual disks are in DR groups, leading to a controller termination.

- Fixed a work load hang that occurred when creating a large number of snapclones under heavy load.

HP P6000 Continuous Access

This section describes issues affecting HP P6000 Continuous Access implementations of remote replication, including data replication (DR) groups.

- Fixed issues where a controller could terminate (termination codes `0x020c0100, 0x42350104`) for an invalid group cache operation state because the determination of DR group membership was based on a snapshot rather than the successor of the snapshot.

- Fixed an issue in HP P6000 Continuous Access configurations where the controller software intermittently fails to correctly identify the active protocol type for EVA3000/5000 peers.

- Fixed an issue where controllers can experience a processor exception (`0x0402011f`) due to non-zero link fields during HP P6000 Continuous Access site failover.

- Fixed an issue which causes a controller to experience a stalled state and execute a `CSM Reset` termination (termination code `0x4238011f`) to clear the stalled state due to the tunnel state transitions not calling back the log for failed merge writes.

- Fixed an issue where a controller experiences a processor exception termination due to a stack overflow on remote replication write retries when the SCSI-FCP tunnel is open, but the remote replication array discovery data is marked invalid.

- Added information to events related to invalid group cache operations.

- Fixed an issue where resolving a multiple disk failure condition can leave a DR group unusable.

- Fixed out of sequence replication requests in HP P6000 Continuous Access configurations.

- Added instrumentation to HP P6000 Continuous Access to track instances when a controller termination (termination code `0x0442011f`) occurs due to inter-controller cache inconsistency.

- Fixed an issue where HP P6000 Continuous Access recognizes a host as a possible replication target, resulting in the host port WWN being deleted.

- Fixed an unexpected resynchronization that could occur during HP P6000 Continuous Access log removal or invalidation.

- Improved array response to host I/O during HP P6000 Continuous Access copies.

- Fixed an issue where DR tunnel closures caused by SCSI exchange timeouts can lead to `Unit Stalled Too Long` or `CSM Reset` termination in an effort to clear the stalled state.

- Fixed an issue where the SCSI-FCP data replication protocol aborts exchanges if they do not complete within a specified timeout period, resulting in a `Unit Stalled Too Long` controller termination.

- Fixed a problem that results in a controller termination during controller restart if a RSCN (Remote State Change Notification) ELS (Extended Link Services) request is received prior to the start of an HP P6000 Continuous Access discovery.
- Fixed an issue where mirror cache is not synchronized when failover clears cache data lost on a DR group, leading to a termination when proxy I/Os arrive.
- Fixed an issue where the data replication protocol could inadvertently change to SCSI-FCP after a controller software upgrade.
- Fixed an issue where a controller on the DRM remote array can experience a `Unit Stalled Too Long` or `CSM Reset` termination during a secondary to primary controller LUN transistion.
- Fixed a problem where dynamic expansion of DR logs could create map inconsistency in metadata, resulting in a recursive controller termination.

Operating system/solution support

This section describes issues affecting array support of operating systems or solutions.

- Fixed an issue observed on Windows hosts configured with QLogic HPAK344A 8 Gb HBAs where the queue depth counts were being cleared with I/Os active on a connection.
- Fixed events and controller resynchronizations seen with some Brocade products.
- Fixed a problem with abort task and LUN reset responses not being returned correctly to HP-UX hosts.
- Fixed slow link-up problem for an HP-UX host with an 8 Gb Fibre Channel adapter that is connected to an EVA4400.
- Fixed issues which prevented proper interaction with Windows 2008 KMS server activation.

Upgrades (controller software, I/O module firmware, disk drive firmware)

This section describes issues affecting upgrades involving controller software, I/O module firmware, or disk drive firmware.

- Fixed an issue where controllers do not shut down as intended following a situation where disk enclosures overheat and bypass drives. This issue can result in improper array start up, thereby leaving the array vulnerable to cache data loss conditions.
- Fixed an issue where environments with multiple DR groups can experience more than 60 second resynchronization times after a controller software upgrade.
- Fixed a case where I/O modules did not report status correctly after an I/O module firmware upgrade.
- Fixed multiple issues involving communications between enclosure link modules within a disk enclosure that could inhibit or block firmware upgrades to the enclosure.
- Improved resynchronization times for online controller software upgrades.

Operating systems

For complete information about operating system specifications and supported configurations, see the Single Point of Connectivity Knowledge (SPOCK) at http://www.hp.com/storage/spock. You must log in to access SPOCK. If you do not already have an account, select **Register to log in** on the main page and follow the instructions.

Upgrade and downgrade paths

For details about supported upgrade paths to XCS 10000000, see Table 3.1, Upgrade support for controller software versions, in the *HP P6000 Enterprise Virtual Array Compatibility Reference*. For

supported downgrade paths from XCS 10000000, see Table 3.2, Downgrade support for controller software versions in the compatibility reference.

For upgrade instructions, see the *HP Enterprise Virtual Array Updating Product Software Guide (XCS 10000000).* You can download these documents from the following website:

http://www.hp.com/support/manuals

Under Storage, click **Disk Storage Systems**, and then select **HP 4400 Enterprise Virtual Array** or **HP 6400/8400 Enterprise Virtual Array** under P6000/EVA Disk Arrays.

NOTE: A full restart of both controllers is required only one time after HP P6000 Command View and the management module software is installed on the management module of the EVA4400. This is applicable when upgrading to XCS 09006000 or later. Subsequent upgrades of controller software or management module software, or upgrading HP P6000 Command View on the management module do not require another full restart.

HP P6000 SmartStart Kit

HP P6000 SmartStart is a CD-based wizard that you use on your Windows Server 2003 or 2008 system to install and configure HP P6000 Command View. You can use HP P6000 Command View to configure, manage, and monitor your storage system.

NOTE: For the EVA4400, HP Command View EVA 9.2 is pre-installed on the controller enclosure management module (for array-based management); on the P6300/P6500 EVA, HP P6000 Command View 9.4 is pre-installed. You can still use HP P6000 SmartStart to configure application servers.

To bypass the HP P6000 SmartStart interface and manually run the HP P6000 Command View installer, go to the `\bin\installers\CV` directory on the CD.

HP P6000 SmartStart will install HP MPIO EVA DSM, which enables you to provision storage from the array; and DSM Manager, which enables you to change the default settings of HP MPIO EVA DSM.

For more information about HP P6000 SmartStart, see the latest product release notes, which are available at:

http://www.hp.com/support/manuals

Under storage, select **Storage Software**. Then, select **HP P6000 SmartStart** under Storage Device Management Software.

SAN support

The HSV300 controller in the EVA4400 supports 2/4 Gb Fibre Channel communication, but requires 4 Gb SFPs in the controller host ports. The HSV300-S supports up to 8 Gb communication through the embedded switch ports.

The HSV400 controller in the EVA6400 and the HSV450 controller in the EVA8400 are enabled for 4 Gb/s on each Fibre Channel host path, but will also support 2 Gb/s Fibre Channel host paths and components for backward compatibility.

Supported Fibre Channel switches

For complete information on which Fibre Channel switches are supported, see the Single Point of Connectivity Knowledge (SPOCK) at: http://www.hp.com/support/manuals. You must log in to access SPOCK. If you do not already have an account, select **Register to log in** on the main page and follow the instructions.

Supported disks

For information about disk drive support, see *HP P6000 Enterprise Virtual Array Disk Drive Firmware Support*, available on the HP Manuals website: http://www.hp.com/support/manuals.

Under storage, click **Disk Storage Systems**, and then select the appropriate array model under P6000/EVA Disk Arrays.

Performance sizing

To configure your array for the intended disk model(s) and host I/O workloads, please contact your HP account support representative for consulting services and instructions. For additional information on performance and solutions, see the following HP websites:

- http://h18006.www1.hp.com/storage/arraywhitepapers.html
- http://h18006.www1.hp.com/storage/whitepapers.html

Workarounds

This section identifies important notes and workarounds for the EVA4400, EVA6400, and EVA8400. If you encounter difficulties with the workarounds, contact HP Services for assistance.

Hardware and controller software

Setting the controller power on behavior

In the P6000 WOCP online help and user guide, the "Controller power on behavior" and "Setting controller power on behavior" sections describe the new WOCP feature that can be set so that the array boots up automatically when power is applied after a full shutdown. To further clarify this feature:

- If this feature is disabled and you turn on power to the array from the rack power distribution unit (PDU), only the disk enclosures boot up. With this feature enabled, the controllers will also boot up, making the entire array ready for use.

- If, after setting this feature, you remove the management module from its slot and reinsert it to reset power or you restart the management module from the WOCP, only the controllers will automatically boot up after a full shutdown. In this scenario, you must ensure that the disk enclosures are powered up first; otherwise, the controller boot up process may be interrupted.

- After setting this WOCP feature, if you have to shut down the array, perform the following steps:
    1. Use HP P6000 Command View to shut down the controllers and disk enclosures.
    2. Turn off power from the rack power distribution unit (PDU).
    3. Turn on power from the rack PDU.

  After startup of the management module, the controllers will automatically start.

Stale Inquiry data issue after SSD firmware upgrade

After upgrading disk drive firmware on solid state disk drives, HP P6000 Command View may indicate that the upgrade was successful, but the disk drive properties page does not reflect the upgraded firmware version.

To resolve this issue:

1. Upgrade the disk drive again.
2. Wait 10 minutes before checking the disk drive properties page to verify the correct firmware version is displaying.
3. If the problem persists, contact HP Support Engineering.

Disk group occupancy allocation notification received on non-thin provisioned virtual disks

After expanding or shrinking a virtual disk, if the action exceeds the occupancy alarm level setting (either warning or critical), you may receive notification from P6000 Command View events and Insight Remote Support notifications. These events and notifications may be received even if the affected virtual disk is not a thin provisioned virtual disk. All notification alarms should be investigated and when it is determined that they apply to non-thin provisioned virtual disks, the alarm may be safely ignored.

Data Replication Protocol changes after controller software upgrade

In an HP P6000 Continuous Access configuration, the Data Replication Protocol may change to HP SCSI FC Compliant Data Replication Protocol when the array being upgraded to XCS 10000000 is:

- An EVA4400 that was initialized at a controller software version earlier than XCS 09500000
- An EVA6400 or EVA8400 that was upgraded from an EVA4400 (data in place upgrade) and was initialized at a controller software version earlier than XCS 09500000.

Symptoms of this issue are:

- Data replication stops after the upgrade.
- There are no visible paths to the destination array. To determine if there are visible paths, select the **Data Replication** folder in the HP P6000 Command View navigation pane. When the Data Replication Properties Folder window opens in the content pane, select **View remote connections**.

To resolve this issue, you must set the protocol to HP FC Data Replication Protocol in HP P6000 Command View as follows:

1. Select the upgraded array in the EVA Storage Network Properties window.
2. Select the **Data Replication** folder in the navigation pane.

   The Data Replication Properties Folder window opens in the content pane.

3. Select **Data Replication Options**.

   The Data Replication Options window opens.

4. Select **Set Data Replication Protocol**.

   The Data Replication Protocol options window opens.

5. Select **HP FC Data Replication Protocol**.
6. Select **Save Changes**.

DR log progress bar percentage appears incorrect

Because the DR log can suddenly reach the full copy threshold, the percentage complete displayed by HP P6000 Command View can appear to be inaccurate. This is caused by overhead (or metadata) that is applied to the file and is included in the percent complete, which reduces the amount of capacity available. This overhead is more significant for smaller log files than larger log files because some of the overhead is constant in size. For example, a 5 GB minimum log size can contain 35 percent

overhead, while a 40 GB log file might only contain 10 percent overhead. This could cause the progress bar in HP P6000 Command View to show a larger amount of progress than one would expect for the allocated log size.

Connectivity

This section describes workarounds for HBA, switch, and operating system connectivity. For the latest support information about connectivity, see the Single Point of Connectivity Knowledge (SPOCK) at http://www.hp.com/storage/spock. If you do not already have an account, select **Register to log in** on the main page and follow the instructions.

Citrix 5.6 host may require manual rescan

If you have a Citrix 5.6 host running Emulex 4 Gb/8 Gb HBAs in a direct connect configuration, you may need to perform a manual rescan after adding or removing LUNs online.

Windows 2003 server requires hotfix

If the management server is running Microsoft Windows 2003, HP P6000 Command View may not display any array. To resolve this issue, you must install a Microsoft hotfix. Go to the following link for details and the hotfix download:

http://support.microsoft.com/kb/945119

If you are using the server for storage only, not as a management server, you do not need to install this hotfix.

HP MPIO EVA DSM requirement

HP strongly recommends that you always install the latest version of HP MPIO EVA DSM on all Windows servers. The available MPIO DSM has exhibited LUN path failures on rare occasions. These LUN path failures were not observed with HP MPIO P6000 DSM version 4.02.00.

NOTE: If you use HP P6000 SmartStart to install HP P6000 Command View on the Windows 2003 or 2008 management server, HP MPIO P6000 DSM 4.02.00 and DSM Manager are installed automatically.

You can download the latest DSM Manager and HP MPIO P6000 DSM from the following HP website:

http://www.hp.com/support/downloads

1. Under Storage, select **Storage Software**.
2. Under Storage Infrastructure Software, select **Other Multi-Path Software-Windows**.
3. Select **Windows MPIO DSM for EVA**.
4. Select the appropriate Windows operating system.
5. Do one of the following:

   - For MPIO DSM, select **HP MPIO Full Featured DSM for P6000 EVA Disk Arrays**.

   - For DSM Manager, select **HP MPIO DSM (Device Specific Module) Manager for Full Featured DSMs**.

See the release notes included with the download file for more information.