



## Release Notes and Installation/Upgrade Guide (Release 10.0 PSP6 Update5)

| Cumulative Change Summary   | Date         |
|---|--------------|
| 10.0 release  | May 28, 2014 |
| Minor edits to Online Help and Memory Utilization Notes   | May 30, 2014 |
| Added an additional item in the Fixes section   | Jun 13, 2014 |
| 10.0 Update1 release  | Sep 4, 2014  |
| 10.0 PSP1 release   | Nov 13, 2014 |
| Clarifications in the Upgrade section, additional Known Issues  | Dec 4, 2014  |
| Additional edits to the Upgrade section   | Dec 23, 2014 |
| 10.0 PSP1 Update1 release   | Feb 25, 2015 |
| Clarified Emulex 16 Gb rebranded HBA support; added Known Issue   | Mar 9, 2015  |
| 10.0 PSP2 release   | May 18, 2015 |
| Removed incorrect item in the Fixes section   | May 20, 2015 |
| 10.0 PSP3 release   | Aug 12, 2015 |
| Edits and additional fixes; removed a Known Issue   | Aug 25, 2015 |
| 10.0 PSP4 release   | Nov 16, 2015 |
| Added additional Fixes and Known Issues   | Dec 8, 2015  |
| 10.0 PSP4 Update1 release   | Mar 15, 2016 |
| Added note about discontinued support for Emulex LPe11000 series HBAs and additional fix  | Mar 16, 2016 |
| Clarified upgrade procedures, added known issue regarding expiring administrator passwords, and removed Emulex configuration restrictions | Mar 24, 2016 |
| Removed Qlogic QLE2694 HBAs from supported list (Note: subsequently re-added support for this HBA)  | Apr 11, 2016 |
| 10.0 PSP5 release   | Jun 27, 2016 |
| 10.0. PSP5 Update1 release; Corrected manual installation steps; added known issue for mirrored pool disks and full recovery              | Jul 8, 2016  |
| Added Table of Contents; added known issue Executive Service not starting after upgrade; edited new addressable memory limit              | Jul 13, 2016 |
| 10.0. PSP5 Update2 release  | Aug 24, 2016 |
| Removed obsolete known issues; added installation note regarding logstore pools   | Sep 6, 2016  |
| 10.0 PSP6 release   | Nov 7, 2016  |
| Updates to Known Issues section, enhancements and minor edits   | Nov 15, 2016 |
| 10.0 PSP6 Update1 release   | Dec 5, 2016  |
| 10.0 PSP6 Update2 release; additional Upgrade Notes for specific configurations.  | Jan 30, 2017 |
| Added 2 Known Issues and updated information regarding a 10.0 PSP6 U2 fix   | Feb 9, 2017  |
| Added Known Issue regarding ReFS-formatted virtual disks  | Feb 14, 2017 |
| 10.0 PSP6 Update3 release   | Apr 17, 2017 |
| 10.0 PSP6 Update4 release   | May 3, 2017  |
| Added note on the enhancement to allow snapshots of pass-through disks  | May 9, 2017  |
| Added known issue regarding restrictions for SANsymphony on Windows Server 2016   | Jun 8, 2017  |
| 10.0 PSP6 Update5 release   | Aug 7, 2017  |
| Added upgrade warning regarding reboots during an upgrade   | Aug 28, 2017 |
| Revised upgrade warning regarding reboots during an upgrade for clarity   | Sep 25, 2017 |

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## Enhancements and Fixes in 10.0 PSP6 Update5

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- **Enhancement:** Added support for Microsoft Windows Server 2016.
  - Increased addressable memory allowing for caches up to 8 TB
- **Enhancement:** For Bulk Server, allow the use of SSD or flash devices in storage pools.
- **Problem:** In the DataCore Servers panel, the OS Version incorrectly displayed Windows Server 2012 for servers running Windows Server 2012 R2.  
**Cause:** When detecting the OS version, there was no specific check for Windows Server 2012 R2  
**Resolution:** A code change was made to check for Windows Server 2012 R2 when detecting OS versions.

## Configuration Notes

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### Download Package

Included in the self-extracting, executable download package (SANSymphonyWizard.exe) are:

- The automated installation and upgrade wizard (automatically launches after the download package is extracted to the specified folder.)
- The DataCoreServer.exe executable file (base software installation package)
- The DataCore.Vasa.Provider.Installer.msi executable file (software installation package)
- The SANSymphony Installation and Getting Started Guide
- Release and Installation Notes for SANSymphony (this document)
- Release Notes for DataCore VASA Provider
- Release Notes for Storage Management Provider to support System Center Virtual Machine Manager

### Configuration Notes

- **Hyperconverged Virtual SAN and SANSymphony Environments**
  - While Hyperconverged Virtual SAN nodes and SANSymphony nodes can reside within the same server group, they cannot be upgraded together using the automated deployment wizard.
  - Windows Hyper-V Server 2016 is not supported in this release.
- **Microsoft Windows Features or Roles on Microsoft 2012 or 2012 R2 DataCore Servers**
  - Do not use the Storage Spaces and Storage Pools with Virtual Volumes Microsoft Windows Features or Roles on Microsoft 2012 or 2012 R2 DataCore Servers, as they adversely affect SANSymphony's fundamental storage operations.
  - Disable the Microsoft Windows iSCSI target service.
- **SANSymphony Management Consoles Managing Multiple SANSymphony versions**

A management console cannot manage SANs running different versions of SANSymphony software. Use the appropriate Management Console for each version.
- **Viewing SANSymphony WebHelp**

SANSymphony WebHelp may be opened with Windows Internet Explorer, Chrome, Firefox and Safari browsers. The Opera browser is not supported. Javascript must be enabled. Due to security enhancements in Internet Explorer 10 or greater, modifications to the default security settings may be required to view SANSymphony WebHelp:

  - Add the DataCore website (<http://www.datacore.com>) as a trusted site.
  - Enable Active Scripting and disable ActiveX Filtering in the Tools/Internet Options/Security tab.
- **Computer Names in Host Files**

For detailed information, see the topic "Name Resolution" in the SANSymphony Help.
- **Host Operating Systems**

For Sun Solaris or Hewlett Packard HP-UX hosts, manually failover I/O paths to the 'other' DataCore Server when performing storage source replacements for mirrored virtual disks.
- **Fibre Channel Adapters**
  - Do not configure host Fibre Channel adapters to use TPRLO (Third Party Logout) as a method of resetting storage target devices.
  - Installing SANSymphony software will set the Fibre Channel Port WW Port Name (WWPN) and the WW Node Name (WWNN) to be the same. If the native Qlogic driver was previously configured with unique WWPN and WWNNs, these will be reset to be the same, and will have to be reconfigured.
  - The connection mode 'Loop' is not supported on any Emulex or Qlogic 16Gb or 32Gb host bus adapters using the DataCore driver.
- **Front-end Ports**

At installation, the default Front-end (FE), Back-end (BE), and Mirror (MR) roles are applied to all ports, and virtual disks may be served to hosts via these ports. However, most host operating systems require the DataCore Server port to be configured with FE-only ports (or FE/MR ports where the target-only property has been explicitly set) in order for failover to work when the host is stopped. Refer to the appropriate Host Configuration Guides for host-specific operating system requirements (see [FAQ-838](#)).
- **Configuring Network Interface Cards (NICs)**
  - The installation of the DataCore iSCSI driver will pause if one or more NICs do not have an IP address or a network connection. Please choose OK on the resulting dialog box to continue the install and troubleshoot after the installation completes.
  - Ensure that there is at least one network interface card with an IP address configured. DataCore Servers will time-out when connecting to the user interface if there are no network cards present in the system.
- **DataCore Server and Host Clocks**

System clocks must be time-synchronized on all DataCore Servers. In addition, all hosts should be synchronized with the DataCore Servers to increase the ease of use of Snapshot and Continuous Data Protection (CDP).

- **Physical Disks**
  - Disks under management of SANsymphony software will appear as Unknown/Not initialized in Microsoft Windows Disk Management. An Unknown/Offline disk appears in Disk Management for each mirrored virtual disk. Upon opening Windows Disk Manager, a prompt to initialize these disks will be displayed. Select Cancel to close the dialog box.
  - Any storage served to a DataCore Server for virtualization must be served exclusively to DataCore Servers. Serving disks to other storage initiators could lead to corrupt data or inoperative storage servers.
- **Deduplication**
  - Deduplication is experimental and may be subject to change in future releases. It was introduced in SANsymphony 10.0 PSP2. Please refer to the SANsymphony Deduplication topic <http://www.datacore.com/SSV-Webhelp/SSV.htm#Deduplication.htm> in the online help for specific guidance on tested and supported configurations.
  - This feature is only available on Microsoft Windows Server 2012 R2 and 2016.
  - On Windows Server 2016 installations, insure that Microsoft KB4013429 (July 2017 Rollup) or greater is installed.
  - Deduplication is not supported for files that are open and constantly changing for extended periods of time or that have high I/O requirements. See [Microsoft's "Plan to Deploy Data Deduplication"](#) documentation.
  - Create deduplication pools one at a time. Wait for completion before creating another pool.
  - Do not run disk defragmentation software on volumes used to create deduplication pools or on volumes created from deduplication pools. In Windows 2012, defragmentation is a maintenance mode task that occurs automatically during optimization. Disks are optimized automatically by default, so optimization must be disabled for volumes involved in deduplication. Settings for scheduled optimization must be changed by the administrator in the Windows Defragment and Optimize Drives utility, so that volumes used in deduplication pools and volumes created from deduplication pools are not selected for optimization. See Microsoft documentation for more information.
- **Secure Boot**
  - Do not enable the Microsoft Secure Boot option for new SANsymphony installations.

# Installation and Upgrade Instructions

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This release is ONLY for new installations OR for updating existing SANsymphony 10.0 PSP1 (or greater) versions. Installations that are below this requirement must first upgrade to release 10.0 PSP1 or greater. Versions prior to 9.0 PSP4 Update4 have reached End Of Life and are no longer supported. DO NOT directly upgrade from SANsymphony 7.X, SANmelody, SANsymphony 8.X or SANsymphony 9.X. Attempting to do so may result in an inoperable system and/or data loss.

Ensure that all hardware and software requirements, including Microsoft .NET requirements, Microsoft Visual 2015 Redistributable Packages (x64 and x86) and latest operating system updates and hotfixes, be applied, before installing or upgrading SANsymphony software. See <http://www.datacore.com/Software/Products/SANsymphony-V-Prerequisites.aspx> for detailed information.

## New SANsymphony Installations

For new installations, refer to the SANsymphony Installation and Getting Started Guide.

## Upgrading from Previous SANsymphony Versions

For upgrades, follow the Pre-Upgrade and Upgrade steps below. Note: Link errors may be reported during the upgrade process. See [http://www.datacore.com/SSV-Webhelp/SSV.htm#Resetting\\_Link\\_Error\\_Counts.htm](http://www.datacore.com/SSV-Webhelp/SSV.htm#Resetting_Link_Error_Counts.htm) for information on resetting link error counts.

### Pre-Upgrade Steps

- 1 Refer to the Known issues [FAQ 1277](#) before upgrading.
- 2 Important Note: if VVOLs are configured, refer to updated VASA Provider Release Notes for special upgrade procedures before proceeding.
- 3 Read and understand the Upgrade Notes (below) and the Installation and Upgrading Known Issues (see the Known Issues section in this document).
- 4 Ensure that all hardware and software requirements, including NEW Microsoft .NET requirements, Microsoft Visual C++ 2015 Redistributable Packages (x64 and x86) and latest operating system updates and hotfixes, be applied, before installing or upgrading SANsymphony software. See <http://www.datacore.com/Software/Products/SANsymphony-V-Prerequisites.aspx> for detailed information.
- 5 Ensure all mirrored virtual disks are healthy and all replication streams are fully initialized before performing the upgrade.
- 6 Ensure that the "Windows Modules Installer" service is not disabled. By default, this service should be set to "Manual", and will be automatically started and stopped as required.
- 7 Backup the configuration. Refer to the SANsymphony Help for directions that includes stopping the DataCore Server before doing the Backup. Note: a backup folder must exist in order to proceed with the upgrade when using the automated wizard. To create this folder, open the DataCore Servers Panel->Backup Configuration dialog, and enter the complete path to a local folder for each DataCore Server in the group.
- 8 If DataCore Technical Support has previously requested that the DataCore.Executive.CorePMFdll.config file be customized because of a specific hardware configuration, copy this file to a safe location, as it must be restored after the upgrade, replacing the newly installed file.
- 9 Close all DataCore windows on all DataCore Servers being upgraded before proceeding with the upgrade instructions below.
- 10 Manually remove the **SmartDeploymentWizard** folder in the existing Program Files/DataCore folder, as well as the DataCore SANsymphony desktop shortcut and Start Menu option.

### Upgrade Notes

- The automated installation and upgrade wizard requires DataCore Servers be running SANsymphony 10.0 PSP1 or greater. For prior versions, manually upgrade the servers (see Manually Upgrading DataCore Servers below).
- During the upgrade procedure, do NOT modify the existing configuration until the entire upgrade is complete. If issues are experienced during the upgrade, such as mirrors not recovering, contact DataCore Technical Support.
- If physical disks, virtual disks or disk pools do not come back online at the conclusion of the upgrade process, perform a rescan by right-clicking the DataCore Server in the left pane of the Management Console and selecting Rescan Ports from the actions menu.
- After upgrading the first DataCore Server and restarting the server, do not open the Management Console on other DataCore Servers or management consoles until they are upgraded.
- After upgrading a DataCore Server and completing the reboot required by the installer, do NOT stop that server or reboot it again until another server has been upgraded.
- To monitor the state of the upgrade, use the Management Console on the newly upgraded DataCore Server. Alternatively, for DataCore Servers without the Management Console component installed, next upgrade the stand-alone Management Console server to monitor status during the upgrade.
- For bi-directional replication relationships, either server group may be upgraded first, but all servers must be manually upgraded. Replication transfer will be stopped in one direction until the update is complete on all groups. (See Manually Upgrading DataCore Servers for instructions below).
- When upgrading configurations from pre-SANsymphony10.0 PSP5 to 10.0 PSP5 or later, where a pair of DataCore Servers have mapped mirrored or dual virtual disks to another DataCore Server, the order of upgrading must be followed in order to failover correctly. First upgrade one of the pair of servers (local or remote), next upgrade the host/ DataCore Server where the disks were mapped to, then upgrade the second server.

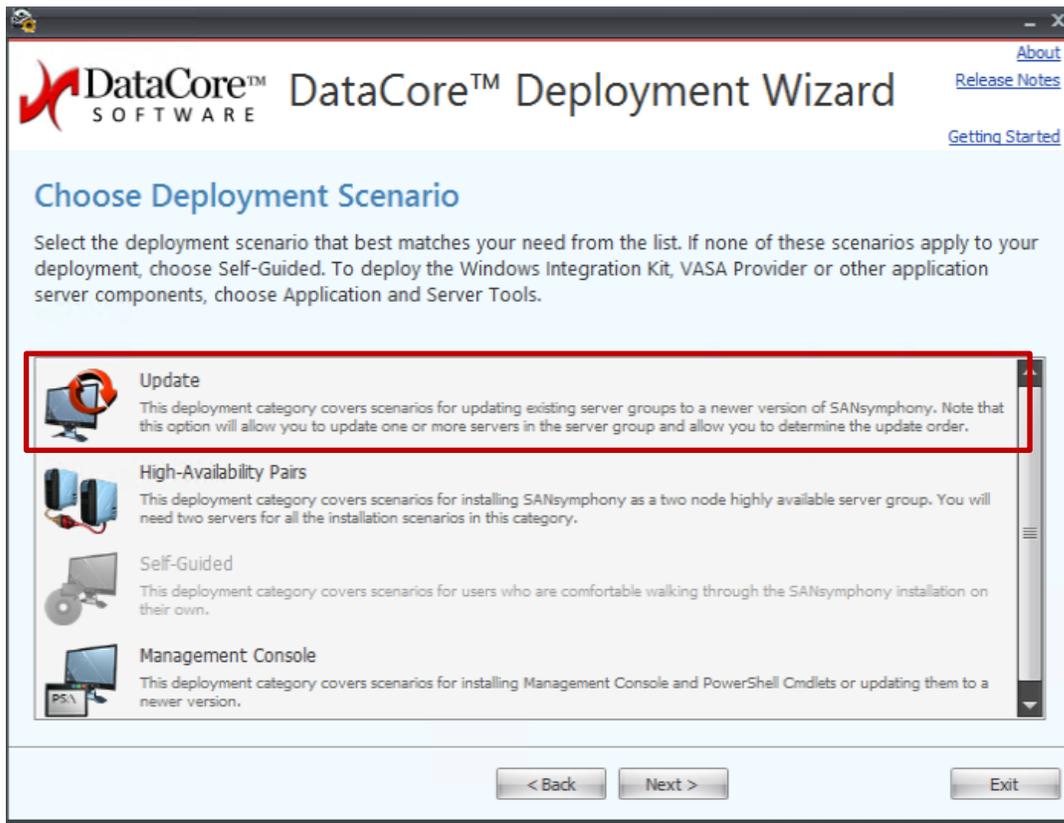
### Installer Notes

- An automated installer tool assists and guides Administrators through the process of configuring and deploying DataCore Servers in a variety of environments, such as:
  - Single self-guided installation of a DataCore Server,
  - Basic installation of a pair of highly available DataCore Servers
  - Virtual SAN installation in both Windows (Hyper-V) and vSphere environments.

- Clustered environment solutions, including a clustered NAS/SAN solution and clustered Virtual Machines solution using the Windows Hyper-V feature.
- Upgrades to existing SANsymphony installations
- VASA Storage Provider installation and registration in VMware Vcenter
- Windows Integration Kit on application hosts. Note: The Windows Integration Kit is a separate software package and must be downloaded to the server running the installation wizard before selecting this template.
- System requirements are not checked when selecting the upgrade template. The wizard only verifies that the servers meet the software, hardware, and operating system requirements necessary before new installations.
- To bypass the installation wizard and upgrade manually, exit the wizard by clicking the **Exit** button, and double-click the SANsymphony executable in the installation folder previously designated. See the **Manually Upgrading DataCore Servers** instructions below.
- The wizard requires Windows Server 2012 or 2012 R2 on servers. The "Self-guided" configuration may be used to install SANsymphony on other supported operating systems.
- Servers must be able to connect to each other over Network Interface Cards (NICs). NICs should be connected with a valid IPv4 address. Disable firewalls between servers while using the wizard to assure the connection. Upon successful completion of the deployment, the firewall may be re-enabled.
- Servers must be a member of the same domain or workgroup.
- Login with a local administrator account to deploy a single server using the self-guided installation or High Availability pair or Virtual SAN server. Login with a domain administrator account when running the wizard to configure a cluster solution.
- If the wizard is exited before it has completed or the server is restarted during the installation or upgrade process, the wizard will continue at the point where it left off when it is restarted.
- If for any reason, the upgrade of a multi-node Server Group is interrupted, then the wizard should be rerun from the same server it was initially run on. This will allow the upgrade to resume from the point it had previously reached.
- Warnings and errors received while the wizard is running will be logged in a file named log.txt in the Smart Deployment Wizard installation folder, as well as the operating system Event Viewer>Windows Logs>Application Logs.
- Although steps may continue when warnings have been flagged, care should be taken that a valid configuration is created. Steps with errors may not be continued. The error should be corrected and the wizard resumed.
- After the wizard is finished, open the SANsymphony Management Console and connect to the server group. Consult the Help for instructions on using the SANsymphony software. Activate your permanent licenses.
- When using the wizard, a minimum screen resolution of SXGA (1280x1024) is recommended.

### Upgrading Using the Wizard

- 1 Log on to Windows using the local Administrator account and password to the server where deploying or upgrading the Server Group from (the wizard will remotely install or upgrade other servers, see above).
- 2 Save and close all files, programs, and windows. At the end of the installation, it will be necessary to restart the server to finalize the installation process.
- 3 Copy or download the self-extracting executable to the first server and run the executable.
- 4 Accept the EULA and enter a location where the files are to be extracted.
- 5 Select the SANsymphony category from the initial panel; next select the Update Category in the next panel, and then the Upgrade from Prior Version template. Click Next.



- 6 The top left panel will provide a high-level overview of the steps the wizard will follow, while the bottom panel will give a detailed list of steps, the status of the installation, and the start and end times for each step. The main panel provides a description of the current operation and allows input for some configuration information when required. These Release Notes and the Installation Guide can be accessed by clicking the links in the upper right corner of each panel.
- 7 Click the **Next** button to proceed through each major component of the wizard. If there are errors or a step fails, the wizard will pause, and can be resumed where it left off when the issue has been resolved. Once a step has been completed, changes cannot be made.
- 8 In the **Select Server Update Order** panel, use the up and down blue arrows to the right of the Server List to move the highlighted server up or down in the upgrade order.
- 9 Status is also recorded in a text file named **log.txt** found in the installation folder, and additional troubleshooting information may be found in the SANsymphony and Windows event logs.
- 10 The DataCore Server will be restarted automatically when the upgrade is complete.

## Manually Upgrading DataCore Servers

The automated installation wizard may be bypassed and a manual upgrade performed.

- 1 Log in as the local administrator on one of the DataCore Servers to be upgraded, copy or download the self-extracting executable to this server and run the executable.
- 2 Accept the EULA and click **OK** to begin the extraction. The DataCoreServer.exe file will be extracted to the C:\Program Files\DataCore\DataCoreDeployment\SANsymphony folder.
- 3 Exit the wizard by clicking the **Exit** button and navigate to the folder specified above.
- 4 Stop the DataCore Server from the DataCore Servers Panel and wait for the status to change from 'running' to 'stopped' and then set the DataCore Executive Service to Manual start. Do NOT stop the DataCore Executive Service.
- 5 Click the DataCoreServer.exe executable.
- 6 If prompted, enter the login credentials for the DcsAdmin account. This information should exactly match the original credentials entered for the previous version, and must be identical on all DataCore Servers and Management Consoles in the Server Group.
- 7 Restart the DataCore Server when prompted. Important Note: Restore the saved DataCore.Executive.CorePMFdll.config if the file was modified (see above) BEFORE restarting.
- 8 On the newly upgraded DataCore Server, open a command prompt and run 'net start dcsx' and then open the DataCore Management Console.
- 9 Perform a rescan by right-clicking the DataCore Server in the left pane and selecting Rescan Ports from the actions menu.
- 10 Start the DataCore Server from the DataCore Servers Panel and wait for the status to change from 'stopped' to 'running'.
- 11 In the Microsoft Windows Services panel, reset the DataCore Executive service to Automatic start.
- 12 Wait until all mirrored virtual disks have recovered and are marked 'on-line'. If recoveries remain to be completed, rescan ports. Check that all running hosts see the path to this DataCore Server before proceeding with the pre-upgrade instructions on the next DataCore Server, and then continue the upgrade of that server. Repeat for all servers in the configuration.
- 13 Create mini support bundles for each server in the server group and submit to Technical Support (see instructions below).
  - o ->Device Manager->Network Adapters.

## Upgrading Management Consoles

- Upgrading stand-alone Management Consoles may be performed at any time, however if there are DataCore Servers without the Management Console component in the configuration, the Management Console must be upgraded first in order to monitor status during the upgrade.
- If installing only the Management Console component, use the Self-guided installation template in the installation wizard. Note: the server must meet the full pre-requisites for a DataCore Server. If it does not, exit the wizard by clicking the **Exit** button and follow the instructions for manual installation and proceed with a custom installation as in previous versions.

## Host Considerations

- If using DataCore MPIIO, Microsoft Windows 2008 R2, 2012 or 2012 R2 hosts must be upgraded to the MPIIO version in the Windows Integration Kit 3.0 before installing this SANsymphony release to take advantage of fixes and enhancements. See the Windows Integration Kit Release Notes for detailed instructions.
- For configurations using DataCore VSS, install the VSS component in the Windows Integration Kit 3.0 on all Windows 2008 R2, 2012 or 2012 R2 hosts using VSS.
- For configurations using the SANsymphony Cmdlets for Windows PowerShell on Windows hosts, including products such as DataCore SCOM Management Pack, Storage Replication Adapter, Hitachi Analyzer Plug-in or the vSphere Plug-In for SANsymphony, install the cmdlets using this SANsymphony installation package.

## Post-Upgrade

- Reactivate all license keys for the server group after the upgrade has been completed.
- Once the upgrade has been completed, upload the mini Support Bundles that have been generated by the wizard or manually created after a manual upgrade, for all DataCore Servers in the Server Group.
  - Open a new incident by sending an email to support@datacore.com and include '<Your Customer name> - Mini Bundle' in the Subject line. Note: Do not attach the support bundles to this email.
  - An automatic response explaining the next steps will be sent. The data included in the support bundles may be used as a baseline for future troubleshooting, if needed.

## Known Issues

- **Installation and Upgrading**

When updating the SANsymphony management console component on a Microsoft Windows 7 system, a pop up message is displayed stating that SANsymphony might not have installed correctly, although it has. Select 'This program installed correctly' to continue.

- If upgrading from SANsymphony-V 10.0 PSP 4 Update 1 or earlier, the Logstore Pool will need to be set manually. Please see the section 'Logstore' from the online help: [http://www.datacore.com/SSV-webhelp/Mirroring\\_and\\_Mirror\\_Recovery.htm](http://www.datacore.com/SSV-webhelp/Mirroring_and_Mirror_Recovery.htm)
- The DataCore iSCSI driver will not install if there are no network interface cards with an IP address configured. An iSCSI error message will be displayed during installation when manually installing SANsymphony software.
- If a DataCore Server has no Internet access, software installation can take a significant amount of time. To correct this problem: Open Internet Explorer. Select the Tools menu, and choose Options. In the Advanced tab, scroll down to the Security section and clear the Check for Publisher's Certificate Revocation check box. Click OK. This setting may be changed at any time during the installation of the software; there is no need to cancel an installation already in progress. It will take effect immediately.
- If the screen resolution is 1024x768 and it is not in full screen mode, lines may be cut off in the installation tool (DataCore Deployment Wizard) panels. To correct this, run the wizard in full screen mode.
- The automated installation wizard should not be used when upgrading the destination server of a replication configuration. The destination server must be upgraded manually first. The installation tool may then be used to upgrade the source side.
- The automated installation wizard may incorrectly fail the "check prerequisites for update" check with a message stating there is not enough space in # pool(s) when verifying shared pools. Rescan ports from the Actions menu in the Management Console on all DataCore Servers in your group and re-run the check. Note: if there is no space in the shared pool, a manual upgrade will be required.
- In configurations on Microsoft Windows 2012 or 2012 R2 with Emulex Fibre Channel adapters and the native Storport driver configured on the server, the DataCore Emulex driver will not install correctly. A message is posted in the event log: "The DataCore Emulex driver could not initialize the adapter on bus X, slot X, function X because it could not map some of the resources for that adapter. This may be due to a critical shortage of system resources." Using the Microsoft Device Manager, uninstall the DataCore driver and do to a port rescan to reinstall it. Alternatively, first install the Emulex Management Interface Library (MILI) utility and start the service before installing SANsymphony. This utility is included as part of the Emulex OneCommand Manager (OCM) Application, available from the Avago website, and installs as a service, which is set to "Manual" by default. Start the service to allow the DataCore driver installation to succeed; it may be stopped again afterwards. Contact Avago/Emulex support for further information.
- During installation or upgrading, the installation of a required component (Visual Studio C++ 2015 Redistributable(x64) - 14.0.24210) will fail with an error 0x800b010a "Certificate chain could not be built to a trusted root authority." This only occurs on systems without internet connection running Windows Server 2008 R2 SP1. For instructions on obtaining this certificate manually, see [FAQ 1641](#).
- Do not enable the Microsoft Secure Boot option for new installations, as SANsymphony software is not compatible with Secure Boot at this time.

- **Hosts With Microsoft Windows 2012 or 2012 R2 Hosts and SCSI UNMAP:**

By default, Windows 2012 or 2012 R2 hosts will have SCSI UNMAP support enabled. In some cases, this feature can cause disk format operations on the Host to take a longer time than expected, increase IO load to Back-end storage on the DataCore Server and cause CDP enabled Virtual Disk's History Log retention times to drop suddenly. See [FAQ 1544](#) for more details.

- **Host Settings**

For Windows hosts that are using ALUA, do not use the "All" option when setting a "Preferred Server" in the host details. Select a specific DataCore server, or use the "Auto select" setting, otherwise failover/failback may not work as expected..

- **CDP**

The history log for a CDP-enabled virtual disk may grow indefinitely. Set the CDP log size threshold appropriately.

- CDP and sequential storage features are not supported for VVOL disks at this time.

- **Data Rate for 40/56 GigE Ethernet**

The Current Data Rate on the Server Port Info tab is incorrectly displayed as 10 Gbs.

- **HP Insight Management WBEM Utility on DataCore Servers**

If the HP WBEM utility is running on a DataCore Server, refer to 'Known Issues - Third Party Hardware and Software' [FAQ 1277](#) for more information.

- **Deduplication**

If a deduplication pool is offline because the pool's physical disk is offline, manually run the SANsymphony task "Internal Use – Mount Dedup VHD X" for the pool. The task will have a description containing the name of the pool.

- **Adding Disks to a Pool**

Adding a large number of physical disks to a pool may cause the Management Console to timeout. To avoid this, add disks one at a time to a pool.

- **Bulk Storage Activation**

When enabling the Bulk Storage option on a server where the storage pool contains many virtual disks, the operation may time out and an error message displayed. To avoid this time out, stop virtualization OR change all virtual disks on the server to write-thru mode while this operation is in progress.

- **Virtual Disk Reserved Space**

After upgrading from a previous version, mirror recovery will not start, or mirrors cannot be created for virtual disks that fulfill all the following criteria:

- were created or resized prior to SANsymphony 9.0 PSP4
- the 'reserved space' size is equal to the virtual disk size
- the virtual disk size is not an exact multiple of the Storage Allocation Unit (SAU) size

Remove the reserved space before upgrading, and then add it back when the upgrade is complete.

- **Stopping the DataCore Server**

- Stopping the server may take longer than a minute, which could result in a timeout in the user interface, even though the command completes successfully. Check the Services applet to determine whether the DataCore Executive service has stopped.
- Stopping and immediately restarting virtualization may not allocate the expected amount of cache on systems with large amounts of memory.

- **Snapshot Revert Operation**  
After stopping server virtualization while a snapshot revert operation is in progress, there is no indication that the revert operation completed and access was restored to the source and destination disks. If the operation did not complete, the source is partially updated and should not be used until the revert operation is completed. To determine if the operation completed prior to the stop, examine the delta bitmap percentage after starting server virtualization. If the delta bitmap percentage is greater than 0, the revert did not complete and requires the operation to be manually re-run. Note: the revert operation will pick up where it stopped previously.
- **Performance Recording**
  - The Backup SANsymphony feature does not include the Performance Recording database when it resides on a DataCore Server, thus the performance recording data will be lost when restoring after upgrading or rebuilding an operating system.
  - Depending on the physical hardware, the Performance Recording database resides on, when recording a large number of counters on a local performance recording database that becomes full, stale data may not be deleted as fast as new data is recorded. When this occurs, reading and recording performance data will stop until deletion operations are complete. Event log messages will be posted. Consider reducing the number of counters being recorded if this occurs.
  - If data cannot be recorded on a backup database (either on the primary server, or on the local server), because the server was down or there was a loss of connectivity, it will not be available for viewing once the primary server and database connection is restored.
  - Some counters may show differing values in recorded performance and live performance (Physical disk % Idle Time, Average Queue Length).
  - When grouping two servers together, the recording sessions and recording endpoints are deleted for the server that is being added.
- **Support Bundles**  
The performance recording error logs are sometimes not included in the support bundles. If this occurs, the logs may be collected manually from the local application data folder associated with the user account that the SQL service is running under. Navigate to the subfolder \Microsoft\Microsoft SQL Server Local DB\Instances\v11.0 and collect all files in this location with the extension .log.
- **Performance Counters**  
The DataCore Performance Monitor Service may not restart if there are more than 100 counters exported for the same category.subfolder. A registry key should be set for FileMappingSize to be four times larger for each performance category, for example, "DataCore Server SCSI Ports". See this Microsoft article for details:  
<https://msdn.microsoft.com/en-us/library/ms229387%28v=vs.110%29.aspx?f=255&MSPPErrors=-2147217396>
- **Removing DataCore Servers from a Server Group**  
If after removing a DataCore Server from a Server Group, the removed server is still displayed in the DataCore Management Console, re-connect to the original Server Group by either using the 'Server Group Connections' Window or the 'Connect to Server Group' option in the Common Actions menu option.
- **User Role Assignments**
  - Predefined roles have been renamed from Owners to **Full Privileges**, and from Readers to **View**. PowerShell scripts that refer to a role by name rather than ID will have to be modified accordingly.
  - Snapshots and CDP rollback volumes will not inherit ownership properties.
- **Shared Physical Disks and Pools**
  - To prevent uncoordinated access to shared physical disks, join DataCore Servers in a server group before configuring disk pools.
  - Automatic reclamation may not occur for dual virtual disks in a shared pool. Manual reclamation may be required.
  - While reclamation is being performed on a virtual disk in a shared disk pool, the allocated storage amounts displayed may differ on the DataCore Servers.
  - While reclamation is being performed on a virtual disk in a shared disk pool, deleting the virtual disks and then the pool will not delete the pool from both DataCore Servers. Wait until reclamation has completed to perform this operation.
- **Number of Mirrored Disks**  
In the Virtual Disk template creation of more than 256 mirrors is permitted, but due to the OS limitation of 256 LUNs, mirrors beyond the LUN limit will not have mirror paths, and the mirror paths need to be added manually.
- **Converting Single Virtual Disks to Mirrored**  
Converting a single virtual disk to a mirrored virtual disk where the Sequential Storage feature is enabled will trigger a log-based mirror recovery, rather than a full recovery. After performing this operation, replace the new mirrored disk to invoke the full recovery and synchronize the mirror.
- **ReFS-formatted Virtual Disks**  
Formatting a virtual disk with Microsoft ReFS (Resilient File System) that is mapped over a loopback port will fail with an error stating the drive is not accessible.
- **Move Across Server**  
Move across servers of multiple virtual disks simultaneously is a long operation and occasionally the call can timeout and the management console will disconnect with the error "Connection time out". The action will be marked as failed in the action panel but actually continues. Ignore the error, reconnect and then confirm the operation succeeded. To avoid this issue, set the selected virtual disks in write-thru mode before attempting the operation OR move the virtual disks one at a time.
- **Evacuating DataCore Servers**
  - When using the Preferred All host setting, the host can lose access to the virtual disks that are being evacuated (moved). To avoid this issue, set the static (non-moving) side as the preferred server before evacuating.
  - Before evacuating a DataCore Server, confirm that the path to the static DataCore Server is healthy to avoid loss of access by the host. Also confirm that a path can be created from the destination DataCore Server to the host.
  - After an offline evacuation, an auto-generated virtual disk is created. The virtual disk must be deleted manually.
  - Evacuation of disk pools using the PowerShell cmdlet 'Start-DcsDistributionPlan' on servers with pools that are missing disks is not supported.



Also refer to Known Issues in the non-DataCore Products FAQ #1277.

## Enhancements and Fixes in 10.0 PSP6 Update4

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### Enhancements

**Enhancement:** Added the ability to create full snapshots with a destination that is a pass-through disk by using a new PowerShell cmdlet (Add-DCSPassthroughSnapshot). This allows migration of virtual disks with pool storage sources to physical disks. Note: This feature is available in SANsymphony 10.0 PSP5 and greater.

### Critical Fixes

- **Problem:** The DataCore Executive service did not start after upgrading a DataCore Server to a later version.  
**Cause:** An exception occurred when after removing the old server, the host's "preferred server" reference remained in the configuration file.  
**Resolution:** A code change was made to delete the preferred server property if the server is not present, and reset the property to auto-select.
- **Problem:** In some configurations, the DataCore Executive service did not start after upgrading to SANsymphony 10.0 PSP6 Update 3.  
**Cause:** An invalid configuration check was made during the startup sequence.  
**Resolution:** A code change was made to remove this check.

## Enhancements and Fixes in 10.0 PSP6 Update3

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### Critical Fixes

- **Problem:** In configurations with disks only on one DataCore Server from a shared pool, when the DataCore Executive service was stopped on one server, all logical disks were deleted on the other server if the pool was offline.  
**Cause:** A 'delete' flag was incorrectly set for the logical disks in this scenario.  
**Resolution:** A code change was made to not allow these logical disks to be deleted. Note: if this scenario occurs during an upgrade, the healthy DataCore Server should be upgraded before upgrading the failed server.
- **Problem:** A shared disk pool went offline, and access to disks was lost when migrating virtual disks.  
**Cause:** A race condition occurred when handling disk reservation conflicts, causing high latency.  
**Resolution:** Code changes were made to optimize the DataCore storage pool driver.
- **Problem:** Mirrored virtual disks were marked as offline and the storage source was marked as not ready, however the storage pool and the storage sources were actually healthy and accessible. The disks could not be brought back online without a split and recreation of the mirrors.  
**Cause:** A mismatch of information between the driver and the user interface prevented the disk from being displayed as online.  
**Resolution:** Code changes were made to set a timer to refresh the pool and disk information.
- **Problem:** After a physical disk was moved or replaced, performance was impacted, especially in large configurations.  
**Cause:** Constant disk rescans were issued every 8 minutes.  
**Resolution:** A code change was made to the rescan logic to stop the unnecessary rescanning.
- **Problem:** High latency was observed in shared pool configurations  
**Cause:** Race conditions occurred when handling disk reservation conflicts, causing high latency. 2) Unnecessary full catalog updates were performed when cancelling migration operations.  
**Resolution:** Code changes were made to optimize the DataCore storage pool driver.

### Fixes

- **Problem:** When performing new SAU allocations in shared pools, incorrect monitor alerts were erroneously posted ("Pool <Name> - <Servers> has reached 100% allocation.").  
**Cause:** During creation, deletion and move operations, the ownership of the storage pool needs to be switched. During the switch, the available space information was not available, and thus was set to 0.  
**Resolution:** A code change was made to use the previous values in this scenario.
- **Problem:** In a large ESX configuration, after a switch failure, constant SCSI BUSY statuses were returned by the surviving DataCore Server, preventing failover.  
**Cause:** A large number of target group resets were issued, causing excessive messages to be sent per virtual disk, resulting in the SCSI BUSY status returns.  
**Resolution:** A code change was made to reduce the number of target group resets.
- **Problem:** Physical disk size changes were not displayed in the management console's physical disk list.  
**Cause:** Changes were discovered upon a rescan, but were then ignored.  
**Resolution:** A code change was made to reflect size changes.
- **Problem:** Resetting the number of DataCore pollers in the registry was not retained over a reboot if the value was set to less than the default.  
**Resolution:** A code change was made to retain the setting.

## Enhancements and Fixes in 10.0 PSP6 Update2

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### Enhancements

- **Qlogic Support:** Added support for Dell 32 Gb Qlogic QLE-2742 Host Bus Adapter.
- **Emulex Support:** Emulex 16 Gb HBAs are not currently supported for new customers. Existing Emulex customers are supported. See [FAQ 1529](#).

### Critical Fixes

- **Problem:** A system crash occurred when creating a support bundle after upgrading to SANsymphony 10.0 PSP6 when HGST NVMe disks are read.  
**Cause:** A field used by a SCSI pass-through command (Data Transfer Length) used to extract storage array information did not match the allocation length in the SCSI descriptor info, causing the disk's array controller to crash.

- Resolution:** A code change was made to make the Data Transfer Length match the allocation length expected by the storage array.

**Problem:** A system crash occurred in the DataCore Partition Management driver during support bundle collection.

**Cause:** A race condition caused a thread running in the kernel to return to user mode at an elevated interrupt request level (IRQL), causing the system to crash.

**Resolution:** A code change was made to eliminate the race condition.
  - Problem:** In certain scenarios, an exception occurred and the DataCore Executive service would not start after a reboot in configurations with ESX hosts registered in VMware vCenter.

**Cause:** Although a preferred server was set, it was not saved in the configuration file until configuration changes were made, causing an error on the reboot.

**Resolution:** A code change was made to always save the preferred server property in the DataCore configuration file.
  - Problem:** 1) In some circumstances, stopping the SANsymphony software would sometimes fail or a system crash could occur.  
2) After resizing a virtual disk, a host lost access to the disk.

**Cause:** A race condition in a DataCore driver handling SCSI XCOPY commands sent by VMware ESX would cause the processing of the command to be completed twice

**Resolution:** A code change was made to eliminate the race condition.
  - Problem:** Access to virtual disks was lost on hyperconverged virtual SANs with VMware vCenter integration after updating to SANsymphony 10.0 PSP6. An error "The licensed hosts limit has been reached." was generated.

**Cause:** After migrating manually registered ESX hosts to vCenter, a new hypervisor host was created in addition to the original one, causing what appeared to be two hypervisors to be present. This violated the license limit and caused the virtual disks to not be remapped.

**Resolution:** A code change was made to replace the original hypervisor host with the new one.
  - Problem:** A system crash occurred in the DataCore Storage Domain Controller driver.

**Cause:** A function that looks for a list of domains returned an invalid entry because the number of entries on the list was incorrect.

**Resolution:** A code change was made to return the correct number of domain entries.
- Fixes**
- Problem:** In certain scenarios, virtual disks were not automatically discovered by a host without manually rescanning for them.

**Cause:** A notification was not sent when presenting virtual disks to a host that already had discovered other disks from the same DataCore Server over the same path.

**Resolution:** A code change was made to issue the notification so the host would automatically rescan for new disks.

## Enhancements and Fixes in 10.0 PSP6 Update1

### Fixes

- Problem:** After an upgrade to SANsymphony 10.0 PSP6, systems with 8GB Qlogic HBAs installed and used as Front End Targets, experienced IO timeouts and stalls.

**Cause:** Updated firmware included in PSP6 is correlated with this issue. Testing has confirmed that the prior firmware version does not show this behavior.

**Resolution:** Reverted to the prior Qlogic firmware revision.
- Problem:** After removing a preferred DataCore Server from a group, the DataCore Executive Service crashed.

**Cause:** The now invalid server ID was subsequently referenced.

**Resolution:** Removed the unnecessary reference.
- Problem:** DataCore Servers with a large number of backend disks became unresponsive after an upgrade.

**Cause:** An excessive number of port rescans for each disk on each path caused the Datacore Executive Service to timeout.

**Resolution:** Reduced the number of rescans by eliminating duplicate rescan requests.
- Problem:** After an upgrade to SANsymphony 10.0 PSP6, the 'Quick Serve' function failed with an internal error.

**Cause:** Modifications in PSP6 code caused a regression in the Quick Serve function.

**Resolution:** A code change was made to correct this issue.

## What's New in 10.0 PSP6

- Cluster Improvements in Configurations with Multiple Fabrics and Multiple Storage Servers**

  - Preferred Servers
  - Support indication of multiple preferred DataCore Servers – multiple selections allowed
  - Topology Intelligence
  - Create mirror mappings using physically independent paths with Port Groups
  - Release shared pools even if the controlling server is offline or down
- iSCSI Performance Improvements**

iSCSI Preferred Path Management for clustered environments and hyperconverged SANs allow the setting of the preferred path to the local server.
- Pools, Consumed Capacity Display**

  - Usage display allocation additions
- AFD Disk Differentiation Display**

  - Detects and displays 4k native disk types
  - Ability to create 4k native pools
- Access Controls Improvements**

Access Controls Display

  - Assign ownership of multiple virtual disks
  - Create Snap/Rollback with option to become owner
  - Updated PowerShell cmdlets (Create Virtual Disk, Rollback and Snapshot) to allow assignment to current user
- Deployment Wizard Improvements**

  - Supports Console-only installation and upgrade
  - Hybrid Group Support (SANsymphony and HVSAN)
  - Improved HVSAN Support

- Install Software Updates from a Central Location
- Improved HVSAN Support
- Installation of Server software on Hyper-V Server 2012 R2

## Enhancements and Fixes in 10.0 PSP6

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### Enhancements

- Standardized the **DataCore Cache allocation algorithm** based on system memory.
- Added support for the **unmap/trim** features for Citrix XEN Server.
- Renamed the "**Use as template**" virtual disk feature to "**Create Another**" for clarity.
- Added a **Windows PowerShell cmdlet** to set a storage pool's physical disk thresholds in the System Health panel.
- Added an **Oracle** storage type to support managed disks in Oracle Hyperconverged configurations.
- Added the ability to assign **Port Groups**.
- Increase the number of **multiple clients** from different instances such as monitoring scripts that may connect to the DataCore Server controller node.
- Remove the **limitation of 16 license keys** in the Activate License form.
- Added support for the **Qlogic QLE2692** and **HP SN1100Q** (rebranded Qlogic QLE2692) Host Bus Adapters.
- Updated the PowerShell cmdlet **Start-DcsDistributionPlan** to aid in the evacuating server process. See the Method 1 section of the [Start-DcsDistributionPlan](#) help page in the DataCore Cmdlet Reference Guide for details.
- Added support for Microsoft Windows Server 2016 as a **host**. Use the host type "Microsoft Windows 2012 or later".

### Critical Fixes

- **Problem:** iSCSI disconnects and performance issues were observed when systems had 10gb NICs installed.  
**Cause:** TCP/IP 5 second delay  
**Resolution:** A code change was made to enable the Microsoft Data Center TCP congestion provider when installing on Windows 2012 and 2012 R2.
- **Problem:** A system crash occurred in the DataCore Support driver when virtualization was stopped.  
**Cause:** A race condition existed resulting in accessing invalid memory.  
**Resolution:** A code change was made to correct the race condition.
- **Problem:** A system crash occurred in the DataCore Emulex driver.  
**Cause:** Processing of PRLO requests sometimes missed setting an internal variable.  
**Resolution:** A code change was made to correctly set this internal variable allowing for proper processing of PRLO.
- **Problem:** A system crash occurred in the DataCore Fibre Channel driver after the system storage command buffers were fully depleted.  
**Cause:** An ESXi host issued a WRITE SAME SCSI command which was not handled correctly on a system where the command resources were exhausted.  
**Resolution:** A code change was made to the WRITE SAME handling; return a BUSY response in this case.
- **Problem:** A system crash occurred in the DataCore Fibre Channel driver during a Clone VVOL virtual machine operation.  
**Cause:** The DataCore snapshot driver code contained a deadlock scenario while attempting to delete a snapshot relationship.  
**Resolution:** A code change was made to the driver to eliminate the deadlock.
- **Problem:** A system crash occurred in the DataCore SCSIport driver during an uninstall  
**Cause:** A race condition existed between a device removal and a bus reset.  
**Resolution:** A code change was made to modify the processing so the race condition is prevented.
- **Problem:** A system crash occurred in the DataCore pool driver when reclaiming pool space.  
**Cause:** An internal pointer to a logical disk was reset.  
**Resolution:** A code change was made in the way the pointer is used.
- **Problem:** VMware ESX servers using iSCSI may hang and the virtual machines become unresponsive.  
**Cause:** The maximum number of I/O sequence numbers had been reached for a DataCore target port, and the iSCSI driver did not handle rolling this value over correctly when it reached the boundary.  
**Resolution:** A code change to handle this scenario by restarting the count.

### Transports

- **Problem:** Fibre channel initiator ports were denied port login to DataCore Server ports, causing loss of access to served virtual disks.  
**Cause:** Stale entries were left in the port database after the initiator port logged into the target from a different Port ID  
**Resolution:** A code change was made to purge the port database when this condition was detected.
- **Problem:** Internal errors and topology problems were reported on Emulex HBAs and ports were stopped permanently.  
**Cause:** The port management call did not check for a "resetting" status.  
**Resolution:** A code change was made to check for this status and return a busy status if this is the case.
- **Problem:** In configurations with 8 Gb Qlogic HBAs, after upgrading to SANsymphony 10.0 PSP5 Update2, mirrors went down and mirror recovery could not be completed or latency may be observed on hosts.  
**Cause:** A code optimization was introduced in that release that modified the way the Fibre Channel driver communicates with the HBA; specifically in the management of the shared memory queues that was not compatible for 8 Gb HBAs.  
**Resolution:** A code change was made to ignore the optimization on 8 Gb HBAs.
- **Problem:** After adding a registry key to ignore a Fibre Channel driver optimization for older Qlogic 8 Gb HBAs, the optimization was also ignored for subsequently added 16 and 32 Gb HBAs.  
**Cause:** The value that was set caused all Qlogic HBAs to ignore the optimization.  
**Resolution:** Code was added to the driver to identify HBA board types and behave appropriately.
- **Problem:** Virtual disks changed state to 'Not Ready' sometimes when files were being copied or virtual machines were being moved on Windows Server 2012 and 2012 R2 hosts.  
**Cause:** Offloaded Data Transfer (ODX) token resources were depleted because partial write commands consume tokens in chunks, so the token would be left to expire when the last chunk was consumed, rather than deleted immediately.  
**Resolution:** A code change was made to mark a token deletable when the last chunk is consumed, and reduce the token expiration time to allow resources to be freed up sooner.

### Performance Metrics

- **Problem:** In the System Health panel, under the Performance Spotlight tab, selecting the Export to CSV action worked as expected. However after closing and reopening the Performance Spotlight tab, the export function no longer worked and failed with an exception.  
**Cause:** Closing and reopening the form caused a new instance to be created, however the previous instance was still active.  
**Resolution:** A code change was made to remove the previous event.
- **Problem:** In the Performance Recording tab, under the Pool Virtual Disk Services for a CDP disk, the Total Bytes in History Log counter was displayed as zero.  
**Cause:** The counter name was misleading and actually displayed the number of bytes during a 'Disable, Revert or Split Rollback' operation. Note: this counter only has meaning during data copying operations (disable CDP and split/revert rollback).  
**Resolution:** A code change was made to rename the counter appropriately. Also renamed "Rollback Revert or Split Bytes Copied" to "Disable, Revert or Split Rollback Bytes Copied" and "Rollback Revert or Split Percentage" to "Disable, Revert or Split Rollback Percentage", and updated descriptions for related counters.
- **Problem:** In the Performance tab, when multiple recorded performance counters were selected, the graph lines were not highlighted.  
**Resolution:** A code change was made to bold all counters in a selected group.
- **Problem:** Pending Writes, Pending Operations and Pending Reads performance counters for a VirtualLogicalUnit (Path/Mapping) and VirtualTargetDevice displayed incorrect values  
**Resolution:** These counters have been removed.

#### Replication

- **Problem:** Adding or removing a mirror path on the active replication virtual disk side failed with errors ("Virtual disk XXX has a replication configured and its path to Server YYY is system protected and cannot be deleted." or "Cannot serve virtual disk XXX to Server YYY since the server acts as a replication server for this virtual disk.")  
**Cause:** Validation rules were too strict for these operations.  
**Resolution:** A code change was made to relax the validation rules when mapping or unmapping a logical disk that is in a replication relationship.  
User Interface
- **Problem:** The Virtual Disk tab Sort by Recovery Priority operation sorted incorrectly.  
**Cause:** The status column sort mode was set incorrectly.  
**Resolution:** A code change was made to correct the sort mode.
- **Problem:** The preferred path check box didn't remain checked when the virtual disk tab was closed and reopened.  
**Cause:** A logic error in the setting of the preferred path caused unreliable behavior in the selection of the check box.  
**Resolution:** A code change was made to correct the logic error.
- **Problem:** When multiple virtual disks were served to an ESX host where the 'Create DataStore' option is set, only the first one was converted to a DataStore.  
**Cause:** The function only handled a single virtual disk ID.  
**Resolution:** A code change was made to operate on multiple virtual disk IDs
- **Problem:** When serving multiple virtual disks to an ESX host, the 'Set Multipath' policy was not applied to all disks.  
**Cause:**The function only handled a single virtual disk.  
**Resolution:** A code change was made to operate on multiple virtual disks.
- **Problem:** After a pass-through disk was created, deleted and recreated using the same physical disk, it was marked as failed even though it was not.  
**Cause:** The state information was not updated when a the virtual disk was deleted in this scenario  
**Resolution:** A code change was made to clean up the states when a virtual disk is deleted. This ensures that when a pass-through disk is recreated, a new state object is created.

#### Snapshot

- **Problem:** The preferred path check box didn't remain checked when the virtual disk tab was closed and reopened.  
**Cause:** The name validation function incorrectly limited the name to too few characters.  
**Resolution:** A code change was made to allow up to 64 characters for snapshot alias names.
- **Problem:** After creating a snapshot, promoting it to full and then splitting it, an internal error was reported when selecting the resulting virtual disk.  
**Cause:** The new virtual disk name was over the 41 characters limit.  
**Resolution:** A code change was made to allow virtual disk names to be the same size as snapshot and rollback names (63 characters).

#### Scheduled Tasks

- **Problem:** After changing the time zone, tasks were being triggered based on the original time.  
**Resolution:** Modified the way time zone changes are handled. The trigger time is automatically adjusted.
- **Problem:** Adding an action to a task to update a snapshot resulted in an exception ("Object reference not set to an instance of an object.")  
**Cause:** A logic error existed when closing and reopening the Task Details tab and selecting an action.  
**Resolution:** A code change was made to reinitialize each time the task details tab is opened.

#### Disk Pools

- **Problem:** Reserved space for a mirrored virtual disk was 0 when one DataCore Server is shutdown.  
**Cause:** Reserved space data was not available when one of the DataCore Services was not connected.  
**Resolution:** A code change was made to obtain and display the correct value.
- **Problem:** A shared pool could not be deleted after the physical disks were renamed.  
**Cause:** There was no code to delete the physical disks in the pool.  
**Resolution:** A code change was made to add a command to delete the disks, allowing the pool to be deleted.
- **Problem:** The pool mirroring state was incorrect when a shared pool with mirrored disks was shared on multiple nodes.  
**Cause:** There was a timing issue when updating status for shared pools on multiple nodes.  
**Resolution:** A code change was made to correctly the update information.

#### Executive Service

- **Problem:** In certain situations, the DataCore Executive stop operation timed out, leaving the DataCore Server in an invalid state.  
**Resolution:** A code change was made to functions involved in setting the server offline.
- **Problem:** Logging into the DataCore Management Console failed and an exception occurred (Error 'Value cannot be null').  
**Cause:** Invalid port data existed in the configuration database and caused the exception.  
**Resolution:** A code change was made to report the issue rather than throw an exception

## Installation and Upgrading

- **Problem:** During an upgrade, an error occurred when updating the SQL database with a message "Failed to install Microsoft SQL Express LocalDB. Error code = 1618"  
**Cause:** A current database session was running, preventing the upgrade.  
**Resolution:** A code change was made to attempt to stop any running sessions before upgrading, and warn the user if they can't be stopped.
- **Problem:** In the DataCore Deployment wizard upgrade template, an error occurred when using the remote scripted installation ('Unable to serve virtual disk XXX to server ZZZ using loopback.')
- **Problem:** In the DataCore Deployment wizard VSAN template, an error occurred when serving a loopback virtual disk ('Unable to serve virtual disk XXX to server ZZZ using loopback.')

## High Availability

- **Problem:** After an upgrade, virtual disks went into full recovery, despite that fact that the Logstore Pool Setting was set to Auto Select.  
**Cause:** if there were no new virtual disks created during the upgrade, the logstore was not created because there was no check for the setting.  
**Resolution:** A code change was made to check for the Auto Select setting and create the logstore, avoiding unnecessary full recoveries.

## Miscellaneous

- **Problem:** When creating a support bundle, the folder and zip filename did not include the correct date and time if the time zone had been modified on the DataCore Server.  
**Cause:** Time zone information was not recorded correctly.  
**Resolution:** A code change was made to include the correct data and time. The time stamp of the bundle folder is now consistent with the time zone of the controller, and the time stamps of the zip files are consistent with the local DataCore Server's time zone.
- **Problem:** In a hyperconverged virtual SAN configuration, a pass-through dual looped-back virtual disk was added to a Microsoft Cluster. After a reboot or restart of virtualization the disk could not be moved to the other server. An "access denied" error was reported when attempting the move.  
**Cause:** The pass-through disk was erroneously protected.  
**Resolution:** A code change was made to not hide the pass-through disk.
- **Problem:** The evacuation operation failed when a disk pool contained mirrored physical disks.  
**Cause:** The validation rules prohibited this operation when the pool contained mirrored physical disks.  
**Resolution:** A code change was made to allow the evacuation in this scenario.
- **Problem:** The evacuation operation failed for pass-through virtual disks with the error "Unable to perform the requested operation".  
**Cause:** Pass-through disks are ineligible for evacuation.  
**Resolution:** A code change was made to issue a warning if a disk is a pass-through disk. Note: this restriction may be lifted in a future release.
- **Problem:** After a successful local move from one disk pool to another, VMware ESX did not recover the paths on the moved side. After a rescan on the ESX servers was performed, the path reappeared, but was marked as 'Dead' and could not be used.  
**Cause:** The non-moved side did not trigger a host refresh of the ALUA view, so ESX did not attempt to bring the moved side's paths online.  
**Resolution:** A code change was made notify that an ALUA state change has occurred.
- **Problem:** After a pass-through disk was created, deleted and recreated using the same physical disk, it was marked as failed even though it was not.  
**Cause:** The state information was not updated when a the virtual disk was deleted in this scenario  
**Resolution:** A code change was made to clean up the states when a virtual disk is deleted. This ensures that when a pass-through disk is recreated, a new state object is created.
- **Problem:** Attempting to set the preferred path for a loopback port fails, and an error message "The setting of path preference is only valid for Fiber Channel ports." Is displayed.  
**Cause:** The validation rules prohibited setting the loopback path to be preferred.  
**Resolution:** A code change was made to relax this validation.

## What's New in 10.0 PSP5

- **Improvements** in DataCore schedulers and cache for Parallel I/O processing and performance improvement.
- **Increased addressable memory** allowing for caches up to 4 TB.
- **Storage Management Provider (SMP)** to support System Center Virtual Machine Manager (SCVMM) Integration
- Support for **Advanced Format Disks (AFD)** that natively work on 4K Byte sector format.
- Improvements in the automated installation wizard.
- **Quality of Service controls** have been added to virtual disk groups
- **Full Recovery Mitigation** eliminates unnecessary full recoveries, saving time and bandwidth.
- Support for **Qlogic 32 Gbps Fibre Channel Adapters** (QLE274X, QLE2694U)
- **Configuration Access Controls:** Use of new pre-defined roles and user-defined roles to manage virtual disk configuration access.
- **Virtual Disk Templates** publish storage capabilities to hypervisor managers such as vSphere and VMM and to assist with repetitive creation of like virtual disks
- Practical application of historical performance data to:
  - Add a **Performance Spotlight** Tab in System Health. New charts highlight the top 20 virtual disks with the highest I/O rate, throughput and latency
  - Provide predictive **Storage Pool Depletion Monitoring** to assist in capacity planning (experimental feature)

## Enhancements and Fixes in 10.0 PSP5 Update2

### Enhancements

- Added support to allow bulk storage to utilize SMPA (Shared Multi-Path Arrays). Note: Existing bulk storage licenses must be replaced after upgrading to this update.
- Added support for the Qlogic QLE2694L Host Bus Adapters.

### Critical Fixes

- **Problem:** After a complete communication failure (where all mirror links and management communication links are lost between mirrored DataCore Servers) and a virtual disk is accessed from both DataCore Servers simultaneously, on reconnection an unexpected log recovery was started. Note: This issue was only present in SANsymphony 10.0 PSP5 and 10.0 PSP5 Update1.  
**Cause:** After the two servers began communicating again, the double failure state was not preserved, allowing the recovery to start.  
**Resolution:** A code change was made to allow both servers to enter the double failure state and not perform recovery until user intervention selects the side to recover from.
- **Problem:** In certain rare double failure scenarios where logstore is enabled, a mirror partner server is down (via a clean stop or a crash) and I/O takes place on the local server, if the local server also crashes, when the DataCore servers are restarted an incorrect recovery took place. This situation may also occur if both DataCore Servers crash, and an I/O has occurred before the second server crashes. Note: This issue was only present in SANsymphony 10.0 PSP5 and 10.0 PSP5 Update1.  
**Cause:** A logic error was introduced SANsymphony 10.0 PSP5 in the recovery order.  
**Resolution:** A code change was made to correct the logic error.

### Fixes

- **Problem:** After upgrading to SANsymphony 10.0 PSP5, the DataCore Executive service would sometimes fail to start  
**Cause:** New fields that were added during the upgrade were not registered properly.  
**Resolution:** A code change was made to force the new fields to be updated.
- **Problem:** After an upgrade to SANsymphony 10.0 PSP5 or restarting the DataCore Executive Service, in configurations using vCenter integration: 1) an internal error was reported that a port did not exist in the configuration and the service did not start. 2) ports were logged out and could not re-login, causing front-end paths to virtual disks to fail.  
**Cause:** When ESX servers were removed in vCenter and re-added, ports were not correctly saved in the DataCore configuration file.  
**Resolution:** A code change was made to recreate the port if needed and re-login and bind the port to the new host.
- **Problem:** After an upgrade to SANsymphony 10.0 PSP5 on a replication destination server, the DataCore Executive service would not start.  
**Cause:** When the standby side of the replication pair is on a previous version, the replication relationship is built when the service starts on the upgraded side. Due to the version mismatch, the session was automatically closed.  
**Resolution:** A code change was made to handle the version mismatch.
- **Problem:** After an upgrade to SANsymphony 10.0 PSP5, an error exception occurred ("Violation of PRIMARY KEY constraint 'PK\_Sample' from the Historical Monitoring feature when there were a large number of entries in the monitoring database.  
**Cause:** A logic error in the code resulted in a duplicate value sent to the monitoring database, causing a check violation and the transaction was rolled back.  
**Resolution:** A code change was made to correct the error.
- **Problem:** After an upgrade to SANsymphony 10.0 PSP5 Update1, the user interface was slow to load and display objects in the Hosts and Server panels.  
**Cause:** A large amount of performance monitors were introduced in the Performance Spotlight feature, slowing down the startup.  
**Resolution:** A code change was made to reduce the number of monitors and optimize the startup process.
- **Problem:** In large configurations, the user interface was slow after upgrading to SANsymphony 10.0 PSP5.  
**Cause:** Excessive calls to a performance recording monitor were made.  
**Resolution:** A code change was made to reduce the number of calls.
- **Problem:** The **Replace** and the **Split and Unserve** operation failed for a virtual disk in a redundancy failed state.  
**Cause:** Code changes made in PSP5 caused a failure that was not handled correctly.  
**Resolution:** When this failure occurs, log the error and continue with the operation.
- **Problem:** A misleading error message ("Object does not exist in the registry") was posted when a virtual disk was served.  
**Cause:** The error was posted before an entry was made in the performance recording database.  
**Resolution:** A code change was made to not flag this as an error.
- **Problem:** When changing the update time in the live performance tab, the timestamps were not displayed correctly.  
**Resolution:** A code change was made to correct the formatting of the timestamp.

- Problem:** In some configurations, after an upgrade to SANsymphony 10.0 PSP5 or PSP5 Update1, the Qlogic HBA driver would not load for back-end and mirror ports or start for front-end ports. An error "The DataCore Fibre Channel driver was unable to recover from a previous internal error" was posted.  
**Cause:** If the data rate mode parameter had been explicitly set to 'automatic', the PSP5 update erroneously failed.  
**Resolution:** A code change was made in the installer to reset the Data Rate Mode registry value to the correct value during the installation.
- Problem:** In configurations with 16 GB Emulex Host Bus Adapter: 1) resetting link error counts did not update the counts in the System Health panel 2) after initiating a LIP on a port, the port will not connect.  
**Cause:** Mailbox queue processing in the Emulex driver differed from what the HBA firmware expected.  
**Resolution:** A code change was made to the correct this.

## Fixes in 10.0 PSP5 Update1

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### Critical Fixes

- Problem:** DataCore Servers serving storage to Microsoft Windows 2012 or 2012 R2 hosts OR Hyperconverged Virtual SAN servers installed on Microsoft Windows 2012 or 2012 R2 servers crashed after upgrading to SANsymphony 10.0 PSP5.  
**Cause:** A flaw in processing ODX commands in the DataCore Fibre Channel driver caused an invalid kernel pointer to be referenced, causing the crash.  
**Resolution:** A code change was made to validate the pointer before referencing it.
- Problem:** The DataCore Emulex driver did not start for 8GB Emulex LP12000 Host Bus Adapters.  
**Cause:** A previous change to the Emulex Fibre Channel driver eliminated a HBA reset, which was required on the 8GB HBAs.  
**Resolution:** A code change was made to re-add an HBA reset during initialization.

### Fixes

- Problem:** The Management Console component could not be installed on Microsoft Windows 10 systems, failing with a .NET version error.  
**Cause:** The Windows 10 version of 4.6.1 .NET differed from other Windows Server versions, so the check for a valid .NET version failed during installation.  
**Resolution:** A code change was made to add an additional valid .NET version.
- Problem:** The Auto-tiering license information was not visible in the License Information panel after upgrading to SANsymphony 10.0 PSP5.  
**Cause:** A code change in SANsymphony 10.0 PSP5 inadvertently hid this information.  
**Resolution:** A code change was made to restore this field.
- Problem:** Server port core license information was mistakenly displayed in the License Information panel.  
**Resolution:** A code change was made to hide this information.
- Problem:** After upgrading to SANsymphony 10.0 PSP5, mirrored disks in a pool would go into an unnecessary full recovery.  
**Cause:** Previous versions marked the shutdown flag as 'dirty', causing the recovery to take place.  
**Resolution:** A code change was made to set this flag correctly when upgrading.

## Enhancements and Fixes in 10.0 PSP5

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### Enhancements

- Enhancement:** Allow more than 256 virtual disks to be mirrored over a single Initiator-Target path (VVOL support initially).
- Enhancement:** Added a method to identify that the SANsymphony software is running on a virtual machine.
- Enhancement:** Allow the Support Bundle Relay server software to be installed on Microsoft Windows 7 or 8.1.
- Enhancement:** Added the ability to take snapshots of pass-through disks. A new PowerShell cmdlet (Add-DCSPassthroughSnapshot) was added.

### Critical Fixes

- Problem:** A DataCore Server crashed when deleting the host group after setting the Quality of Service setting.  
**Cause:** The implementation for multiple quality of service restrictions was incorrect.  
**Resolution:** The portion of code for setting multiple quality of service settings has been modified.
- Problem:** A system crash occurred during shutdown of a DataCore Server.  
**Cause:** Because of problems in the backend storage, no available worker threads were available to flush the cache.  
**Resolution:** A code change was made to change the way the cache is flushed that doesn't rely on system worker threads.
- Problem:** A system crash occurred during initialization of an Emulex Host Bus Adapter.  
**Cause:** A timer issue in the initialization code caused a command to be sent before the HBA is ready.  
**Resolution:** A code change was made to correct this timing issue.
- Problem:** A system crash occurred in the Emulex Host Bus Adapter driver under heavy load (during mirror recoveries).  
**Cause:** A work queue in the driver filled because of an error in freeing work queue commands.  
**Resolution:** A code change was made to correct this issue.
- Problem:** Client access was lost after a Split and Unserve operation was performed on virtual disk that was failed on both DataCore servers.  
**Cause:** A cleanup routine for a mirrored virtual disk was incorrect for a virtual disk that was not mirrored, so host access was not restored when the connection was re-established.  
**Resolution:** Code changes were made to the cleanup routine.

### Transports

- Problem:** In configurations with 8GB Emulex Fibre Channel Adapters, ports would sometimes log in and out. An error message was posted in the system event log.  
**Cause:** Unnecessary violations were called in the driver; instead of just returning the error for a logged out port, the code set a violation causing the port to reset.

**Resolution:** A code change was made to eliminate the unnecessary violations.

- **Problem:** Maximum outstanding Initiator and Target commands could not be set to a value greater than 512 for 16 GB Qlogic and Emulex Fibre Channel Adapters.  
**Cause:** The drivers for the HBAs limited the setting of the maximum outstanding commands.  
**Resolution:** Modify the calculations allowing for these properties to be set correctly, depending on the mode they are being used for and the capabilities of the HBA.
- **Problem:** The HP StoreFabric SN1000Q 16 GB Fibre Channel adapter would not start.  
**Cause:** The adapter returned an unrecognized code for a Temperature Alert. The DataCore Fibre Channel driver interpreted this as a serious event, even though it wasn't, and failed to continue initializing the board.  
**Resolution:** Removed code that returned a failed status in this case. Messages are still logged to the tracer. If the high temperature warning system on the board determines the temp is critically hot, the board will shut down without intervention by the driver.
- **Problem:** Modifying the maximum number of outstanding target commands in the management console inadvertently reset another registry key back to a default value.  
**Cause:** The DataCore iSCSI driver was overwriting the registry key in error.  
**Resolution:** A code change was made to correct this.
- **Problem:** Directly-connected point-to-point 16Gb and 32Gb Qlogic Host Bus Adapters occasionally wouldn't establish a connection.  
**Cause:** In this mode, two port IDs are reported (F-Port and N-Port) with the same WWN.  
**Resolution:** Allow the WWN to be entered into the Port Database for one port.
- **Problem:** Poor performance was reported when a virtual disk on a loopback port was mounted in the Host OS and mapped to the Guest OS as a virtual hard disk.  
**Cause:** The DataCore SCSI port driver and a Microsoft VMBUS worker thread competed for CPU resources.  
**Resolution:** A code change was made to the SCSI port driver to alleviate the contention.
- **Problem:** DataCore SCSI port ETL logs were flooded with harmless SCSI check condition error messages for "85h ATA pass-through" commands.  
**Cause:** VMware ESX hosts send an unsupported ATA pass through command when issuing a normal automatic rescan every 5 minutes to report LUNS.  
**Resolution:** Suppress Check Condition trace messages for the unsupported ATA PASS THROUGH SCSI command.
- **Problem:** A system crash would occur when a certain Qlogic driver was installed on an initiator host bus adapter.  
**Cause:** The Qlogic driver erroneously set a field to a non-zero value resulting in an invalid address.  
**Resolution:** Protect against this scenario. Additionally, new Qlogic firmware (8.03.06 ) will correct the issue.

#### Performance Recording

- **Problem:** Timeouts could occur while recording performance data as a result of insufficient processing resources on the selected recording server.  
**Cause:** The update and purge procedures of performance instances was inefficient, as was the connection to the database protocol.  
**Resolution:** Optimized the procedure of updating performance instances in the database. The connection is no longer "auto-closed" by default. Instead, the connection is left open so there is less overhead each time the data is modified.
- **Problem:** Alerts were posted that connections to a server was lost and that "a value exceeded the Maxlength limit of this column".  
**Cause:** An internal error occurred because objects in the performance recording database were greater than 100 characters in length.  
**Resolution:** A change was made to allow objects in the performance recording database up to 4000 characters.

#### Performance Metrics

- **Problem:** In the VASA Provider Live Performance panel, the values for **Total operations/reads/writes per second** performance counters for protocol endpoints are incorrect, and the individual virtual volume counters report 0. In a future release, virtual volume counters will show appropriate performance metrics for individual virtual volumes, and the protocol endpoint counters will show 0.  
**Cause:** A mapping name was incorrectly formatted.  
**Resolution:** A code change was made to correctly format the mapping name.
- **Problem:** **AverageTimePerOperation** performance counters were incorrectly reported as 1.0 in the Performance Monitor, while live performance values were correct.  
**Cause:** Averages were incorrectly calculated.  
**Resolution:** A code change was made to correct the calculation.
- **Problem:** The DataCore Performance Monitor Agent service terminated repeatedly and error logs were flooded with error messages after a virtual disk that was being monitored was deleted.  
**Cause:** An exception was thrown when scanning for the missing disk.  
**Resolution:** Do not throw an exception and ignore the error.

#### User Interface

- **Problem:** VMware ESX hosts that had mappings that were removed from vCenter and subsequently re-added to vCenter were displayed twice.  
**Cause:** The host ID is changed each time it is added to vCenter, so appears as a new host.  
**Resolution:** Enable vCenter integration to correctly migrate ESX hosts.
- **Problem:** The order the cursor moved when using the tab key in the "System Health Thresholds" settings was incorrect (moved right to left).  
**Resolution:** A code change was made to correct the tab order.
- **Problem:** Sorting paths for a virtual disk by Initiator or Target did not sort them alphabetically.  
**Cause:** Sorting was incorrectly done using the port ID value, not its caption, so sorting appeared to be random.  
**Resolution:** Use the port caption for sorting paths.
- **Problem:** Serving a single virtual disk to a host group with multiple hosts did not honor the LUN selected.  
**Cause:** The LUN selected was not being retained.  
**Resolution:** Retain the LUN information when a specific LUN is entered.

#### Storage Pools

- **Problem:** No error messages were posted when a storage pool filled and ran out of SAUs (Storage Unit Allocations).  
**Resolution:** Improve the alert mechanism in the console when a pool runs out of SAUs.
- **Problem:** When replacing a soft WWN-enabled port, the port could not be labeled with the original soft WWN. The user had to copy the soft WWN of the original port, delete the original port and then set the soft WWN of the original port to the replaced one.

**Resolution:** After replacing the port, transfer the soft WWN of the original port to the replaced one if the port is not present. Add a warning message stating the soft WWN replacement will occur. If the port is still present, replace the port as before.

#### Replication

- **Problem:** When a Replication disk switched from active to standby mode, a persistent reservation remained.  
**Cause:** Reservations were not guaranteed to be removed when going from active mode to standby mode.  
**Resolution:** When the active side of a replication is deactivated, clear virtual disk reservations.
- **Problem:** The Replication Time Lag value was sometimes incorrect in the Replication tab for a virtual disk.  
**Cause:** A rounding error caused an extra hour to be added if the minutes value was 30 or greater.  
**Resolution:** A code change was made to correct the rounding error.

#### DataCore Executive Service

- **Problem:** After an upgrade, the DataCore Executive Service would not start, and an exception was logged.  
**Cause:** A physical disk was listed in the configuration file, but was not actually in the system. This caused the service to not start.  
**Resolution:** A code change was made to correct the inconsistency between the physical disk object and the configuration file.
- **Problem:** Virtualization started automatically even after stopping the service when upgrading from older versions.  
**Cause:** Configuration information was mismatched during the upgrade.  
**Resolution:** A code change was made to resolve the mismatch.
- **Problem:** DataCore virtualization hung while stopping.  
**Cause:** Internal handles were not closed because a status code was not returned when stopping  
**Resolution:** A code change was made to check for error status while processing the stop.
- **Problem:** On a reboot of certain systems, such as the Fujitsu SVA server, the DataCore Executive service terminated with an internal error.  
**Cause:** Calls to retrieve system information to detect if the machine is a virtual machine took too long, causing the initialization of the service to timeout, thus terminating the service.  
**Resolution:** Return an immediate false response when the service requests the information, and start a background operation for obtaining the system information. When the operation completes, if the machine is a virtual machine, modify the information.
- **Problem:** The DataCore Executive service log was flooded with repeated Core VDS error messages ("Exception when reading volume properties").  
**Resolution:** A code change was made to not log the same error message twice to prevent flooding the log on a repetitive error.

#### Continuous Data Protection

- **Problem:** From the Rollback Virtual Disk tab, CDP rollbacks that were served to a host were not successfully mapped.  
**Cause:** A regression in the code existed where the selected rollback disk was not being passed to the mapping function.  
**Resolution:** Include the rollback type so the selected rollback disk will be passed correctly.
- **Problem:** 1) After an upgrade or reboot, warnings were displayed about Continuous Data Protection (CDP) volumes being in an unknown state. 2) Disabling CDP or sequential storage did not complete and the progress bar remained at 0%.  
**Cause:** When a stop of the DataCore software caused the controlling node of the server group to change, events were missing so the state of sequential storage and CDP changed to unknown.  
**Resolution:** A code change was made to the order events occur.

#### High Availability

- **Problem:** Host access from both DataCore Servers was prohibited after resizing a virtual disk.  
**Cause:** Internal handles were not closed because the reference count had not been decremented  
**Resolution:** A code change was made to de-reference the handle.
- **Problem:** After a double failure of a mirrored disk, mirror recovery on both virtual disks was initiated without allowing the user to identify the mirror to recover from.  
**Cause:** Mirror state was not correctly synced between the DataCore Servers.  
**Resolution:** A code change was made to insure that the state of each mirror is correct, allowing the user to select the side to online.
- **Problem:** After setting a DataCore Server offline twice in rapid succession, virtual disks went into Full Recovery,  
**Cause:** An invalid status was reported in this scenario.  
**Resolution:** Set the correct status so that no full recovery is started.

#### Installation

- **Problem:** Running the SANSymphony installer in repair scripted mode on a server that already has SANSymphony software installed will result in a popup message stating "If you proceed the DataCore Software will be stopped .... Do you wish to proceed with this update?", however the installer will continue even when 'No' is selected.  
**Cause:** The popup was displayed in error. A scripted installation should always continue, as expected.  
**Resolution:** Remove the popup when doing a scripted installation.
- **Problem:** Automatic license activation failed with an error "Invalid license or missing information".  
**Cause:** The license ID validation failed because the generated GUID started with a number. Some Microsoft Windows updates added a stricter GUID validation check that requires GUIDs to start with a letter.  
**Resolution:** Ensure that all license IDs start with a letter.

#### Scheduled Tasks

- **Problem:** When opening the details of tasks in Scheduled Triggers form a second time, settings for different schedules are not displayed and cannot be modified even when selecting different radio options such as weekly/hourly/monthly. During a settings of trigger/action the tabs are closed and re-opened, the details of the previously saved form is displayed instead of a new create-trigger/action form, and a second task trigger was not set or run correctly.  
**Cause:** The Scheduled Triggers forms weren't initialized and reset properly.  
**Resolution:** Code has been modified to initialize the form each time the form loads and fully reset.
- **Problem:** A scheduled snapshot update task, after triggering once, never changed status from 'running' to 'idle'. Subsequent updates occur, but are never displayed in the task list again.  
**Cause:** A change in the snapshot update function no longer reported completion of the operation.  
**Resolution:** A code change was made to correct this issue.

#### Auto-tiering

- **Problem:** In the Allocation View tab for a disk pool, the auto-tiering SAU temperature did not cool down as expected when aged over long periods.  
**Cause:** A coding error did not account for large temperature values.  
**Resolution:** A code change was made to allow for large temperature values.

## Miscellaneous

- **Problem:** Various issues relating to loopback ports existed: 1) After upgrading or reinstalling, loopback ports were displayed as failed.  
2) After deleting ports after replacement of an HBA, roles could not be modified and a message “Port name already exists” was displayed  
3) After server and loopback ports were renamed, the renamed loopback ports are not displayed however new ports are displayed.  
**Resolution:** Added a new Organizationally Unique Identifier (OUI) for loopback ports.
- **Problem:** An MPIO Client took one minute to failover when one DataCore Server was shutdown cleanly, causing client I/O to pause.  
**Cause:** Stopping a DataCore Server severed the front-end connection abruptly and did not give the MPIO initiator time to see I/O errors that would initiate path failover.  
**Resolution:** A code change was made to set client paths offline so client I/Os are failed with an error initiating path failover and sets all mirror paths disabled so incoming mirror I/Os are failed without timing out, allowing failover to start instantly.
- **Problem:** In the PowerShell cmdlet Set-DcsServerPortProperties could not be used to set or rename the port alias.  
**Cause:** The Alias parameter in this cmdlet was misleading.  
**Resolution:** The Alias parameter was removed from this cmdlet. The Set-DcsPortProperties ‘NewName’ parameter can be used instead to change the alias.
- **Problem:** A Move operation on virtual disk from one pool to another reset the Reserved Space parameter to 0.  
**Cause:** In a local move, the snapshot logical disk does not set any reserved space property.  
**Resolution:** Set the reserved space before replacing the snapshot disk with the snapshot source
- **Problem:** A failed, unused, redundant mirror path could not be removed, because the virtual disk is in a replication relationship.  
**Cause:** The path removal validation rules prohibited mapping or unmapping a logical disk that in replication.  
**Resolution:** The path removal validation rules were relaxed to allow these operations.

## What’s New in 10.0 PSP4 Update1

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- Added support for a dedicated Bulk Storage Server feature for archival class storage:
  - Bulk storage servers have a lower cost point and are an effective way to manage large amounts of storage for archiving and other applications where performance is a lower priority.
  - Bulk capacity is licensed per bulk server and all pools on the server will be of type ‘bulk’. **Important Note:** Bulk licenses will be available in April, 2016.
- Discontinued support for Emulex LPe11000 series HBAs

## Enhancements and Fixes in 10.0 PSP4 Update1

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- **Enhancement:** Added support for IBM-rebranded QMI2582, Cisco QLE2672-CSC, Hewlett Packard SN1000Q Fibre Channel HBAs.
- **Problem:** In some large configurations, complete support bundles could not be collected.  
**Resolution:** A code change was made to the collection process.
- **Problem:** Some tasks were not shown in the Management Console after upgrading to SANsymphony 10.0 PSP4, however all tasks were running.  
**Cause:** There was a circular reference between tasks and actions, causing the task and action to wait on each other to be displayed when connecting to the management console while an action was running.  
**Resolution:** A code change was made to remove the circular reference.
- **Problem:** In configurations with Emulex Fibre Channel adapters, a system crash occurred at startup.  
**Cause:** A timing issue existed in the Fibre Channel driver hardware initialization function.  
**Resolution:** A code change was made to avoid the timing issue at startup.

## What’s New in 10.0 PSP4

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- **VASA Provider for SANsymphony:** Added support for VMware VVOL VASA API 2.0, including vMotion over iSCSI.
  - Enables policy-based provisioning and management of virtual machines and storage.
  - The SANsymphony installer will install and register the VASA Provider in VMware vCenter.
  - Storage administrators provision containers with defined capabilities.
  - VASA Provider reconciles container capabilities to VMware vCenter.
  - VMware ESX administrators define policies based on virtual machine requirements.See the online help topic [Getting Started with VASA Provider for SANsymphony](#) for further information.

## Enhancements and Fixes in 10.0 PSP4

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- **Enhancement:** Parallel I/O
  - Increased the maximum number of SANsymphony schedulers to 256.
  - Maintain a minimum number of permanently running schedulers.
  - Allow as many scheduler threads as possible to be restricted to a single NUMA node.
  - On Windows 2008 servers, make calculations by the scheduler based on the number of logical processors, rather than the number of physical processors.
- **Enhancement:** Added an executable (SetDcsAdminPassword.exe) which allows the DcsAdmin password to be modified without requiring a special passcode.
- **Enhancement:** Added a method to identify when SANsymphony software is installed on a virtual machine.
- **Enhancement:** Improved performance for large sequential write IOs.
- **Enhancement:** Allow a port to be replaced when there is no connection available between the chosen initiator and target ports because the port is not logged in.
- **Enhancement:** Avoid a full recovery of mirrored virtual disks in cases where both disks are unavailable because of a local failure after a mirrored disk failure or vice versa.
- **Enhancement:** Added support for Microsoft .NET 4.6
- **Enhancement:** Added support for Lenovo-rebranded 16Gb Emulex Fibre Channel HBA (LPe16002B).
- **Enhancement:** Allow creation of up to 64 TB deduplication pools.
- **Problem:** In configurations with Emulex initiator ports, the remote initiator ports were not displayed in the user interface.  
**Cause:** The Emulex driver only reports a port database change when new ports are added or removed, so not all changes resulted in an update.  
**Resolution:** Add an option to refresh the port database by right clicking the refresh command in user interface which will update the database with new version.
- **Problem:** Windows 2012 (R2) backup to a local disk did not work when SANsymphony software is installed on a server.  
**Cause:** The backup process created VHDX disks, which were immediately protected by SANsymphony and could not be accessed.  
**Resolution:** Check for a registry key (HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\DcsPMF\NoVhdProtect ) and if present, do not protect any new virtual disks. **IMPORTANT NOTE: This key should be set only while performing a backup.** After the backup is complete, the NoVhdProtect key must be deleted.  
**Important Note:** Do not change the configuration, add physical disks, stop/start SANsymphony or reboot the system with this registry key present.
- **Problem:** Files that were manually dragged and dropped were not uploaded when using the Support Bundle Relay feature.  
**Resolution:** A code change was made to correct this problem.
- **Problem:** Support bundles and backups were not being collected and uploaded in SANsymphony 10 PSP3.  
**Cause:** A change in SANsymphony 10 PSP3 caused the support bundle process to no longer distinguish between a file and a folder, causing an exception.  
**Resolution:** A code change was made to correct this and allow the zip process to continue.
- **Problem:** In snapshot and replication configurations with virtual disks greater than 2 TB in size, destination snapshots were not migrated correctly.  
**Cause:** Some blocks with data residing beyond 2 TB and on a segment boundary were not written because of a miscalculation.  
**Resolution:** A code change was made to correct the migration calculation.
- **Problem:** The snapshot revert operation on mirrored virtual disks was slow compared to the speed when reverting single virtual disks.  
**Cause:** Snapshot revert progress was limited by 4MB/s writes on the snapshot source.  
**Resolution:** A code change was made to increase the speed of the revert operation for mirrored virtual disks.

## What's New in 10.0 PSP3

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- **Managed Storage Performance Degradation:** Detect, monitor and react to performance degradation on back-end disks. A Logical Disk Latency monitor has been added, and sample scripts are included to be used by administrators to automate handling of failures.
  - **disablelogicaldisksaccess.ps1** may be used with a trigger definition to mark front end and mirror ports inaccessible for the logical disk(s) who have SAUs on the physical disk exhibiting the latency.
  - **enablelogicaldisksaccess.ps1** will enable the disabled logical disks once the issue has been corrected.
- **Replication Group Checkpoints**
  - Added checkpoints for virtual disk groups.
  - Extended checkpoints to enable an association of virtual disks with common markers at the replication destination.
- **Flash Devices:** Detect and identify Flash/SSD devices with a different icon and disk type.
- **Support Bundle Relay:** A separate installation package that creates a non-DataCore Server support bundle relay proxy to eliminate the need for DataCore Server internet connectivity. This enables automated upload of support bundles vs. manual transport and upload.
- **Port Contention:** Added a port contention monitor that tracks and compares 'Port Busy' responses with thresholds that may be configured. An alert occurs when a threshold is reached.
- **REST support:** A separate installation package provides basic monitoring capability thru a SANsymphony REST API.

## Enhancements and Fixes in 10.0 PSP3

### Enhancements

- **Enhancement:** Allow mixed configurations with 16GB QLogic HBAs to 16GB Emulex point-to-point.
- **Enhancement:** Allow a replication source or destination virtual disk to be served over the loopback port of the source DataCore Server. This allows replication to function in Virtual SAN environments.
- **Enhancement:** Expand the deduplication partition size from 1.6 TB to 2 TB, allowing creation of a 2 TB Virtual Hard Disk (VHD).
- **Enhancement:** Allow selection of a LUN when serving virtual disks to a host; allow specifying a 'Starting LUN' when serving multiple virtual disks.
- **Enhancement:** Enable the "redundant path" (in addition to "single path") choice when mapping a virtual disk to a host group.
- **Enhancement:** Allow merging DataCore Servers with virtual disks having the same name as a replication virtual disk in a partner group.
- **Enhancement:** Added additional physical disk counters (percent idle time, average second/transfer, average queue length).
- **Enhancement:** Post an alert when auto-disabling the sequential storage feature because the log file has reached the 900 GB threshold.
- **Enhancement:** Added support for Dell and Lenovo rebranded Emulex 16Gb Fibre Channel Adapters.
- **Enhancement:** Updated the version of Microsoft SQL Server 2012 Express (used for Performance Recording).
- **Enhancement:** Added support for the Management Console on Microsoft Windows 10.

### Critical Fixes

- **Problem:** Some data was not recovered after the **purge** operation was performed for failed physical disks in a storage pool.  
**Cause:** For mirrored virtual disks larger than 2 TB, a miscalculation caused SAUs (Storage Allocation Units) beyond the 2TB offset to not be recovered from the remote server.  
**Resolution:** A code change was made to correct the calculation
- **Problem:** A system crash occurred in the DataCore storage pool driver when removing a physical disk from a shared pool.  
**Cause:** A timing issue existed in the delete physical disk operation.  
**Resolution:** A code change was made to correct the timing issue.
- **Problem:** In certain storage configurations, access to a back-end LUN was lost after an upgrade to SANsymphony 10.0 PSP2.  
**Cause:** The Network Address Authority (NAA) ID on back-end LUNs had been truncated.  
**Resolution:** A code change was made to allocate a buffer large enough hold longer disk ID information.
- **Problem:** A system crash occurred when the DataCore Poller driver hung.  
**Cause:** A timing issue caused a deadlock when QOS (Quality Of Service) restrictions were enabled.  
**Resolution:** A code change was made to avoid the deadlock.
- **Problem:** A system crash occurred when the DataCore Pool driver referenced an invalid memory location  
**Cause:** When attempting to map invalid characters in a pool name, the driver accessed invalid memory.  
**Resolution:** A code change was made to reduce the number of characters for the pool name.

### User Interface

- **Problem:** When SANsymphony software was installed on a Citrix Xen Server virtual machine, in the DataCore Server-> Settings, the Hypervisor Host could not be selected.  
**Resolution:** Code was added to detect when SANsymphony is running on certain virtual machines, and if so, enable the Hypervisor Host selector.
- **Problem:** Cache performance counter values were incorrect for mirrored virtual disks.  
**Cause:** Values incorrectly included mirror channel metrics.  
**Resolution:** A code change was made to exclude mirror metrics in cache performance counters.
- **Problem:** When sorting virtual disks by size, the resulting order was not correct.  
**Cause:** The sort column function ignored MB, GB and TB values.  
**Resolution:** A code change was made to sort size correctly.
- **Problem:** When a virtual disk has reached 100% of the maximum allocated space threshold, the system health monitor incorrectly reports the status as **critical**.  
**Resolution:** Allow the threshold to be set to 101% to suppress the critical alert.

### High Availability

- **Problem:** 1. Increasing the size of a virtual disk while the disk was in reclamation caused the virtual disk to briefly fail. 2. A virtual disk never completed log recovery after the virtual disk was resized.  
**Cause:** The new size was not reported causing the reclamation function to fail.  
**Resolution:** A code change was made to rescan mirror ports so that the physical disk information is updated with the new size.
- **Problem:** Mirrored virtual disks didn't start recovery when several DataCore Servers in a Server Group were unavailable for a long period of time.  
**Cause:** When servers are unavailable, a backlog of inquiry messages builds up, keeping recovery synchronization messages from being delivered.  
**Resolution:** A code change was made to create individual delivery message queues for each DataCore Server in the configuration. This prevents one unavailable DataCore Server from blocking others from receiving messages.
- **Problem:** After upgrading a DataCore Server, a loopback port was displayed as failed. Note: if the failed loopback port had been used as the path for the replication destination to de-stage, replication de-staging may be stopped.  
**Cause:** Updating a loopback port caused the WWNs for the loopback ports to be out of sync with existing loopback WWNs.  
**Resolution:** A code change was made to synchronize loopback WWNs before updating loopback port WWNs.
- **Problem:** Disks were not rediscovered and a manual rescan was needed if the backend disks were unavailable while the DataCore Server was up (for example, during a switch reboot).  
**Cause:** No automatic rescan was issued in these scenarios.  
**Resolution:** A code change was made to rescan the backend paths when the paths go down while the DataCore Server is still up. If the disk is in use (used as a pass-through logical disk or in a pool), the backend paths are monitored so that if the paths go down, the rescan manager rescans the ports until the path shows up or until the disk is no longer used (logical disk deleted or disk removed from pool).
- **Problem:** After a single virtual disk was converted to a mirrored virtual disk and a full recovery had started, the recovery halted and then restarted.

**Cause:** When the recovery started, the healthy DataCore Server had not opened the mirror LUN presented by the partner. During the recovery, an I/O was received from the host, however the mirror write failed, hence the recovery failed and then restarted.  
**Resolution:** A code change was made to not stop or restart full recovery if the healthy DataCore Server has not discovered the LUN from the failed server.

- **Problem:** A mirrored virtual disk without the “auto recovery enabled” setting remained in this state after a split and re-mirror operation.  
**Resolution:** A code change was made to reset this setting after the split operation.

#### Installation

**Problem:** When uninstalling SANsymphony using a script (/Uninstall \Scripted option), entries are left in the Add/Remove Programs and Features list, requiring manual clean-up.

**Cause:** Microsoft registry keys were not deleted when uninstalling.

**Resolution:** A code change was made to correctly clean all SANsymphony registry keys.

- **Problem:** The evacuation operation failed when run on a DataCore Server that was not licensed for Shared Multi-port Array.  
**Cause:** A validation rule incorrectly required a pool to meet the requirements of shared multi-port arrays.  
**Resolution:** Do not include this validation rule when performing an evacuate or redistribution operation.
- **Problem:** In some cases, a local move operation would never complete and the progress bar remained at 100% complete.  
**Cause:** A timing issue in the snapshot driver prevented completion  
**Resolution:** A code change was made to correct the timing issue.

#### VSS

- **Problem:** In some configurations, Veeam Backup failed when using DataCore VSS.  
**Cause:** The TCP port 3793 wasn't opened for outgoing connections.  
**Resolution:** A code change was made to the installer to always open port 3793 to allow outgoing connections.

#### Cache

- **Problem:** After a power failure, the DataCore cache incorrectly remained in write-through mode after the power was restored.  
**Cause:** If the server was stopped during the outage, no information about the cache mode was available then the power was restored.  
**Resolution:** A code change was made to remember that the system was explicitly set into write-through and to set the server into write-back mode when the power is restored.
- **Problem:** After a power failure, DataCore write-back caching was not disabled when on battery power, resulting in all virtual disks going in to a full recovery.  
**Cause:** A timing issue occurred, causing the enable write-through mode call to not be made.  
**Resolution:** A code change was made to correctly enable write-through mode.

#### Snapshot

- **Problem:** Full snapshots were displayed as failed when performing a snapshot **revert** operation.  
**Cause:** A synchronization problem caused an incorrect state to be displayed.  
**Resolution:** A code change was made to report and display the correct state.
- **Problem:** A **Split Snapshot** option was not available for a full snapshot after a DataCore Server crashed.  
**Cause:** A check for a failed status was not correct, resulting in the option being grayed out.  
**Resolution:** A code change was made to allow the split option to be available.

#### Replication

- **Problem:** The % **Checked for Consistency** value was taking a long time to complete on unallocated large virtual disks.  
**Cause:** The replication checksum function was not working as expected.  
**Resolution:** A code change was made to change improve the speed of the consistency check.

#### Deduplication

- **Problem:** A served deduplication disk failed under heavy I/O load.  
**Cause:** Heavy fragmentation of the disk caused the failure.  
**Resolution:** A code change was made to change the file record segment size to prevent heavy fragmentation

## What's New in 10.0 PSP2

### • Management and Integration Improvements

- Multiple Group Management: This release adds a Server Group Connections panel, which allows selection of DataCore Servers.
- Post-process Deduplication: a new configuration tool extends the benefits of deduplication to storage virtualization (Notes: Experimental, only available on Microsoft Windows Server 2012 R2)
- Virtual Desktop Integration (VDI) Services: adds a set of PowerShell-based wizards running under the VDI Console to create VDIs using SANsymphony alongside Hyper-V on a single server or Failover Cluster/Hyper-V on two servers
- Veeam Integration: offloads snapshot overhead on VMware ESXi servers while Veeam backup is in progress. Note: this feature requires installation of a separate package.
- User-centric monitoring and alerting enhancements, including Virtual Disk 'Space Allocated' and latency, replication buffer and CDP retention time monitor and alerts

### • Performance and Scale Improvements

- iSCSI target improvements
- Memory optimizations
- SSD and flash memory performance improvements

### A Note on Experimental Features

Experimental features are clearly labeled as such in the management console. These features have been implemented as experimental in order to gain an understanding of their continuing contribution to the software as case studies, analysis, and benchmarking continue to be developed. Features that carry an experimental label have been fully implemented and tested and are safe to use in production; however, the feature functionality is subject to change. Experimental features are supported and comments, suggestions, and issues may be reported to DataCore Technical Support as usual.

## Enhancements and Fixes in 10.0 PSP2

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### Enhancements

- **Enhancement:** Allow text to be copied from the SANsymphony Management Console to the clipboard.
- **Enhancement:** Require confirmation when creating shared pools or adding disks to a shared pool that the storage used is Shared Multiport Array capable.
- **Enhancement:** Adjust the preferred server settings after a Move Across Server operation is performed.
- **Enhancement:** Following an evacuation operation in Maintenance Mode, allow the DataCore Server to be selected when moving disks back in the redistribute operation.
- **Enhancement:** Added support for: Hewlett Packard SN1000E single and dual port Host Bus Adapters, Dell QME2572 dual port Adapters.
- **Enhancement:** Do not allow a snapshot to be split if one of the virtual disks is not fully migrated.

### Critical Fixes

- **Problem:** A system crash occurred in the DataCore Trace driver.  
**Cause:** A timing issue occurred when copying multiple trace events that would cause a buffer overflow.  
**Resolution:** A code change was made to use local variables to decide if the trace event will overflow the trace buffer or not.
- **Problem:** The DataCore Executive service unexpectedly terminated and could not be restarted.  
**Cause:** In large configurations running for a period of time and/or when many configuration changes occurred, the journal log size exceeded a 4 GB limit, causing the service to terminate.  
**Resolution:** Changed the code to compact the journaling database automatically when a predefined number of entries in the database is reached.
- **Problem:** A system crash occurred in the DataCore iSCSI driver on configurations running VMware ESX with the VAAI Block Zeroing feature enabled.  
**Cause:** The handling of the SCSI WRITESAME command was incorrect.  
**Resolution:** A code change was made to correctly handle this command.
- **Problem:** A system crash occurred in the DataCore Storage Pool driver in configurations with mirrored pool disks when the primary mirror disk was missing.  
**Cause:** Because the physical disk was missing, a pointer to a null device object was referenced causing the crash.  
**Resolution:** A check was added to determine whether the first physical disk in a mirror pair is missing and pass the device object of the mirror disk if this is the case.
- **Problem:** Data inconsistency was reported following a mirror log recovery.  
**Cause:** A retry for the mirror recovery I/O that failed was incorrectly treated as a success and never delivered to the target.  
**Resolution:** Code changes were made to the High Availability driver to correctly report the error.

### Transports

- **Problem:** An error message was displayed after a Fibre Channel port was reset to correct a link error.  
**Resolution:** A code change was made to post an event log warning instead of an error for reset link error counts.
- **Problem:** The DataCore Executive service could not be stopped and remains in the 'Stopping' state.  
**Cause:** A timing related deadlock occurred in the DataCore ScsiPort driver.  
**Resolution:** A code change was made to the driver to avoid the deadlock.
- **Problem:** The Microsoft Cluster Validation test suite failed when using DataCore virtual disks mapped over the loopback port.  
**Resolution:** Changes were made to allow disks to be mapped over the null loopback port.
- **Problem:** A Fibre Channel port failed to start and a hardware error was reported by the Host Bus Adapter.  
**Cause:** 'Loop mode' was set as a connection type in the Port Connection/Advanced Settings panel, however this connection type is not supported for QLE 16Gbps HBAs.  
**Resolution:** Do not present 'loop mode' as an option for these HBAs.
- **Problem:** The DataCore Fibre Channel driver would not start on a Hewlett Packard rebranded Qlogic 16Gb adapter and an error was posted ("Warning: Temperature alert monitor error.")  
**Cause:** A return code sub-status was misinterpreted by the HBA firmware and prohibited the driver from loading. The message was invalid.  
**Resolution:** Added code to check for this specific model and return a different sub-status.

### Sequential Storage

- **Problem:** The sequential storage feature could not be enabled for a virtual disk that was served to a host.  
**Resolution:** A code change was made to allow this feature to be enabled without having to first unmap the virtual disk.

### High Availability

- **Problem:** After splitting a mirrored virtual disk where recovery had been paused, the state remained 'recovery paused' on the non-mirrored disk.  
**Cause:** The pause recovery state was not cleared after the mirrored virtual disk was split.  
**Resolution:** A code change was made to clear the paused state when splitting or deleting a mirrored virtual disk.
- **Problem:** Converting a single virtual disk to a mirrored virtual disk resulted in the new virtual disk to go into a double failure state.  
**Cause:** This occurred when the single disk had previously been part of a mirrored virtual disk, but had been split. Incorrect flags were set when converting a non-mirrored disk to a mirrored virtual disk.  
**Resolution:** A code change was made to correct the setting of flags when converting to/from mirrored to non-mirrored virtual disks.

### Snapshot

- **Problem:** An invalid warning message was displayed when issuing the Delete-DcsSnapshot PowerShell cmdlet. ("Reverting from the snapshot will change the existing data on the source of the snapshot. The source virtual disk will become an identical copy of the snapshot.")  
**Cause:** The warning message was inadvertently related to the Revert cmdlet, not the Delete cmdlet.  
**Resolution:** Issue the appropriate warning for the Delete cmdlet.

### Replication

- **Problem:** After splitting a replication relationship, the DataCore Executive service failed to start.

**Cause:** Connection loss during the replication deletion process caused the virtual disk replication information to remain in the configuration file, which in turn, caused the configuration consistency validation check to fail.

**Resolution:** A code change was made to the replication deletion process to avoid this issue.

- **Problem:** After a failure, some replication source virtual disks went into log initialization instead of full initialization.  
**Cause:** When the replication service is stopped, the replication state was not correctly preserved.  
**Resolution:** When stopping the replication service a check was added to test if the server has stopped the drivers. If so the last state is used to determine if full initialization is needed.

#### **Storage Pools**

- **Problem:** A shared storage pool could not be deleted and an error message was displayed (“The pool cannot be deleted because it contains virtual disks sources” or “Unable to move the storage”).  
**Cause:** If the DataCore service exited while deleting virtual disks, logical disks inadvertently remained in the configuration file, preventing deletion of the storage pool.  
**Resolution:** Allow deletion of protected logical disks as long as they are not associated with any virtual disk.
- **Problem:** A failed physical disk remained in a storage pool and could not be deleted.  
**Cause:** A timeout occurred causing a portion of the disk removal function to fail.  
**Resolution:** A code change was made to no longer treat the timeout as a failure case for the complete removal function.
- **Problem:** A mirrored storage pool was displayed as ‘Foreign’ and could not be imported.  
**Cause:** Pool recovery could not take place because the first mirrored disk was not present.  
**Resolution:** A code change was made to determine which physical disks are present when selecting a disk for mirror recovery.

#### **Move Operations**

- **Problem:** A local move operation failed on the secondary side of a mirrored virtual disk.  
**Cause:** A timing issue existed when starting the operation and disabling mirror paths, causing the virtual disk mirror to fail during the move.  
**Resolution:** A code change was made to offline the host paths before disabling mirror paths to prevent the mirrored virtual disk from failing.
- **Problem:** A local move server operation with the Preferred Server All setting caused some virtual machines to not be available.  
**Cause:** A storage source replacement did not complete as expected, but did not abort the entire move operation.  
**Resolution:** A code change was made to abort the move operation.

#### **I/O Operations**

- **Problem:** Read I/Os failed and virtual disks were subsequently marked as failed in configurations with certain Storage Allocation Unit sizes and physical disk sizes.  
**Cause:** A backend read IO is issued to an offset that is bigger than the physical disk size.  
**Resolution:** A change was made to modify the code that calculates the offset.
- **Problem:** Unexpected cache write misses were observed after a mirrored virtual disk log recovery.  
**Cause:** The Cache Write Through setting was never reset after the log recovery, leaving the cache in write-through mode.  
**Resolution:** A code change was made to modify how this setting was stored and reset.
- **Problem:** A backup application failed when a read I/O failed with a SCSI reservation error.  
**Cause:** A logic error existed in the order that status was checked, resulting with the wrong SCSI status being returned.  
**Resolution:** Re-order the function that checks status.
- **Problem:** Adding a new host to a large cluster configuration caused the new host to crash.  
**Cause:** Mapping a virtual disk to the host exceeded the limit of reservation keys per virtual disk and the returned error status was not correct, causing the system to crash.  
**Resolution:** Modify the status sent when the reservation key limit is reached.

#### **Installation**

- **Problem:** Upgrading a remote DataCore Server using the upgrade installation wizard failed when single direction replication relationships existed in the configuration.  
**Cause:** The one directional replication prerequisite check failed if executed on the destination server.  
**Resolution:** A code change was made to no longer perform this check on the replication destination server.

#### **Performance Monitors**

- **Problem:** After an upgrade to SANsymphony 10.0 PSP1, DataCore Performance counters were not visible in Windows Perfmon.  
**Cause:** The Log On As account for the DataCore Performance Monitor Agent service was set to Local System.  
**Resolution:** The Log On As account is now set to the DcsAdmin credentials before starting the service.

#### **Licensing**

- **Problem:** License activation failed in a specific instance when accepting the EULA.  
**Cause:** A prior replication split operation resulted in an invalid replication relationship to be left in the configuration file, thus causing the activation process to fail.  
**Resolution:** Ignore a remote replication relationship that is not present when activating a license.

## What's New in 10.0 PSP1 Update1

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- **16 Gb Emulex Host Bus Adapter support** – added a target/initiator driver to support the Emulex LPe1600x and Fujitsu rebranded family of HBAs in a DataCore Server. See FAQ 1529: Qualified Hardware Components for SANsymphony for a full list of OEM-Branded Emulex 16Gb HBA's that are currently qualified.

## Enhancements and Fixes in 10.0 PSP1 Update1

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- **Problem:** A system crash occurred in the DataCore cache driver after installing SANsymphony 10. PSP1.  
**Cause:** A coding error existed in the cache flush function.  
**Resolution:** A code change was made to adjust the timing of the lock release in the cache flush routine.
- **Problem:** After upgrading or applying a new license with additional storage capacity, creating new storage pools or adding physical disks failed to existing pools failed and an error was displayed (“Message: Unable to consume the additional 0 B of storage capacity.”)  
**Cause:** The Maximum Storage license value was not being handled correctly in some cases.  
**Resolution:** A code change was made to correctly handle this value.
- **Problem:** An incorrect license validation error occurred when converting a single pass-through virtual disk to a mirrored virtual disk.  
**Cause:** Consumed storage capacity was not calculated correctly when a single pass-through virtual disk was converted to a mirror.  
**Resolution:** A code change was made to correct the calculation in this scenario.
- **Problem:** An exception occurred and performance data was no longer collected when recording performance for hosts that were not part of a host group.  
**Cause:** A regression in the Performance Recording feature code was introduced in PSP1  
**Resolution:** A code change was made to correct the regression.
- **Problem:** The DataCore Executive Service would not start in configurations with Dell (Samsung NVMe PCIe) SSD disks installed.  
**Cause:** The disk type for this disk was not supported.  
**Resolution:** Added support for disks of this type.
- **Problem:** After rebooting a DataCore Server, the DataCore Executive service hung when attempting to re-establish many replication connections.  
**Cause:** When processing writes to a slow replication buffer, new threads were continually created and became backed up, causing the service to hang.  
**Resolution:** A code change was made to not create new threads until the current thread is processed.

## Enhancements and Fixes in 10.0 PSP1

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### Enhancements

- **Enhancement:** Added support for Qlogic QLE-2564 HBA; updated Qlogic firmware for 24xx, 25xx, and 26xx HBAs.
- **Enhancement:** Allow physical disks with aliases to be visible so the alias may be removed and the disks reused. **Note:** if unused disks exist, they may be removed by blanking out the alias name.
- **Enhancement:** Improved management of shared storage pools.
- **Enhancement:** Added PowerShell support to execute steps to purge a failed physical disk from a storage pool.
- **Enhancement:** Automatically create 4 loopback ports at installation.
- **Enhancement:** Expanded support for up to 64 nodes in a Server Group.

### Critical Fixes

- **Problem:** After resizing a virtual disk, the disk went into double failure.  
**Cause:** In some cases, the new virtual disk size was set to 0.  
**Resolution:** Set the virtual disk size correctly.
- **Problem:** A system crash occurred during snapshot deletion.  
**Cause:** A timing issue existed in the snapshot driver when deleting snapshots.  
**Resolution:** A code change was made to change a timeout and return busy.
- **Problem:** A system crash occurred after stopping virtualization on a DataCore Server.  
**Cause:** A timing issue occurred between several DataCore drivers.  
**Resolution:** A code change was made to the locking mechanism between drivers.
- **Problem:** A system crash occurred when uninstalling or upgrading SANsymphony software.  
**Cause:** The method used for device removal in a Storage pool was faulty.  
**Resolution:** Modify the method used for device removal.
- **Problem:** A system crash occurred because kernel stack space was exhausted under heavy load.  
**Cause:** The DataCore storage pool driver was not handling I/O completion efficiently in heavy load situations.  
**Resolution:** A code change was made to the I/O completion routine.

### Replication

- **Problem:** In replication configurations where markers were explicitly or automatically issued, destaging failed with an error message 'Invalid marker version'.  
**Cause:** A synchronization error occurred when processing markers.  
**Resolution:** A code change was made to synchronize critical sections of the code.
- **Problem:** The replication transfer failed and the state was marked as offline after exiting replication test mode.  
**Resolution:** A code change was made to no longer fail the transfer.
- **Problem:** After moving a replication buffer to a different disk during initialization, the folder remained and could not be deleted.  
**Cause:** A timing issue occurred when doing a replication checksum transfer during initialization.  
**Resolution:** A code change was made to the checksum transfer function.

### User Interface

- **Problem:** An erroneous 'free space' value is displayed for a partitioned physical disk in the Physical Disks tab.

- Resolution:** Remove the Free Space column from the display.
- Problem:** An error occurred in the Management Console after restarting a DataCore Server in an iSCSI environment. Error Message was 'Object reference not set to an instance of an object'.

**Cause:** The internal error occurred when trying to access unavailable iSCSI data.

**Resolution:** A code change was made to account for null data.
- Problem:** An 'Unhandled Exception Error message' is displayed when opening the Management Console.

**Cause:** The code was not taking into consideration that the requested physical disk information may not contain data when the object isn't currently present.

**Resolution:** Simplified the code for adding, updating, and removing an object to ensure that the object actually is present.
- Problem:** Creation of support bundles failed after changing an alias name.

**Cause:** After copying an alias name and then pasting it into the alias name of a virtual disk, the special characters corrupted the configuration file.

**Resolution:** Invalid characters will no longer be allowed and a warning message given.
- Problem:** On a Japanese language OS, all fields were not displayed when setting up a replication partner if the ribbon was expanded and the display was at the lowest supported resolution (1024x768).

**Cause:** The form docking was incorrect, causing panels to overlap and hiding some fields.

**Resolution:** A code change was made to correct the form.
- Problem:** On a Japanese language OS, the "Target port" label was obscured when serving a virtual disk to a host.

**Resolution:** Modified the layout of the form so that the anchoring and spacing will not cause an overlap.
- Problem:** An exception error occurred in the Management Console when using a filter on the virtual disk status column while some virtual disks were in recovery.

**Cause:** The sort function was attempting to include the progress bar.

**Resolution:** Sort only based on the text in the column.
- Problem:** All ports were reinitialized when port roles were assigned or modified from the Getting Started/ Assign Port Role wizard.

**Cause:** All ports were processed even those where there were no changes requested.

**Resolution:** Only update ports that have been added or modified.
- Problem:** The Management Console incorrectly reported that some target ports "lost connection to port" initiator.

**Cause:** Events such as SCSI bus resets will cause short disconnections that are normal and have no functional impact. These are reported in the event log as errors and can trigger tasks.

**Resolution:** Ignore any disconnect that does not last for 30 seconds.
- Problem:** When registering a host, adding a host name with a space resulted in an error.

**Cause:** The wizard was replacing a space in the Register Host wizard with an underscore, which is itself an illegal character.

**Resolution:** Replace the space character with a dash.
- Problem:** When cancelling an operation in the Serve to Host form, the icon and host was removed from the display.

**Resolution:** A code change was made to check the configuration before deleting objects.
- Problem:** Renaming a Server Group, Virtual Disk or Disk pool by changing the case did not work.

**Cause:** The string comparisons that determined if the name had changed were not accounting for case sensitivity.

**Resolution:** Changed the string comparisons to account for case sensitivity.
- Problem:** An error occurred when editing, deleting, creating, or sorting storage profiles with the Write-aware Auto-tiering column checked.

**Cause:** A custom sort function was missing for this column.

**Resolution:** Added a custom sort for this column.
- Problem:** A dual virtual disk's state changed from 'up to date' to unknown and had to be forced online.

**Resolution:** A code change was made to prevent the status change.

#### High Availability

- Problem:** A virtual disk status was set to 'inaccessible' immediately after the log recovery from the partner completed.

**Cause:** A timing issue occurred when updating the state of the virtual disk.

**Resolution:** A code change was made to correct the status update.
- Problem:** After a failed virtual disk was split and immediately a new mirror added from a different pool, the disk was incorrectly marked in double failure, although the virtual disk and the paths were healthy.

**Cause:** A timing issue caused the virtual disk state to be reported incorrectly

**Resolution:** A code change was made to correct the timing issue.
- Problem:** Virtual disk recovery did not resume after importing a storage pool that contained mirrored physical disks that were out of sync.

**Cause:** The pool was incorrectly marked as healthy following a rescan.

**Resolution:** A code change was made to set the status correctly.
- Problem:** Virtual disks with failed I/O took too long to be marked as down when redundant paths were configured, causing hosts to lose access to the disks.

**Cause:** The SCSI Port driver was incorrectly setting the timeout period to fail an I/O.

**Resolution:** A code change was made to assure that I/O failure timeout is deterministic.
- Problem:** Moving a storage source that was served via the loopback port resulted in the temporary loss of access to the virtual disk.

**Cause:** The loopback mapping had ALUA configured when there was also a host mapping to the other server.

**Resolution:** Do not enable ALUA for loopback mappings or host mappings to DataCore servers.
- Problem:** The Split and Unserve operation was prohibited when attempting to split inaccessible virtual disks.

**Cause:** The validation checks for this operation were incorrect.

**Resolution:** Allow splitting the virtual disk when either of the sides is in an offline storage pool even if the mirror side is not up-to-date.
- Problem:** While moving a virtual disk storage source from one server to another, the Microsoft Cluster host lost access to that virtual disk.

**Cause:** After the move, the SCSI ALUA RTPG commands sent from the host were returned with a zero-length buffer, causing the cluster to fail.

**Resolution:** A code change was made to return a check condition for the SCSI RTPG.

#### Installation

- Problem:** Install or upgrade failed with the error "Failed to install the DataCore Support Driver".

**Cause:** The Windows Modules Installer service was disabled.

**Resolution:** Added a check to make sure that the Windows Modules Installer is enabled in the pre-requisites check of the installation and upgrades.

- **Problem:** During an upgrade the DcsSnmp.exe service exited.  
**Cause:** Certain services and libraries were locked and the new files were not installed.

**Resolution:** Install to an intermediate folder to guarantee that no files are locked. After running the necessary install tasks, copy them to the target directory, and rely on the required restart to handle any files that are locked and need to be replaced on reboot.

- **Problem:** An upgrade failed to install the DataCore Storage Pool Driver on configurations with shared storage pools.  
**Cause:** A logical disk reference counter was not being updated correctly, causing a timeout when reinstalling the driver.  
**Resolution:** A code change was made to correct the reference counter issue.

#### DataCore Controller

- **Problem:** After deleting a virtual disk or performing the Split and Unserve operation on a virtual disk, the DataCore service stopped and the management console became unresponsive.  
**Cause:** The operation timed out while deleting a mirror mapping, causing the mapping to be removed from virtual disk and logical disk, but remaining in the configuration file. On a subsequent deletion of the logical disk, the configuration validation failed and stopped the service.  
**Resolution:** A code change was made to not remove the mapping from the logical disk and virtual disk before it is deleted.
- **Problem:** Creating or deleting CDP rollback volumes caused the DataCore service to continuously restart.  
**Cause:** A failure to fully complete the creation or deletion operation caused an inconsistency in the configuration file.  
**Resolution:** A code change was made to modify the configuration file validation operation.

#### Auto-tiering

- **Problem:** 1) An error occurred when changing the tier of a physical disk within a storage pool or 2) when removing a physical disk from a storage pool.  
**Resolution:** Modified the code to set tier and physical disk values using a different method.

#### Transports

- **Problem:** A Fibre Channel 'Abort Task' log message displayed an incorrect LUN value (always displayed LUN 0).  
**Resolution:** A code change was made to extract and display the correct LUN.
- **Problem:** In some large configurations under heavy load, initiator I/Os failed.  
**Cause:** Processing of excessive Unit Attention SCSI commands.  
**Resolution:** Reduce redundant SCSI Unit Attention commands.
- **Problem:** Certain 3rd Party software application services were unable to start at boot up.  
**Cause:** Required SCSIport driver registry keys were not created.  
**Resolution:** Improved the trace messages to identify why the keys were not created.

#### Snapshot

- **Problem:** Snapshot relationships failed when the host's 'Preferred Server' setting was set to 'All' or to different DataCore Servers.  
**Cause:** I/Os were failed by design in SANsymphony 10.0 Update1 to avoid possible deadlock scenarios.  
**Resolution:** A code change was made to avoid the deadlocks, and no longer fail the snapshots.
- **Problem:** When attempting a revert operation on a snapshot, the revert operation never completed.  
**Cause:** The snapshot driver was not handling a write failure correctly during the revert operation.  
**Resolution:** A code change was made to correctly handle the failure.
- **Problem:** When attempting a revert operation on a snapshot, the mirror volume status was set to Failed Redundancy, causing the revert operation to never complete.  
**Cause:** The mirror path was disabled while there was still outstanding I/O.  
**Resolution:** A code change was made to no longer disable the mirror path.
- **Problem:** On virtual disks less than 500 GB, a full snapshot might skip migrating certain data.  
**Cause:** An incorrect calculation was performed when setting the next block of data to be migrated.  
**Resolution:** Corrected the calculation.

#### Miscellaneous

- **Problem:** Creating support bundles or running the emergency repair script from the command line interface failed.  
**Cause:** When the scripts are run outside of their respective DataCore Software directories, the path was incorrect for loading the utilities module.  
**Resolution:** Check where the script is executing from directly.
- **Problem:** DataCore Poller counters did not show details for both DataCore Servers after an upgrade.  
**Cause:** Details were only displayed for one SANsymphony version.  
**Resolution:** Check SANsymphony versions when counters are added.
- **Problem:** Moving one component of a dual virtual disk into a different storage pool on the same DataCore Server incorrectly created a mirrored virtual disk.  
**Cause:** This operation is not supported.  
**Resolution:** Prevent moving one component of a dual virtual disk unless it is to the same shared storage pool, either locally or remotely.
- **Problem:** An SNMP trap Object Identifier (OID) was modified after a SANsymphony upgrade.  
**Cause:** The OID was being retrieved from a deleted trap list.  
**Resolution:** Retrieve the static OID from the correct location.
- **Problem:** A storage pool usage task was triggered, but only performed the configured action for one of the storage pools on the system.  
**Cause:** When a task is disabled at the time while a trigger occurs, and the task is enabled later, only the last occurrence to trigger its monitor causes the action, Task triggers maintain only one trigger state, so when a monitor trigger is set for "All" objects, only the last object's state is remembered. Note: This doesn't occur when the task is enabled because the monitor state changes are processed as they occur.  
**Resolution:** Keep a list of all monitors that are currently in the triggered state, and dispatch an action for each of them when the task is enabled.

## Enhancements and Fixes in 10.0 Update1

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### Critical Fixes

- **Problem:** In certain configurations, after a reboot or when virtualization is stopped/started on a DataCore Server, the partner server may mirror data to an incorrect disk.  
**Cause:** Existing symbolic links to the mirror disk from some third-party applications were incorrectly preserved and prevented closing the disk when the connection was lost. When access to a remote disk was re-established, this invalid mirror link may be used.  
**Resolution:** A code change was made to prevent an incorrect mirror link to be used after the connection to a remote disk is lost.
- **Problem:** In some circumstances, a write I/O was incorrectly acknowledged as being written to disk.  
**Cause:** A previous code change in SANsymphony 10.0 broke an assumption about write I/Os completing with reservation conflict status.  
**Resolution:** A code change was made in the driver to correct this problem.
- **Problem:** In certain circumstances (small cache size, under heavy load and with multiple hosts active), a system crash occurred in the DataCore cache driver.  
**Cause:** A coding issue in the cache driver resulted in an invalid buffer pointer when multiple hosts accessed the buffer simultaneously.  
**Resolution:** A code change was made in the driver to correct this problem.
- **Problem:** In certain configurations, if a mirror log recovery was interrupted due to I/O failure, the subsequent log recovery omitted recovery of some data.  
**Cause:** Certain I/O failure completion conditions were not recognized as requiring subsequent recovery. The ranges of the mirrored virtual disk associated with some completed mirror recovery operations were not marked for subsequent recovery.  
**Resolution:** A code change was made to reset those areas of the virtual disk for subsequent log recovery.

### Snapshot

- **Problem:** A DataCore Server with ALUA enabled and the Host's 'Preferred Server' setting set to 'All', became unresponsive after a snapshot relationship was deleted.  
**Cause:** A deadlock occurred when one of the snapshot relationships was deleted.  
**Resolution:** A code change was made to check for this scenario.
- **Problem:** Snapshots on a mirrored source served to clustered hosts from a secondary DataCore Server with the host's 'Preferred Server' setting set to 'All' or set to different DataCore Servers, may result in invalid data being presented in the snapshot image.  
**Cause:** A possible deadlock occurred during migration reads, which caused the migration bitmap to be updated incorrectly.  
**Resolution:** Fail a snapshot relationship when a possible deadlock is returned from migration reads and log the error.
- **Problem:** While under load, a system crash occurred after a full snapshot operation completed.  
**Cause:** A timing issue in the completion code for snapshot caused elements on work queues to be invalid.  
**Resolution:** A code change was made to correct the completion function for full snapshots.

### Transports

- **Problem:** An initiator was not notified that a reservation for a virtual disk had been cleared.  
**Cause:** When a virtual disk's reservation was erroneously cleared, a Unit Attention flag was not delivered to the initiator that had the reservation removed because of a communication failure between mirrored DataCore Servers.  
**Resolution:** Deliver the Unit Attention to the VMware host.
- **Problem:** In certain hardware configurations, a DataCore server would crash after upgrading to SANsymphony 10.0  
**Cause:** An error occurred when querying storage properties on certain devices that implement the interface incorrectly. The invalid data returned from the device could cause the crash.  
**Resolution:** The code was generalized to eliminate the possibility of faulting from invalid data being returned by the query.
- **Problem:** When a host accessed an ALUA-enabled, mirrored or dual virtual disk and the 'Preferred Server' setting for that host was set to 'All', stopping virtualization on one of the storage servers may have caused applications on the host to hang indefinitely.  
**Cause:** The Peripheral Qualifier field in the Standard Inquiry data returned from the stopped server was set incorrectly.  
**Resolution:** Driver code was changed to set the Peripheral Qualifier field correctly.

### Continuous Data Protection

- **Problem:** When opening some CDP-enabled virtual disks in the Management Console, the console would close.  
**Cause:** A logic error existed when the history log buffer size was set to the maximum configurable value of 1 TB, however the log filled beyond that size, resulting in a stack overflow exception.  
**Resolution:** A code change was made to correct the logic error.

## What's New in 10.0

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- **Virtual SAN Technology**
  - Changes to support host-side installation of SANsymphony software.
  - Improved the way virtual disks that are served to a DataCore Server are displayed.
  - Added the ability to configure automatic login of iSCSI ports.
- **Auto-tiering Enhancements**
  - Include write, as well as read, I/Os when building the heat map. This feature is configurable via the Create Storage Profile tab. (Experimental)
  - 'Intelligent rebalancing' ensures uniform distribution of virtual disk Storage Allocation Units (SAUs) across disks in a tier.
  - Ability to specify a percentage of reserved space per tier to be available for new SAU allocations.
- **Performance Improvements**
  - Increased the minimum number of poller threads that are dedicated to servicing I/O from 1 to 2 (providing the system has more than 4 logical CPUs) to improve throughput.
  - Improved the algorithm to increase the number of threads dedicated to servicing I/O as the load increases.
  - Added additional performance counters for poller operations.
- **Disk Pool Optimizations**
  - Provide a way to repair only failed SAU's from a pool. This eliminates the need to rebuild the entire pool and selects only the required recovery mode (full or log-based) for disks in the pool.
- **Performance Visualization Improvements**

- Improved the disk pool heat display in the Allocation View by grouping together allocated SAUs and sorting by temperature, to more accurately depict the state of SAU allocation in disk pools.
- Added new performance counters, including the maximum latency per I/O for physical disks and maximum I/O size per mapping. Added corresponding columns in various lists and alert monitors.
- Added Host port counters for maximum I/O size and pending/outstanding commands per Initiator/Target nexus.
- Display aggregated performance information for a whole server group in one view.
- Added a Bandwidth Display in the System Health tab displaying latency and throughput for components in a tree view.

- **Transport Optimization**

- Qualified 40/56 GigE Ethernet
- Added support for additional QLogic 16 Gb models.
- Qualified Microsoft Windows 2012 or 2012 R2 NIC teaming (LBFO)

- **Large Configuration Support**

Support for large configurations (32 DataCore Servers per Server Group), including disabling auto- login of iSCSI ports for configurations with more than 6 DataCore Servers in a Server Group.

### Note on Experimental Features

Experimental features will be clearly labeled as such in the management console. These features have been implemented as experimental in order to gain an understanding of their continuing contribution to the software as case studies, analysis, and benchmarking continue to be developed. Features that carry an experimental label have been fully implemented and tested and are safe to use in production; however, the feature functionality is subject to change. Experimental features are supported and comments, suggestions, and issues may be reported to DataCore Technical Support as usual.

## Fixes in 10.0

### Critical Fixes

- **Problem:** A system crash occurred in the DataCore storage pool driver when deleting the first mirrored physical disk.  
**Cause:** Unallocated memory was incorrectly being accessed because of an invalid pointer.  
**Resolution:** A code change was made to use the correct pointer.
- **Problem:** A system crash occurred during an upgrade when Emulex HBAs were installed.  
**Cause:** A non-maskable interrupt (NMI) occurred when the HBA was reset.  
**Resolution:** Reworked the code to reset the Emulex board.
- **Problem:** A system crash occurred in a specific configuration when under heavy load.  
**Cause:** A race condition occurred during the deletion of a snapshot relationship when accessing an internal configuration structure.  
**Resolution:** Code changes were made to relinquish and reinstate exclusive access to internal structures.
- **Problem:** A system crash occurred and hosts lost access to disks after resizing CDP-enabled disks.  
**Cause:** A deadlock occurred when closing an object while CDP I/O de-stage was occurring asynchronously.  
**Resolution:** A code change was made to the driver to perform closes asynchronously and return a busy status until the asynchronous de-stage operation is complete.
- **Problem:** A system hang or crash occurred in the DataCore SCSIport driver during a port rescan while stopping or upgrading a DataCore Server.  
**Cause:** A timing issue caused a deadlock when a bus reset command occurred during the rescan.  
**Resolution:** A code change was made to prevent the deadlock.
- **Problem:** Hosts could hang or crash while running certain applications that used a 3rd party copy command, and Fibre Channel internal errors were reported on the DataCore Server.  
**Cause:** When 3rd party copy commands were sent from hosts, internal handles were never closed and subsequent commands could not be processed, resulting in the host hanging.  
**Resolution:** The DataCore Fibre Channel driver was modified to correctly close handles for these commands.
- **Problem:** A double failure occurred for a mirrored virtual disk.  
**Cause:** When a write I/O is received on both storage servers, for the same or overlapping blocks at the same time, the cache may deadlock.  
**Resolution:** A code change was made to address the deadlock.
- **Problem:** A system crash occurred in the DataCore storage pool driver after performing volume source replacements.  
**Cause:** The driver was not handling a command correctly during removal of a source.  
**Resolution:** A code change was made to correctly implement this operation.
- **Problem:** Mirrored virtual disks became out of sync when hosts wrote to the same cache buffer for different blocks.  
**Cause:** A command encountered an active read or write causing stalled I/O when subsequent reads were deadlocked.  
**Resolution:** A code change was made to identify blocks in use should this condition occur and report the deadlock immediately.

### Snapshot

- **Problem:** A system crash occurred in the DataCore snapshot driver when deleting snapshot relationships while under heavy I/O load.  
**Cause:** A logic error existed when deleting a snapshot relationship.  
**Resolution:** A code change was made in the snapshot relationship deletion function.
- **Problem:** Snapshot creation would fail when the virtual disk name, including timestamp, exceeded 44 characters.  
**Cause:** The name validation function incorrectly limited the name to too few characters.  
**Resolution:** A code change was made to allow up to 64 characters for snapshot alias names.
- **Problem:** Virtual disk host access remained disabled when a snapshot was marked offline following a server crash.  
**Cause:** Reactivation of the snapshot was not attempted even after a snapshot mapstore was again available.  
**Resolution:** When the mapstore becomes online, try activating snapshot relationships that are failed, offline or not-present.

### Installation

- **Problem:** Installation of MPIO in the Host Integration Kit was prohibited on hosts that had only the SANsymphony Management Console installed.  
**Resolution:** Modified the installer to only prohibit this if the SANsymphony Server component was installed.
- **Problem:** During installation, a warning message dialog stating iSCSI ports could not be configured was hidden behind the installation window.

- **Resolution:** A change was made to all installation message dialog boxes to bring them to the foreground.
- **Problem:** Upgrading to a new version of SANsymphony software would sometimes never complete.
- **Resolution:** Modified the order that drivers are uninstalled and reinstalled on an upgrade.
- **Problem:** An error ("Could not connect to server <name>. The security negotiation failed or the username/password is invalid.") occurred when using the PowerShell Change Password script to set the DataCore Administrator password failed.
- **Cause:** The function to format the original error message was incorrect.
- **Resolution:** Correctly format the error message that is the result when failing to set the DataCore Administrator password.
- **Problem:** Duplicate Firewall Incoming Rules entries were created in the rule base upon each upgrade of SANsymphony software.
- **Cause:** The installer was incorrectly checking existing firewall rules before adding incoming rules.
- **Resolution:** A code change was made to the check for inbound rules.

#### Transports

- **Problem:** Fusion-IO attributes such as vendor name and serial number were displayed as 'Unknown' in the physical disk properties.
- **Cause:** Fusion does not support certain SCSI commands used by SANsymphony to obtain this information.
- **Resolution:** New code was added to obtain this information through other means.
- **Problem:** Stopping DataCore Virtualization Services never completed on a DataCore Server.
- **Cause:** While a file copy operation was in progress, a virtual disk configuration change was made, resulting in the DataCore Fibre Channel driver failing to close a storage handle.
- **Resolution:** A code change was made to correctly free resources and close the storage handle.
- **Problem:** In certain circumstances, large I/O writes were not correctly processed.
- **Cause:** For SCSI write commands that are greater 1MB, the status of each intermediate write command was not being checked; only the final write command, resulting in the possibility of good status being returned for the SCSI command when part of it failed.
- **Resolution:** Check that the status of each sub-command is good before continuing to issue the next write.

#### Performance Metrics

- **Problem:** No values were displayed for shared pool performance monitors for Maximum time / Operation and Average time / reads.
- **Resolution:** Correctly display performance counter data for these monitors.
- **Problem:** Fibre Channel Port Pending Commands performance counter data was incorrect.
- **Cause:** SCSI commands that gathered data from the Fibre Channel adapter were being incorrectly processed.
- **Resolution:** A code change was made to the manner that SCSI commands are processed.

#### High Availability

- **Problem:** Misleading "double failure" disk status was incorrectly displayed while the host continued to access it.
- **Resolution:** A code change was made to modify the conditions for reporting failure and failed redundancy for a virtual disk.
- **Problem:** After a double failure, in some cases, all data may not be recovered following a force online operation.
- **Cause:** A timing issue existed in the force online logic when recovering from a double failure.
- **Resolution:** Modified the method to recover when a double mirror failure has occurred.
- **Problem:** After a mirrored virtual disk failed, in certain circumstances, a log recovery did not occur.
- **Cause:** A logic and timing error incorrectly changed the mirror state on an incoming mirror write I/O, causing the mirror log recovery to be skipped.
- **Resolution:** A code change was made to correctly handle incoming mirror write I/Os while in a failed state.

#### Replication

- **Problem:** Could not re-establish the connection to a replication server group after losing the connection.
- **Cause:** No attempt to reconnect was made if a connection to at least one other server in the remote group was available.
- **Resolution:** A mechanism was added to periodically attempt to reconnect to the remote server group.
- **Problem:** An error ("Replication Partner Group state is invalid. Cannot connect to partner server group with endpoint address <hostname> because it has a different configuration") was reported when attempting to connect to a replication server.
- **Cause:** Network faults may cause the next connection to a replication partner to be redirected to the local replication service instead. The issue is time dependent and is not always hit when network faults occur.
- **Resolution:** Code changes were made to handle these scenarios.
- **Problem:** Offline initialization failed and the status changed to 'Standby (offline initialization), waiting to start initialization', when started on the destination server.
- **Cause:** Frequent cancellation of offline initialization occurred when there were periodic events posted for IP configuration changes.
- **Resolution:** A code change was made to prevent certain incorrect events from cancelling offline initialization.

#### Management Console and Configuration

- **Problem:** The Virtual Disk Creation wizard would only create up to 100 virtual disks at a time, even though more than 100 could be specified.
- **Resolution:** A code change was made to longer allow more than 100 virtual disks to be specified in one operation.
- **Problem:** The DataCore Executive service continually stopped unexpectedly on a specific configuration.
- **Cause:** A duplicate mapping remained in the configuration file after a split and move operation, causing the configurations to become out of synch.
- **Resolution:** A code change was made to correctly synchronize the configurations after the switch source operation is performed.
- **Problem:** After saving a configuration, the configuration could not be restored.
- **Cause:** The backup zip folder structure was not created when the backup was saved to "C:\\" or any path with a trailing "\", causing the folder structure to be removed.
- **Resolution:** Corrected by trimming the '\' on backup path locations.
- **Problem:** In the Paths by Server Port report, incorrect state information for the Active/Standby paths was displayed for the Initiator port.
- **Cause:** Because the pair initiator port/target port isn't unique, data may not have been displayed for the correct path.
- **Resolution:** Added LUN in the condition to obtain the correct path data.
- **Problem:** Changing of a front end LUN number for a mapping, caused the disk access to always revert to Read/Write.
- **Cause:** When replacing the mapping, access attributes were incorrectly reset.
- **Resolution:** Only change the LUN number and preserve the access setting.
- **Problem:** Virtual disk groups could not be dropped on multiple hosts in the host panel.
- **Cause:** Virtual disks in a group that were already served were not eligible to be served again.
- **Resolution:** Make these disks eligible to be reserved.
- **Problem:** The DataCore Executive service terminated unexpectedly and restarted while virtual disk reclamation is occurring.

- **Resolution:** A code change was made to modify the manner this function was implemented.
- **Problem:** The DataCore event log was flooded with "Core logical disk info for LogicalDiskId changed" messages, which included no useful information.  
**Resolution:** Remove this log message.
- **Problem:** An unhandled exception error occurred when connecting to another DataCore Server and included the message "Async End on wrong channel."  
**Cause:** Obsolete code checked for the previous connection.  
**Resolution:** A code change was made to ignore this check.
- **Problem:** After removing a mirrored pool disk and subsequently adding it back into the configuration, an error message was displayed stating "License storage capacity exceeded."  
**Cause:** Removing a mirrored pool disk did not correctly reduce the used storage capacity counter.  
**Resolution:** Added a missing call to update used storage capacity.
- **Problem:** The Management Console became unresponsive during reclamation operations.  
**Cause:** The console was flooded with state change notifications from the storage pool driver during reclamation, especially when a small SAU size was configured.  
**Resolution:** Silence unnecessary state change events.

#### Scheduled Tasks

- **Problem:** When creating a monthly or yearly scheduled task, the drop down list of days and months was not ordered chronologically.  
**Cause:** The drop down menu selections were incorrectly ordered alphabetically.  
**Resolution:** Correct the order of the days of the week and the week count when creating monthly or yearly scheduled tasks.
- **Problem:** When setting a task trigger to search using the "message text contains" filter didn't work for certain cases.  
**Cause:** The log message filter searched only the message data rather than the entire formatted message.  
**Resolution:** Search the entire message.
- **Problem:** On double-byte operating systems, such as a Japanese or Chinese OS, setting an email recipient fails when creating a new task.  
**Cause:** There was an omission in the code for this functionality on a double-byte OS.  
**Resolution:** The code was updated to allow this operation.

#### Performance Recording

- **Problem:** An error ("Failed to connect to the performance recording endpoint.") occurred when attempting to connect to an external SQL Server for Performance Recording.  
**Cause:** A problem occurred when configuring the database user and specifying an existing database.  
**Resolution:** Modified the database security policy/requirements for external database server connectivity and implemented a validation algorithm for the new policy.
- **Problem:** An error ("Object reference not set to an instance of an object.") occurred when configuring a Performance Recording session.  
**Cause:** A physical disk was previously configured for performance recording, and subsequently removed from the server.  
**Resolution:** A code change was made to handle the case where objects no longer exist.

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