D-Link

D-Link System, Inc.™
xStack Storage DSN-1000 series, DSN-2000 series, DSN-3000 series & DSN-5000 series
V2.7.7.1 Release Notes

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1 Introduction

Note: For the remainder of this document, issues that pertain to the DSN-1100, DSN-2100, DSN-3200, DSN-3400, DSN-5110, DSN-5210 & DSN-5410 products will be identified as DSN-1000/2000/3000/5000 series. Issues pertaining to specific products will be called out with those product's names.

D-Link Systems, Inc.™ is shipping the next firmware version release, V2.7.7 for the DSN-1000/2000/3000/5000 series products. The V2.7.7 release notes identify what is included and what limitations have been identified as part of this release. The V2.7.7 release has all key functionality, with verification completed to support the customer base for the DSN-1000/2000/3000/5000 series products.

> Any system that is running v1.5.1 firmware or earlier must first be upgraded to version 1.6.x, and then upgraded to this new version.
>
> Note: The upgrade from firmware V1.6.1 to this new version requires the installation of a new and improved system kernel. It is recommended that you copy your system configuration (LAGs, LUNs, targets, etc.) down on paper manually and have it available when the upgrade is complete. Please review your final configuration to make sure they match your previous settings. Make changes if necessary.

1.1 Purpose

The purpose of this document is to communicate the contents of the DSN-1000/2000/3000/5000 series product firmware V2.7.7 release. This document identifies supported functionality, what was originally supported, but not part of this release and what errata and caveats that may effect the operation of the DSN-1000/2000/3000/5000 series products. This document is a release note on the v2.7.7 software release. It is not a product spec, nor does it specify the total functionality of the DSN-1000/2000/3000/5000 series products.

1.2 Related Documents

DLink XStack Storage Management Center Software User's Guide

1.3 Update and Installation Requirements

The v2.7.3 software release is available as an initial factory installation and a field upgrade for the following products:

- **DSN-1100** running v2.0.x, v2.5.x, v2.6.x or v2.7.0 software
- **DSN-2100** running v1.6.x, v2.0.x, v2.5.x, v2.6.x or v2.7.0 software
- **DSN-3200 or 3400** running v1.6.x, v2.0.x, v2.5.x, v2.6.x or v2.7.0 software
- **DSN-5110, 5210 or 5410** running v2.5.x, v2.6. or v2.7.0 software

Any systems that are running v1.5.1 software or earlier must first be upgraded to version 1.6.x, and then upgraded to v2.7.7. For more information about the software upgrade process, please refer to your existing system documentation (**Chapter 5.2.6 "Upgrading Software"** in the Storage Management Center Software User's Guide).

> The v2.7.7 software release requires that the **Java Runtime Environment 6 (JRE 6) Release 1.6.0.0, or later** (http://java.com) is installed on the system that will serve as the management host. The Java Runtime Environment software must be installed prior to the first connection to the xStack Storage Management Center.

2 Product Features and Enhancements

All of the existing product features from previous versions are included in this release, including support for running the xStack Storage Management Center from a host system with Windows XP, Windows Server 2003, Windows Server 2008, Windows Server 2008 R2 or Windows Vista. Note that D-Link xStack Storage products that are running v2.7.7 cannot be managed by earlier versions of the xStack Storage Management Center.   In addition, support for the 32-bit version of Microsoft Virtual Disk Service ("VDS") is available for Windows 2003 Server only (VDS support for Windows Server 2008 is not yet available), which allows you to use any VDS-based applications (such as Microsoft's **DiskRaid** utility and **Storage Manager for SANs** application) to configure and manage any xStack Storage product. For more information, please refer to the appropriate Microsoft documentation.

The following are new or updated features that have been added since the v2.6.0 general release..

2.1 Management Center (Java GUI) Changes

2.1.1 Faster and Smoother Display
The Java GUI has been improved to display information more quickly. It also eliminates any flickering and other display anomalies that existed in previous versions.

2.1.2 Reorganized System Administration View
The System Administration View now displays individual tabs for all of the dialogs, rather than using multiple "leaves" for the General Settings, System Policies, User Accounts and Advanced Settings dialogs. In addition, the "Schedule" tab has been renamed to "**Tasks**", and the Settings tab has been renamed to "**Control**".

2.1.3 Ability to Select Drives when Reconfiguring a Volume
A new dialog appears in the "**Reconfigure Volume Wizard**" that allows you to select specific drives when reconfiguring a volume. This feature can also be used to make a volume wider when new drives are added, while maintaining the same volume composition.

2.1.4 Display of System Cache Mode on the Summary Dialog
The current system cache mode of either "**Write Thru**" or "**Write Back**" now appears on the System Summary dialog. The "Write Back" mode provides the highest system throughput by utilizing the cache memory in the controller, and it is only available when a fully charged battery is present.

2.1.5 Configurable Read-Ahead Cache Size
A new selection in the **Volume View**->**Advanced Settings** dialog allows you to set the read-ahead cache size for optimizing performance with a large number of concurrent data streams.

2.1.6 Optimize for Multi-Track Audio
A new selection in the **Volume View**->**Advanced Settings** dialog allows you to optimize the read-ahead caching algorithm for multi-track audio playback on a volume-by-volume basis.

2.1.7 Simplified Battery Policies
Reduced the number of selections on the **System Administration**->**System Policy** dialog for the Battery Policy to include only "**Ignore Battery Status**" and "**Stop Buffering I/O**".

2.1.8 Ability to Enable or Disable the iSCSI Network Ports
A new selection in the **Network Settings**->**Details** dialog allows you to enable or disable each of the iSCSI network ports (support for standalone systems only)

2.1.9 Display the Drive Technology (HDD or SSD)
The Drive Details dialog in the Physical Storage View now displays a suffix ("HDD" or "SSD") after the primary drive type (SATA or SAS), if that information is reported by the hard drive.

2.1.10 Display of NAND Flash Memory Size
The size of the NAND Flash memory module now appears in the **System Administration**->**Controller** dialog. That information is also included in the system startup information that appears on the RS-232 Serial Diagnostic port output.

2.1.11 Synchronize Date and Time
A new button in the **System Administration**->**Advanced Settings** dialog allows you to set the date and time of the storage array to be the same as the management host system.

2.2 Support for Volumes Larger than 2TB
When using a standard volume block size of 512 bytes, most 32-bit operating systems (such as Windows XP) can support a maximum volume size of 2TB. This version introduces an alternate volume block size of 4096 bytes that will support volumes up to 16TB. A new setting in the **Volume Advanced Settings** dialog allows you to specify a block size of 4096 bytes for specific volumes that require it. You can also use a new setting in the **System Administration**->**Advanced Settings** dialog to set a system-wide default block size of 4096 bytes, so that any new volumes that are created will use that new block size.

2.3 New Spare Drive and Rebuild Policies
Volume rebuilds will now look for a spare or available drive that is the same type (SAS/SATA/SSD) and capacity as the drive that failed or was removed. If a matching drive cannot be found, the system will attempt to allocate any other similar type drive from the spare or available pool for the rebuild. If a similar drive type is not available, the system will use any spare or available drive, even if it is a different type. Finally, if there is no spare or available drive, the system will use any available capacity on any drive that is already in use. To reserve a drive as a spare, select the drive in the Physical Storage View, and click on the "**Reserve as Spare**" item. As always, reserving a drive as a spare will prevent it from being used when creating a new volume.

2.4 Support for SNMP Traps

In addition to generating an e-mail notification message for serious events, the system can now generate an SNMP (Simple Network Management Protocol) Trap that can be used with any thirdparty network management application that supports SNMP version 2. The SNMP parameters (including SNMP Server IP address, SNMP Server Port Number and SNMP Community String) can be configured in the **System Administration**->**Advanced Settings** dialog. In addition, a new "**Send Test Notifications**" button has been added to the bottom of the Advanced Settings dialog to allow you to validate your e-mail and/or SNMP parameters.

2.5 Updated Linux Kernel

A newer version of the embedded Linux kernel has been implemented to improve the reliability and performance of the JFFS2 Flash file system in the controller.

2.6 Improved Diagnostic Capture Capabilities

The System Diagnostic Capture has been expanded to capture more detailed information about the system state, including all configuration and system logs, as well as the Serial Diagnostic Console messages. This new capability requires 256MB of NAND Flash memory on your controller. Most newer controllers are already equipped with 256MB of NAND Flash memory, but a few older controllers may only have 128MB of NAND Flash memory.

2.7 Maximum Buffer Memory Size for the DSN-5000 Series

The maximum size of Buffer Memory for the DSN-5000-series controllers is no longer limited to 2GB. The system can support up to a maximum of 4GB of Buffer Memory.

2.8 New or Updated CLI Commands

2.8.1 Performing a Volume Integrity Scan

Renamed the `IntegrityScan` command in the Volume context to `IntegrityScanNow` to distinguish it from `IntegrityScanAt`.

2.8.2 Enable or Disable the iSCSI Network Ports

Added the ability to enable or disable each of the iSCSI data ports in the **iSCSI->Ports** context. Examples: `iSCSI.Ports[n].disable` or `iSCSI.Ports[n].enable`

2.8.3 Volume Block Size Attribute

In the Volume context, use the new `BlockSizeBytes` keyword to `SHOW` or `SET` the block size for the current volume to either 512 bytes or 4096 bytes.

2.8.4 System Default Volume Block Size Attribute

In the System Administration Advanced Settings context, the
`DefaultVolumeBlockSizeBytes` keyword can be used to `SHOW` or `SET` the system-
wide default block size to either 512 bytes or 4096 bytes.

2.8.5 SNMP Trap Notification Attributes

In the External Connections Manager context, the following keywords can be used to
`SHOW` or `SET` the SNMP Notification attributes: `SNMPNotificationEnabled`,
`SNMPClientIPAddress`, `SNMPClientPortNumber`, and
`SNMPClientCommunityString`.

2.10 Fixed Issues since Version 2.6.0

The following additional issues have been fixed in this release:
• Recurring Fan Fault/Clear messages occur with some enclosure types
• Repeated link transitions (Link Down/Up) can result in a non-responsive data port
• Systems with 84 drives may not always complete the startup sequence
• System with SATA drives can bugcheck under heavy I/O load when the Java GUI is active
• Improved reliability of redundant-controller processing during a Failover
• Eliminated the cause of "Task Management" entries in the Event Log
• Improved reliability the 10GbE interface when using CX-4 modules
• The system did not automatically reboot after an ARC 6 bugcheck occurred
• Improved iSCSI session disconnect/reconnect handling
• No email notification on battery failure
• No indication on SMART data changes
• Support for 4GB Cache Memory
• System bugcheck can occur during an orderly shutdown of the system
• DSN-5000-series-HA software upgrade did not complete resulting in a lockup of both
controllers
• System restart occurred on iSCSI reinstate connection
• DSN-5000-series-HA secondary controller did not take over after a failover (failover failed)
• MC shows incorrect drive percentage used
• Number of Drives = 'Pick drives for Me' if system allowed to select drives
• MC shows extents drive status "Blank" when reconfiguring volumes
• Cannot use port after deleting VLAN
• Changing the VLAN setting for a LAG does not show up on the Management Center
• ARC-6 (Command in System Too Long) bugcheck can occur under heavy load
• User cannot clear the iSNS server IP to 0.0.0.0 in the Management Center
• Volume Manager bugcheck occurred after a failover while processing a reconfigure task
• PieMan events filling log when network configured with VLAN
• No event log entries for a disk configured as "Spare"
• DSN-5000 series system boot failure due to bad battery
• Cannot change Sync Cache parameter in the Management Center Volume Advanced Features
• System restart when copying data to a 4.21 TB Volume using 4K block size
• Setting Management Port IP and Default Gateway to different subnets prevents successful
restarts
• SCC does not correctly handle a timed out message for the system's serial number

2.11 Fixed Issues since Version 2.7.0

The following additional issues have been fixed in this release:
• System startup failed when the I2C cable was not connected on some enclosures

2.12 Fixed Issues since Version 2.7.1

• Updated the configuration parameters of the SAS expander on DSN-5110 controllers
• Suppressed the Engineering Event Log entries for the SCSI Reserve/Release
   commands that could cause performance issues with VMware environments

2.13 Fixed Issues since Version 2.7.2

• Resolved constant Fan Fault/Fan Clear messages reported on DSN-3000 Series

2.14 Fixed Issues since Version 2.7.3

• Fixed a bug that prevented some SATA drives from being discovered during startup.

2.15 Fixed Issues since Version 2.7.4

• Corrected the display of the Write Cache Mode on the System Summary panel to more
   accurately show the current mode (Write-Thru vs. Write-Back).

2.16 Fixed Issues since Version 2.7.5

• Fixed a bug that prevented a Volume Reconfigure request from completing when only the
   physical drives were changed (but no other volume composition changes).

2.17 Fixed Issues since Version 2.7.6

• Eliminated the restriction that prevented a pair of DSN-5110 controllers with only on
   System Memory DIMM from binding.

3 Software Upgrade Procedure

For any existing DSN-1000/2000/3000/5000 series system that is running software version
1.6.x, v2.0.x, v2.5.x, v2.6.x or v2.7.0, you should obtain one of the following binary files from
the D-Link support website. (For USA it is www.dlink.com).

System Type	File Name	File Date
DSN-2100/3200/3400	**FUFI_2_7_7_1.DLink_DSN2100_DSN3200_DSN3400**	February 18, 2010
DSN-1100	**FUFI_2_7_7_1.DLink_DSN1100**	February 18, 2010
DSN-5210/5410	**FUFI_2_7_7_1.DLink_DSN5110_DSN5210_DSN5410**	February 18, 2010

Note: If your host system is running Windows XP, be sure to disable the Windows firewall
before starting the firmware upgrade.

	After a successfully upgrading your system to the V2.7.3 release, be sure to save a new Configuration File by using the following procedure: 1. From within the Management Center GUI, click on the "System Administration" item for your specific system in the View panel 2. Click on the "Settings" tab 3. Click on the "General" leaf (if it is not already selected) 4. Click on the "Save" button below the "xStack Storage Configuration" heading 5. Navigate to where you wish to save the configuration file and enter the filename 6. Click on "Save"

3.1 Upgrade for systems that are running v2.x.x

Use the following procedure from the D-Link Management Center to install this new software image:

1. Select **System Administration** in the upper-left frame
2. Select the **Settings** tab, and select the **General** leaf (if it is not already pre-selected)
3. Click on the **Upgrade** button
4. Browse for the software image file that you wish to upload, then click **Open**.
5. In response to the prompt "**After new software is uploaded, the remote system will be shutdown and restarted. Are you sure you want to do this?**", click **OK** to proceed.
6. A progress bar will appear to show the progress of the software upload process.
7. After the software image is uploaded, a message prompts you to restart the system so that the new software image can take effect, and you should click **OK**.
8. After the system restarts (approximately 4 minutes), launch your web browser at the Management Port IP address and download the new Management Center GUI.

> If your DSN-5X00 system is equipped with dual controllers, the software upgrade process will automatically upgrade both controllers as the same time if they are in a "**Bound**"state

3.2 Upgrade for systems that are running v1.6.x

Use the following procedure from the version 1.6.x D-Link Management Center to install this new software image:

1. Select the **Physical Resources** tab in the left-most frame
2. Select the **System** item under Physical Resources
3. In the menu bar, select **View**, then select **Software Upgrade**
4. In response to the prompt "**Upgrading the software will require a restart of your system; Do you want to continue?**", click **OK**
5. Browse for the software image file that you wish to upload, then click **Open**.
6. A progress bar will appear to show the progress of the software upload process.
7. After the software image is uploaded, a message prompts you to restart the system so that the new software image can take effect, and you should click **OK**.
8. When the system restarts, the Management Console GUI will be closed, and you would wait approximately 4 minutes for the system to complete the restart process without interruption.

> After upgrading from v1.6.x, your system will present the new Graphical User Interface and new Target Creation paradigm that were implemented in version 2.0.0. For more information, please refer to the *Version 2 Upgrade Procedure Document*, which is available on the D-Link website. You must also install the Java 6 Run-Time Environment for your host system in order to use the new GUI.

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3.3 Upgrade for systems that are running v1.5.x or earlier

All systems that are running version 1.5.x or earlier must first be upgraded to version 1.6.x. That software image can be downloaded from the **Support**->**Tools and Resources** page of D-Link's public website at http://www.dlink.com.

4 Known Issues and Limitations

4.1 DSN-5000-Series Airflow Optimization

To ensure proper airflow and cooling of the system, every drive slot in the primary enclosure and any expansion enclosure must contain one of the following items:
• Drive carrier with a hard disk drive installed
• Drive filler with no hard drive installed
There should be no empty drive slots or empty drive carriers installed. Both of the controller bays on the rear of the DSN-5000 series Primary Array should contain either a controller or a blank-off plate. Similarly, both of the controller bays on the rear of the DSN-5000 series-Expansion Array should contain either an I/O Module or a blank-off plate.

4.2 VDS Hardware Provider

Microsoft's VDS subsystem does not support the creation of Network Portals. Therefore the iSCSI network configuration must be performed using the Startup Wizard or the D-Link Management Center GUI. For more detailed information, refer to the Microsoft documentation for DiskRaid and Storage Manager for SANs.

4.3 iSCSI Initiator Support for Windows 2000

We no longer provide iSCSI initiator support for Windows 2000, since Microsoft no longer provides support for that version. However, it is still possible to run the Management Console GUI from a Windows 2000 client.

4.4 Reverting to Earlier Versions

If you must return your system to an earlier version of software, you can click on the "**Use Alternate Version**" button, and the system will restart using the earlier version. However, be sure that all background tasks (such as parity volume initialization, volume reconfiguration or volume scan) have completed before clicking on the "**Use Alternate Version**" button. If the system does not restart automatically, you may need to restart the system manually.

4.5 Reconfiguring the Volume Chunk Size through the CLI

The ability to change the chunk size of a volume when using the CLI "**reconfigure**" command in the **volume** context is not supported in this version.