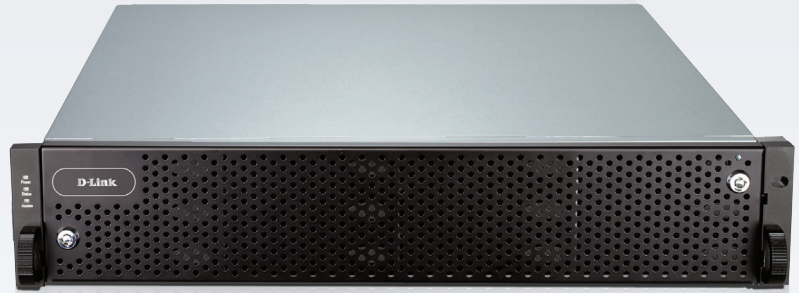


## Product Highlights

- Complete solution includes Writeable Snapshots, Volume Cloning and Replication at no-cost
- Active-Active controller operation in HA configuration for redundancy and maximum performance
- Online firmware upgrades in HA configuration for superior uptime



## DSN-6000 Series

# HA-Capable 4x1GbE or 2x10GbE iSCSI SAN Array with 12 SAS/SATA Bays (expandable to 60 bays)

### Features

- Hot-Pluggable Design
- Battery Protected Cache Memory: 4GB per Controller
- 12 Hot-Swap SAS/SATA<sup>1</sup> Hard Drive Bays
- Supports 48TB Capacity with 4TB<sup>1</sup> Hard Drives
- Industry Standard 2U 19-inch Chassis
- Hardware iSCSI Offload Engine

#### Transactional Performance

- DSN-6110: Up to 200,000
- DSN-6410: Up to 220,000

#### Additional DSN-6020 Expansion JBODs:

- Up to nine additional JBODs (120 Drives Total) with single-controller configuration, with 480TB total using 4TB<sup>1</sup> drives.
- Up to five additional JBODs (72 Drives Total) with dual-controller configuration, with 288TB total using 4TB<sup>1</sup> drives.

#### High Performance iSCSI Interface:

- DSN-6110: Four 1GbE Data Ports per Controller
  - Add a DSN-610 Controller for High Availability (Active/Active Operation)
- DSN-6410: Two 10GbE Data Ports per Controller
  - Add a DSN-640 Controller for High Availability (Active/Active Operation)

### Overview

D-Link's DSN-6000 Series (DSN-6110 & DSN-6410) iSCSI SAN array is a highly available, data center-class network storage solution in a 2U rack mount form factor that is simple to deploy and manage, ideal for small to medium enterprises seeking nearline or primary storage. It uses an intuitive management GUI to ensure the system can be up and online in little time, even with limited IT knowledge. The DSN-6000 Series supports 48TB of raw capacity using 4TB<sup>1</sup> drives and overall scalability to 480TB (for a single-controller configuration) and 288TB (for a dual-controller configuration) using additional DSN-6020 expansion JBODs.

All DSN-6000 storage solutions are supplied complete with snapshot, volume cloning and remote replication capabilities, without the need for costly software licenses. Also, each RAID controller is equipped with 4GB cache to ensure maximum read and write performance right out of the box.

### iSCSI for IP Networks

Storage Area Networks (SANs) have traditionally been reserved for complex Fibre Channel networks. The introduction of iSCSI has extended the powerful centralized storage capabilities of SAN technology to IP networks. By utilizing existing Ethernet technology, the costs associated with Fibre Channel switching, separate host bus adapters, expensive storage subsystems and administration is significantly reduced. iSCSI SANs leverage the Ethernet infrastructure and standards that are already familiar to most IT personnel.

### Redundant Architecture:

- RAID Controllers
  - Dual-Controller Configuration: DSN-6110 + DSN-610
  - Dual-Controller Configuration: DSN-6410 + DSN-640
- Dual, Hot-Swappable 500 Watt Power Supplies
- Two Hot-Swap Fan Modules
- Battery Backup Module: Provides Cache Protection up to 72 hours
- JBOD expansion with redundant SAS controllers

### Advanced Data Protection:

- RAID support: 0, 1, 0+1, 3, 5, 6, 10, 30, 50, 60
- Up to 512 Writeable Snapshots
- Windows VSS Support
- Volume Cloning
- Replication for up to 8 volumes
- Full and Incremental Replication Support
- Manual & Scheduled Task Support
- Dedicated Port Reservation for Data Replication Usage
- Windows and Linux Host Utilities Support

### High Availability Network Connections:

- Load-balancing
- Failover

### Energy Saving Design:

- Auto Disk Spin-Down
- Auto Fan Speed
- 80 PLUS Energy-Efficient Power Supply

## A Choice of Host Interfaces – Four 1GbE or Two 10GbE

Both the DSN-6110 and DSN-6410 each support Link Aggregation Groups (LAG), Multi-Path I/O (MPIO) and Multiple Connections per Session (MCS) for flexibility, performance and resiliency.

The DSN-6110 can have its four 1GbE ports grouped together for up to 450 MB/s bandwidth. With the addition of a secondary controller (DSN-610) the available throughput increases up to 900 MB/s bandwidth.

The DSN-6410 utilizes two built-in fully integrated 10GbE interfaces as a high performance alternative to 4Gbps Fibre Channel, for up to 650 MB/s. With the addition of a secondary controller (DSN-640) the available throughput increases up to 1,300 MB/s bandwidth. Each DSN-6410 array and DSN-640 controller comes standard with one 10GbE SFP+ transceiver and one optical cable providing industry standard LC-connectors.

## High Availability

The DSN-6110 & DSN-6410 primary arrays, based on a single controller, each provides an ideal platform for nearline storage requirements such as disk-to-disk backup, data archiving and video surveillance.

With the addition of a secondary controller (DSN-610 for the DSN-6110 and DSN-640 for the DSN-6410) the DSN-6000 Series can provide the failover, redundancy and performance required for mission critical scenarios such as Virtual Machine (VM) shares, databases, Online Transactional Processing (OLTP), email applications, storage consolidation and your other primary storage needs. When deployed with redundant controllers, the DSN-6000 series is equipped with fully redundant components for all major functions including RAID controllers, host connectivity, power supplies, fan modules, battery backup modules, and SAS JBOD expansion ports. The hot-pluggable design allows for uninterrupted services, even while replacing failed components. Additionally, the active-active controller design allows for online firmware upgrades, eliminating the need for a system reboot or additional downtime when updating the system to the latest software code.

## Remote Replication, Cloning and Snapshots

Remote replication provides continuous data protection ensuring your valuable data is safe in the event of a catastrophic system failure in your primary site or data center. One source target can be set up with multiple destination targets, allowing administrators to replicate data to different locations. These replication jobs can be set up for manual or automated scheduling allowing hourly or daily configuration.

Volume cloning can be used to backup data from a source volume to a target volume, set up a backup schedule, and deploy rules for creating these backups.

Snapshot technology ensures data can be restored quickly and easily from a point-in-time copy and easily without the need for lengthy restore from a backup. Up to a

total of 512 writable or read-only snapshots are supported and compliant to Microsoft Windows Volume Shadow Copy Services (VSS). These snapshots can be implemented manually or through automated scheduling which allows hourly or daily configuration. In addition, the snapshot technology follows the block-level copy-on-write technology which provides fast recovery of data in case of a disk failure, file corruption or program malfunction.

Remote replication, cloning and snapshot technology are supplied as standard features in all DSN-6000 Series storage solutions, at no additional cost.

### Additional Features

The DSN-6000 Series incorporates advanced high availability features such as RAID 6 and RAID 60, writable snapshots, Microsoft Windows VSS support, and volume configuration restoration. These advanced features help to reduce or eliminate any system downtime. Unlike other vendors, D-Link's DSN-6000 Series (with a secondary controller installed) is able to upgrade its onboard firmware without the need for a system reboot or any system downtime. Firmware images and volume handling are protected by the redundant controllers, when one RAID controller is down or has lost its connection, the other RAID controller takes over the tasks immediately. This ensures that volumes and services are transferred seamlessly and simultaneously.

### Applications

The optimized IOPS and throughput are capable of providing the necessary performance for critical online services such as cloud storage, SQL, Microsoft Exchange, video editing and video streaming applications. Furthermore, with its iSCSI interface, D-Link's DSN-6000 Series is ideal for virtualization environments like VMware, Hyper-V and Citrix.

The DSN-6000 Series appears in the VMware Hardware Compatibility Guide, Citrix XenServer Hardware Compatibility List and the Microsoft Windows Server Catalog.

### Expansion Options

The DSN-6110 & DSN-6410 primary arrays each support 12 internal SAS/SATA<sup>1</sup> hard drives and with the addition of up to nine additional DSN-6020 expansion arrays supporting 120 drives and 480TB raw storage with single-controller configuration, or five additional DSN-6020 expansion arrays supporting 72 drives and 288TB raw storage with dual-controller configuration, using 4TB<sup>1</sup> drives.

### Green Energy Savings

The DSN-6000 Series is equipped with D-Link Green features for saving power. When properly configured, the power consumption of hard drives can be reduced to a minimum using the auto disk spin down feature. The DSN-6000 Series array monitors environmental temperatures to optimize the cooling mechanism. The fan modules respond only when needed. The power supply modules are all 80 PLUS power efficient, providing a more favorable power conversion rate. These power-saving features help to greatly reduce energy consumption and increase the product's lifespan, which is critical in a data center environment.

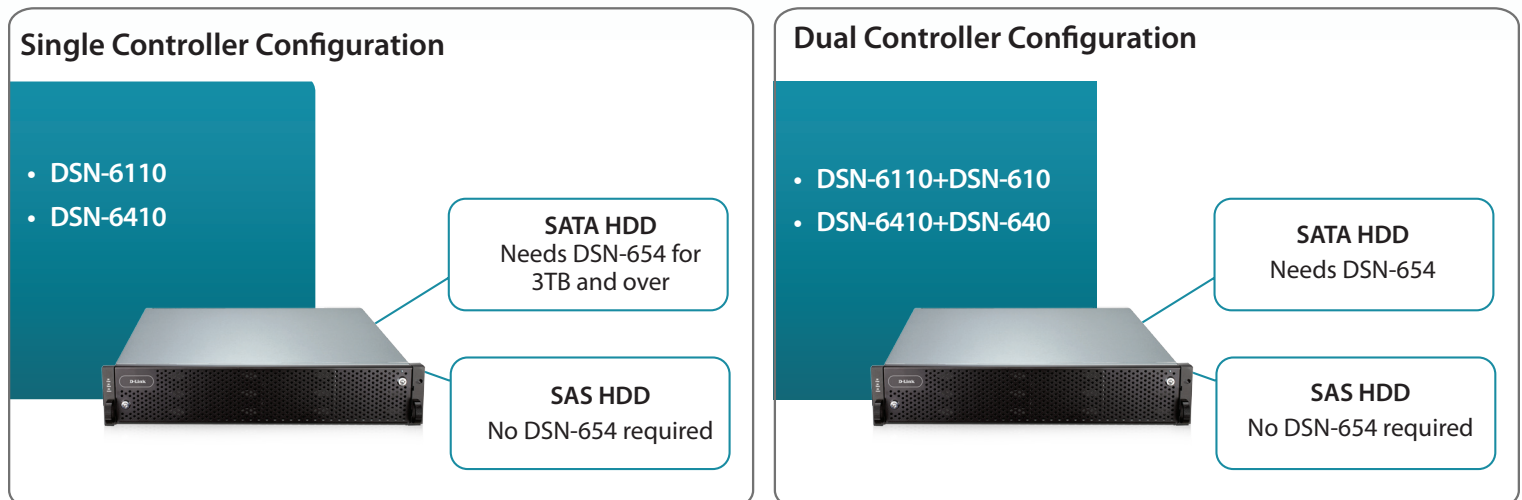
### RAID support

The DSN-6000 Series iSCSI SAN arrays support RAID levels 0, 1 (N-way mirror), 0+1, 3, 5, 6, 10, 30, 50, 60 and JBOD for data protection and performance.

### SATA Bridge Board (DSN-654)

The DSN-654 SAS to SATA bridge board is designed to enable single-ported SATA drives to connect seamlessly like native dual-ported SAS drives. The DSN-654 is required for each drive, for SATA deployments in a dual controller configuration or with SATA hard drives having capacities of 3TB or greater, as described in the diagram below. Also, these same rules will apply to SATA drives installed in any additional DSN-6020 expansion enclosures.

### SATA drives in the following configurations need a SATA bridge board:



Technical Specifications	
DSN-6110	<ul style="list-style-type: none"> <li>Four 1GbE Copper iSCSI Ports</li> </ul>
DSN-6410	<ul style="list-style-type: none"> <li>Two 10GbE iSCSI Ports (Comes standard with one SFP+ transceiver and one LC fiber cable)</li> </ul>
Features	
Processor	<ul style="list-style-type: none"> <li>Intel IOP</li> </ul>
Drive Bays	<ul style="list-style-type: none"> <li>12, Expandable with DSN-6020 Expansion JBODs to 60</li> </ul>
Drive Interface Support	<ul style="list-style-type: none"> <li>SAS/SATA<sup>1</sup></li> </ul>
Cache Memory	<ul style="list-style-type: none"> <li>4GB per controller</li> </ul>
Cooling Fans	<ul style="list-style-type: none"> <li>2</li> </ul>
Battery Backup for Cache	<ul style="list-style-type: none"> <li>Yes</li> </ul>
SBB Compliant Controllers	<ul style="list-style-type: none"> <li>Yes</li> </ul>
Bandwidth	<ul style="list-style-type: none"> <li>DSN-6110 : Up to 450 MB/s</li> <li>DSN-6110 + DSN-610 : Up to 900 MB/s</li> <li>DSN-6410 : Up to 650 MB/s</li> <li>DSN-6410 + DSN-640 : Up to 1,300 MB/s</li> </ul>
Storage Capacity	<ul style="list-style-type: none"> <li>48TB with 4TB<sup>1</sup> Hard Drives</li> <li>Additional DSN-6020 Expansion JBODs provide 480TB with single-controller configuration and 288TB with dual-controller configuration.</li> </ul>
iSCSI Network Interface	
Hardware iSCSI Offload Engine	<ul style="list-style-type: none"> <li>Yes</li> </ul>
Jumbo Frame Support	<ul style="list-style-type: none"> <li>Yes , MTU size = 9,000 bytes</li> </ul>
Header/Data Digest	<ul style="list-style-type: none"> <li>Yes</li> </ul>
CHAP Authentication	<ul style="list-style-type: none"> <li>Yes</li> </ul>
Target Nodes	<ul style="list-style-type: none"> <li>Up to 32</li> </ul>
Sessions Per Controller	<ul style="list-style-type: none"> <li>Up to 128</li> </ul>
VLAN Support	<ul style="list-style-type: none"> <li>Yes (VLAN 802.1Q, 802.1P)</li> </ul>
Volume & RAID Support	
RAID Support	<ul style="list-style-type: none"> <li>RAID levels 0, 1 (N-way mirror), 0+1, 3, 5, 6, 10, 30, 50, 60 and JBOD</li> <li>The maximum number of drive members on a volume is the following: For any RAID type: 32 HDDs</li> </ul>
Logical Volumes	<ul style="list-style-type: none"> <li>Up to 1,024</li> </ul>
Hard Drives per Group	<ul style="list-style-type: none"> <li>Up to 32 per volume group</li> </ul>
Volume Sharing	<ul style="list-style-type: none"> <li>One logical volume can be shared by up to 16 hosts</li> </ul>
Hot Spares	<ul style="list-style-type: none"> <li>Global and dedicated</li> </ul>
Online Capacity Expansion	<ul style="list-style-type: none"> <li>Yes</li> </ul>
Cache Policy	<ul style="list-style-type: none"> <li>Write-through or write-back</li> </ul>

Instant Volume Access	• Yes
Auto Volume Rebuilding	• Yes
RAID Level Migration	• Online volume migration without system downtime
<b>D-Link Green</b>	
Auto Disk Spin Down	• Yes
Temperature Controlled Fans	• Yes
Power Supplies	• 80 PLUS energy-efficient power supplies
<b>High Availability</b>	
Active/Active RAID Controllers	• Yes, with redundant dual controllers installed
Flexible RAID Group Ownership	• Yes, with dual controllers installed • Each flexible RAID group can be assigned to one of the two controllers
Management Port Takeover	• Yes, seamless with dual controllers installed
Online Firmware Upgrade	• Yes, no system reboot or down-time required with dual controllers installed
Multipath and Load Balancing	• Yes, supports Microsoft MPIO, MC/S, Trunking and LACP
<b>Advanced Data Protection</b>	
Writable Snapshot	• Yes
Snapshot details	• Snapshot enabled up to 16 volumes, each logical volume supports up to 32 snapshots, total 512 snapshots per system using block-level copy-on-write technology
Microsoft VSS Services	• Microsoft Windows Volume Shadow Copy Services (VSS)
Configurable N-Way Mirror	• Yes
Online Disk Roaming	• Yes (Online disk roaming supported within the DSN-6000 Series models)
Volume Configuration Restoration	• Yes, instant volume configuration restoration
Hot Pluggable Battery Modules	• Yes
Volume Replication Tool	• Yes, with multipath support included
<b>Management</b>	
Serial Console	• Yes
SSH/Telnet	• Yes
HTTP Web User Interface	• Yes
Secured Web (HTTPS)	• Yes
iSNS	• Yes
S.E.S	• Yes

Notification	
Email	• Yes
SNMP Trap	• Yes
Browser Pop-Up Windows	• Yes
Syslog	• Yes
Windows Messenger	• Yes
Operating Systems Supported	
OS Support	• Windows, Linux, Solaris, Mac
Virtualization	• VMware, Hyper-V, Citrix
Power Supply	
Supply Type	• Dual Hot-Swappable 2x500W
AC Input	• 100-240V ~7A-4A 500W with PFC (Auto Switching)
DC Input	• 3.3V-25A; 5V-32A; 12V-40A
Environmental	
Operating Temperature	• 32° to 104°F (0° to 40°C)
Relative Humidity	• 5% to 95% non-condensing
Physical	
Form Factor	• 2U Industry-standard 19-inch Rack
Dimensions	• 17.43" x 19.71" x 3.46" (442.8mm x 500.5mm x 88.0mm)
Weight	• ~33 lbs (15kg)
International Approvals	
Emissions	• CE Mark, FCC Class A
Safety	• UL, cUL, BSMI
RoHS	• Compliant
Warranty and Support	
Warranty	• 3-Year Limited <sup>2</sup> (Manufacturer's Warranty on Hard Drives)
Extended Warranty	• Available (See ordering information below)
Support	• 1 year (24 hours per day/ 7 days per week Technical Support)

# DSN-6000 Series iSCSI SAN Array

Ordering Information	
Part Number	Description
DSN-6110	4x1GbE iSCSI SAN Array, 12 Bays, 2U, w/Primary Controller
DSN-6410	2x10GbE iSCSI SAN Array, 12 Bays, 2U, w/Primary Controller
DSN-6020	iSCSI SAN Expansion JBOD, 12 Bays, 2U
DSN-610	4x1GbE Secondary iSCSI SAN Controller for DSN-6110
DSN-640	2x10GbE Secondary iSCSI SAN Controller for DSN-6410
DSN-654	SATA Bridge Board for DSN-6000 Series
DEM-431XT-DD	10Gigabit SFP+ Adapter (DSN-6410 and DSN-640)
DSN-6110-LW	Extended Warranty for DSN-6110
DSN-6410-LW	Extended Warranty for DSN-6410
DSN-6020-LW	Extended Warranty for DSN-6020
DSN-610-LW	Extended Warranty for DSN-610
DSN-640-LW	Extended Warranty for DSN-640

<sup>1</sup>When any SATA hard drive is used in a dual-controller configuration, or when supporting any 3TB capacity or larger SATA drives in a single-controller configuration, each SATA hard drive requires a DSN-654 SATA bridge board. Also, these same rules will apply to SATA drives installed in any additional DSN-6020 expansion enclosures used in the SAN array.  
<sup>2</sup>Available in U.S.A. and Canada only

Updated 1/25/2013

DSN-6410



DSN-6110



## For more information

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