D-Link®

Product Highlights

Volume Virtualization Technology

Supports multiple RAID types and volume segments on a single drive and supports online capacity expansion, volume reconfiguration and migration on the fly.

Expansion Options

The DSN-4100 and DSN-4200 primary arrays each support 16 internal SAS/SATA hard drives and with the addition of up to four DSN-4000 expansion arrays, can scale to a total of 240TB^2 of raw storage capacity using 3TB^2 drives.

DSN-4000 Series

xStack Storage® 4x1GbE or 8x1GbE iSCSI SAN Array
with 16 SAS/SATA Bays (expandable to 80 bays)

Features

- Handles Over 80,000 I/Os per Second
- Battery Protected Cache Memory:
  DSN-4100: 512MB
  DSN-4200: 1GB
- System Memory: 512MB standard
- 16 Hot-Swap SAS/SATA Hard Drive Bays
- Supports 48TB^2 Capacity with 3TB^2 Hard Drives
- Additional DSN-4000 Expansion Arrays Provide 240TB^2 Total Capacity
- RAID Support: 0, 1, 1+0, and 5
- Supports up to 1024 volumes and host connections
- Mix and Match disk drives within a single array
  - Different Capacities, Manufacturers, Technologies and Speeds
- Volume Virtualization technology
  - Supports multiple RAID types and volume segments on a single drive
  - Optimizes capacity utilization and maximizes performance
  - Supports Online Capacity Expansion, Volume Reconfiguration and Migration on the fly
- Drive Roaming supported in Power Off
- Dual redundant Hot Swappable 450 Watt Power Supplies
- Industry Standard 3U 19-inch Chassis

Introduction

D-Link's DSN-4000 series (DSN-4100 and DSN-4200) iSCSI SAN arrays provide a mid-range network storage solution in a 3U rackmount form factor, ideal for small and medium sized enterprises. The heart of the DSN-4000 series is a powerful 10Gbit iSCSI System-on-a-Chip (SoC) capable of handling over 80,000 I/OS per second. The DSN-4000 series supports 48TB^2 of raw capacity using 3TB^2 drives and can be easily implemented as a supplemental backup platform for quick restores, as secondary online storage, or as bandwidth demanding primary storage for security surveillance and A/V applications.

iSCSI for IP Networks

Storage Area Networks (SANs) have traditionally been reserved for complex Fibre Channel networks. The recent 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.

A Choice of Host Interfaces – Four 1GbE or Eight 1GbE

The DSN-4100 & DSN-4200 iSCSI SAN arrays support Multi-path I/O (MPIO), Multiple Connections per Session (MCS), and Link Aggregation Groups (LAG) for unmatched network flexibility, performance and resiliency, allowing their 1GbE data ports to be grouped together for full line speeds of up to 425MB/s and 850MB/s bandwidth respectively.

High Performance iSCSI Interface

- DSN-4100: Four 1GbE Data Ports
- DSN-4200: Eight 1GbE Data Ports

Storage Network Management

- Web-based, Wizard-driven IP SAN Device Manager (IDM) for easy Management
- Remote Monitoring and Configuration
- CHAP Authentication Helps Halt Intruders
- SSL Security to Management Console

Drive Expansion

- DSN-4000 Expansion Array
  - For use with DSN-4100 and DSN-4200 Primary SAN Arrays
  - Provides 16 Hot-Swap Drive Bays
  - Up to four expansion arrays supported for 80 drives total
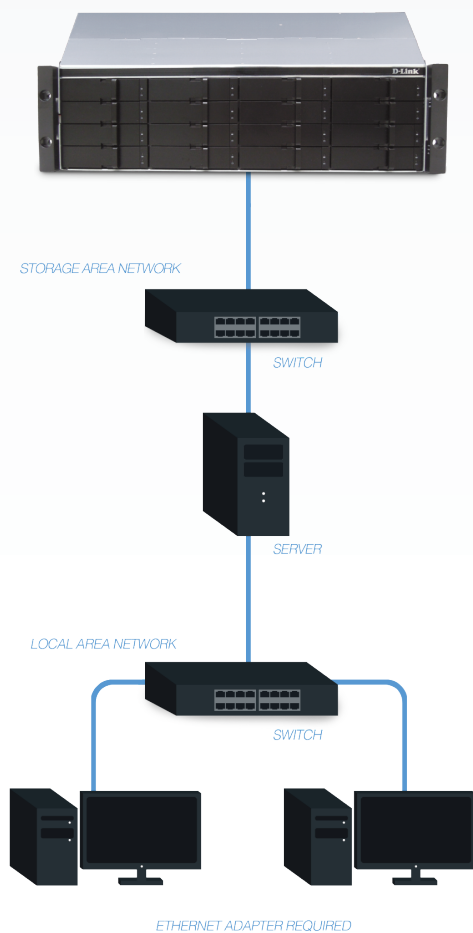
STORAGE AREA NETWORK

SWITCH

SERVER

LOCAL AREA NETWORK

SWITCH

ETHERNET ADAPTER REQUIRED

Expansion Options

The DSN-4100 and DSN-4200 primary arrays each support 16 internal SAS/SATA hard drives and with the addition of up to four DSN-4000 expansion arrays, can scale to a total of 240TB[2] of raw storage capacity using 3TB[2] drives.

System-on-a-Chip (SoC) Implementation

By utilizing a SoC design, the DSN-4000 series combines both networking and storage functions into a single specialized Application Specific Integrated Circuit (ASIC). This SoC combines 10Gbps iSCSI, TCP & IP offload, 12 embedded processors and storage virtualization firmware onto a single chip. The tight integration of these functions eliminates interoperability, timing and support issues found in competitive products that offer a "discrete implementation" wherein various components are selected separately, then assembled.

RAID support

D-Link's xStack Storage iSCSI SAN arrays support RAID level 0, 1, 1+0 and 5 configurations (striped sets, mirrored sets, striped mirrored sets and parity sets) for data protection and performance.

D-Link's xStack Storage iSCSI SAN arrays support S.M.A.R.T. disk diagnostics, and non-destructive data migration to prevent disk failure.

Embedded Centralized Storage Management

The embedded, user-friendly IP-SAN Device Manager (IDM) provides a comprehensive console for system management. Boasting a rich set of management features, this suite of utilities allows monitoring and control of the SAN array via the Storage Management Initiative-Specification (SMI-S) command set. With a secure server, users can remotely configure and monitor their SAN arrays over the Internet.

Advanced Management Features

The DSN-4000 series also provides an advanced set of features for efficient management and optimal storage performance.

For the fastest RAID performance offered in the industry, D-Link's adaptive cache management provides write coalescing and multi-stream read-ahead on a volume basis, optimizing cache utilization and performance in an application dependent manner. Volatile cache data protection is afforded via an on-board battery supporting cache memory for a minimum of 72 hours. A write-back or write-through cache memory policy can be selected manually or automatically, depending on the status of the battery's charge.

The DSN-4000 series supports jumbo frames and VLAN tagging to segregate traffic into isolated zones for secure access, improving network throughput and reducing CPU overhead.

D-Link's volume virtualization technology utilizes the concept of storage extents, which are the fundamental building blocks used to enable features such as RAID, online capacity expansion, volume reconfiguration and migration. Each disk drive can contain multiple and divergent RAID configurations instead of requiring dedication to a single RAID set. This technology allows for the support of mixed disk drive capacities for volume creation. Volume capacity expansion, volume reconfiguration, and RAID level migration are performed online with minimal impact to users. Users can quickly deploy a SAN using inexpensive SAS or SATA disk drives and simply add more drives as needed.

An iSCSI SAN array can prove to be a valuable tool to supplement a network storage foundation. Whether providing a low-cost block-based solution for data backup and recovery, replacement of Direct Attached Storage (DAS), providing secondary online storage, or providing up to 850MB/s bandwidth for security surveillance and video post-production applications, the DSN-4000 series may provide the performance and functionality needed.

Technical Specifications

	DSN-4100	DSN-4200
1GbE Copper	• Four 1GbE Copper	• Eight 1GbE Copper
Features		
Drive Bays	• 16, Expandable with DSN-4000 expansion arrays up to 80	
Drive Interface Support	• SAS/SATA	
System Memory	• 512MB Standard	
Cache Memory	• 512MB	• 1GB
Battery Backup for Cache	• Standard (approximately 72 hours on full charge)	
Bandwidth	• Up to 425MB/s	• Up to 850MB/s
Storage Capacity	• Supports 48TB^2 Capacity with 3TB^2 Hard Drives • Additional DSN-4000 expansion arrays support up to 240TB^2 total capacity	
Operating Systems Supported Please see support.dlink.com for latest support information	• Windows Vista® 32-bit & x64 (Ultimate & Enterprise) w/Built-in iSCSI Initiator • Windows Server® 2003 R2 | SP1 32 & 64-bit (Standard & Enterprise) with v2.07 iSCSI Initiator or later • Windows Server 2008 Enterprise 32 & 64-bit with Built-in iSCSI Initiator • Windows XP Pro® 32 & 64-bit with v2.07 iSCSI Initiator or later • Windows 2000 Advanced Server – No MS iSCSI Initiator support, Qlogic HBA only • Red Hat® 7.3 • Red Hat Enterprise AS update 5 (64-bit)	• Red Hat Enterprise 5 update 2 (64-bit) • SuSE® Professional 9.3 32-bit • SuSE Enterprise Server 10.2 32-bit • Sun Solaris® 10 build 6/06 • IBM AIX 5L • Microsoft Hyper-V • VMware vSphere® 5 • VMware ESX Server® 3.02 & 3.5 • VMware ESX Server® 4.0 & 4.1 • Virtual Iron v4.2 • Citrix XenServer® v4 • Mac OS X® (10.4 & 10.5)
Supported NICs, iSCSI Accelerators and iSCSI HBAs Please see support.dlink.com for latest support information	• Intel® Pro 1000MT & XT [1GbE] • Intel Pro 10000 CX4 [10GbE] • Myricom 10G-PCIE-8A-C+E [10GbE] • Chelsio® S310X-SR-XFP [10GbE] • Neterion® Xframe® II & Xframe E [10GbE]	• Alacritech® SES2104ET (drivers: SNP 9.1.0.1092 & 7.3.1.0) • Alacritech SES2102ET (drivers: SNP 9.1.0.1092 & 7.3.1.0) • QLogic® 4010C, 4052C, & 4062C
iSCSI Network Interface		
Host Interface	• iSCSI Draft 20 Compliant Initiator	
Connections	• 1,024 hosts	
CHAP Authentication	• Yes	

Access Control of Management	• Yes	
iSCSI/TCP/IP Full HW Offload	• Yes	
Jumbo Frames Support	• Yes	
LAG Support (Link Aggregation)	• Up to four LAGs (Static LAG)	• Up to eight LAGs (Static LAG)
Flow Control	• Enabled by default	

Volume & RAID Support

RAID Controller	• Integrated in ASIC chip
RAID Support	• RAID Levels 0, 1, 1+0 and 5 (Striped sets, mirrored sets, striped mirrored sets and parity sets) The maximum number of drive members on a volume is the following: RAID-1 and RAID-10: 32 HDDs RAID-5: 17 HDDs RAID-O: 16 HDDs
Volumes	• 1,024 Virtual Volumes (256 accessible per initiator)
Target Nodes	• 1,024
Online Capacity Expansion	• Yes
Hot Swappable Drives	• Yes
Instant Volume Access	• Yes
Free Space Defragmentation	• Yes
Auto-Detection Failed Drive	• Yes
Auto-Rebuild Spare Drive	• Yes
RAID Level Migration	• Yes
Drive Roaming in Power Off (configured drives are not bay-specific)	• Yes
Micro Rebuilds	• Yes

Storage Management

Embedded IP-Based Management GUI	• Create, manage, expand and monitor storage pool, volumes and RAID • Event manager to view and persist events
Firmware Field Upgradeable	• Yes
SMI-S Version 1.1	• Yes
Event Log	• Yes

Power

Supply Type	• Dual Redundant Hot-Swappable 450 Watt
Input Voltage:	• 90-264 VAC
Input Frequency:	• 47-63 Hz
Current	• 7 to 8A (100V); 3.5 to 4A(240V)
Power Factor Correction	• PFC 80PLUS

Environmental & Physical

Operating Temperature	• 41° to 104°F (5° to 40°C)
Storage Temperature	• -4° to 140°F (-20° to 60°C)
Relative Humidity	• 10% to 80% (Non-condensing)
Form Factor	• 3U industry-standard 19-inch rack
Certifications	• CE, FCC Class B, VCCI, BSMI, CB, KCC, C-Tick, UL/cUL, TUV
Weight	• 33 lbs (15 kg)
Dimensions	• 17.6" x 18.5" x 5.1" (446mm x 471mm x 131mm)

Warranty and Support

Warranty	• 3 year limited[1] (Manufacturers warranty on Hard Drives)
Extended Warranty	• Available (See ordering information below)
Support	• 1 year (9 hours per day / 5 days per week Technical Support)

Order Information

Part Number	Description
DSN-4100	xStack Storage® 4x1GbE iSCSI SAN Array, 16 Bays, 3U
DSN-4200	xStack Storage® 8x1GbE iSCSI SAN Array, 16 Bays, 3U
DSN-4000	xStack Storage® iSCSI SAN Expansion Array ,16 Bays, 3U
DSN-210-SW	SureSync Replication & Synchronization Software
DSN-4100-LW	Extended Warranty for DSN-4100
DSN-4200-LW	Extended Warranty for DSN-4200
DSN-4000-LW	Extended Warranty for DSN-4000

1   Available in the U.S.A. and Canada only.
2   The DSN-4000 Series supports up to 3TB SAS drives, and up to 2TB SATA drives.

All references to speed are for comparison purposes only. Product specifications, size and shape are subject to change without notice, and actual product appearance may differ from that depicted herein.

Updated 1/25/13

DSN-4000   **DSN-4100**   **DSN-4200**

For more information

D-Link®
Building Networks for People

XSTACK