



D4

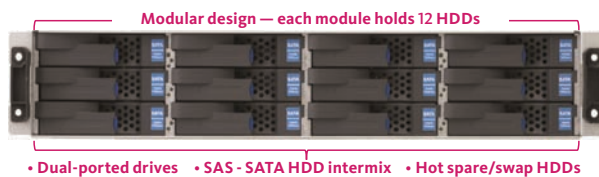
SAN STORAGE

NEC D4 Storage

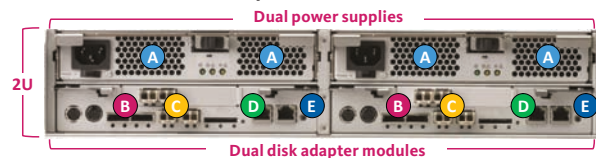
The D4 SAN storage array delivers both high performance 8 Gbps Fibre Channel ports and cost-effective 10 Gbps iSCSI connectivity in the same system for use with VMware®, databases, and other block-storage applications. It uses SAS and SATA drives in the same enclosures to create a tiered storage architecture.

D4 at a Glance

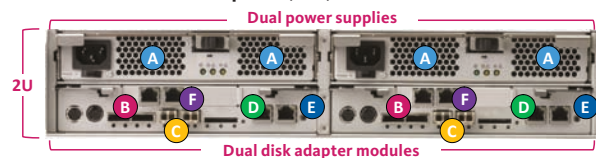
Base Unit/Disk Enclosure (front)



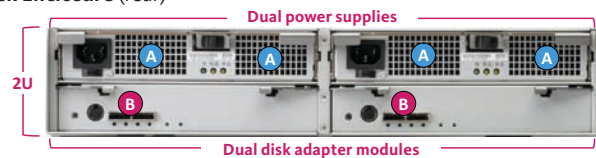
Base Unit with Extended FC Option (rear)



Base Unit with FC + iSCSI Option (rear)



Disk Enclosure (rear)



- A** Dual fans per power supply
- B** Dual SAS back-end ports (48 Gbps wide-link)
- C** Fibre Channel front-end connectivity
- D** Redundant management ports
- E** ECC cache memory (mirrored, battery-backed)
- F** iSCSI front-end connectivity

Superior Dependability

- **Fully redundant** system architecture delivers 99.999% availability
- **Active-active controllers** provide highest performance and dependability in a multipathing environment
- **Snapshots and replication** enable data protection
- **Self-healing**, patented *Phoenix* technology decreases the number of RAID rebuilds by 30%-50% and reduces HDD failures by fixing hard drives before they fail
- **Catches silent data corruption** of both SAS and SATA drives that is not detected by other systems
- **RAID groups span enclosures** for maximum reliability
- **Global hot spares** and hot swappable hard drives
- **Mirrored ECC cache** is also battery-backed
- **Background disk & cache scrubbing** prevents applications from receiving corrupt data

High Efficiency

- **Thin Provisioning** enables smart capacity over-provisioning, keeping drive costs to a minimum
- **Both FC and iSCSI** connectivity is ideal for making the transition to an IP-based storage infrastructure
- **SAS and SATA intermix** in the same enclosure can economically store both primary and secondary data
- **Power off RAID groups** when not in use to save energy

Wide Scalability

- **Expand RAID groups** dynamically by adding HDDs one-by-one or many at a time while data is still being accessed
- **Up to 144 HDDs** in a single RAID group
- **Grow LUNs online** without reconfiguring RAID groups
- **Use 8 front-end ports** to attach more servers without a switch
- **Up to 8 GB cache** provides top performance for multiple hosts
- **Command Line Interface (CLI)** allows automated control
- **Email notification and SNMP traps** proactively alert you
- **Browser-based GUI** allows remote management of up to 32 arrays in a 'single pane of glass'

Specifications

HARDWARE

Model		D4 Basic Architecture	D4 with Extended FC Option	D4 with FC + iSCSI Option*
Host Ports	8 Gbps Fibre Channel	4 ports (2 per controller)	8 ports (4 per controller)	4 ports (2 per controller)
	10 Gbps iSCSI	-	-	4 ports (2 per controller)
	iSCSI Connection Type	10GBASE-SR (multi-mode fiber compatible with OM3 cables)		
Number of Controllers		Dual controllers (active-active)		
Configuration		1 to 12 2U enclosures 12 drives per enclosure SAS – SATA intermix within an enclosure		
Cache Memory	Capacity	4 or 8 GB (2 or 4 GB per controller)	4 or 8 GB (2 or 4 GB per controller)	8 GB (4 GB per controller)
	Battery Backup Time	7 hours (8GB Cache Memory) 14 hours (4GB Cache Memory)		
	Optional BBU Time	72 hours (8GB Cache Memory) 120 hours (4GB Cache Memory)		
Supported RAID Levels	SAS	1, 10, Triple Mirror, 3, 3DP (3 Double Parity), 5, 50, 6		
	SATA	Triple Mirror, 5, 50, 6		
Maximum Capacity	SAS	86.4 TB		
	SATA	288 TB		
Disk Drives	Capacity	SAS	300 GB, 450 GB, 600 GB rotating at 15,000 rpm	
		SATA	1 TB, 2 TB rotating at 7,200 rpm	
	Interface Speed	SAS	6 Gbps	
		SATA	3 Gbps	
Number of Disk Drives		3 – 144		
Disk Enclosure Connections		48 Gbps wide-link SAS		
Performance		Up to 1000 MB/s and 140,000 IOPS		
Supported Operating Systems		Microsoft® Windows Server® 2003* & 2008 (x86, x64), Hyper-V, Red Hat® Enterprise Linux®, VMware®, HP-UX, Solaris™, Citrix® XenServer®		
Base Unit/Enclosure Dimensions		2U: 18.9" W x 21.3" D x 3.4" H (480 x 540 x 86.5 mm)		
Weight	Base Unit	68.3 lbs. (31kg) or less		
	Disk Enclosure	63.9 lbs. (29kg) or less		
Power Requirements		AC 100 – 240V single phase 50/60Hz		

* iSCSI option does not support

SOFTWARE (see software data sheet for details)

Objective	NEC Storage Software	Function
Simple Operation	StorageManager (iSM)	Core storage management functionality
	ThinProvisioning	Allows over-provisioning of capacity
High Availability	PathManager	Multi-pathing for failover and load balancing
Data Protection	DynamicDataReplication (DDR)	Data replication within same array
	RemoteDataReplication (RDR)*	Replication between arrays - synchronous, asynchronous, & semi-synch
	RemoteDataReplication Asynchronous*	Replication between arrays - asynchronous only
	DynamicSnapVolume (DSV)	On-demand snapshots
	ReplicationControl SQL Option	Transaction-consistent protection for MS SQL Server
Performance Management	PerformanceMonitor	Performance monitoring & alerts
	PerformanceNavigator	Analysis of performance data over time
	PerformanceOptimizer	Automates performance tuning
Energy Conservation	PowerConserver	Turn off HDDs when not needed
Compliance	VolumeProtector	Prevent unauthorized modification of data

Available on the GSA Schedule

* iSCSI option does not support

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ENVIRONMENTAL

	Maximum Watts		BTUs/Hour	
	All SAS	All SATA	All SAS	All SATA
D4 base unit	640 W	570 W	2,184 BTU/hr	1,945 BTU/hr
Disk Enclosure	430 W	370 W	1,462 BTU/hr	1,258 BTU/hr
	Operating		Storage	
Temperature	41 - 104° F (5 - 40° C)		14 - 140°F (-10-60°C)	
Humidity	10 - 80%		5 - 80%	

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