

Dell Networking Solution Brief

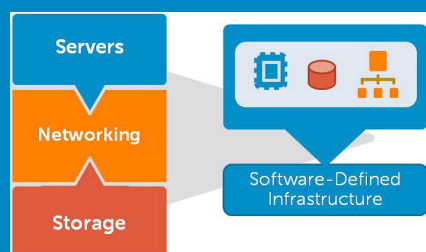
Modernize and transform your storage network

Solutions for traditional Storage Area Networks (SANs) and emerging Software Defined Storage (SDS) Environments

The Dell difference

Dell helps you choose the networking products and services that best fit your storage needs. Dell delivers:

- Open, pragmatic and proven solutions
- Quick and efficient scalability to meet growing user and business demands
- Worldwide presence and expertise
- Complete end-to-end solution development, deployment and support
- Disruption-free integration of new networking technology into existing environments
- A modular portfolio of customer-centric Pro-Support services



Software Defined Storage (SDS)
for enhanced flexibility and orchestration

Today's IT plays a vital role in generating new business value, delivering new services and capturing new markets. Information and technology teams are radically rethinking how they can take advantage of cloud, data management and security strategies to create value for the enterprise. The core of all successful IT initiatives is the efficient, cost-effective and secure access to enterprise data. Traditionally, this data has been stored in arrays accessible through Fibre Channel (FC), iSCSI, or FCoE Storage Area Networks (SANs).

More recently, the well-established SAN methodologies are being challenged by virtualization and Software Defined Storage (SDS). While virtualization brings numerous advantages to the data center, such as more efficient resource utilization, decreased level of management complexity, lower power and cooling demands, etc., it also introduces new challenges, including specific performance requirements, application isolation, security aspects and business continuance and disaster recovery considerations.

Dell embraces both methodologies, offering robust, comprehensive storage networking solutions that enable organizations to access their vital data where and when it's needed within an efficient, secure, and cost-effective environment.

Start small and scale as you grow with the Dell storage networking portfolio. Whether you need an entry-level switch for a departmental SAN or a large fabric for an enterprise-level application, Dell can help with traditional or SDS-based configurations, providing the best cost for performance solutions.

Some businesses are expanding their existing SAN and NAS infrastructure while others are deploying software-defined storage (SDS) solutions with hypervisor-integrated systems and open-source solutions. Dell and Dell partners enable you to choose the best approach for your data center and evolve at a pace that meets your business needs.

Welcome to the virtual era

Volume, velocity and value of data is accelerating at an ever-increasing pace, driving a critical departure from the historically costly and complex approaches to storage. Dell is redefining the economics of enterprise storage through modern storage architectures, a focus on customer workloads and an end-to-end integrated portfolio of server, storage, networking, software, deployment and support offerings. Dell helps our customers develop the right workload-based data center and virtualization strategies, producing faster response times and lower TCO. From performance optimized flash technologies to ultra-dense storage enclosures — and anything in between — Dell's end-to-end storage portfolio offers optimized solutions that fit your business demands and budget.

Your data center, defined by you

Dell can help you achieve a balance of price and performance with your virtualized or traditional IT environments that can leverage the investments you've already made, thereby reducing your TCO.

Why Dell for your Storage Networking?

Dell has decades of experience working with organizations around the globe in every industry vertical, public, private, healthcare, and government, from the very small to the multi-national corporations. As one of the only IT vendors worldwide with expertise in server, storage, networking and software, Dell understands the storage hurdles facing our customers.

Comprehensive storage networking portfolio

Dell understands that every organization's needs are unique. Dell offers a comprehensive storage networking portfolio that includes fabrics for Fibre Channel (FC), iSCSI, Fibre Channel over Ethernet (FCoE), RDMA over Converged Ethernet (RoCE), NAS, InfiniBand, Omni-Path and Software Defined Storage (SDS) environments.

Best of breed portfolio

Dell strives to provide the best technology to meet the specific needs of storage networking fabrics. Consequently, Dell's industry-leading, best of breed solutions include products that are built by Dell and/or by partners that are leaders in their respective technologies.

Dell-validated solutions

Virtually every storage networking environment includes products from multiple vendors. Dell engineering puts every storage networking product through a very strict test and qualification process to ensure it meets the highest quality standards that customers need and expect from Dell.

Years of storage networking experience

As a leading solution provider for enterprise customers, Dell has years of experience in architecting, designing, deploying and supporting data center environments.

Dell leverages the experience gained in working with customers of all sizes, small to large to very large, to build future-ready solutions for every application.

End-to-end solutions

Today, Dell is one of very few IT solutions providers to offer an end-to-end solution which includes servers, storage, networking, software and services. This end-to-end view of the environment enables Dell to greatly minimize or completely eliminate risk while providing customers faster deployment times.

Industry leading services and support

Dell delivers on customer expectations with great products, solutions, and overall experience. Dell's wide range of professional services simplifies the assessment, design, implementation, management and maintenance of your IT environment, and helps you accomplish your business and technical goals.

Choice of open networking

As a leader and a visionary in open networking, Dell offers organizations disaggregated hardware and software. Such an approach provides customers faster pace of innovation, tried and tested solutions, investment protection, cost-effective flexibility, scalability and a greater choice of networking operating systems that are fine tuned for specific applications.

Leader in IP-based storage

Dell has been the #1 IP storage (iSCSI) vendor worldwide by revenue and market share for many years. This leadership enables Dell to extend a high quality storage networking solution built on years of experience in customer environments of all sizes and scale.

Worldwide deployment and delivery services

Dell's end-to-end deployment services ensure customers' storage installation, configuration and implementation are completed accurately and quickly – anytime, anywhere – with proven processes based on best practices acquired from thousands of deployments by our highly skilled experts.

Dell ProSupport Plus with SupportAssist

Dell ProSupport offers a suite of support services that enable you to choose support models based on how you use technology and where you want to allocate resources. We recommend Dell ProSupport Plus with SupportAssist for mission-critical systems or Dell ProSupport for premium hardware and software support for your Dell Storage Networking solution.

Dell Financial Services™

When you're looking to preserve cash as you increase operational efficiency, Dell Financial Services has a wide range of options to make technology acquisition easy and affordable. Contact your Dell Sales representative for more information.

Dell multi-protocol switches

Dell offers a comprehensive portfolio of multi-protocol switches that are ready to meet your storage connectivity needs.

Switch	Type	Ports	iSCSI	FCoE ¹	FC	SDS	NAS FE ²	RoCE
S6000	ToR/Fixed	32x40GbE 112x10GbE with 4x40GbE	Yes	FSB ³	No	Yes	Yes	Yes
S5000	ToR/Modular	48x10GbE with 4x40GbE	Yes	Fabric ⁴ , NPG ⁵ , FSB	Yes	Yes	Yes	Yes
S4048-ON	ToR/Fixed	48x10GbE with 6x40GbE	Yes	FSB	No	Yes	Yes	Yes
S4820T	ToR/Fixed	48x10GbE with 4x40GbE	Yes	FSB	No	Yes	Yes	Yes
N4000	ToR/Fixed	48x10GbE with 4x40GbE	Yes	FSB	No	Yes	Yes	Yes
MXL	Blade (M1000e)	32x10GbE with 6x40GbE	Yes	Direct attach ⁶ , NPG, FSB	Yes	Yes	Yes	Yes
M-IOA	Blade (M1000e)	32x10GbE with 6x40GbE	Yes	Direct attach, NPG, FSB	Yes	Yes	Yes	Yes
FN-IOM	Blade (FX2)	8x10GbE with 4x10GbE	Yes	Direct attach, NPG, FSB	Yes	Yes	Yes	Yes
S3048-ON	ToR/Fixed	48x1GbE with 2x10GbE	Yes	No	No	No	Yes	No
N3000	ToR/Fixed	48x1GbE with 2x10GbE	Yes	No	No	No	Yes	No

1. Fibre Channel over Ethernet enables Ethernet switches to carry FC traffic encapsulated within Ethernet packets.
2. NAS Front End
3. FIP Snooping Bridge allows Ethernet switches to securely forward FCoE packets to a fabric or NPG switch.
4. Fabric mode allows multiple switches to be connected together and form a larger FC fabric.
5. NPIV Proxy Gateway (NPG) mode is used to simplify the management of FC fabrics. NPG also provides FCoE to FC encap/decap functionality.
6. Direct Attach mode allows FC arrays to directly connect to the switch. In this mode, multiple switches cannot be connected together to form a larger fabric.

Dell fibre channel switches

Dell offers an industry leading Fibre Channel switch portfolio based on Brocade Fibre Channel products and technology. Dell and Brocade have been working together for more than 15 years to offer a comprehensive line of Fibre Channel switches.

Switch	Type	Max ports speed	Max ports
Brocade 300	ToR/Fixed	8Gb FC	24
Brocade 6505	ToR/Fixed	16Gb FC	24
Brocade 6510	ToR/Fixed	16Gb FC	48
Brocade 6520	ToR/Fixed	16Gb FC	96
PowerConnect M5424	Blade (M1000e)	8Gb FC	24
Brocade M6505	Blade (M1000e)	16Gb FC	24
Brocade DCX 8510-4	Director	16Gb FC	192
Brocade 8510-8	Director	16Gb FC	384

Dell high performance switches

Dell offers a comprehensive high-performance interconnect portfolio specifically aimed at providing customer the maximum choice to better meet their high-performance needs.

Switch	Type	Ports	Ethernet	InfiniBand	Omni-Path
Dell Z9100	ToR/Fixed	32x100GbE	Yes	No	No
Dell S6100	ToR/Modular	100GbE	Yes	No	No
Dell S6000	ToR/Fixed	32x40GbE	Yes	No	No
S4048-ON	ToR/Fixed	48x10GbE with 6x40GbE	Yes	No	No
H1024-OPF	ToR/Fixed	24x100Gb	No	No	OPA
H1048-OPF	ToR/Fixed	48x100Gb	No	No	OPA
H9106-OPF	Director	192x100Gb	No	No	OPA
H9124-OPF	Director	768x100Gb	No	No	OPA
Mellanox SX6036	ToR/Fixed	36x56Gb	No	FDR	No
Mellanox SX6025	ToR/Fixed	36x56Gb	No	FDR	No
Mellanox SX6012	ToR/Fixed	12x56Gb	No	FDR	No

[Learn More at Dell.com/TechCenter/StorageNetworking](http://Dell.com/TechCenter/StorageNetworking)

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