Dell™/EMC® Solutions Help Deliver SAN Advantages with Proven Leadership

The majority of today’s businesses are required to do increasingly more with less. Not only are essential data and applications constantly growing, the cost of downtime can reach millions of dollars per hour. As a result, it is difficult to manage the unpredictable demand for storage capacity. What’s more, providing fast, continuous and secure access to that data is imperative.

Dell offers end-to-end enterprise server and storage solutions including hardware, software and services to help you address the demanding storage issues facing your organization. Featuring powerful Dell/EMC products, a Dell/EMC Storage Area Network (SAN) can give you incredible flexibility to meet your configuration and connectivity requirements as your organization grows.

Dell/EMC CX200, CX400 and CX600 fibre channel storage arrays are designed to help you capitalize on the benefits of SANs by providing highly available storage for a variety of workgroup, midrange and enterprise applications.

Dell/EMC Fibre Channel RAID Arrays

Dell/EMC CX200, CX400 and CX600 fibre channel storage arrays are built to power your SAN with high performance and dynamic scalability in an easy-to-manage format. They exploit the full potential of fibre channel by integrating 2Gb fibre channel providing up to 200MB/s throughput.

Each system is designed to meet your specific size and speed requirements. For instance the Dell/EMC CX200 array with up to 5.9TBs of storage capacity offers exceptional value for small deployments and entry-level SAN environments and provides a “data in place” upgrade option to a Dell/EMC CX400 or CX600. It offers high availability and scalability and supports 2Gb fibre channel connectivity to give you the performance necessary for high-bandwidth applications.

SAN Benefits Brief

- Centralized management helps simplify storage administration and lower management costs.
- The incredible scalability and flexible infrastructure allow you to add storage online or dynamically reconfigure and reallocate storage to servers in need, helping you keep pace with your changing business.
- A no-single-point-of-failure architecture with patented data integrity features and remote diagnostics help keep your data available and can reduce costly downtime.
- High performance storage arrays deliver information fast to meet the needs of a variety of enterprise applications.
- High-speed SAN-based backups are designed to shorten backup windows and improve application performance by offloading data traffic from your network.
- Recovery helps to get information online after a disaster and keep your business thriving.
- Tested and certified heterogeneous interoperability provides investment protection.

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If you have a more demanding SAN environment, the Dell/EMC CX400 is a versatile, rack-dense midrange 2Gb fibre channel storage array offering up to 13.4TB of storage capacity and the highest bandwidth in its product class. It delivers speeds of up to 680MB/s throughput and provides a “data-in-place” upgrade option to the more robust Dell/EMC CX600 along with shared software and hardware architecture for excellent investment protection.

The Dell/EMC CX600 gives the most data-intensive enterprise environments a powerful storage solution delivering end-to-end 2Gb fibre channel technology and raw capacity of up to 58.4TB. Not only is it designed to move your data fast with speeds of up to 1300MB/s throughput, its compact chassis helps address your space constraints.

**High Availability and Data Integrity Features Help Reduce Unplanned Downtime and Improve Application Deployment**

Features such as fully redundant components and dual active storage processors provide high levels of availability and data integrity. End-to-end checksum provides a mechanism against data corruption, even after unexpected events occur. Plus, data parity coherence helps protect against the possible inaccuracies that can be created during power outages and disk failures. The advanced features allow Dell/EMC storage systems to deliver data reliability under the most adverse conditions.

High availability is further enhanced by Dell Storage Systems Remote Monitoring, which helps minimize unscheduled outages by delivering automatic diagnostics and early warning signals for potential problems. PowerPath™ software helps ensure that users always have access to information, even in the event of a failure in one of the data paths between the host and the Dell/EMC fibre channel array.

**Centralized Console for SAN Management**

Manage Dell SANs from a single console with EMC VisualSAN®. Topology maps clearly represent all the components of the SAN and make it easier to check status, monitor events and performance and take appropriate actions to improve utilization, and prevent or correct problems. And because it’s fully integrated with OpenManage™ Server Administrator and Navisphere array manager, you can manage the individual servers and arrays in the SAN.
Dell/EMC storage systems. SnapView array-based software allows parallel access to data by creating instantaneous snapshots of information, and provides corruption recovery using cloning. SAN Copy provides the ability to migrate or distribute data outside an array within the SAN fabric.

Navisphere® Storage Management Software Helps Reduce Overall Storage Management Costs

The Navisphere family of products provide a powerful set of capabilities to help simplify management and security. Navisphere applications enable you to easily configure, monitor, tune, and manage your Dell/EMC arrays from a single browser.

Not only does Navisphere Manager help simplify storage provisioning, your configuration can be changed dynamically as your needs and requirements change. When combined with Access Logix, you can also manage and control data access across multiple, heterogeneous hosts in distributed SANs. PowerPath™ integrates automatic failover, dynamic load balancing, and information access optimization to help ensure data availability and high performance.

Navisphere extends the capabilities of Dell/EMC CX series arrays by offering comprehensive data protection and availability through integrated and centralized control of optional SnapView, SAN Copy, and MirrorView™ software. MirrorView software offers remote disaster recovery capabilities with synchronous mirroring to other Dell/EMC storage systems. SnapView array-based software allows parallel access to data by creating instantaneous snapshots of information, and provides corruption recovery using cloning. SAN Copy provides the ability to migrate or distribute data outside an array within the SAN fabric.

RAID Flexibility for Easy Configuration

The various RAID levels supported by Dell/EMC arrays allow them to be easily configured into storage pools for high performing distributed applications, balancing performance and cost. RAID protection is through the array, relieving the host from this task and saving precious host CPU cycles that can be used for other business needs. To allow you to take advantage of the increased capacity of drives for maximum disk utilization, Dell/EMC arrays support RAID groups and the ability to create logical unit numbers (LUNs) within the RAID group. Dynamic Expansion allows physical drives to be added to an existing RAID group while the system is operating, providing you the flexibility to allocate and redeploy storage to different users.

Dell/EMC Fibre Channel Switches

Dell/EMC switches are designed to move your business’ vital information quickly through your SAN environment with exceptional management and high availability features. With a comprehensive line of Dell/EMC switches, you can choose the connectivity solution that is right for you. The 8-port switch provides the beginning foundations of a SAN. A 16-port switch is ideal for department-sized SAN infrastructures incorporating 16 auto-sensing one or two Gigabit1 ports for up to 32Gb/s throughput. There is also an 8-16-24 flexport switch that can expand in port count as needs increase. For more efficiency, the 32-port switch gives you an alternative to the complexity of linking multiple switches.

Dynamic Capacity for Growth and Scalability Give You the Freedom to Grow as Needed

The modular architecture of Dell/EMC arrays allow seamless scalability from gigabytes to terabytes. Simply add disk array enclosures. Both Fibre Channel and ATA disk array enclosures are available to meet the needs of different applications. Capacity can be expanded online, and the systems can be dynamically and easily reconfigured to meet your changing business needs.

DELL ENTERPRISE SERVICES

By leveraging the proven advantages of our direct model, including tailored service and support, low cost and a single point of accountability, Dell Services can provide you with fast, effective, affordable service offerings at any point in your IT process. By doing so, we offer a combination of bundled best practices and tailored solutions that work together to provide maximum value to you. Whether you need support, deployment, training and certification programs, or professional consulting services, individually or bundled as a total package, Dell promises to be your single point of accountability at all times.

Professional Services

Dell Professional Services enables Dell customers to optimize ROI by leveraging complex technology through the design, development and deployment of innovative, robust and scalable business-critical solutions. With each engagement, we utilize our proven methodology and project management expertise to understand your business objectives, design plans that are flexible to adapt to your current environment and then deliver the desired results.

Deployment Services

We bring you deployment assistance that delivers true value from beginning to end. Dell can tailor systems to our customers’ specifications by customizing the hardware and software configuration during the initial system-build to reduce redundancy and time. We can manage the delivery, installation and disposal of your assets with the same eye for efficiency.

Training and Certification Services

Our approach to Training and Certification allows you to outsmart your competitors - not outspend them - with industry standard learning across Dell hardware and industry standard software. Dell can assist you wherever you need us, whether on-site, on-line or in a classroom setting, to help your organization take full advantage of information technology.

Enterprise Support Services

Technology is a significant investment, and it pays to have a partner who can help you minimize costly downtime. Through our Premier Enterprise Support Services (PESS) offerings, Dell provides tiered support service packages with the flexibility to customize the offering to meet your specific needs across a wide range of computing environments. With proactive and reactive support options which include hardware and software support with varied response levels, account management, and remote resolution, Dell provides support solutions that meet your needs, cost effectively.

Services vary by region. For more information on the available services in your area, please visit www.dell.com.
### Dell/EMC CX300

- **Operating systems**: Microsoft Windows NT, Windows 2000, Sun Solaris, HP-UX, IBM AIX, NetWare, Linux, SGI, Irix, TRU-64
- **Server platforms**: Dell PowerEdge servers and Dell/EMC supported servers; Variety of Compaq, HP, IBM and SUN Sparc servers
- **Maximum servers direct attach to a single array in a SAN**: Eight
- **Maximum storage capacity**: 58.4TB
- **Drives per enclosure**: 15 one-inch FC2 or ATA drives
- **Performance**: Up to 240 drives
- **Maximum cache**: 8GB
- **RAID levels**: 0, 1, 1/0, 3, 5
- **Disaster recovery**: Optional SnapView, SAN Copy and MirrorView software
- **Form factor**: Storage Processor Enclosure: 4U; Disk Array Enclosure: 3U; Standby Power Supply: 1U

### Dell/EMC CX400

- **Operating systems**: Microsoft Windows NT, Windows 2000, Sun Solaris, HP-UX, IBM AIX, NetWare, Linux, Irix, TRU-64
- **Server platforms**: Dell PowerEdge servers and Dell/EMC supported servers; Variety of Compaq, HP, IBM and SUN Sparc servers
- **Maximum servers direct attach to a single array in a SAN**: Four
- **Maximum storage capacity**: 13.4TB
- **Drives per enclosure**: 15 one-inch FC2 or ATA drives
- **Performance**: Up to 60 drives
- **Maximum cache**: 2GB
- **RAID levels**: 0, 1, 1/0, 3, 5
- **Disaster recovery**: Optional SnapView, SAN Copy and MirrorView software
- **Form factor**: Disk Processor Enclosure: 3U; Disk Array Enclosure: 3U; Standby Power Supply: 1U

### Dell/EMC CX200

- **Operating systems**: Microsoft Windows NT, Windows 2000, NetWare and Linux
- **Server platforms**: Variety of Dell PowerEdge, Compaq, HP, and IBM servers
- **Maximum servers direct attach to a single array in a SAN**: Two
- **Maximum storage capacity**: 5.9TB
- **Drives per enclosure**: 15 one-inch FC2 or ATA drives
- **Performance**: Up to 30 drives
- **Maximum cache**: 1GB
- **RAID levels**: 0, 1, 1/0, 3, 5
- **Disaster recovery**: Optional NSI® Double-Take® software
- **Form factor**: Disk Processor Enclosure: 3U; Disk Array Enclosure: 3U; Standby Power Supply: 1U

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1. This term indicates compliance with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/sec. For high speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.