



How Dell Addresses Today's Enterprise Storage Challenges

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EXECUTIVE SUMMARY

When facing storage-related business and operational challenges, customers have typically focused their attention on technology decisions. Today's storage technology options — networked versus direct-attached issues, capacity requirements, and backup and recovery options — are more complex than ever. While technology continues to play a dominant role in a storage solution, enterprise customers are increasingly turning to suppliers and other providers for the services that turn a technology investment into a storage solution.

Many enterprises understand the need to address business continuity and disaster recovery goals, availability needs, and the viability of consolidating systems. Yet, customers must also consider return on investment (ROI), total cost of ownership (TCO), scalability of their solution, and requirements for support services. Because most enterprises lack expertise regarding networked storage and storage management, they must work with a storage provider that offers both strong technology expertise and robust deployment and professional services capabilities.

A number of technology vendors, such as Dell, are increasingly offering presale consulting, design, and assessment services to help their customers better face these complex scenarios. IDC research shows that most enterprise storage customers are turning to their storage technology provider first for these types of services. By involving technology providers early in the process, customers are more likely to build a storage solution that will meet both their present and future needs while increasing their ROI and lowering the overall TCO of their storage solution.

Dell has introduced a new suite of storage services designed to help customers optimize technology, rapidly deploy storage solutions, and maximize system uptime in production environments. Through a combination of in-house expertise, key partnerships, and targeted tools, Dell is well positioned to assist customers throughout the storage technology life cycle and to help them gain maximum return on their storage investments.

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BUSINESS ISSUES ARE DRIVING THE NEED FOR STORAGE SOLUTIONS AND SERVICES

Before examining the products and services required for various storage solutions, it is important to have a greater understanding of the business issues that many enterprises face today, what enterprises should consider when evaluating a storage solution, and the impact these factors will have on the enterprise's overall storage strategy.

IDC addresses the following issues and examines how they are driving the need for storage solutions and services:

- Business continuity and disaster recovery strategies
- Designing for high availability
- Opportunity to consolidate servers
- Opportunity to consolidate storage
- TCO and ROI
- The challenge of the heterogeneous storage area network (SAN)
- Postimplementation support

By understanding the implications of each of these issues, enterprises will be better prepared to ask the right questions when evaluating storage technology, services, and solutions. IDC believes that each of these factors plays a critical role in selecting the appropriate storage solutions provider and perhaps, more important, developing a successful enterprise storage strategy.

Business Continuity and Disaster Recovery Strategies

As enterprises continue to face pressure to keep their IT infrastructure available on a 24 x 7 basis, an unprecedented combination of internal and external factors drives requirements to reduce downtime (planned and unplanned) while developing a comprehensive backup and recovery strategy. As enterprises run more of their businesses on the Web and automate processes (e.g., sales order entry) that previously required manual operations, the need to keep hardware and software functioning and available increases dramatically.

Many enterprises are also seeking ways to link suppliers to their network, develop customer relationship management (CRM) strategies, and manage customer information more efficiently. Enterprises also feel more strongly than ever that they must have a viable recovery plan in place in the event of a disaster that can cripple the business for a significant period of time. As enterprises interpret the events of September 11, 2001, and weigh the threats

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that their business currently faces, they are exploring new ways to augment traditional disaster recovery plans and products to ensure maximum recovery.

As a result, IDC believes that it is important to select a technology provider that recognizes the importance of business continuity and can offer services to successfully address disaster recovery issues. By working with a storage solution provider to understand how prepared an organization is to handle a disaster recovery scenario, the provider can identify the appropriate technical requirements for the customer.

Designing for High Availability

As enterprises consolidate systems and centralize global data, these systems must be available continuously to satisfy customers and partners around the world. Organizations have also developed an understanding of the costs of downtime, both planned and unplanned. While unplanned downtime is always expensive, even planned downtime for a globally accessed system may result in less effective operations and lost revenue opportunities.

Historically, high availability referred to complete redundancy at extremely high costs. Today, high availability is considered at every point in a solution life cycle — from product specifications to solution design and premium support. Quite often, high availability is maintained by a premium support contract, but postimplementation is too late in the process to begin considering availability and uptime needs. IDC believes that for high availability to be manageable and cost-effective, uptime needs to be considered carefully throughout the decision process. This requires effective planning as well as strong support capabilities.

Opportunity to Consolidate Servers

IDC research shows that customers in most IT environments have the opportunity to consolidate their servers. This can be attributed to advances in server performance and density, improved management software, and the reduced cost of network bandwidth (see the IDC white paper *Server Consolidation: Benefits, Considerations, and Dell's Approach*).

By consolidating servers, enterprises can realize significant advantages, including:

- Cost savings
- Higher levels of service
- Greater efficiency
- Better control over operations
- Improved flexibility when implementing new applications

In particular, the increased pressure on many enterprises to improve service levels, reduce TCO, demonstrate ROI from previous IT investments, and achieve greater business continuity factors into the opportunity for server consolidation. Many enterprises facing

competitive pressures and reduced resources require assistance from a trusted third party to plan and execute a server consolidation plan, whether it involves physical consolidation or is more focused on logical, workload, or transparent consolidation.

Opportunity to Consolidate Storage

Similarly, enterprise customers are searching for opportunities to consolidate storage implementations. Many enterprises have made large investments in direct attached storage devices and capacity, but may not monitor whether or not they are achieving acceptable utilization rates pertaining to this capacity. Rather, many customers have simply focused on adding storage capacity while developing a formalized storage assessment and architectural strategy later. Clearly, the high costs of managing this proliferation of decentralized storage, economic conditions, and the competitive landscape are now forcing storage managers to evaluate their current infrastructures and find ways to spend their storage budgets more wisely and efficiently.

In today's IT environment, many enterprise customers turn to a SAN solution as the most effective way to consolidate their storage devices. SANs promise to deliver higher utilization rates by the nature of their design, which allows all servers to access data stored across the SAN. The challenge for many customers is to balance the up-front investment — both in terms of technology investment and the labor required to plan, design, and integrate the network — against the future cost savings and ROI that can be achieved by committing to a SAN implementation.

TCO and ROI

It is rare to find an IT manager whose budget isn't facing scrutiny. With shrinking staffs and the increased role of the finance department in the IT decision-making process, IT managers are continuing to explore ways to lower costs. Pressure to accurately and clearly understand TCO and potential ROI before making a purchase decision is increasing.

While the ROI metric typically involves a larger constituency within the organization, including stakeholders who may not be impacted directly by the solution itself (such as the CFO or the finance department), IDC finds that most TCO discussions take place within the confines of the IT department during the evaluation of various solutions. The ROI discussion often begins at the business-unit level and later filters down into the IT department.

In either case, organizations are struggling to develop methodologies and tools that will provide them with accurate and usable data with which to calculate both TCO and ROI. Storage solutions are becoming more complex compared with just a few years ago, when the purchase decision revolved around selecting a vendor and determining how much capacity to buy. Because of the increasing complexity of storage solutions, it can be quite challenging to effectively evaluate TCO and ROI in a reasonable period of time. IDC recommends that enterprises turn to a provider that has the customized tools to help them understand both the TCO and the ROI of their storage solution.

The Challenge of the Heterogeneous SAN

IDC believes that we have entered a new era of networked storage that guarantees enterprises will build heterogeneous storage environments. Storage networks now vary significantly in terms of brand, class of storage device, operating system, and even transport protocol. The move to networked storage represents a dramatic shift from the earlier era of a single-brand, proprietary storage purchase.

The SAN approach explodes the proprietary nature of earlier storage architectures by delivering networked devices that can be accessed by multiple servers. The network fabric itself is built on technology from specialized suppliers, while the SAN management software and related tools may be delivered by a different supplier. The storage devices may come from one or more storage suppliers, while separate server suppliers may provide servers. Enterprise customers, already strapped for resources, often look in vain at their staffs to find enough expertise and bandwidth to do sufficient planning, testing, and integration of the storage network. IDC research shows that many enterprise customers are turning to external resources for help with these projects, and they often require assistance from the early planning stage to the actual integration of the network.

As a result, IDC recommends that enterprises turn to a provider that can successfully work with a variety of vendors to develop a heterogeneous solution using best-of-breed products and services.

Postimplementation Support

IDC believes that postimplementation support will be one of the most important decisions an enterprise makes about its storage solution. Typically, vendors offer multiple tiers of support designed to address the technical and business needs of a particular customer.

Support has emerged as a key differentiator for many vendors. IDC recommends that enterprises evaluate solutions that provide the necessary level of interaction, service, and support and be wary of providers that offer support only out of necessity. A vendor's support service offerings should focus on offering high-availability, mission-critical support with a single point of contact and should include the option for premier support services.

DELL'S STORAGE SOLUTIONS AND SERVICES

Dell Professional Services provides solutions and services designed to help enterprises develop the appropriate storage solution. Dell's storage solutions address the full spectrum of business continuity services, including:

- Technology and business continuity risks from a technology perspective
- Disaster recovery strategies
- Technology readiness assessment
- System design

- System implementation
- Postimplementation support

With a strong reputation in providing technology solutions, Dell is expanding its portfolio of services to help customers optimize products and technologies in their storage environment, rapidly deploy those solutions, and increase productivity of their internal staffs through training and certification to maximize the uptime of the storage environment. Dell offers solutions-based storage services that target the needs of many enterprises. These services allow Dell to help enterprises develop successful business continuity and disaster recovery strategies, achieve high availability, and utilize customized tools to better understand how to benefit from server and storage consolidation.

By working with Dell to address these business issues, enterprise customers can make sure that their storage technology solution addresses key issues, such as TCO, ROI, and continuity of the solution, while guaranteeing the appropriate support services.

Business Continuity Planning

Through a combination of in-house expertise, key partnerships, and targeted tools, Dell is well positioned to help customers plan for mitigating risks that may cause business process failure, asset loss, regulatory liability, customer service failure, and the corresponding damage that impacts a firm's reputation. Dell's business continuity and disaster recovery expertise and that of its partners identify the critical processes, people, and technology in an enterprise with a focus on protecting, maintaining, and recovering from planned and unplanned downtime.

Dell Infrastructure Disaster Recovery Readiness Assessment

Dell works with enterprise customers to balance vulnerabilities, risks, and costs with operational needs when developing disaster recovery solutions. Dell's Infrastructure Disaster Recovery Readiness Assessment provides an analysis of the risks and issues associated with a datacenter's technical infrastructure and associated support processes. Mission-critical applications, supporting network infrastructure, backup and recovery policies and practices, high-availability solutions, recoverability objectives, and supporting operational practices are assessed and rated. A resultant risk analysis and mitigation report is delivered at the end of a three- to five-week engagement to help guide the enterprise in the rectification of disaster recovery risks.

Once the readiness assessment is complete, Dell then works closely with its clients to correct their disaster recovery risks through improved backup and recovery solutions and associated operational practices, high-availability server and storage topology solutions to support mission-critical applications, datacenter replication or geographical cluster solutions as required, hot-site recommendations, and network infrastructure improvements. Upon design completion, Dell will work with best-of-breed partners to deploy the solution as designed.

ROI/TCO Tools

Server Consolidation ROI Analyst Tool

The Dell Server Consolidation ROI Analyst Tool is used to create a customized business case for consolidating Microsoft-based file and print, messaging (i.e., Microsoft Exchange 2000), and other application environments with Dell PowerEdge servers and Dell services. The ROI analysis, a gratis service from Dell, provides customers with a 50-page business case analysis, including expected costs, resultant benefits, and demonstrable ROI.

Many customers choose to first evaluate consolidation for their server environment and then follow with consolidation projects for their storage environment. By consolidating servers, enterprises can expect to spend less on hardware management, improve the guarantee on high availability, improve redundancy, and lower their costs.

This analysis is an important tool for many enterprises because it provides demonstrable benefits based on customized settings. Because of competitive pressures and reduced resources, enterprises can justify a server consolidation plan by creating this business case analysis from a trusted third party.

Storage Consolidation ROI Analyst Tool

The Dell Storage Consolidation ROI Analyst Tool is an application designed to help storage managers deliver a customized, detailed business case to their management on the benefits of a Dell storage consolidation solution. It outlines the impact that a Dell SAN or networked attached storage consolidation solution can have in terms of payback time and return on the customer's investment and how it may help reduce the cost of managing the storage environment, thus lowering the organization's total cost of operations.

The analysis results in a detailed business case report with analysis results, customer inputs, and industry best-practices assumptions. The business case provides information, including a measure of a customer's storage currently under management, number of servers, and projected growth. The tool also features:

- View of the customer's consolidation plan
- Selection of how the customer wants to optimize the storage solution, such as for cost, availability, disaster recovery
- Sample configurations based on extensive performance sizing by Dell's Solutions Engineering group, sizing recommendations by application
- Summary of current storage environment
- Financial modeling
- "What-if" scenarios
- Benefits schedule
- Business case report
- Benefits and cost analysis, annualized over three years

- Detailed report with customer inputs, industry research, and analysis results
- Industry best-practices data

Consolidation Services

In addition to the gratis ROI analysis, Dell Professional Services offers a mature suite of infrastructure consolidation services that often act as a complement to a complete disaster recovery solution. Dell's Infrastructure Consolidation Readiness Assessment focuses on an enterprise's current deployment of technology and assesses risks, issues, and challenges associated with consolidation. By performing both automated and consultative discoveries of the client's server and storage infrastructure, supporting network infrastructure and associated operational practices, and aligning this current state with business, functional, operational, and technical objectives for a consolidation, Dell is able to provide a detailed ROI analysis as well as a high-level blueprint for consolidation. Much like its Disaster Recovery Readiness Assessment helps customers address their disaster recovery risks, Dell's Infrastructure Consolidation Readiness Assessment offers a mature suite of services designed to help clients move from their current state to a well-designed and well-deployed consolidated state that will meet their business, operational, and technical objectives.

Partnership with EMC

Dell offers enterprise customers end-to-end server, storage, software, and service solutions through its own extensive internal capabilities as well as through its partnership with EMC. Dell's offer includes an array of consulting, deployment, training and certification, and support services. In addition to receiving full EMC engineering and escalation support, customers get the added value of Dell's expertise in supporting the entire SAN.

Currently, Dell claims that its enhanced remote diagnostic and management tools enable its Premier Enterprise Support analysts to resolve over 85% of storage customer calls within minutes of a call being placed to Dell. The company's new extensive diagnostic capabilities have resulted in a near on-time, first-time fix rate that approaches 100%. When it becomes necessary to replace a part, a certified Dell enterprise-level technician arrives at the customer site, within the included four-hour response in most areas, with the correct parts to resolve the problem.

Dell's direct model enables end-to-end enterprise solutions — including hardware, software, and services — with a single point of contact and defined service delivery metrics. These enterprise solutions can be expanded as a customer's needs grow.

By bundling services designed to improve the customer experience, Dell can offer a variety of options, including basic design and assessment capabilities, hardware installation, implementation, and planning services, and Premier Enterprise Support Services. Optional services, such as cluster design and implementation,

data replication, geographic clusters, onsite parts, enterprise administrator and end-user training, two- to six-hour response, and Platinum-level support with an onsite Dell engineer, provide enterprise customers with the flexibility to select the solution that fits their needs.

Dell Support Offerings

While the process for determining the appropriate storage solution is a process that includes a beginning and end date, the support contract continues all year long. Quite often, a support agreement is a three-year contract (additional contract lengths are available) that will serve as the foundation for every customer interaction over that period. The level of support selected, therefore, will be one of the most important decisions an enterprise makes about its storage solution.

Premier Enterprise Support Services for Storage: Gold and Platinum

In a datacenter environment, high availability is a core requirement. To meet those needs, Dell has created a Gold-level Premier Support program, which offers a host of benefits, including:

- **24 x 7 engineer-to-engineer support with direct access to the Gold call queue.** This allows customers to bypass the lower-level technical support tiers and go straight to a technical engineer. Engineer-to-engineer support is very useful for enterprises that have significant technical expertise in-house and do not want to perform the basic troubleshooting steps in tiers 1 and 2 support.
- **Technical account manager (TAM) handling escalations and reporting.** A technical account manager, who handles escalations and acts as a single point of contact for status reports, can help ensure that critical incidents are given top attention through resolution. The TAM manages open cases until they are resolved, and the enterprise customer defines the severity level and when a case is closed.
- **Four-hour onsite response service with 24 x 7 coverage.** There are always points when it becomes clear that an issue cannot effectively be resolved remotely. This support offering ensures that customers can have a Dell support technician onsite within four hours, for faster resolution.
- **Customer-defined call priority.** Typically, call priority is assigned based on the severity and type of problem that is occurring. The ability for a customer to define a call priority ensures that mission-critical issues are being resolved around the clock.
- **Coordinated support between Dell and third-party providers.** Nearly every enterprise has a horror story about a support incident during which every vendor in the equation pointed to another vendor as the cause of the problem. With Premier support, Dell will stay involved as a single point of contact and will manage the entire incident, including agreeing to work with other vendors in the solution until resolution.

- **Prefailure alert program.** This service monitors the health of the SAN and notifies Dell of potential problems. Dell can then call the customer and correct the problem or, if necessary, dispatch a technician to replace a failed part.
- **Additional Dell/EMC (Gold and Platinum) Premier Enterprise Support Services.** These services include:
 - Change notification
 - Three-year limited warranty
 - Four-hour onsite response service with 24 x 7 coverage
 - Case management services through the Enterprise Expert Center
 - Advanced software and storage support — with unlimited resolutions
 - Customer training at Dell or at customer's location (optional)
 - Onsite parts (optional)
 - Platinum onsite Dell engineer (optional)
 - Two- to six-hour response (optional)

These flexible support offerings from Dell serve a critical role in that they align with an enterprise's need for a highly available storage solution that leverages expertise from a trusted provider, such as Dell. By relying on Dell Professional Services for support, enterprise customers can leverage Dell's significant investment in mission-critical support infrastructure and processes to improve availability and reduce TCO.

Dell's support staff includes Unix-certified experts in Solaris, Linux, HP-UX, and AIX with extensive experience in heterogeneous environments. Each person in Dell's Enterprise Expert Center is certified and experienced in various applications, including Oracle, SQL, Exchange, Backup Exec, ARCserv, Proxy, SMS, SNA, TCP/IP, IIS, and Microsoft Clustering Services.

Additionally, Dell's storage analysts and SkyTech engineers are certified on IBM, Compaq, HP, and Sun hardware. If a Dell technician determines a problem resides with a third-party vendor's product, the technician will engage the vendor, discuss the issue, and manage the process through resolution. Furthermore, Dell will also follow up with the customer to ensure the issue is fully resolved.

When a Premier Enterprise Support customer calls in to Dell, the customer is routed to the engineer-to-engineer line. The Dell engineer pulls up and reviews the customer's custom configuration and call history. If necessary, Dell has the customer initiate a procedure that allows Dell to remotely control the customer's management console. This gives Dell and the customer the ability to see and manipulate the management console, as if they were onsite performing troubleshooting and repair, without the travel time.

Dell can also conference in additional resources and vendors to the same session, to rapidly diagnose and correct the problem. This remote tool provides Dell engineers with the ability to do complete SAN management, including reconfiguration, viewing of event and error logs, file upload/download, software installation and updates, switch configuration, and access to the server systems management, including non-Dell servers attached to the SAN. This relatively new support technology, along with Dell's seamless support with third-party manufacturers, allows Dell to get its customers up and running as quickly and efficiently as possible.

With many SANs being implemented into heterogeneous environments, Dell started to acquire additional Microsoft- and Unix-qualified architecture consultants and implementation system engineers. Dell increased both of these groups over threefold since October 2001 — part of the \$20 million it spent in the first six months of its partnership with EMC on SAN service personnel and tools.

Dell is also adding Dell Enterprise Regional Support Specialists, who will be located in major metropolitan areas, to supplement its SkyTech engineers, local service providers, and local EMC field experts. All Dell onsite service providers have at least three to four years of storage environment experience and are EMC-certified and master Dell-certified systems engineers, making them qualified to provide support for the entire SAN.

CONCLUSION

Enterprises are struggling to determine how to effectively migrate to networked storage environments in a way that makes these infrastructures manageable and cost-efficient while driving revenue for the organization. Because of the relative complexity of many storage solutions today, enterprise customers will continue to seek external assistance in planning, building, managing, and supporting their storage infrastructures.

Storage services are the third link in the chain that begins with large application projects. Storage-intensive applications, whether CRM, ERP, or rich-digital media applications, drive customers to buy and install additional networked storage, which drives demand for storage consulting, integration, and management services. Support services also see demand increase as a result of customers' investments in storage capacity, although IDC believes this is becoming an increasingly problematic segment.

While storage hardware may be approaching commoditization, thorough knowledge of network storage technologies continues to be relatively rare, particularly knowledge across various proprietary technologies and standards. Dell has built a full line of storage-related services and tools that address enterprise customer needs from early in the planning stage right through its support offerings. Through a combination of in-house expertise and strategic partnerships, Dell is in a position to address customer needs for storage solutions that go beyond technology and ultimately provide ROI commensurate with the customer's original investment.

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