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Rethinking Storage for Enterprise Survival

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Rethinking Storage for Enterprise Survival

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Information is the lifeblood of the modern enterprise. Driven by advances in the storage and transmission of information, enterprises can make highly informed business decisions. Strategic thinking aimed at adjusting the direction of the company can now be supported by analyses of information collected over months and years. Some of that same information can be put to work tactically to personalize interactions with valued customers and to make split-second adjustments to offerings and prices.

Moreover, the opportunity for information sharing within the enterprise is far greater today than ever before. Information sharing is nearly instantaneous, relatively inexpensive, and global in scope. It is not just possible, but routine, for a sales agent in Australia to call for help and receive engineering advice from a colleague in France, collateral materials from the marketing department in Chicago, and a link to a relevant Web page from a friend in the next cubicle.

Information: Many Forms, Many Channels...Faster

Today's information comes in many forms. Traditionally, enterprises have thought of information processing as the crunching of numbers to monitor resources and finances in the back office. With the explosion of personal computing and enterprisewide networks, information has moved to the desktops of knowledge workers, customers, and partners. Command and control functions have shifted from voice, paper, and fax communication to email and e-commerce. Finally, with the increasing convergence of analog telephony and data communication, information communicated by voice can be stored and shared as well.

Today's information flows through new channels. Extranets now extend the flow of enterprise information to trading partners as supply chains become more tightly coupled. The Internet provides access to the enterprise by customers, be they businesses or individuals, and detailed information about customer behavior has become yet another category of information.

The Internet also reaches out to remote workers and branch operations for employees of the enterprise. Wireless extensions to the Internet will provide access to mobile customers and employees.

The velocity of information flow is increasing. Copper wireline, optical fiber, and wireless networks are all moving from kilobit speeds to megabit speeds (i.e., broadband communication). The availability of global broadband networks allows local and regional enterprises to reach out globally. Broadband also allows the consolidation of information at one or several locations because rapid access over long distances is now commonplace.

Information Fuels Growth 24/7

Forward-thinking companies use information to fuel growth. Consider the concept of "business hours," which is that period of time when customers typically purchase goods and services. All hours are business hours in this new millennium. High-growth organizations are reaching out to aggressively compete in new markets around the globe. And they do so by investing first in their ability to capture and store information in systems that are nearly always available.

Not so many years ago, back-office IT systems could be down for hours or even days and the organization could remain in business. Storage systems could be repaired, maintained, and upgraded overnight or on the weekend without harm to the enterprise revenue stream. Today, however, conducting business is highly dependent on immediate access to the complete interrelated mesh of computing and networking systems. Scheduled downtime has gone the way of the buggy whip.



Business initiatives that boldly address new markets must have contingencies for expanding incrementally to support whatever rate of growth actually occurs.

Achieving Complete Storage Solutions

Enterprise executives should expect complete business solutions. Gone are the days when business needs were subordinated to technology choices. CIOs and IT directors no longer approach the Board asking for technology components — another server, additional storage, or a new optical fiber network. Today's executives expect to see business initiatives drive IT infrastructure. Rather than viewing IT as a cost center to be divided into overhead slices, today's executive expects a return on the IT investment.

In order to provide quality customer care, for example, an enterprise will need to acquire hardware, software, and telecommunication systems designed to capture, store, share, and put to use a variety of different sources of information. Although technicians and specialists still engineer the subsystems, executives and strategists should expect to evaluate the business case for customer care. The new solution should align with corporate objectives and deliver a return on investment.

Complete solutions are not static but rather incorporate plans for system growth. Business initiatives that boldly address new markets must have contingencies for expanding incrementally to support whatever rate of growth actually occurs. Thankfully, new storage options minimize fixed costs and provide increased opportunity to add capacity as usage requirements become clear.

Step 1: Assessment

Assessment is the first step toward a complete solution. After two decades of decentralized IT, many enterprises simply have no current information inventory. A systematic audit of the

Road Map for Achieving Complete Solutions

Assessment

- Provide systematic inventory
- Ensure foundation for application integration
- Forecast for future growth

Planning and Design

- Partner with external consultants
- Design industry standard or custom solution

Implementation, Testing, Deployment

- Meet business and operational objectives
- Provide tools for ongoing support

content and capacity of storage and processing systems provides the necessary foundation for a complete solution. Assessment often reveals that information assets are improperly secured, underutilized, and poorly integrated.

Assessment also provides the blueprint for integrating new systems with old. As we have come to learn, there is no such thing as a “stand-alone” business solution. New information systems will inevitably need to work with legacy systems. Many enterprises launching ebusiness systems are reaffirming this lesson today.

Additionally, assessment must include a thorough review of the business processes under consideration. It is especially prudent to consider the information storage impact of a grand success, as the following scenarios indicate:

- What if the enterprise's new ebusiness initiative does double or triple the number of customers? At just the time when you want to nurture your new rep-

utation as a reliable Internet merchant, will your customers be frustrated with slow or unavailable service?

■ What if the new service delivery mechanism dramatically increases the frequency of transactions, as ATMs did for banking in the 1980s? Back-office transaction systems built to support paper or person-to-person transactions may not be resilient when taken to Internet speeds.

■ What if that new differential pricing strategy captures the fancy of existing customers? Are there fixed price constraints built into legacy accounting systems that demand revision? Are inventory management systems ready to support just-in-time delivery of goods and services?

The transactions of today may also be more complex. For example, online brokers have replaced monthly printed statements with ad hoc query tools that report not only a statement of positions and balances but also year-to-date and monthly returns, individual security performance, and pending corporate actions, such as dividends, stock splits, and mergers. A single query by an online investor may generate a flood of supporting transactions.

The enterprise must be prepared for upside consequences of new, effective business solutions. Assessments need to include a careful examination of problems that may emerge elsewhere in the organization as the velocity and complexity of a single business process is increased significantly.

Step 2: Planning and Design

Planning and design of the complete solution occur next. In the new millennium, partnerships between enterprise IT staff and external consultants are the rule. Of course the primary

responsibility for understanding a company's critical business factors remains within the enterprise, but it is now clear that outside specialists can engineer many core technologies and subsystems more quickly and efficiently than in-house staff.

In many vertical markets, specialists not only decrease cost and risk, they also increase the likelihood that a system meets the benchmark for the industry. For systems that are not intended to provide a competitive

ment, and ongoing support. Attention should be paid to ongoing support because its cost is a large proportion of a system's total cost of ownership. Storage systems in particular require attention and complete solutions will include the increasingly effective tools available to assist storage administrators.

Today's Storage Architecture

Today's storage architecture must be flexible, available, and consolidated. Enterprises now have more

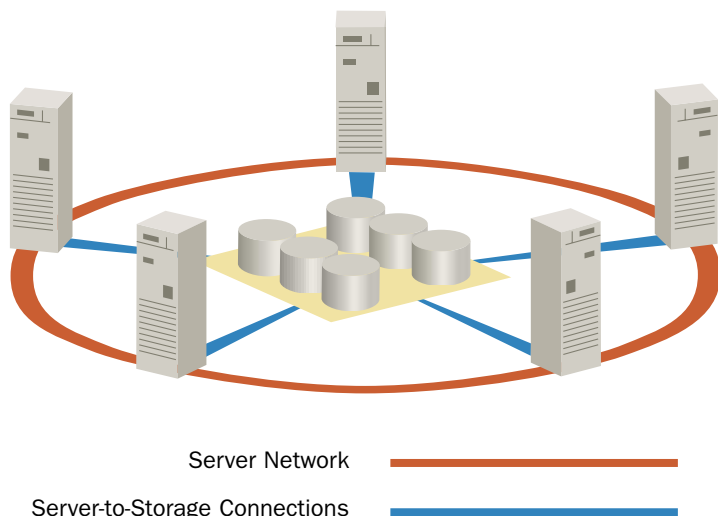
eliminating single points of failure. Today's predominant storage media — spinning magnetic disks — are configured as an array of devices designed so that component failures do not harm the integrity or availability of enterprise information. Backup components switch on instantly and automatically, and failed components can be replaced without taking the storage system, and the applications that depend upon it, out of service.

Increasingly, a storage system's value derives from the embedded software that provides the storage system functionality. Therefore, this "component" of the storage system must also be redundant, and maintenance and upgrades of this embedded software must be accomplished without taking the system out of service.

Application resilience depends on more than the storage system. Eliminating single points of failure will be necessary for all other key components. The familiar list includes power supplies, processing servers, local area networks, and Internet access connections, which must also be redundant in highly available systems.

Figure 1. Consolidated Storage

Storage once scattered can be brought together to be shared by the enterprise.



advantage, the best solution is the industry standard solution delivered quickly, reliably, and at the lowest possible cost. When industry standard solutions are used to provide competitive advantage, much of the competitive advantage will be derived from delivering superior availability, performance, and scalability.

Step 3: Implementation, Testing, Deployment

The complete solution is then ready for implementation, testing, deploy-

options for purchasing adequate storage capacity at a good price and more ways of adding capacity without disrupting daily operations. Technical advances also provide new and better ways to make stored data highly available, accessible, and recoverable. In addition, storage capacity is no longer wedded to a particular server supplier's operating system choice nor to any particular storage software supplier's management solution.

Highly available storage systems are engineered by systematically

Reducing Storage Management Costs

Consolidated storage has always been easier to manage than decentralized storage. It is the recent availability of broadband communication networks that makes centralized management of consolidated storage systems, as shown in Figure 1, especially practical today. Namely, high-speed networks make it possible to deliver information to widely dispersed users from central locations. It is no longer necessary to attach storage to each computing device

Figure 2. Storage Area Network (SAN)

SANs consolidate storage systems on a dedicated network.

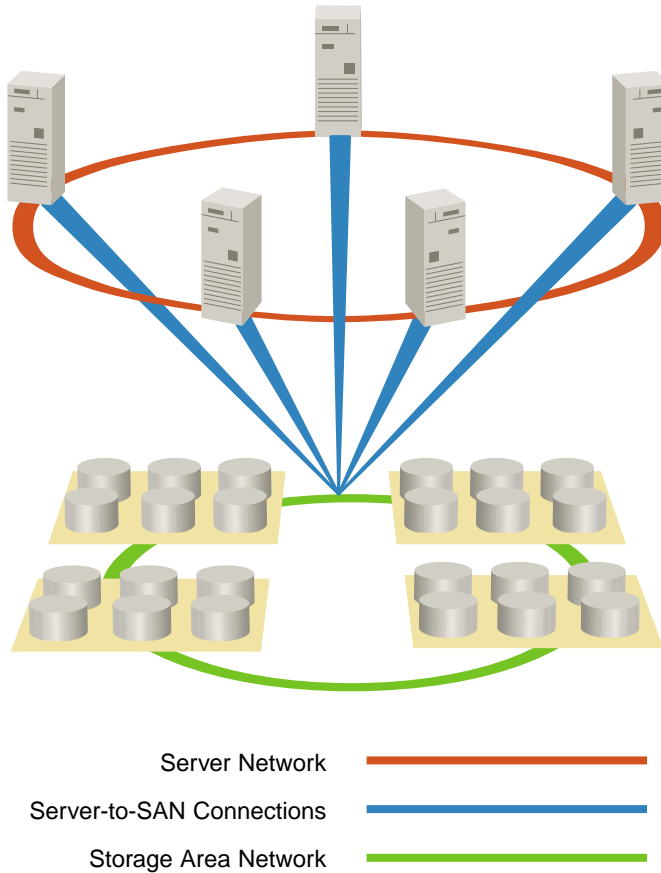
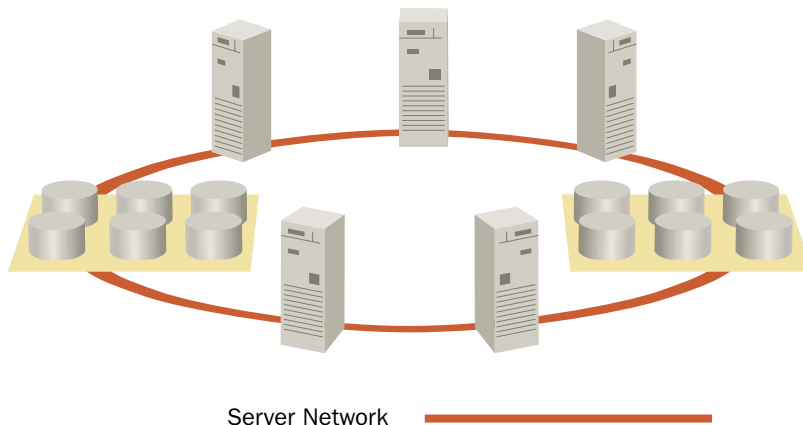


Figure 3. Network-Attached Storage (NAS)

NAS devices snap into the enterprise networks.



individually. Distance still matters, of course, and bandwidth is not free. Most important, it is now possible for an enterprise to optimize consolidated storage in much the same way that enterprise logistics planning optimizes the location of warehousing and distribution for products.

The cost of managing information is sharply reduced when storage is consolidated and centrally managed. Labor costs are the biggest factor. As a rule of thumb, half the staff can manage twice the data in a state-of-the-art data center. Even when correcting for the higher salaries needed to retain the more highly skilled technical staff required to maintain these systems, the economies of scale predominate. Maintaining fewer facilities, decreasing storage system downtime, and gaining tighter control over storage assets also contribute to further savings.

Networked Storage

Once consolidated, the integration among storage systems can be improved. The storage industry today offers consolidated, highly integrated systems called storage area networks (SANs). In the old model of storage, the storage devices were attached directly to servers. Organizations often found that while they had sufficient storage, it was not attached to the right servers. As Figure 2 shows, SANs allow storage capacity to be allocated to applications and servers as needed. The result is greater flexibility and efficiency.

Another category of storage system is network-attached storage (NAS), shown in Figure 3. NAS products vary in capacity from smaller-capacity devices to enhanced workgroup systems to larger-capacity devices that

address corporate needs. Regardless of capacity, the imperative of NAS is the same: stop adding storage to servers and start adding storage to networks. Server-attached storage is harder to manage and harder to share.

SAN and NAS are storage architectures that exploit pervasive networks to provide shared access to data. SAN and NAS differ in the way that they supply data to appliances and servers. As Figure 3 shows, each NAS device supplies data over the corporate server network. A SAN, as shown in Figure 2, consists of a separate network dedicated to interconnecting storage devices and providing uniform access by multiple servers to enterprise data storage resources in shared storage devices.

Storage on Demand

Innovative suppliers offer storage systems that vary in capacity on an as-needed basis — a storage-on-demand approach. In some offerings, a service call is needed to add new components. In other offerings, system administrators will bring surplus storage online electronically. In the future, it will be possible to release excess storage as well. For organizations with seasonal usage, the storage-on-demand approach will provide a solution to a long-standing problem of owning storage capacity that is idle much of the year. (See “Storage on Demand,” page 8.)

Downtime Is Not an Option

Storage system design is critical to business continuity planning. Once called “disaster planning,” business continuity planning has become more difficult over the past few years, primarily due to two factors. The first

factor is the vanishing window during which systems can be taken offline for backup purposes without disrupting business. The second factor is the sheer size of modern information repositories. Fortunately, storage is now affordable enough that companies can store vast amounts of data redundantly.

Two new techniques are being used to ensure that business is not disrupted: remote copy and point-in-time copy. Both depend on the fundamental idea of “mirroring” data.

■ Data is mirrored when it is collected and stored redundantly in two or more collections of disks, rather than in just one. Within a storage system, mirroring is a parallel process, not a sequential one, and so there is no performance penalty. Instead, the result is two or more replicates of the information. Multiple mirrors can be created that may be used for a variety of purposes. For example, e-business transactions might be mirrored three times — once for accounting applications, a second time to transfer information to marketing, and a third time to support rapid recovery of key applications.

■ A remote copy is a replicate of valuable information transmitted over a distance to a second storage system for safekeeping. Making a remote copy is analogous to the historical process of transporting magnetic tapes to a salt mine or to a cave. Today the transfer is handled by a high-speed network and is woven into the ongoing process of mirroring the data. When mirroring moves “live” data over extended distances, there may be a performance implication. There are a variety of approaches to mirroring data. Knowledgeable

suppliers will match the mirroring technique to the workload.

■ A point-in-time copy is a time-stamped mirrored copy of corporate data that is set aside for further use. Business needs and risks determine the frequency of point-in-time snapshots. For example, a weekly snapshot may be fresh enough to serve the marketing department’s need to analyze e-business transactions. A retail point-of-sale system may depend on a pricing snapshot that is updated overnight. Twice-daily snapshots of transactional data may be needed to feed into the general ledger. For an equity trading company, however, snapshots may need to be taken on an hourly basis, or even more frequently.

In addition to supporting parallel use by the marketing department, point-in-time snapshots enable critical business applications to recover rapidly when subsystems fail. Modern applications are able to quickly backtrack to the most recent snapshot and recover in seconds or minutes without loss of valuable transactional information.

Wringing Value From Information

The multiple use of information offers enormous opportunities to the enterprise. The ability to mirror and make point-in-time copies of data provides a quantum leap in the value that enterprises can squeeze from a collection of data. A thoughtfully designed information warehouse can inform many useful decisions across the enterprise. Customer data is a particularly powerful category where creative reuse of information makes a large difference.

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Storage on Demand

by Doug Chandler

Program Manager, Storage and Data Management Services Program, IDC

The storage-on-demand market — also referred to as the storage utility, managed storage services, or the Storage Service Provider (SSP) market — makes up a small part of today's overall storage market. However, its growth potential, as well as its potential to change the dynamics of the storage industry, remains strong.

What is it? In the “pure” form of the storage utility model, storage devices owned by the service provider are located at a facility some distance from the customer, who then accesses the capacity when required and pays for it as if it were a utility — typically on a monthly basis. The goal is to deliver the needed storage capacity and related management services to customers without requiring that customers make a large capital investment in storage devices or commit to their own ongoing management of the devices after they're installed. The storage being delivered may be used for primary, production-level data or for data backup. Most providers offer storage-related consulting and other professional services as well.

There are variations on this approach. The devices may be owned by the storage utility firm but located at the customer site. When management and other services are provided around the devices, the relationship resembles a more traditional outsourcing agreement.

Alternatively, some storage product suppliers have unveiled technology

solutions that allow them to “turn on” additional storage capacity on their own devices at customer sites. These solutions also allow suppliers to monitor customer storage capacity use so that customers can pay-as-you-go as they need additional capacity. IDC distinguishes these technology-based approaches from a storage-on-demand utility service. In fact, providers of the latter may employ the former in their own installations.

Why is this happening now? Not long ago, storage was treated as an add-on item when businesses invested in server and operating system platforms. But driven by the insatiable demand for data that the Internet and data-intensive applications like Customer Relationship Management (CRM) have created, many organizations now find that

data storage sucks up the single, biggest piece of their annual IT budget. Competitive pressures force firms to think strategically about their corporate-wide data storage architecture to ensure that critical data will be available instantly, whenever and wherever it is needed. At the same time, the advent of more “commoditized” storage devices and falling prices for network bandwidth have made it possible for a third-party service provider to effectively deliver a company's storage capacity — in effect, its data — from a remote, centralized location.

The Bottom Line

What's the issue? Organizations now have an alternative to buying and managing their own storage devices by outsourcing these tasks to a storage-on-demand provider.

Why should you care? Most competitive organizations are seeing their data storage capacity demands soar, but they are unable to hire enough skilled engineers to manage these environments. The various storage-on-demand approaches offer an alternative.

What should you do? Explore the utility service offerings now available from both established players as well as the aggressive start-up SSPs. A third party may be able to provide you with better storage availability, scalability, and performance — not to mention ROI — than you can achieve on your own. For a more traditional approach, it's worth examining the pay-as-you-go storage technology solutions as well. ■



Customer-Centric Business

Henry D. Morris, Ph.D.

Vice President, Data Warehousing and Information Access, IDC

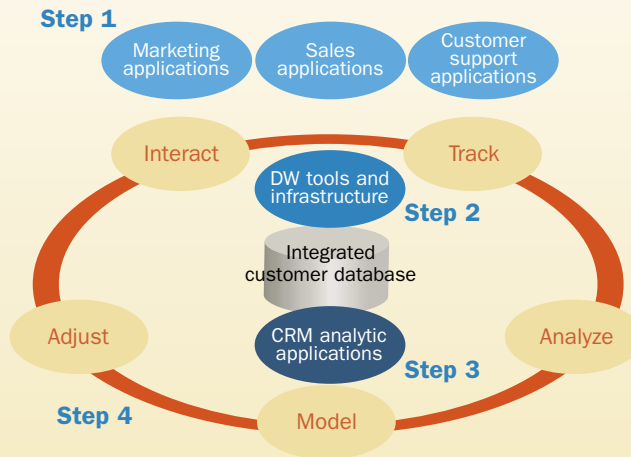
Successful companies must respond to their customers in a highly personalized and efficient manner. Customer care requires the methodical collection, storage, analysis, and application of customer “touchpoint” information, that is, the information gleaned from each and every encounter between an enterprise and its customers.

The enterprise customer-care imperative is to enrich the ability to market, sell, and support products and services to customers based on a well-cultivated understanding of their needs. As Figure 1 shows at **Step 1**, the ability to personalize offerings to customers rests on a closed-loop process of information gathering and analysis.

Analysis depends on quality customer touchpoint information that is collected and stored in an integrated customer database, as shown at **Step 2**. Much of this information flows from the organization’s transactional and operational systems, such as ebusiness exchange systems and inventory management systems, respectively. For efficiency, organizations must integrate CRM with traditional IT systems so that information collected for one purpose can be put to work a second time.

Touchpoint data must be analyzed and summarized, as shown in **Step 3**, in order to support personalization modeling. Today’s analytic tools provide

Figure 1. The Customer-Centric Model



Web-site, marketing, and multi-touchpoint analyses, and are often specialized for markets such as financial

services, telecommunications, and retail enterprises. The ability to utilize Customer Relationship Management (CRM) analytic tools depends in large measure on a unified view of the customer across the entire organization.

The precise actions taken with customers are generated by an explicit model of personalization, as shown at **Step 4**. Business rules are applied to aggregated scores that

summarize touchpoint behavior. Rules identify high-value frequent buyers, for example, or triangulate from past purchasing behavior to identify additional products and services that a customer is likely to need. The ability to personalize customer interaction provides the potential for driving additional value from each and every customer relationship.

If customer information flow is blocked or delayed, the customer-centric enterprise is temporarily out of business. As Figure 1 reveals, in a closed-loop customer-centric system, information must flow from acquisition to analysis to personalization in order to support the delivery of products and services to customers. At the heart of a successful customer-centric business model is a robust enterprise storage architecture.

A robust enterprise storage system should be designed with replication and migration facilities to enable the rapid

Enterprises encounter several predictable challenges when building a customer-centric business model.

Challenge 1: New clear definitions of customer data often need to be created across the organization. To be used widely, data must be collected in a uniform fashion.

Challenge 2: System integration must be addressed. Some customer data will reside on traditional computing platforms while other information is collected on new Web-based ebusiness platforms.

Challenge 3: Customer care spans different departments in the organization and integrating the information will require realignment of the organization’s incentives for cross-departmental cooperation.

flow of information through resilient systems without single points of failure. Storage platforms need to interoperate with servers and operating systems obtained from multiple suppliers. Automated recovery facilities are essential to ensure continuous operations.

The ability to snapshot and replicate large collections of data is a critical feature for modern storage systems. When businesses operate continuously, there is no downtime during which a copy of a dataset can be made. Today's storage technologies provide facilities to make a quick copy (snapshot) without taking applications offline. It is this snapshot of operational data that is used to populate the integrated customer database shown in Figure 1.

The Bottom Line

What's the issue? According to David Roberson, COO of Hitachi Data Systems, "We want storage systems to be part of value creation in the new enterprise. Providing automated, high-quality personalized attention to customers is one important way to create value."

Why should you care? High quality customer care will result immediately and directly in top-line revenue and a positive impact on stakeholder value.

What should you do? Investigate the advantages of a closed-loop customer-centric model for leveraging touchpoint data to improve and streamline customer care. Highly available, quality customer data is the linchpin to this solution. Reliable storage systems are critical to making this happen. ■

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All organizations capture and store customer transactions. Transactional data drives the delivery of products and services and the billing systems that collect the company's revenue. Transactions constitute the core of the general ledger and provide a foundation for all enterprise activities.

eBusiness transactions often lead to a dramatic increase in available information. When the process of ordering is streamlined with online catalogs and delivery of goods and services is quick and reliable, incentives are in place for customers to order more often and to search more widely for exactly what they need. Customer use of the online catalog can provide many insights into a wonderful category of product: items that your customer is searching for that you do not currently offer.

Winning organizations wring every ounce of value from transactional data. As noted earlier, a point-in-time replicate of transactional data provides a gold mine of information for the enterprise marketing tacticians and strategists. Day-to-day and seasonal trends in the sales of goods and services provide an empirical basis for forecasting immediate future demand for existing offerings. Flexible pricing tactics, for example, provide a mechanism for holding to higher prices for scarce,

desirable products while discounting prices for products that need to be accelerated out of inventory.

Get to Know Your Customers

Year-over-year information informs strategic thinking. With warehouses of data and strong analytic tools, subtle trends can be identified that are invaluable to longer-term planning. Even though business may be accelerating to "Internet speed," it still takes time to build out manufacturing and distribution facilities. With more precise forecasts of future demand, the enterprise can better focus its investments.

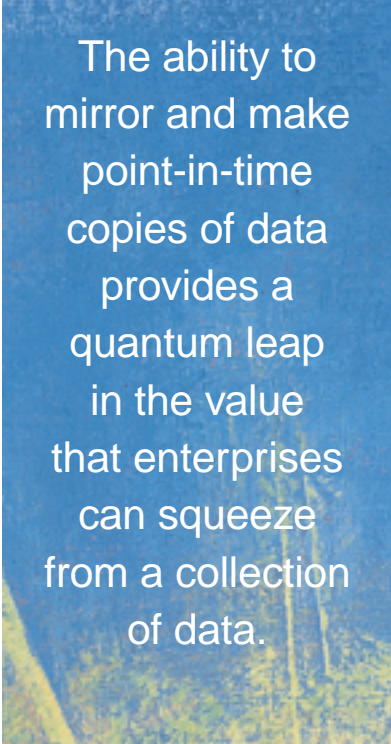
Transactional information is especially useful for customer retention. Customer relationship management (CRM) applications aim to put customer "touchpoint" information to work. (See "Customer-Centric Business" at left.)

Selecting Storage Partners

There are four key criteria to keep in mind when choosing storage suppliers. Look for: **1)** state-of-the-art technology, **2)** powerful partnerships, **3)** reliable distribution partners, and **4)** systems interoperability.

State-of-the-Art Technology.

Storage technology is an amalgam of hardware, software, network, system integration, and service expertise. Advances continue in each of these domains. Leading vendors will offer



The ability to mirror and make point-in-time copies of data provides a quantum leap in the value that enterprises can squeeze from a collection of data.

not just high-performance hardware, but also storage management software to maintain enterprise information efficiently.

Network connectivity is a critical factor as well. Adequate network bandwidth is critical to the successful delivery of information held in storage. Bottlenecks in data access negate the value of the information on hand.

Storage providers should offer system integration tools and services, either directly or through strategic partnerships. Putting the pieces together properly is as important as evaluating business requirements or selecting quality components.

Powerful Partnerships. Partnerships extend the expertise of storage suppliers. Expect higher performance and smoother system integration from products offered by complementary suppliers that work together. Integration issues can be addressed and solved by technicians who have deep access to the component technologies. Performance can be optimized as all partners make certain that their subsystems are tuned to work together. The quality of support is improved when partners work together to optimize the application of their products.

Partnerships provide a single point of contact for customers. Assembling a collection of technologies and services requires cooperation among suppliers. Without committed partnerships, system integration problem solving can result in finger pointing. A partnership among suppliers should be a commitment to solve integration problems and to accept overall responsibility for the timely delivery of a system that meets the customer's requirements.

Distribution Partners. Storage distributors offer increased choices to

Criteria for Selecting Your Storage Partner

State-of-the-Art Technology

- Highest performance
- Highest availability
- Leading storage management software
- Network connectivity options

Powerful Partnerships

- Complementary product suites
- Single point of contact

Reliable Distribution Partners

- Choice of buying channels
- Integrated solutions

System Interoperability

- Multiple operating system support
- Open infrastructure

the consumer. For some applications, organizations may want to negotiate a best price for raw hardware and software technology purchased directly from suppliers and assembled in-house. For many applications, organizations will choose a distribution partner that provides integrated solutions and not just raw technology. Distribution partners expert in the needs of different industries are particularly valuable.

Trustworthy storage providers should guarantee multiple distribution channels that deliver solutions to customers with different requirements. Not only should organizations expect distribution channel choices, but they should also expect those choices to be available year after year. Choosing to exploit the expertise of a distributor versus engineering a system from the ground up is a business decision. Distribution through multiple channels means greater choice for the enterprise.

Systems Interoperability. Storage systems are increasingly able to support different operating systems, brands of server, and suppliers of software applications. Interoperability is the rule — not the exception — in the new millennium, and enterprises are advised to select storage systems that meet public and industry standards and provide interoperability with existing legacy systems.

Over the last decade, the term “open” has often been used to describe interoperable systems. Industry associations, such as The Open Group, have been formed to advance shared standards. Open initiatives have not always lived up to their promises. Debates usually

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Would you rather learn about your shortcomings and respond to them, or would you prefer that your competitors exploit those shortcomings to their advantage?



Hitachi Data Systems and VERITAS Software Together: Creating Better Solutions for Data Availability

by Paul Mason, Ph.D.

Group Vice President, Infrastructure Software Research, IDC

Hitachi Data Systems provides storage products, VERITAS Software Corporation provides a suite of storage management solutions for data availability, and the two companies work together as strategic partners.

“Partnerships are the way to bring better, more complete solutions to market and thus provide greater value to our customers,” says Dave Roberson, chief operating officer of Hitachi Data Systems. “Best-of-breed partnerships allow companies such as

VERITAS Software and Hitachi Data Systems to tune their respective products for highest performance and for simplicity in installation and use. We are proud to be a key partner in the VERITAS VERTEX Initiative.”

“Hitachi Data Systems is a trusted provider of storage hardware with leading technology products,” says Gary Bloom, chief executive officer and president of VERITAS Software. “In addition, Hitachi Data Systems has maintained a high level of satisfaction in their current customer base, which is why they continue to grow. Customers need both the high standard of quality embodied in the Hitachi Data Systems Freedom Storage Lightning 9900 and the power and leverage of our VERITAS Software solutions.”

The synergy for these companies lies at the intersection of traditional hardware and software functionality. Hitachi Data Systems storage systems have the ability to take a point-in-time copy of a collection of data, much as a camera takes a snapshot, without bringing the storage system to a halt. Point-in-time copy technology is highly dependent on storage system hardware design, which is why storage hardware suppliers like Hitachi Data Systems are uniquely qualified to develop this facility for their own stor-



Dave Roberson, Chief Operating Officer, Hitachi Data Systems



Gary Bloom, Chief Executive Officer and President, VERITAS Software

age systems. The challenge is to make the capture of point-in-time copies as non-disruptive as possible to applications that depend on the data. Thus the penalty for making copies is minimized.

The value to a customer lies with the increased confidence that critical information will remain available and the guarantee that a complete storage solution has already been optimized prior to delivery. Reliable hardware and high-leverage software tools are

the keys to a successful enterprise data center.

One critical aspect is backup and recovery. The VERITAS VERTEX Initiative is a suite of data protection software solutions provided within VERITAS NetBackup that put point-in-time copies of data to work. When VERITAS NetBackup manages frequent copies of data, then the time it takes for a system recovery is minimized. Overall performance is enhanced when the storage system rather than the application server handles these backup operations and, of course, high performance and minimal downtime are becoming increasingly important to organizations, particularly in support of ebusiness initiatives.

In the future the VERITAS VERTEX Initiative suite will be extended to further integrate and leverage Hitachi Data Systems storage area networks (SANs). Additional operating environments will also be supported, to allow customers greater choice in purchasing new systems or integrating Hitachi Data Systems and VERITAS Software storage solutions with existing platforms.

Both Dave Roberson of Hitachi Data Systems and Gary Bloom of VERITAS Software are careful to highlight that their partnership is not to the exclusion of other partnerships undertaken by both parties. The value proposition for choosing Hitachi Data Systems and VERITAS Software is not an artificial result of proprietary suppliers locking out other choices. Customers can choose either Hitachi Data Systems or VERITAS Software in combination with other suppliers. ■

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hinge on which standards are the open ones.

Today, interoperability translates in practical terms to the choices that consumers are offered for assembling multivendor systems for new initiatives, for integrating new systems with legacy systems (whether open or not), and for extending these integrated enterprise systems in the future.

The Bottom Line

What's the issue? Storage suppliers are responding to critical business

requirements with new high-performance systems that are more flexible and available and aim to provide complete business solutions.

Why should you care? The survival of your enterprise depends on reliable access to vast amounts of information by not only your employees, but also your customers and trading partners.

What should you do? Rethink your storage strategy in light of today's new opportunities to consolidate systems and to fuel growth by wringing every ounce of value from the information that you collect. ■

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As the Vice President of IDC's storage research program, John McArthur establishes the worldwide and European research agenda for storage systems and for disk, tape, and optical storage mechanisms. Mr. McArthur provides custom research and consulting for IDC clients on product requirements and marketing strategies for storage and storage-management solutions. Mr. McArthur has more than 13 years of experience in IT operations, management, and finance. He came to IDC from State Street Bank and Trust Company where he was Manager for Information Technology Procurement.



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