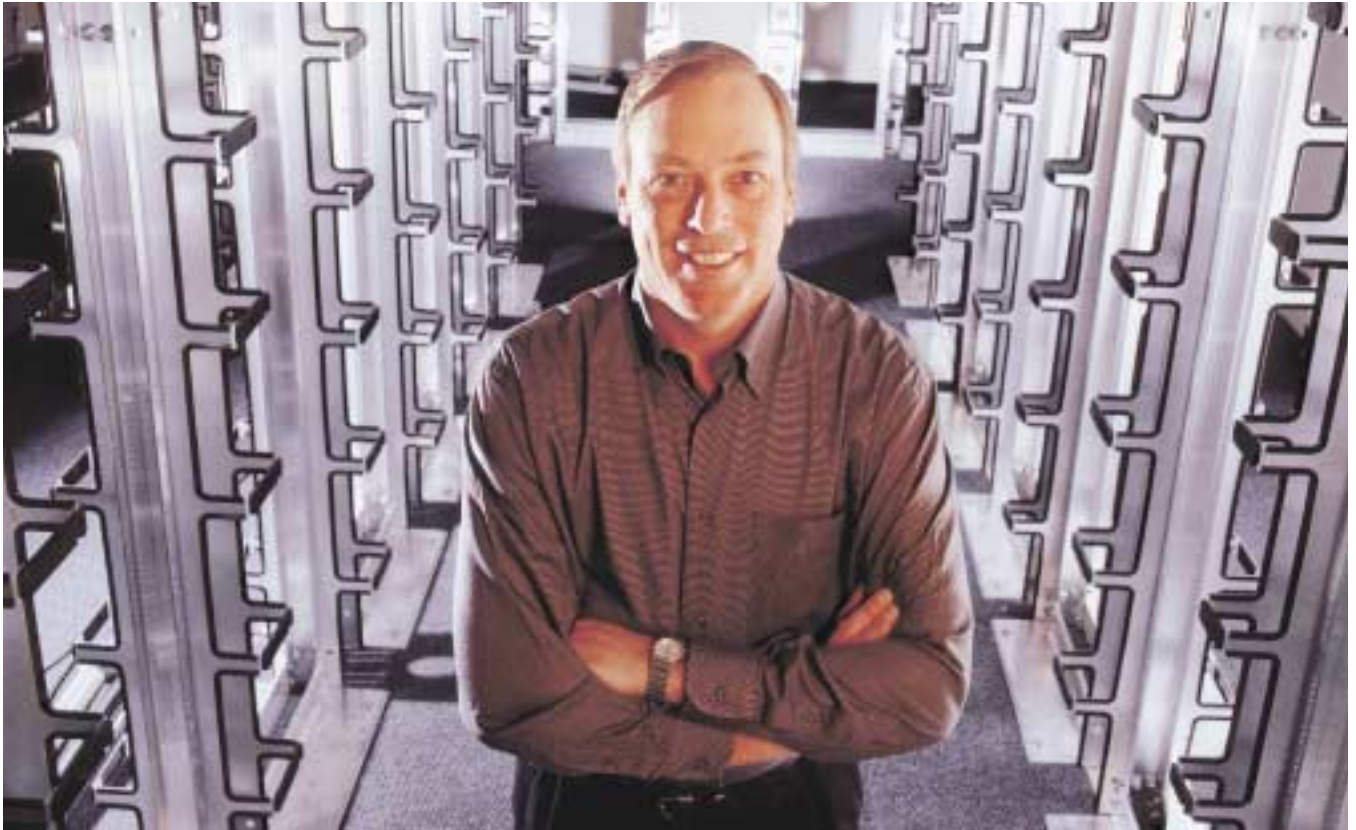




VISIONS

INSIGHTS FROM TODAY'S E-BUSINESS LEADERS



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The End of Complexity

The emergence of the “intelligent infrastructure”

will make life simpler for IT professionals—and help them truly do more with less

BY DAN WARMENHOVEN, CEO, NETWORK APPLIANCE

Technology budgets have always been subject to their share of scrutiny, but over the last year, IT departments everywhere have been asked to cut back and reduce expenditures. As any IT professional knows, however, the challenges facing those departments have not diminished in the least—and for most, they're increasing dramatically.

The problem is that information technology is not an isolated or “nice to have” part of the company; it's right at the heart of virtually every aspect of business—and especially, e-business. That means that the IT function must oversee growing

NETWORK APPLIANCE AT A GLANCE

Network Appliance has been providing data access solutions since 1992 and today offers a range of network file storage and content delivery solutions for global data management. The company pioneered the network-attached storage concept, and currently, more than 23,000 NetApp® solutions are installed worldwide. Clients include major corporations and service providers such as Lycos, Yahoo!, Citicorp Securities, Siemens, Lockheed, Cisco, Motorola, and Texas Instruments.

Headquartered in Sunnyvale, California, Network Appliance maintains a global presence with more than 2,200 employees and distribution channels that span more than 70 countries. Network Appliance is listed on the NASDAQ exchange as "NTAP" and is included in the NASDAQ 100 and the S&P 500 indexes.

For more information, visit www.netapp.com/partners/oracle/

volumes of data, and growing types of data, such as video and voice. It must accommodate a wide range of applications, from data warehouses to CRM and supply-chain management. It must manage data over far-flung global networks. And increasingly, it must integrate systems, not only internally, but with an array of customers, partners, and suppliers, as well.

All together, those demands add up to growing and increasingly complex e-business infrastructures that are difficult and costly to maintain, and which only add to the strain on IT resources.

As if that weren't enough, IT professionals have to keep delivering systems that support new business processes, new products, and new business paradigms—that is, the systems that enable the improvements and innovation that keep a company competitive. But the complexity of the underlying infrastructure makes those tasks more difficult, and time-consuming maintenance work pulls resources away from such efforts.

In short, the complexity of today's infrastructures leaves IT professionals with a difficult choice: To move forward, they can devote more and more resources to overcoming complexity. Or they can cut back and put business-critical improvements on hold. In other words, in a world that demands that they do more with less, IT departments are in a position only to do "more with more," or "less with less."

The key to solving that dilemma lies in recasting our approach to e-business and

the storage and movement of data. Instead of managing complexity, we need to focus on eliminating it. By doing so, we can essentially create infrastructures that are easier to manage and that make the third option—doing more with less—a real possibility.



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COMING SOON: INTELLIGENT INFRASTRUCTURE

This new approach has its roots in the advent of network-centric storage technologies, such as network-attached storage, which separates storage functions from the traditional application server and makes data available over the network. Network-centric storage has proven to be cost-effective and flexible, and it has rapidly evolved into a robust enterprise solution—and a key component in many corporate e-business infrastructures.

At Network Appliance, we believe that business is now moving into the next stage in the evolution of storage. E-business and globalization have heightened the need for constantly available data, and to meet that need, we have broadened our approach to combine storage and data management with content delivery technologies, such as caching hardware and software. Indeed, as we have inte-

grated those technologies, we have come to see data management and content delivery as two parts of the same thing: information management.

The convergence of data management and content delivery has resulted in an integrated platform for han-

dling data—and that, in turn, is opening the door to the creation of an "intelligent infrastructure." By bringing sophisticated tools and innovative technologies to that platform, we are simplifying and streamlining the infrastructure. And at NetApp, we have developed several guiding principles that differentiate the intelligent infrastructure from traditional approaches.

For example, we have found that an intelligent infrastructure should:

- **Draw on the strength of specialization.** Our approach relies on appliances, such as our NetApp filers for storage and our NetCache® for content delivery, rather than the traditional server. An appliance is a system that is dedicated to handling a focused set of tasks; it is optimized to handle those tasks with speed and efficiency and to make data available to all users over the network. By nature, the use of an appliance makes storage easier to manage—you don't program

FROM Shared Vision TO Business Reality

Network-centric storage has quickly become an important part of the enterprise technology landscape—and that's due in part to the cooperative efforts of Network Appliance and Oracle.

"With its shorter time-to-deploy and lower cost of ownership, NetApp's network-centric, appliance-based approach to storage fits well with Oracle's focus on increasing manageability in IT environments," says Doug Kennedy, vice president of Global Partnerships at Oracle. "For example, Oracle combined with NetApp's storage solutions helps companies scale horizontally, at low price points. Overall, we have a shared vision of reducing complexity, in everything from the data center to the edge of the network."



Today, that shared vision is at work at a number of companies. For example:

■ Appshop, an application service provider that offers the full range of the Oracle® E-Business Suite of applications, uses four clustered pairs of NetApp filers that store and serve more than 4TB of customer data in Oracle databases and applications. In fact, Appshop is currently managing more than 100 instances of Oracle

applications on the filers.

■ Three divisions of Continental Airlines rely on NetApp filers and Oracle database applications to support flight scheduling, revenue management, and other applications, which collectively encompass more than 2TB of data.

■ FANUC Robotics North America uses NetApp data management solutions and an Oracle database to give more than 500 engineers fast access to CAD drawings and provide storage for more than 1,200 corporate employees. A NetApp filer provides reliable data access for a mixed community of PC and UNIX® workstation users.

■ The Indian Motorcycle Company manufacturing firm uses NetApp filers and NetCache systems with a full

complement of Oracle applications to ensure that critical production data is available to more than 100 Oracle users—and to provide enhanced database performance and rapid database backup and recovery.

■ Boeing Australia Ltd., a wholly owned subsidiary

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PARTNERSHIPS, ORACLE

of The Boeing Company, has consolidated applications and Oracle databases onto a NetApp filer and just one server to simplify administration and shorten backup times. ■

it to do its job, because that intelligence is already built in. It is a simple, easy-to-use single-function system, without the range of interrelated functions found on the traditional server.

■ **Take an end-to-end approach to managing data.** Data should be kept as close as possible to the person who needs it in order to reduce network and server bottlenecks that slow data delivery. For corporations today, that person could be anywhere around the world. To support far-flung offices with efficiency and speed, you have to distribute data—but at the same time, you also have to

keep solid control over it.

At NetApp, we do that through a Center-to-Edge™ framework that lets companies quickly disseminate content—from e-mail to streaming media—to remote offices and users. This strategy encompasses our highly reliable, highly scalable storage products in the data center, our content delivery appliances at the edge, and a range of applications that allow a company to manage content throughout the network from a central point of control.

■ **Use automation to handle routine tasks** Through our Data ONTAP™ operating system,

we provide a range of data management and data protection tools. Overall, we have focused on automating much of the labor-intensive maintenance work traditionally found in the data center. Beyond that, we have automated much of the movement and placement of data through the network, which helps companies make sure their data is in the right place at the right time. Our tools also gather feedback about data usage patterns and use it to create policies about future movement. That means that IT professionals can not only react to events, but anticipate upcoming needs as well.

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CEO, NETWORK APPLIANCE



DAN WARMENHOVEN is the CEO of Network Appliance. Under his leadership, the company has grown into a \$1 billion organization. NetApp has been ranked in the top 10 of *Fortune* magazine's 100 Fastest-Growing Companies for three years in a row, and in January 2001, Warmenhoven was named one of *Business Week*'s "Top 25 Managers for the Year."

Before joining NetApp, Warmenhoven was CEO of telecommunications manufacturer Network Equipment Technologies. Prior to that, he held executive positions at Hewlett-Packard and IBM.

■ *Provide scalability and flexibility.* Business is always changing, which means that an intelligent infrastructure has to be able to grow, and grow easily. To that end, our filers are designed to be used as building blocks: Capacity can be added to a system in multi-terabyte increments, so that the system can expand as the business grows. This approach lets a storage system be "just robust enough" at all times, and helps companies avoid overbuilding—or overextending their technology budgets.

Currently, a clustered NetApp filer system can support 18TB of storage capacity, and individual units can be linked together to provide virtually unlimited capacity. Today, Yahoo! uses a 550TB NetApp system for its e-mail storage and Yahoo! Properties. Our technology is meeting the needs of major corporations such as Cisco, Chase Manhattan Bank, Deutsche Bank, Chevron, Continental Airlines, and Motorola.

THE PAYOFF—SO FAR

By keeping those principles in mind, we have made a great deal of progress toward the intelligent infrastructure. And already, those efforts have paid off in terms of reduced complexity and costs. In a recent study, INPUT, the Web-based market research firm, compared NetApp's network-centric storage solutions with competitive solutions for Oracle database environments. Among other things, the study found that:

■ Less than 10% of total IT maintenance time was spent on routine backup-and-



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recovery tasks when NetApp solutions were used, compared with more than 35% for competitive solutions.

■ The number of full-time storage administrators was on average 68% lower for NetApp solutions than for competitive storage solutions.

■ Scaling an Oracle database by 200GB was done in minutes with NetApp solutions, as opposed to hours with others.

■ The amount of downtime with NetApp solutions is one-fifth that of competitive solutions.

Those results, of course, illustrate the solid benefits that come with reduced complexity. Overall, INPUT looked at a range of factors—such as expenditures on products, maintenance, upgrades, training, operations, and support—and found that NetApp's solutions provided the lowest total cost of ownership for storage in Oracle database server software environments, routinely showing a 75% reduction compared to NetApp's largest competitor.*

Just as important, reduced complexity can lead to what we call "durable ROI." By reducing costs and the time spent on maintaining the infrastructure, it frees up people and funds for the strategic, value-adding development

efforts that will help the company run efficiently, reach customers, streamline the supply chain, develop new products—in a word, compete.

LIBERATING THE DATA

As for Network Appliance, we plan to keep expanding the intelligent infrastructure, working alongside partners such as Oracle, Intel, Cisco, and the Open Storage Networking initiative. We will continue to focus on eliminating complexity, and transforming e-business architectures from what they too often are today—inhibitors of speed and innovation—into powerful enablers of new processes and new approaches.

Ultimately, I believe that these efforts will lead to the "liberation" of data. In the era of e-business—when enterprises live on information—data is simply too valuable an asset to be kept captive in the data center. It should be an enterprisewide resource that we make available where and when it is needed. It should be accessible across the company, and easily shared with customers and partners. And it should be used to give people the ability to make informed, timely decisions.

That kind of seamless access has long been a central goal for IT professionals and business people alike—and with the intelligent infrastructure, we are well on our way there. By unlocking data, we are making it an even more powerful resource for efficiency and competitiveness—and, I believe, opening the door to the next great leap forward in e-business. €

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