



PRODUCTS

Dennis Williams

Compaq's TaskSmart C2000R Server

Novell Internet Caching System in Action

Compaq's TaskSmart C2000R server is an Internet caching server that can increase the performance of your company's existing web server, allowing it to handle more hits and persistent connections. In addition, the TaskSmart C2000R server can speed up Internet access for your company's users who request content from external web servers.

The TaskSmart C2000R server is easy to configure and to deploy. For example, if you need to install a TaskSmart server at a remote location on your company's network and that location does not have an IT staff, you can configure the TaskSmart server in minutes at your company's head office and then send the server to the remote location. Any nontechnical person can connect the server to the network by plugging in the power and network cables. You can then immediately begin managing the server from your desktop.

The TaskSmart C2000R server is part of a three-product family of Compaq TaskSmart servers. The difference between the TaskSmart servers is capacity and performance. For example, the TaskSmart C2000R server is the largest server in the C-series family, containing 1 GB of memory, six 9.1 GB hard drives, and five 10/100 Ethernet ports. You can use the TaskSmart servers individually, or you can combine the servers in a tiered architecture to handle your company's web server requests. (For more information about other TaskSmart servers, see "Compaq's TaskSmart Family" on p. 40.)

Although the name on the box says Compaq, Novell Internet Caching System (ICS) is the heart of the TaskSmart servers. Given Compaq's long-standing relationship with Novell, you are probably accustomed to running Novell software on Compaq hardware. In the case of the TaskSmart servers, Compaq has optimized its hardware platform for use with Novell ICS. The combination of Compaq hardware and Novell ICS provides a powerful platform that maximizes server performance and available Internet bandwidth for incoming and outgoing requests for Internet-based content.

By combining the TaskSmart servers with Novell ICS, Compaq has created a turnkey appliance-type product. Compaq is promoting this appliance-type architecture because such products are easy to implement for fault-tolerant e-business solutions.

WHY USE A CACHING SERVER?

Deploying an Internet caching server has many benefits, including the following:

- WAN bandwidth consumption decreases as the number of cache hits increases.
- The number of requests your company's web server can effectively handle increases significantly.
- Response times are reduced, increasing user productivity and goodwill.
- Your company's Return on Investment (ROI) increases because proxy servers and web servers are freed up to perform other tasks.

Many companies use proxy servers that use a general-purpose platform and operating system to cache web server content. These proxy servers offer limited caching capabilities. In addition, caching is just one task these proxy servers perform, and the hardware and the operating system hosting the proxy servers are not optimized to perform caching.

The TaskSmart C2000R server, on the other hand, specializes in one thing: Internet caching. As a result, the TaskSmart C2000R server performs this function much better than general-purpose proxy servers. In addition, the TaskSmart C2000R server allows you to offload caching from your company's web server. As a result, the web server can use all of its resources to service requests, improving its performance even more.

If you use the TaskSmart C2000R server to cache web server content, the difference in your company's web site can be phenomenal. For example, suppose that a given web server can handle between 50 to 100 requests per second. If you add a TaskSmart C2000R server, this web server can immediately handle up to 1,200 requests per second.

There are two common implementations for caching servers. You can configure the TaskSmart 2000R server to support either configuration or both at the same time.

- Reverse Proxy Caching. If you want to provide quicker response times for customers accessing your company's web site, you can configure the TaskSmart C2000R server to use reverse proxy caching, or server acceleration. To configure the TaskSmart C2000R server to use reverse proxy caching, you put the server in front of the end point, or target web server. The TaskSmart C2000R server then increases the web server performance by preloading the information that customers request most frequently. By configuring the TaskSmart C2000R server to use reverse proxy caching, you can have up to 100,000

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Compaq's TaskSmart C2000R Server

Compaq's TaskSmart Family

Compaq offers three TaskSmart servers. You can use the servers individually, or you can configure them to work together to best meet your company's needs.

	C1200R	C1500R	C2000R
Memory	256 MB	512 MB	1 GB
Hard Drive	One 9.1 GB Drive	Two 9.1 GB Drives	Six 9.1 GB Drives
Ports	Two 10/100 Ethernet Ports	Three 10/100 Ethernet Ports	Five 10/100 Ethernet Ports
Form Factor	3U Rack Mount	3U Rack Mount	3U Rack Mount
Other	Optional Redundant Power Supply	Disk Cloning and Mirroring; Optional Redundant Power Supply	Disk Cloning and Mirroring; Standard Redundant Power Supply
Price (U.S. \$)	\$8,999	\$10,999	\$20,750

persistent connections (the TaskSmart C2000R server's theoretical maximum).

- **Forward Proxy Caching.** If you want to speed your employees' access to external web sites or to your company's intranet, you should configure the TaskSmart C2000R server to use forward proxy caching, or client acceleration. For example, employees at a branch office can access precached content on a local TaskSmart C2000R server, instead of having to access that information across a WAN link. Forward proxy caching puts the content local to the users requesting it, speeding access and reducing valuable WAN bandwidth consumption.

NOVELL ICS

Novell ICS is the industry's fastest, most scalable, and most cost-effective Internet caching solution. The superior performance capability of Novell ICS was recently proven in tests conducted at the National Laboratory for Applied Network Research (NLANR), a National Science Foundation networking research and support organization. In head-to-head competition with products from IBM, InfoLibria, Network Appliance, the University of Wisconsin, and NLANR itself, Novell ICS emerged as the all-around leader in performance and price versus performance value. (For more information about the NLANR competition, see <http://www.novell.com/press/archive/1999/04/pr99035.html>. For more information about the NLANR, visit <http://www.nlanr.net>.)

Novell ICS increases the capacity of any web server ten-fold, enabling the deployment of high-performance, content-rich web storefronts that increase buyer satisfaction, attract new customers, and

drive new revenue opportunities. Because Novell ICS is based on open standards, it is compatible with any environment, including environments running TCP/IP, FTP, HTTP, and WCCP. Novell ICS also reduces overall bandwidth consumption, leveraging your company's existing infrastructure.

Novell ICS is also compatible with Simple Network Management Protocol (SNMP), enabling you to easily integrate Novell ICS with your company's network management console. (For more information about Novell ICS, visit <http://www.novell.com/products/nics>.)

FAULT TOLERANCE

Novell ICS software doesn't require hardware-based fault-tolerance. After all, much of the information cached is public information, such as web objects. If the TaskSmart C2000R server fails, you only lose a drive full of web objects—the server will retrieve these objects again from the original web server the next time they are requested.

However, some of the information stored on the TaskSmart C2000R server, such as system configurations and log files, is critical. These log files allow you to discover information about hackers or employees trying to access inappropriate sites. To ensure that this critical information is secure, Novell ICS automatically mirrors this information in systems that contain more than one drive, such as the TaskSmart 2000R server.

COMPAQ'S IMPLEMENTATION OF NOVELL ICS

To create the TaskSmart C2000R server, Compaq integrated its hardware with Novell's ICS software to create a solution that includes the following advantages:

- Compaq Disk Configuration utility
- Compaq Insight Manager (CIM), which allows you to manage the server hardware
- Single vendor support for both the hardware and software

Compaq Disk Configuration Utility

The Disk Configuration utility is a web-based tool that facilitates the deployment of the TaskSmart C2000R server in a remote branch office that doesn't have an IT staff to perform the installation. Using the Disk Configuration utility, you can create a diskette with the configuration information for the TaskSmart C2000R server. You can then ship the server to the branch office. At the branch office, someone can simply connect the network and power cables, insert the diskette into the TaskSmart C2000R server's floppy diskette drive, and turn on the server.

In fact, if you know the TaskSmart C2000R server's intended configuration, you don't even need to have the TaskSmart C2000R server on-hand to create this diskette. (Of course, you must have the Disk Configuration utility.) You can have the server shipped to the intended site and then use the Disk Configuration utility to create a configuration diskette, which you then ship to the site.

When the TaskSmart C2000R server boots, it searches the floppy diskette drive for the configuration file and uses this file to make the appropriate configuration changes to the server. You can then connect to the remote server and manage it via your company's network.

Because you don't need a technical person to install the TaskSmart C2000R server, it is an ideal solution for remote branch offices. For example, suppose that you work for a large school district and

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you need to install the TaskSmart C2000R server in a school across town. You can save the configuration information to the diskette, send the TaskSmart C2000R server to the school, and ask a teacher to insert the diskette into the server and turn it on. You can then manage the server from the district headquarters.

To create the configuration diskette, you don't even need to be connected to a network. However, you do need to know the basic IP information about your company's network, including the following:

- The IP address for the server
- The Domain Naming System (DNS) server address so you can direct URLs to the actual IP addresses
- The gateway address for the network, which could be the gateway to the Internet or to the next LAN

Although the TaskSmart C2000R server accesses configuration information from the floppy diskette drive, the server doesn't boot from the diskette—the server boots from the hard drive. During the boot sequence the TaskSmart C2000R server checks the floppy diskette drive for the configuration file, which is called *AUTOLOAD.NAS*. If the TaskSmart C2000R server finds the configuration file on the diskette, the server uses this information to configure itself and then continues to boot from the hard drive. If the server does not find the configuration file on the diskette, the server simply continues to boot from the hard drive.

The TaskSmart C2000R server is created to be as foolproof as possible. There is no port for a monitor or a keyboard—just ports for power and network cables. You can't stick a diskette into the floppy diskette drive and destroy the unit. If you insert a boot diskette, the TaskSmart C2000R server simply won't read it.

When the TaskSmart C2000R server is configured with the appropriate IP information, you simply turn on the server, and it automatically connects to the network. You can then begin performing various management tasks, including configuring the server, choosing a cache mode (client or server acceleration, or both), accessing log files and status reports, changing access rights, and blocking URLs.

CIM

If your company uses Compaq servers, chances are that you are already running

CIM. This management utility communicates with Compaq hardware to provide prefailure warnings. CIM can detect failing components, such as hard drives or power supplies, and warn you so you can fix them before these components actually fail.

Single Vendor Support

Compaq also provides a single point of support for the TaskSmart C-series servers. Compaq technical support provides support for both hardware and software problems. Compaq also provides its standard three-year hardware warranty. (For more information about how the TaskSmart C2000R server compares with its competition, see "Sizing Up the Competition" on p. 42.)

PROFILE OF AN IDEAL CUSTOMER

The TaskSmart C2000R server is an ideal solution for the education market. Because schools typically filter web access, and many users frequently access the same web sites, a school may be able to cache as much as 90 percent of its Internet activity.

Another good prospect for the TaskSmart C2000R server is an Internet service provider (ISP). If an ISP deploys a caching server at its regional points-of-presence (POPs) and subscribers request cached pages, the ISP can save substantial bandwidth that would otherwise be required to redirect those requests to the origin web site.

As mentioned earlier, the TaskSmart C2000R server will also benefit companies that host external web sites. The TaskSmart C2000R server enables web servers to handle more incoming connections. As a result, companies will save money on web servers, and their customers will get faster service.

In addition, the TaskSmart C2000R server can help companies to provide faster Internet and intranet access for

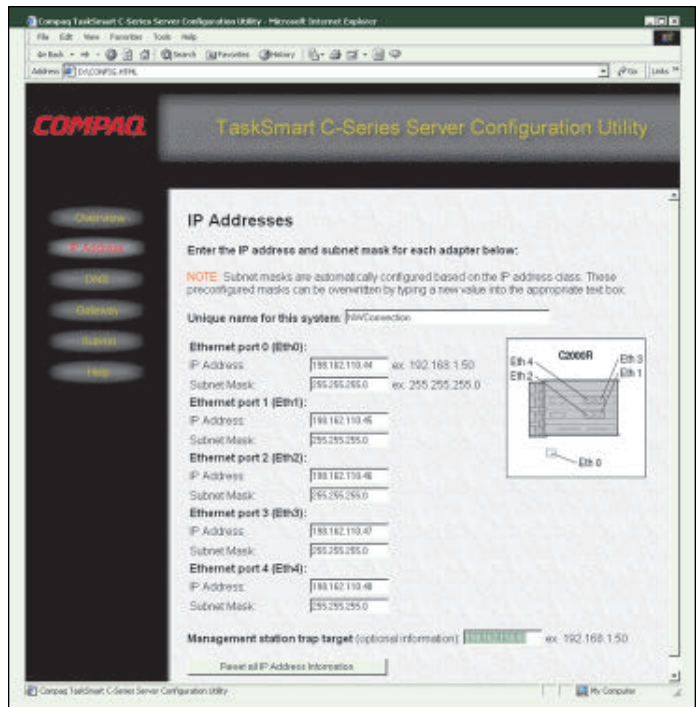


Figure 1. It only takes a few minutes to configure the TaskSmart C2000R server if you know the necessary IP information.

their employees. For example, suppose that all of your company's employees must access Netscape's web site to download the latest browser. Without a caching server, each employee must access Netscape's web site individually to download the file, and each download may require 20 to 40 minutes.

If the Netscape browser were cached on a local TaskSmart C2000R server, the browser would be downloaded across the Internet only once. Each subsequent request for the browser would come from the local TaskSmart C2000R server, reducing download times to a few minutes and conserving Internet bandwidth.

The TaskSmart C2000R server can also help call centers or support centers that need to access information on their company's intranet. If you stored that information on the TaskSmart C2000R server, support technicians could access the information more quickly. As a result, the length of support calls could be shortened.

Remote offices can also benefit from using the TaskSmart C2000R server. Information can be stored closer to those offices, reducing the time that users at remote offices must wait to access information. Ideally, you should implement a caching server at both ends of the WAN link.

Sizing Up the Competition

Since we didn't test or compare other vendors' solutions in this review, we must base any competitive information on product specifications and common sense. The most immediate competitors to Compaq's TaskSmart C2000R server are products from other companies that also license Novell Internet Caching System (ICS). (For more information about these products, visit <http://www.novell.com/products/nics/oempartners>.) When comparing these products, we suggest you use questions such as the following to gather information about each product:

- Has the hardware been optimized to run Novell ICS?
- What kind of management utilities are offered?
- Is the product truly plug-and-play? That is, what kind of configuration must you perform?
- Does the product support remote deployment for branch offices?
- How has the vendor designed the hardware platform to eliminate bottlenecks that are created in a caching environment?

COMPARING TRADITIONAL CACHING VENDORS

Other competitors to the TaskSmart servers include traditional caching vendors such as CacheFlow Inc., Network Appliance, and Cisco Systems. Compaq's advantage over these companies is primarily price and performance. The price range of many of these other caching servers is more than U.S. \$50,000 and frequently around U.S. \$90,000 per unit. The TaskSmart C2000R server offers more hits per dollar: The TaskSmart C2000R server retails at approximately U.S. \$20,000 and offers performance gains of about two to three times that of these competitors.

OUR TESTING EXPERIENCE

We installed the TaskSmart C2000R server in two environments. Our first installation was in a small lab with a mixed-environment test network. After connecting the power and network cables, we ran the Disk Configuration utility from a workstation. (The TaskSmart C2000R server includes three CD-ROMs—one with documentation, one with the Disk Configuration utility, and one with CIM and management agents for SNMP-based management tools.)

The Disk Configuration utility, shown in Figure 1, is easy to use. (See p. 41.) It took only a few minutes to complete the configuration. We saved the configuration file to a diskette, inserted the configuration diskette into the TaskSmart C2000R server, and turned it on. The TaskSmart C2000R server read the disk and configured itself. We could then access the server from our web browser by entering its IP address in the browser's address field.

Our second test environment was a company with a persistent, high-speed connection (T1 line) to the Internet. We

configured the TaskSmart server to match the company's network environment. We kept the TaskSmart C2000R server inside the firewall and configured the server for forward proxy caching.

To test this feature, we downloaded a large file from the Internet—a process that took several minutes. Next, we downloaded the same file from another workstation. This download took only seconds since the file came directly from the TaskSmart C2000R server.

We left the server at this company for several days, and the longer it was there, the better the performance users experienced. In fact, when we removed the TaskSmart C2000R server from the company's network, the users were upset because their Internet access slowed.

CONCLUSION

The TaskSmart C2000R server's price of U.S. \$20,000 per unit may seem expensive, but when you consider savings in bandwidth, web server performance, and reduced administrative overhead, this server becomes quite cost effective. After

MINIMIZING HARDWARE COSTS

To minimize costs, Compaq identifies the bottlenecks to performance in a caching environment. Compaq then addresses these bottlenecks to maximize performance without over-engineering. Bottlenecks are likely to occur in the following areas:

- Quantity of RAM
- Quantity of disk space
- CPU speed
- Network throughput

The amount of available RAM and disk capacity is important to the performance of a caching system. However, CPU speed and network throughput are much less important. As a result, multiprocessor servers are generally considered overkill because caching is not a CPU-intensive operation.

Likewise, 100-Mbps adapters in a server may be overdoing it, since most companies don't have a 100-Mbps connection to the Internet. Instead, most companies have 1.5-Mbps up to 45-Mbps Internet connections. In this case, installing higher network throughput adapters for caching may be a waste of resources.

To maximize caching performance, you should have a properly tiered caching architecture. In other words, you should have the right units at the right locations in the enterprise. For example, depending on your company's network traffic and desired performance, you could combine several TaskSmart C-series servers. For example, you could place the TaskSmart C1200R server (with only one drive) and the TaskSmart C1500R server (with two drives) with parent servers caching the subordinate servers' content. ●

running the TaskSmart C2000R server through the paces, we're confident of its ability to offer outstanding performance at a price that will allow the server to quickly pay for itself. Just how quickly depends on your company's particular environment.

If your company has dynamic content on its web site, you may not think caching will improve the performance of this web site. However, even NASDAQ, which has considerable dynamic content, can cache about 40 percent of its web content. (To find out how cachable your company's web site is, visit <http://www.ircache.net/cgi-bin/cacheability.py>.)

For more information about Compaq's TaskSmart servers, visit <http://www.compaq.com/tasksmart>. For more information about Novell ICS, visit <http://www.novell.com/nics>. For more information about caching, visit <http://www.caching.com>.

Dennis Williams is director of ProductReviews.com, an Internet site specializing in networking product reviews and product improvement consulting. You can reach him at Dennis@ProductReviews.com. ●