

# IDACORP Energy

## Opening Windows to Novell Solutions

by Cheryl Walton

In early 2001, before IDACORP Energy moved into its new office building on Mitchell Street in Boise, Idaho, the company's IT department had some networking decisions to make—and not much time in which to make them. A wholly owned subsidiary of IDACORP Inc., IDACORP Energy is an energy marketing and services company that conducts business in 31 U.S. states and two Canadian provinces. (For more information about IDACORP Energy, visit [www.idacorpenergy.com](http://www.idacorpenergy.com). For information about IDACORP Inc, visit [www.idacorpinc.com](http://www.idacorpinc.com).)

The first big decision the company's IT department had to make was whether to connect its new network to IDACORP Inc.'s corporate network or to create an independent network. For business reasons, Tami Spangler, IDACORP Energy's directory of IT, opted to make IDACORP Energy's network independent.

As Spangler explains, the business needs of other IDACORP Inc. subsidiaries are quite different from IDACORP Energy's business needs and, therefore, so are the networking needs. For example, while network uptime is important for all of IDACORP Inc.'s subsidiaries, network uptime is critical for IDACORP Energy. Therefore, IDACORP Energy requires a particularly reliable, stable network. "We felt we could do a better job" of meeting IDACORP Energy's networking requirements by creating a separate network, Spangler adds.

Spangler and her department then had to decide what kind of network could best meet IDACORP Energy's needs. At its inception, IDACORP Energy's network didn't include any Novell products. However, after assessing the shortfalls of this network and determining the needs of IDACORP Energy's users, the company needed to make some changes. Today, that network is running ten products from Novell, including the following:

- NetWare 6
- Novell Cluster Services 1.6
- Novell Portal Services 1.5
- Novell iFolder 1.01
- Novell eGuide 2.0
- Novell ZENworks for Desktops 3.2
- Novell eDirectory 8.5
- Novell Account Management 2.1 for Windows 2000
- Novell SecureLogin 2.51
- Novell iChain 2.0

Illustration: Debbie Reynolds



The final four products on this list comprise IDACORP Energy's implementation of a Novell Secure Access solution. (A Novell Secure Access solution incorporates three or more Novell Secure Access products. Novell Secure Access is a suite of access management and security products that you can use alone or in combination to control access to network resources. For more information about Novell Secure Access, visit [www.novell.com/products/secureaccess](http://www.novell.com/products/secureaccess).)

### IN THE BEGINNING

In the beginning, IDACORP Energy's IT department implemented a network that ran solely on Microsoft and Sun Microsystems operating systems. In addition to redundant firewalls, routers, and Internet connections (one wired, one wireless), this network included the following components:

- 28 Windows 2000 servers. Twenty-four of these servers were located in IDACORP Energy's main office in Boise, Idaho. (Because the main office resides on Mitchell Street, it is called the *Mitchell site*.) Two of the 24 servers were running file and print services on a two-node cluster, and two servers were running Microsoft Exchange 2000 services on a two-node cluster. The remaining 20 servers were running custom and commercial applications, such as Microsoft SQL Server 2000. These servers were connected over a Gigabit Ethernet LAN backbone.

Of the four remaining servers, two servers were located at IDACORP Energy's disaster recovery site, which is located approximately 5 km from the Mitchell site. These servers were running the company's Exchange 2000 and SQL Server 2000 applications and were connected over a Gigabit Ethernet LAN backbone. The disaster recovery LAN was connected to the Mitchell site's LAN over two T3 WAN connections.

The two remaining servers were located at IDACORP Energy's Houston office, where the company's gas marketing



**Figure 1.** To provide secure remote access to network information and services, IDACORP Energy uses Novell iChain and Novell Portal Services. Users first authenticate to iChain. iChain then displays the company's Novell Portal Services portal, through which these users can access the information and services that they are authorized to receive.

operation is located. One of these servers was running Exchange 2000, and the other server was running file and print services. The servers were connected over a Gigabit Ethernet LAN backbone. The Houston LAN was connected to the Mitchell LAN over a T1 WAN connection.

- Six Sun Enterprise 2.8 servers. A Solaris E5500 server and a Solaris E4500 server were running IDACORP Energy's most critical energy marketing applications on the company's high-availability production cluster at the Mitchell site. Two non-clustered application development servers—a Solaris E3500 server and a Solaris E450 server—were also located at the Mitchell site. All four of these servers were connected over the company's Gigabit Ethernet backbone.

In addition, two Solaris E450 servers running on IDACORP Energy's test cluster were located at the company's disaster recovery site. IDACORP Energy replicates data between the production cluster at the Mitchell site and this cluster at the disaster recovery site. The Solaris servers at IDACORP Energy's disaster recovery site were connected to the disaster recovery LAN via the company's Gigabit Ethernet backbone.

- 267 workstations. Approximately 144 users at the Mitchell site were using 230

workstations, which were connected to the LAN backbone via 100BASE-T Ethernet. (IDACORP Energy's energy marketers require at least two workstations each.) Six users at IDACORP Energy's Houston office were using 12 workstations, which were connected to the Houston LAN via 100BASE-T Ethernet.

Finally, 25 workstations were located at the disaster recovery site and connected to the LAN via 100BASE-T Ethernet. All of the workstations were running Windows 2000 client software and various Windows-based applications.

- 30 Windows 2000 laptops. These laptops were running various Windows-based applications.

**YOU SHOULD LOOK, NOT TOUCH**

Even before the network described above was up and running, the IT staff knew there were a few problems to solve. For example, Jim Acevedo, IDACORP Energy's manager of network infrastructure, realized that desktop management in IDACORP Energy's planned Windows environment could be a problem.

Before moving to the new location, IDACORP Energy had been using Microsoft Systems Management Server (SMS) to manage user workstations in its Windows environment. "SMS didn't scale well, didn't work like we wanted it to, and

wasn't very stable," Acevedo notes. As a result, the IT staff had to physically access users' workstations every time they needed to update old software or deploy new software. "It was the first time in a long time I'd seen technicians running around touching workstations all the time," Acevedo recalls.

Physically going from workstation to workstation takes time—time that would be in short supply for IDACORP Energy's IT staff of six, which would need to provide 100 percent network availability for 150 users. Furthermore, manually performing software updates and installations on 267 workstations would be, to put it mildly, not the most interesting way for IDACORP Energy's IT staff to spend the day.

In a previous job, Acevedo had used ZENworks for Desktops to centrally manage workstations. Based on this previous experience, Acevedo recommended that IDACORP Energy look at ZENworks for Desktops to solve its impending workstation-management problem. To demonstrate the feasibility of this recommendation, Acevedo created a ZENworks for Desktops demonstration in the company's test lab. (For more information about this demonstration, see "A Hands-Off Demonstration," on p. 28.)

Acevedo then invited Spangler and other members of IDACORP Energy's management team to see how one network administrator can use ZENworks for Desktops to manage multiple workstations—without having to physically lay hands on those workstations. The response to this demonstration was overwhelmingly positive. As Acevedo explains, ZENworks for Desktops "sold itself."

Because Acevedo was unfamiliar with deploying Novell products in a pure Windows 2000 environment, he contacted Novell Consulting to help develop and deploy a ZENworks for Desktops solution on IDACORP Energy's fledgling network. Reid Oakes, a senior technical manager for Novell, led the team that helped IDACORP Energy do just that, and more.

**MORE TO MANAGE THAN DESKTOPS**

Because ZENworks for Desktops requires eDirectory, adding ZENworks for Desktops to IDACORP Energy's network meant adding another directory. The company's IT staff would need to manage user accounts in two directories—eDirectory

and Microsoft Active Directory—unless Novell Account Management was included in the ZENworks for Desktops solution. Novell Account Management, which ships with eDirectory, enables you to consolidate user accounts on multiple operating systems in one directory: eDirectory.

Of course, accounts that give users access to server-based resources aren't the only user accounts IDACORP Energy's IT department had to manage and maintain. IDACORP Energy's users also needed to access 20 applications—such as marketing and financial applications. Because the information these applications provide is restricted to authorized users, IDACORP Energy's users had to authenticate to each of these applications separately. As you know, authenticating to several applications can be annoying and time-consuming.

However, convenience and time aren't the only downside of authenticating to multiple applications. Multiple authentications also present a security risk. When users are required to remember multiple username and password combinations, they generally don't. They write down their login credentials instead.

Most users today are too security savvy to write these credentials down in obvious places. If login credentials are written down anywhere, however, someone can potentially find those credentials and use them to access confidential information. If users don't write down multiple login credentials, on the other hand, these users are apt to regularly forget passwords. Forgotten passwords can add significantly to the burden of help-desk personnel, who must then reset these passwords.

To address IDACORP Energy's security concerns and to streamline the process of accessing applications, Novell Consulting suggested that IDACORP Energy deploy another eDirectory-based product—SecureLogin. SecureLogin provides single sign-on access to network and web-based applications—provided users have access rights to those applications, of course.

#### AND ANOTHER THING

IDACORP Energy has several employees who must travel to sell the company's long-term energy contracts and services. For some time, these and other users had been pressing IDACORP Energy's IT department to provide easier

and less restrictive remote access to IDACORP Energy's network than its Virtual Private Network (VPN) solution provided.

Only a few people could use this VPN solution. Specifically, only users who could get IDACORP Energy's VPN client software to run on their computers could use the VPN solution, and this task, Acevedo explains, "wasn't really easy to do." The VPN client was so difficult for IDACORP Energy's average users to install and configure that, according to Acevedo, only a few network administrators were able to accomplish this task and use the VPN.

In addition, Spangler wanted to implement a solution that could provide remote access to IDACORP Energy's customers and business partners. To provide metered data to its customers, IDACORP Energy was then using an Electronic Data Interchange (EDI) solution, which Spangler found "very time-consuming" to manage. Worse from a security standpoint, IDACORP Energy was using e-mail to communicate information to business partners. As Spangler

wryly notes, this situation was "not ideal."

To address all of IDACORP Energy's remote access problems in a single solution, Spangler had originally envisioned deploying a secure web site. Using secure web servers, Spangler reasoned, IDACORP Energy's employees, customers, and business partners could access the resources they needed.

Although IDACORP Energy needed a user-friendly and secure remote access solution for its employees, customers, and business partners, IDACORP Energy had to put its remote access solution on hold until after it moved to the new location. More important than remote access, in Spangler's estimation, was solving the problem of managing desktops and simplifying authentication. For the purposes of this article, the solution to this problem will be called *Solution 1*, which included the following products:

- ZENworks for Desktops
- Novell Account Management
- Novell SecureLogin

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## A Hands-Off Demonstration

Like a picture, a demonstration can be worth a thousand words. Therefore, to sell the idea of deploying ZENworks for Desktops to IDACORP Energy's management team, Jim Acevedo, IDACORP Energy's manager of network infrastructure, created a demonstration.

In the company's test lab, Acevedo installed and configured NetWare 5.1, Novell eDirectory 8.5, ConsoleOne 1.2d, and ZENworks for Desktops 3.0 server components on a Dell OptiPlex Desktop computer with a 1 GHz processor, 256 MB of RAM, and a 20 GB hard drive. Acevedo then installed Novell client software for Windows NT/2000 4.1 and ZENworks for Desktops 3.0 client components on five Windows 2000 workstations. These workstations were also Dell OptiPlex Desktop hardware with a 1 GHz processor.

Next, Acevedo created several policies to manage these workstations. Specifically, Acevedo created a policy that specified workstation background, a policy

that specified workstation color scheme, and a policy limiting user access to Windows Network Neighborhood. Acevedo also created several Application objects for his demonstration, including objects for Microsoft Office 2000 Pro, Visio 2000, Adobe Acrobat Reader, Apple QuickTime Player, and other small applications. (ZENworks for Desktops uses Application objects to distribute and install applications on users' workstations.)

To demonstrate how ZENworks for Desktops can automatically repair corrupted applications, Acevedo also created a snapshot image of a few of these applications. Acevedo then used these snapshot images, policies, and Application objects to demonstrate for seven members of IDACORP Energy's technical and management teams the extent to which ZENworks for Desktops can simplify workstation management. Seeing was believing: IDACORP Energy is now using ZENworks for Desktops 3.2 to manage 267 workstations located in the company's main and branch offices. ●

### SOLUTION 1

Because all of the Novell products in Solution 1 rely on eDirectory, the implementation team began by installing eDirectory 8.5 on a new Windows 2000 server. This server was running on Compaq ProLiant DL380 hardware with two 1.1 GHz Pentium III processors, 1 GB of RAM, and 100 GB of Redundant Array of Independent Disks (RAID) 5 storage.

The eDirectory installation program created a Tree object, thereby creating IDACORP Energy's eDirectory tree. (In previous versions of eDirectory, the Tree object is called the Root object.) Next, the implementation team installed ConsoleOne 1.2d—the version of ConsoleOne that ships with eDirectory 8.5.

After installing ConsoleOne, the implementation team used ConsoleOne to create two Organizational Unit (OU) objects in IDACORP Energy's new eDirectory tree—one OU for the Mitchell site and one OU for the branch office in Houston.

### Taking Management Issues Into Account

To consolidate user-account management, the implementation team next

installed Novell Account Management 2.1 for Windows 2000. This software uses Novell's DirXML technology to synchronize User objects and attributes between eDirectory and Active Directory. The installation wizard for Novell Account Management 2.1 for Windows 2000 automatically created new user accounts in IDACORP Energy's eDirectory tree. These user accounts corresponded to user accounts in the company's Active Directory domain.

The implementation team then installed eDirectory 8.5, ConsoleOne 1.2d, and the Password host component of Novell Account Management 2.1 for Windows 2000 on a second Windows 2000 server. This server was running on Compaq hardware identical to that of the first server. This second server receives all password changes from IDACORP Energy's Windows 2000 users. The Password host component of Novell Account Management 2.1 then synchronizes these password changes with eDirectory passwords.

### ZENworks for Desktops

The implementation team then prepared a third Windows 2000 server for ZENworks for Desktops 3.2. This server was also running on Compaq ProLiant

DL380 hardware with two 1.1 GHz Pentium III processors, 1 GB of RAM, and 100 GB of RAID 5 storage. To prepare this server, the implementation team installed eDirectory 8.5 and ConsoleOne 1.3.2, which are the software prerequisites for installing ZENworks for Desktops 3.2 on Windows 2000 servers.

To help the implementation team deploy ZENworks for Desktops 3.2, Novell Consulting contacted CenterLogic, a Novell alliance partner that specializes in implementing ZENworks for Desktops and other network management solutions. (CenterLogic is a consulting firm based in Portland, Oregon. For more information about CenterLogic, visit [www.centerlogic.com](http://www.centerlogic.com).)

CenterLogic and the implementation team used the ZENworks for Desktops 3.2 Custom Install option to install and configure several ZENworks for Desktops services, including the Automatic Workstation Import and Workstation Inventory. The Automatic Workstation Import service enables ZENworks for Desktops to automatically create Workstation objects in IDACORP Energy's eDirectory tree. The Workstation Inventory service enables ZENworks for Desktops to inventory hardware and software configurations on user workstations. (For more information about the Automatic Workstation Import service and other ZENworks for Desktops components, see "ZENworks for Desktops Installation Particulars" on p. 30.)

### One Last Touch

With ZENworks for Desktops 3.2 server components installed and configured, the implementation team turned its attention to IDACORP Energy's workstations. ZENworks for Desktops 3.2 requires workstations to run Novell client software. Therefore, the implementation team first installed Novell Client for Windows NT/2000 4.81 and then installed ZENworks for Desktops 3.2 client components on each of the 230 Windows 2000 workstations and 30 laptops at the Mitchell site.

After these workstation components were installed and configured, IDACORP Energy's IT department no longer had to physically access workstations to deploy and update software at the Mitchell site. In fact, the implementation team didn't even have to manually add these workstations to IDACORP's eDirectory tree. Instead, the implementation team enabled

the Automatic Workstation Import and Removal services and configured policy objects for these services. When users logged in to eDirectory, ZENworks for Desktops automatically created Workstation objects for the users' workstations.

In addition to saving precious time for IDACORP Energy's IT staff, ZENworks for Desktops saved IDACORP Energy's network from the Goner virus, which spreads via e-mail attachments. The company's fledgling network contracted this virus shortly after Solution 1 was completed. To combat a full-blown infection, IDACORP Energy's IT staff used ZENworks for Desktops to clean infected workstations and prevent infection in healthy workstations. (For more information about how IDACORP Energy thwarted the Goner virus using ZENworks for Desktops, see "Goner's a Goner" on p. 32.)

#### **Houston: We Have No Desktop Management Problem . . .**

After the implementation team finished installing and configuring ZENworks for Desktops 3.2 at IDACORP Energy's Mitchell site, Acevedo flew to Houston. There, he installed and configured ZENworks for Desktops again on a Windows 2000 server. Like its Idaho counterpart, this server was running on Compaq ProLiant DL380 hardware with two 1.1 GHz Pentium III processors, 1 GB of RAM, and 10 GB of RAID 5 storage.

This server mirrored the configuration of the ZENworks for Desktops server at IDACORP Energy's Mitchell site—with one exception: When it came time to configure this server's Workstation Inventory services, Acevedo configured this server as a Leaf server rather than a Root server.

As a Leaf server, this server collects information from each of the Houston office's 12 Windows 2000 workstations. This Leaf server then sends this information to the ZENworks for Desktops Root server at IDACORP Energy's Mitchell site. Acevedo also installed Novell and ZENworks for Desktops client software on the 12 workstations at the Houston site.

**Note.** Acevedo also installed ZENworks for Desktops on the 25 workstations at the disaster recovery site.

#### **Simplify Access to Applications With SecureLogin**

With Novell Account Management successfully installed, IDACORP Energy's

IT staff didn't need to manage user accounts in both eDirectory and Active Directory. Neither did IDACORP Energy's users need to authenticate separately to these directories. However, users still had to authenticate separately to more than 20 commercial and custom applications.

To provide single sign-on access to these applications, the implementation team deployed SecureLogin 2.51 on IDACORP Energy's network. The implementation team began this task by installing the SecureLogin 2.51 server component on IDACORP Energy's two Novell Account Management servers. This server component extended the User objects in IDACORP Energy's eDirectory tree to include the specialized attribute in which SecureLogin stores user login credentials.

The implementation team then used ZENworks for Desktops to install and configure SecureLogin 2.51 client software on all 267 of IDACORP Energy's user workstations. The implementation team also used ZENworks for Desktops to install SecureLogin snap-in modules for ConsoleOne on IDACORP Energy's six network management workstations.

Finally, the implementation team enabled SecureLogin to provide single sign-on access to users' applications. Out of the box, SecureLogin provides single sign-on access to a number of predefined applications. For example, SecureLogin includes support for Oracle financial and database applications, SQL Server 2000, web-based applications, and Citrix applications.

For applications without predefined support, the implementation team used the SecureLogin wizard. This wizard helped the implementation team create login scripts for 17 applications—seven for IDACORP Energy's custom Windows-based applications and ten for its custom web-based applications.

These login scripts contain application-specific commands for requesting login credentials. The SecureLogin component running on users' workstations listens for and responds to these commands.

The first time the component detects an application's login request, it waits for the user to respond by providing his or her login credentials. This component then displays a dialog box, asking the user if he or she wants SecureLogin to save his or her login credentials for this

application. If the user answers Yes to this question, SecureLogin stores these credentials—in an encrypted format—in the user's User object.

Subsequently, when SecureLogin detects this application's call for authentication—that is, when the user launches this application—SecureLogin retrieves these credentials from the user's User object and provides these credentials to the requesting application. With SecureLogin, IDACORP Energy's users need remember only a few login credentials: credentials for logging in to IDACORP Energy's network (which are eDirectory login credentials) and credentials for three or four applications running on IDACORP Energy's Sun servers. (The version of SecureLogin that IDACORP Energy installed, version 2.51, does not support these applications.)

Because IDACORP Energy's users must now remember only a fraction of the username-password combinations they formerly had to remember, these users are less likely to write down these credentials. As an added security benefit, these credentials are stored in individual

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## ZENworks for Desktops Installation Particulars

While installing Novell ZENworks for Desktops 3.2 on the Windows 2000 server, IDACORP Energy's implementation team selected the ZENworks for Desktops Custom Install option. The Custom Install option enabled the team to install the following ZENworks for Desktops software components:

- Workstation Inventory and Sybase Database
- Automatic Workstation Import
- Workstation Imaging
- Application Management

### WORKSTATION INVENTORY AND SYBASE DATABASE

The implementation team configured the Workstation Inventory component to scan the hardware and software configurations of the workstations on the ZENworks for Desktops server's LAN segment—that is, the 230 workstations and 30 laptop computers at IDACORP Energy's main office. (This office is called the *Mitchell site*.) The Sybase Database component, on the other hand, enabled ZENworks for Desktops to process and store this information.

While installing these components, the implementation team selected the Root server role for this server. As a Root server, this ZENworks for Desktops server can receive and store workstation inventory information from ZENworks for Desktops Leaf servers. Leaf servers are ZENworks for Desktops servers that perform inventory services for workstations on remote LAN segments and then upload the resulting inventory information to Root servers.

### AUTOMATIC WORKSTATION IMPORT

During the installation process for the Automatic Workstation Import and Automatic Workstation Removal components, the implementation team selected the Import/Removal role for this server, thereby enabling ZENworks for Desktops to perform these services. The Automatic Workstation Import service creates Workstation objects in Novell eDirectory when users log in from workstations for which Workstation objects have not already been created. ZENworks for Desktops uses these Workstation objects to manage users' workstations.

The Automatic Workstation Removal service, on the other hand, removes obsolete Workstation objects from eDirectory. (A Workstation object is said to be obsolete if a user has not logged in from the workstation this object represents in a specified time.)

### WORKSTATION IMAGING

This option installed imaging components that enabled IDACORP Energy's IT team to create on this server an image of a workstation's hard drive. This option also installed the Preboot eXecution Environment (PXE) component, which enabled workstations to boot from an image stored on this server.

### APPLICATION MANAGEMENT

The ZENworks Application Management component enables ZENworks for Desktops to manage the Novell Application Launcher and Application Explorer. The Novell Application Launcher runs on users' workstations and accesses the applications defined in Application objects. (These objects hold information about applications, such as the location of application files.) The Novell Application Launcher then deploys these applications on the workstation upon which it is running.

The Application Explorer, which also runs on users' workstations, displays on these workstations icons that are associated with applications.

### ADDITIONAL COMPONENTS

In addition to these components, the ZENworks for Desktops installation program also installed ZENworks for Desktops snap-in modules for ConsoleOne and created a ConsoleOne Application object in eDirectory. These ConsoleOne snap-in modules enabled IDACORP Energy's IT department to use ConsoleOne to manage ZENworks for Desktops. The IT department could also use the ConsoleOne Application object to distribute ZENworks for Desktops snap-in modules to the six management workstations that were running ConsoleOne.

After installing these server components, the implementation team used the ZENworks for Desktops ConsoleOne snap-in modules to configure Workstation Import and Workstation Removal policies. These policies are stored as objects in the company's eDirectory tree. Among other things, the Workstation Import policy specifies the location in which the Automatic Workstation Import service creates Workstation objects.

The implementation team also configured Workstation Inventory and Roll-Up policies. The Workstation Inventory policy identifies the workstations from which this server can collect information. The Roll-Up policy specifies the interval after which IDACORP Energy's Leaf server can upload (roll-up) inventory data up to this Root server. ●

User objects rather than in a central location. Therefore, these credentials are unlikely to provide a tempting target for would-be cyber criminals.

With SecureLogin fully deployed on IDACORP Energy's network, Solution 1 was complete. To implement this solution, the implementation team didn't need to replace any of IDACORP Energy's original network. Rather, with Novell's Net services software, the implementation team built Solution 1 on the network IDACORP Energy already had in place.

### A WRINKLE OR TWO

IDACORP Energy planned to have Solution 1 in place when it moved into its new facility in May 2001. The company would then address its remote access problems in a second solution—Solution 2. However, the company experienced a few setbacks in getting its new network up and running—the most ironic of which was a lack of electrical power to the company's new data facility.

As a result, Novell Consulting and Acevedo worked together to implement Solution 1 in June 2001, after IDA-

CORP Energy's network was in place. By the time Solution 1 was implemented, IDACORP Energy realized it had a bigger problem than remote access to address in Solution 2. IDACORP Energy had one of the biggest problems an energy marketing company can face—an unreliable server cluster.

As Acevedo explains, IDACORP Energy's "Windows clusters just couldn't give [the company] the level of availability and security that [it] required." The Microsoft clustering software running on the company's Windows 2000

file and print and Exchange 2000 servers didn't operate properly. Specifically, if one of the servers in the cluster needed rebooting, the whole cluster went down. Unfortunately, the company's Windows 2000 servers frequently needed rebooting.

To solve this problem, IDACORP Energy explored a number of options. For example, IDACORP Energy investigated VERITAS Cluster Server for Windows 2000. However, IDACORP Energy was no longer sold on its pure Windows 2000 environment. Its Windows 2000 servers not only had stability problems but also scalability problems.

Each time users needed a new application, the IDACORP Energy IT department had to buy a new server to run that application. The IT department therefore began looking at alternatives to Windows 2000.

Acevedo was familiar with NetWare and knew that IDACORP Energy could use NetWare 6 to stabilize its network without having to replace its entire Windows 2000 infrastructure. Novell Consulting agreed that NetWare 6 could solve IDACORP Energy's reliability problems.

Novell Consulting made other recommendations as well: For example, Novell Consulting recommended that IDACORP Energy deploy Novell iChain with Novell Portal Services and Novell iFolder to provide remote access, rather than deploying a secure web server. Specifically, Novell Consulting recommended implementing a remote access solution using iChain as the foundation and Novell Portal Services as its web interface. IDACORP Energy could then make Novell iFolder available through this portal interface.

iChain is a software appliance that provides identity-based remote access to resources running on one or more web servers. iChain also includes a reverse-proxy engine that can speed user access to resources and SSLizer, which encrypts communications between iChain and users' browsers. (For more information about iChain, visit [www.novell.com/products/ichain](http://www.novell.com/products/ichain).)

Novell Portal Services is a portal toolbox that includes gadgets—which are small applications that provide access to backend resources. Novell Portal Services also includes a software developer's kit (SDK) for building custom gadgets. Using prebuilt and custom gadgets, IDACORP Energy

could build a custom portal that provided secure identity-based access to network resources. (For more information about Novell Portal Services 1.5, see the "A Portal With a Place for Everything" section in "Novell Portal Solutions: Give Users What They Want, Where They Want It," *Novell Connection*, Feb. 2002, pp. 21–25. You can download this article from [www.ncmag.com/past](http://www.ncmag.com/past).)

Using a prebuilt iFolder gadget, IDACORP Energy could also make Novell iFolder available through the Novell Portal Services web interface. Novell iFolder provides web-based access to the contents of personal iFolders, which are stored locally on users' computers and centrally on a Novell iFolder server. (For more information about Novell iFolder, see "Tip the Scales With Novell iFolder Professional Edition 2.0," *Novell Connection*, May 2002, pp. 20–30. You can download this article from [www.ncmag.com/past](http://www.ncmag.com/past).)

Both iChain and Novell Portal Services use eDirectory to provide access to network resources. Therefore, by implementing a remote-access solution based on these two products, IDACORP Energy could build this solution on its new eDirectory infrastructure.

IDACORP Energy agreed that Novell Consulting should help it implement Solution 2—which would address both IDACORP Energy's stability and remote-access problems. Specifically, Solution 2 would address IDACORP Energy's stability problems by deploying NetWare 6 and Novell Cluster Services. Solution 2 would also address IDACORP Energy's remote-access problems by deploying iChain, Novell Portal Services, and Novell iFolder. The core implementation team for both solutions included Novell Consulting and Acevedo, who worked closely with Novell Consulting.

#### CALLING THE CAMBRIDGE CONNECTION

Before IDACORP Energy signed the contract with Novell Consulting to provide Solution 1, IDACORP Energy's network had undergone a penetration test—a type of security assessment. To validate the results of this assessment, Spangler asked Novell Consulting to recommend a firm that could perform a similar assessment. Novell Consulting recommended Cambridge Technology

Partners, which had recently become a wholly owned subsidiary of Novell. (For more information about how Novell and Cambridge Technology Partners are working together, see "The Beginning of a Beautiful Friendship" on p. 37.) The Novell Consulting and Cambridge Technology Partners teams arrived at IDACORP Energy's Mitchell site to begin work at roughly the same time.

For security reasons, Spangler can't divulge the specific recommendations from either security assessment, except to say that Cambridge Technology Partners made policy-related recommendations rather than product-related recommendations. Spangler also notes that she and her staff were "impressed" by the recommendations the Cambridge Technology Partners team made.

#### SOLUTION 2

Novell Consulting saw the recommendations from both security assessments before it proposed Solution 2. Based on these recommendations, IDACORP Energy's needs, and Acevedo's

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desire to use NetWare 6 to stabilize the network, Novell Consulting suggested deploying the following Novell products in Solution 2:

- NetWare 6
- Novell Cluster Services
- Novell Native File Access Pack components
- Novell iFolder
- Novell iChain
- Novell Portal Services
- Novell eGuide

### Stabilize the Situation

To stabilize IDACORP Energy's network, the implementation team installed two new NetWare 6 servers in a two-node cluster using Novell Cluster Services 1.6. (NetWare 6 ships with a two-node license of Novell Cluster Services 1.6.) These servers were running on Compaq ProLiant DL380 server hardware with dual 1.1 GHz processors and 2 GB of RAM. The implementation team configured Novell Storage Services (NSS) 3.0 storage pools and logical volumes to provide storage for this cluster on two

Compaq RA4100 SANs, each of which has 298 GB of RAID 5 storage. (NSS 3.0 is the storage management component of NetWare 6.)

NSS storage pools are collections of storage space that can—if necessary—span both of the SANs that provide storage for IDACORP Energy's NetWare 6 cluster. Logical volumes consume space from NSS storage pools. Using NSS, IDACORP Energy's IT department can create logical volumes that use up to 8 TB of space. (For more information about NSS 3.0, see "More To Store: NetWare 6 and NSS 3.0 Can Handle It," *Novell Connection*, Apr. 2001, pp. 6–16. For more information about using a NetWare 6 cluster to manage SAN storage, see "Novell Cluster Services 1.6: Keep the Server Side Up and the SAN Side Simple," *Novell Connection*, June 2001, pp. 22–31. You can download these articles from [www.ncmag.com/past/](http://www.ncmag.com/past/).)

As you know, the reliability and stability of the NetWare platform are legendary. To date, the NetWare 6 servers running in IDACORP Energy's NetWare 6 cluster have gone down only when they were manually brought down.

Even when IDACORP Energy needs to bring down one of these servers, Novell Cluster Services 1.6 reliably fails over the services running on this server to the surviving server.

### Extending Access to Files With Native File Access

On this NetWare 6 cluster, the implementation team then installed Novell Native File Access Pack components for Windows, Macintosh, and UNIX. These components, which ship with NetWare 6, enable IDACORP Energy's users to natively access files on NetWare 6 from Windows, Macintosh, and Linux workstations. That is, users can access files from workstations that are not running Novell client software.

For example, IDACORP Energy's IT department now includes approximately five Linux workstations that are not running Novell client software but that are running Samba. (Samba is a freeware application that uses the Common Internet File System [CIFS] protocol—the filing protocol that Windows uses.) These workstations can also use the

## Goner's a Goner

Not long after IDACORP Energy deployed Novell ZENworks for Desktops 3.2, its network became infected with the W32.Goner.A@mm virus (which is commonly known as the *Goner virus*). Perpetrated by a trio of Israeli teenagers, the Goner virus is a mass-mailing worm that uses Microsoft Outlook and ICQ (which is instant messaging software) to propagate. In Microsoft Outlook, the Goner virus infects computers through an executable attachment. This attachment purports to be a screen saver but is actually malicious code.

### OPENING A CAN OF WORMS

When a user activates the Goner virus by clicking on this attachment, the virus code accesses the e-mail addresses in the user's Outlook Address Book and mails itself to these e-mail addresses. In addition, the Goner virus deletes antivirus and firewall files on the user's computer—thereby opening this computer to further attacks. If the infected computer is running Internet Relay Chat (IRC) client software, this virus also inserts scripts that enable the user's workstation to be used in Denial of Service attacks. (IRC is an Internet chat protocol. To prevent Denial of Service attacks, the IRC channel used by the Goner virus has been temporarily blocked.)

Because IDACORP Energy uses Microsoft Exchange 2000 messaging and calendaring services, a virus that propagates by means of users' Outlook Address Books could have spread through the company like wildfire. To stop the Goner virus from compromising the company's network, Jim Acevedo, IDACORP Energy's manager of network infrastructure, used ZENworks for Desktops 3.2.

### ZENWORKS THE VIRUS SLAYER

The Goner virus struck IDACORP Energy's network early in its pathogenic career, before IDACORP Energy's antivirus software vendor had a virus definition file available to combat the virus. When Acevedo discovered the virus, IDACORP Energy network technician Christina Littell immediately brought the company's Exchange 2000 servers down to prevent further infection. Meanwhile, Acevedo downloaded instructions for cleaning the infected workstations. Using these instructions, Acevedo wrote an application to clean these workstations. He then created a ZENworks for Desktops Application object for this application, which ZENworks for Desktops could then use to push this application to infected workstations.

IDACORP Energy had ZENworks for Desktops Workstation Inventory components installed and configured on its ZENworks for Desktops servers. (Workstation Inventory components provide a comprehensive inventory of workstation hardware and software configurations. For more information about how IDACORP Energy installed and configured the Workstation Inventory component, see the "ZENworks for Desktops Installation Particulars" on p. 30.) Therefore, Acevedo could determine which workstations were infected with the Goner virus without having to physically access those workstations.

After cleaning all of the infected workstations, Littell brought the company's Exchange 2000 servers up and continued to check for and clean infected workstations until virus definition files were available to protect those workstations. When virus definition files became available, Acevedo used ZENworks for Desktops to distribute and install these files. ●

Network File System (NFS) protocol that Linux uses natively.

Using Samba and Native File Access for Windows, members of IDACORP Energy's IT department who prefer accessing files using Windows can map drives from these Linux workstations to files on the company's NetWare 6 cluster. Members who prefer the UNIX or Linux method of accessing files, on the other hand, can use NFS and Native File Access for UNIX to mount drives on the NetWare 6 cluster.

Using the Native File Access for Macintosh component, IDACORP Energy can also provide native file access to NetWare 6 for its public relations department, which is planning to purchase a Macintosh computer in the near future. (Native File Access for Macintosh uses Apple Filing Protocol [AFP]. For more information about Native File Access components, see "Native File Access Wanted: Client Software Need Not Apply," *Novell Connection*, Nov. 2001, pp. 6–26. You can download this article from [www.ncmag.com/past](http://www.ncmag.com/past).)

### Let the Remote Access Begin!

The implementation team kicked off IDACORP Energy's long-awaited remote access solution by installing Novell iFolder 1.01 on the company's NetWare 6 cluster. With Novell iFolder, IDACORP Energy's users can access files stored in personal iFolders via the Internet.

Ordinarily, these personal iFolders would be stored on the NetWare 6 server upon which Novell iFolder was running. However, the implementation team configured Novell iFolder to use the company's Storage Area Network (SAN) storage for users' personal iFolders.

The implementation team also configured Novell iFolder to encrypt the contents of personal iFolders on the SAN and to encrypt those contents when crossing the Internet. By encrypting this data, Novell iFolder provides the kind of secure remote access that IDACORP Energy requires. In fact, Novell iFolder "was easy to sell to [IDACORP Energy's] management," because of its intrinsic security and ease of use, Acevedo asserts. (For more information about Novell iFolder, see "Tip the Scales With Novell iFolder Professional Edition 2.0.")

### eGuide, Because Users Want To Know

To provide remote access to information about IDACORP Energy's users,

## No Such Thing As A Fair Share

IDACORP Energy plans to migrate all of the data currently running on its Windows 2000 cluster to its NetWare 6 cluster—partly because its NetWare 6 cluster is more reliable, and partly because NetWare 6 is inherently more secure.

On the Windows 2000 cluster, IDACORP Energy's users create Share Points for sharing data with colleagues. Each Share Point has its own file security. As Jim Acevedo, IDACORP Energy's manager of network infrastructure, explains, even though a user may create a Share

customers, and business partners—information such as telephone numbers and e-mail addresses—the implementation team then installed NetWare 6 and eGuide 2.0 on a separate server. This server is running on Compaq ProLiant DL380 hardware with dual 1.1 GHz Pentium III processors, 1 GB of RAM, and 208 GB of memory.

Using eGuide, IDACORP Energy's users can remotely access look-up services for information stored in eDirectory and other Lightweight Directory Access Protocol (LDAP)-compliant directories. (For more information about eGuide, visit [www.novell.com/products/eguide](http://www.novell.com/products/eguide).)

### Novell Portal Services

IDACORP Energy also needed to provide secure remote access to network services—such as e-mail services—and applications. To provide this access, the implementation team installed Novell Portal Services 1.5 on IDACORP Energy's NetWare 6 cluster. As mentioned earlier, Novell Portal Services includes several gadgets. For example, Novell Portal Services includes a File gadget, an iFolder gadget, and an eGuide gadget to provide access to NetWare file services, Novell iFolder, and eGuide, respectively.

Novell Portal Services also includes an Exchange gadget, which provides portal access to Exchange messaging and calendaring services. Using these pre-built gadgets and Novell Portal Services' support for SecureLogin, the implementation team configured IDACORP Energy's portal to provide single sign-on access to NetWare 6 file services, Novell iFolder, eGuide, and Exchange 2000.

Point that has tight security, another user can decide to create a Share Point with a completely different set of security rules at this same location on disk.

According to Acevedo, this second user "can assign full access rights to everything" at this location—including the first user's Share Point. This Windows 2000 security flaw, Acevedo adds, can create a "security mess."

By unraveling Share Point access rights and moving files from Windows 2000 to NetWare 6, the IDACORP Energy IT staff can assign ironclad identity-based access controls to IDACORP Energy's confidential information. ●

The implementation team also used the Novell Portal Solutions SDK to create custom gadgets that provide single sign-on access to a few of IDACORP Energy's custom applications.

### iChain for Added Security

Finally, the implementation team installed iChain 2.0 on Compaq ProLiant DL380 server hardware with dual 1.1 GHz Pentium III processors and 2 GB of RAM. During the installation process, the implementation team configured this iChain appliance to use SSLizer to secure IDACORP Energy's data as that data crosses the Internet. The implementation team also configured iChain to use the company's Novell Portal Services portal as its web interface.

Through iChain and Novell Portal Services, IDACORP Energy's users now have secure, user-friendly remote access for a growing number of IDACORP Energy's network resources. After these users authenticate to iChain, iChain displays a personalized Novell Portal Service portal interface that includes all of the information and applications these users are authorized to receive. (See Figure 1 on p. 26.)

### Getting Better All the Time

The implementation team completed Solution 2 by adding to, rather than replacing, IDACORP Energy's existing network. With NetWare 6, Novell has gone out of its way to create an operating system that plays nicely with other operating systems. (NetWare 6 is also easy to install, use, and license. With NetWare 6, Novell simplified the Net-

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### Your License to Get Ready, Get 6, Go!

As a new NetWare customer, IDACORP Energy found NetWare 6 user-based licensing simple and straightforward—exactly as Novell intended this new licensing model to be. In a nutshell, the NetWare 6 licensing model stipulates that one User object in one eDirectory tree requires one NetWare 6 license.

Because IDACORP Energy has only one eDirectory tree, it purchased one NetWare 6 user license for each User object in that tree. Licensing NetWare 6 was that simple.

**Note.** If IDACORP Energy were to add another eDirectory tree, it would need to purchase a NetWare 6 user license for each User object in this second tree unless the User objects in the second tree were synchronized with User objects in the first tree. That is, the company would need to purchase a NetWare 6 license for each User object in each tree unless it linked its eDirectory trees together by using data-sharing software such as Novell DirXML. Of course, if any of the User objects in either the first or second eDirectory tree represented users who were not accessing NetWare 6, IDACORP Energy would not need a NetWare 6 user license for these users.

The server-based licensing model for previous versions of NetWare, on the other hand, stipulates that each device concurrently connected to a NetWare server requires one server license. This model is called a server-concurrent connection (SCON) licensing model.

To illustrate the difference between these two licensing models, suppose that IDACORP Energy had deployed a NetWare 5.1 server rather than a NetWare 6 server. Further suppose that the company wanted to use this NetWare 5.1 server to store files for IDACORP Energy's marketers.

To plan licensing for this server, IDACORP Energy would need to count the number of devices—in this case, workstations—that would be concurrently connected to this server. Each marketer uses a minimum of two workstations, and some marketers require three workstations.

Therefore, the company would need to purchase two or three SCON licenses for each marketer. In addition, IDACORP Energy's IT staff would need SCON licenses for the workstations from which they managed the server. If IDACORP Energy had multiple NetWare 5.1 servers, the company would have to license each server this way.

#### WHAT ABOUT UPGRADES?

Obviously, user-based licensing made planning and deploying NetWare 6 easier than planning and deploying NetWare 5.1 with SCON licensing. However, as a NetWare administrator, you probably wonder how this new licensing model would affect IDACORP Energy if the company were upgrading to NetWare 6 from NetWare 5.1.

In this case, the company would have already figured out and

purchased the number of SCON licenses it needed. How would the company convert its existing licenses to user-based licenses, and how much extra would it cost the company to do so?

The answer to the first question depends on the agreement under which the company purchased its SCON licenses. For example, if the company purchased these licenses under a Corporate License Agreement (CLA) with Upgrade Protection or a Master License Agreement (MLA) with Maintenance Protection, the company could do one of the following:

- Upgrade to NetWare 6 using its current SCON licensing model.
- Convert SCON licenses to user-based licenses on a one-to-one ratio. If the company needed extra user licenses, Novell would provide these licenses for free. However, the company would need to pay additional Maintenance or Upgrade protection for these licenses after its current contract expired.
- If the company purchased a Volume License Agreement (VLA) or a CLA without Upgrade Protection, on the other hand, the company would have to convert its SCON licenses to user licenses on a one-to-one ratio. To count the number of user licenses needed, the company could download DS Count (a NetPro utility that counts eDirectory objects and partitions) free from [www.netpro.com/products/dscount/dscount\\_c.cfm](http://www.netpro.com/products/dscount/dscount_c.cfm). (NetPro is a Novell partner company that specializes in directory management software. For more information about NetPro, visit [www.netpro.com](http://www.netpro.com).)

If the company needed more user licenses after this conversion process was completed, Novell would work with the company to provide additional licenses. (For more information about receiving additional user licenses from Novell, contact your Novell sales representative. Alternately, you can complete the "CLA NetWare to User License Conversion Worksheet" and submit this worksheet directly to Novell. (You can download this worksheet, which includes instructions for submitting the completed worksheet to Novell, at [www.novell.com/licensing/collateral/scon\\_conversion\\_worksheet\\_cla.pdf](http://www.novell.com/licensing/collateral/scon_conversion_worksheet_cla.pdf). For more information about upgrading from previous versions of NetWare to NetWare 6, see "Transitioning to NetWare 6." You can download this document from [www.novell.com/licensing/nw6\\_info.html](http://www.novell.com/licensing/nw6_info.html).)

#### THE BOTTOM LINE

As the answer to the first question implies, upgrading SCON licenses to user licenses probably wouldn't cost IDACORP anything in addition to the price of upgrading to NetWare 6. Novell changed the NetWare 6 licensing model to simplify NetWare licensing for its customers, not to provide additional revenue. (For answers to additional questions about the NetWare 6 licensing model, visit [www.novell.com/licensing/nw6\\_faq.html](http://www.novell.com/licensing/nw6_faq.html). In North and South America, you can also call Novell's Customer Response Center (888-321-4272) for answers to NetWare 6 licensing questions.) ●

Ware installation program and licensing model. For more information about NetWare 6 installation, visit [www.novell.com/documentation/lg/nw6p/index.html](http://www.novell.com/documentation/lg/nw6p/index.html). For more information about NetWare 6 licensing, see "Your License to Get Ready, Get 6, Go!"

IDACORP Energy's IT staff is currently in the process of moving all of the company's file and print services from its Windows 2000 cluster to its reliable NetWare cluster, beginning with users' home directories. After IDACORP Energy completes this move, the company's

users will have secure remote access to these services through iChain and Novell Portal Services. (For information about how this move will also make inside-the-firewall access more secure, see "No Such Thing as a Fair Share" on p. 33.)

Eventually, IDACORP Energy also intends to migrate applications that are not limited to the Windows platform from Windows 2000 to NetWare 6. In the meantime, however, Acevedo has deployed many of IDACORP Energy's applications on a Citrix server. Acevedo has also configured the prebuilt Citrix gadget for Novell Portal Services to provide remote access to these applications through iChain and Novell Portal Services.

Acevedo also plans to extend IDACORP Energy's Secure Access solution (which now includes iChain) to include Novell Modular Authentication Services (NMAS). NMAS will enable IDACORP Energy to implement biometric authentication, which the company's executives have requested as an alternative to username and password authentication. (NMAS ships with SecureLogin. For more information about NMAS, see [www.novell.com/products/nmas](http://www.novell.com/products/nmas).)

#### **WILL THERE BE A SOLUTION 3?**

Like any other corporate network, IDACORP Energy's network is a work in progress. At this year's BrainShare Salt Lake City, Spangler mentioned that IDACORP Energy sometimes needed to provide customers with real-time data. IDACORP Energy did not have "a good system in place" for this, Spangler explained.

The person with whom Spangler was talking happened to know of a perfect solution for this problem: Novell Active Information Portal. This portal solution uses Novell Portal Services and a Resource Description Framework (RDF)-based technology to create portals through which users can access—and interact with—real-time data. (For more information about Active Information Portal and RDF, see the "Get Real! The Power of Real-Time Information" section in the "Novell Portal Solutions: Give Users What They Want, Where They Want It" article.) Spangler is currently considering this solution.

#### **IT'S COME A LONG WAY**

Although IDACORP Energy has big plans for its network, that network has come a long way in just one short year. Last May, IDACORP Energy's IT department had to go from workstation to workstation, installing new software and software updates. This May, the IT depart-

### **The Beginning of a Beautiful Friendship**

In a keynote address at this year's BrainShare Salt Lake City, Chris Stone, Novell's new vice chairman, office of the CEO, explained how the merger between Cambridge Technology Partners—a technology solutions consulting firm—and Novell strengthened Novell's offerings: In a nutshell, Stone said that Cambridge Technology Partners gave Novell the expertise to provide business solutions that combine Novell Net services software with end-to-end professional services. Novell will continue to provide software in red boxes, of course, but its marketing emphasis going forward, Stone said, would be on providing these solutions.

Of course, Novell's success at providing these solutions will depend, in large part, on how well Cambridge Technology Partners and Novell can work together. If IDACORP Energy's experience with Novell Consulting and Cambridge Technology Partners is indicative, Novell Consulting and Cambridge Technology Partners can work together quite well. IDACORP Energy, an Idaho-based energy marketing and services firm worked with both of Novell's professional services—Novell Consulting and Cambridge Technology Partners. IDACORP Energy was impressed not only with the quality of service it received from each of

these service units but also with how well each service complemented the other.

IDACORP Energy first contacted Novell Consulting for help in deploying Novell ZENworks for Desktops on its mostly Windows 2000 network. Tami Spangler, IDACORP Energy's director of IT, then asked Novell Consulting to recommend a firm that could perform a security assessment of IDACORP Energy's network. Novell Consulting recommended Cambridge Technology Partners.

Spangler was impressed with Cambridge Technology Partners: "[Cambridge Technology Partners] gave us very good recommendations," noting that these recommendations were policy- and procedure-driven rather than product-driven. Spangler was also impressed with the solution Novell Consulting provided. In fact, Spangler was so impressed that before this solution was completed, she asked Novell Consulting to provide solutions to additional networking problems.

In what was perhaps the first joint engagement of Novell's two consulting organizations, each organization provided valuable and non-overlapping services that met IDACORP Energy's needs and perhaps even exceeded its expectations. In short, this engagement may have marked—in the words of the 1942 film *Casablanca*—"the beginning of a beautiful friendship." ●

ment could centrally manage workstations—including the workstations at the Houston site—using ZENworks for Desktops. This improvement alone represents "a huge savings," for the company, Acevedo declares.

Last year, IDACORP Energy's users were logging in separately to approximately 20 applications. This year, those users can log in once to the company's eDirectory tree, after which SecureLogin does the work of authenticating users to approximately 90 percent of the applications they need. In addition, these users now have an easy-to-use remote-access solution through iChain and Novell Portal Services. iChain and Novell Portal Services have also helped IDACORP Energy communicate more securely and effectively with its business partners and customers.

Last year, the Windows 2000 servers upon which IDACORP Energy's file and

print services were running went down often, leaving users without the data they needed. This year, a good portion of the company's data is always available on IDACORP Energy's NetWare 6 cluster.

Looking back, Spangler expresses surprise that she hadn't originally thought about Novell products and services for IDACORP Energy's network—especially because she worked with Novell products at previous jobs with other companies. She chalks this oversight up to two things: an insufficient amount of marketing on Novell's part and, ironically, the reliability and stability of Novell products. "Novell products are a little like IT departments," Spangler explains. Because Novell products "work well and do their job, they go unnoticed."

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