

Novell[®]

iFolder[™]

Professional Edition

2.0

Storage Services

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WHITE PAPER

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table of contents

Novell iFolder Professional Edition

2.0

2	ACCESS, ORGANIZE AND MANAGE FILES FROM ANYWHERE
2	NOVELL iFOLDER BENEFITS
4	TECHNICAL OVERVIEW
9	NOVELL iFOLDER DEPLOYMENT
9	SECURITY ISSUES
10	NOVELL iFOLDER ADMINISTRATION
11	DATA PROTECTION AND STORAGE BENEFITS
12	HIGH PERFORMANCE AND SCALABILITY
13	NEW REVENUE STREAM FOR ISPs
14	REAL-WORLD BENEFITS
15	CONCLUSION

access, organize and manage files from aNywhere

Novell iFolder™ Professional Edition 2.0 gives organizations a Net services software solution that allows their mobile users' files to automatically follow them everywhere. Users can access, organize, and manage their files from anywhere—online, offline, all the time—across multiple systems and the Net. Novell iFolder also provides organizations and users worry-free security, ensuring that all files are always safe, secure and up-to-date.

Novell iFolder intelligently updates a user's local files to a Novell iFolder server that automatically synchronizes changes through any simple Internet connection to the different PCs or laptops that the user uses. No matter where or from what computer users connect, Novell iFolder makes sure that they will have the most recent versions of their documents. Novell iFolder lets files be just as mobile as their users— at work, at home or on the go.

NOVELL iFOLDER BENEFITS

Novell iFolder Professional Edition 2.0 gives IT managers a secure, manageable and easy to implement file-management solution that makes every computer user in their company more productive by eliminating the hassles of creating, storing and managing their files across multiple devices and locations.

Seamless Data Access

Novell iFolder greatly simplifies IT departments' ability to keep users productive. Novell iFolder lets users' data follow them wherever they go. The days of users e-mailing themselves project files so they can work on them from home are gone, along with the heartburn associated with

sorting through different versions of the same file on different machines. Novell iFolder stores and synchronizes users' work in such a way that no matter what client or what location they login from; their files are available and in the state that they expect them to be.

Data Safeguards and Disaster Recovery

With Novell iFolder encryption, data stored on the server is not only secure from unauthorized access, but it can be easily safeguarded from system crashes and disasters that can result in data loss. When a user saves a file locally, the data is automatically updated to the Novell iFolder server where it immediately becomes available for an organization's regular network

backup operations. Novell iFolder makes it easier for IT managers to ensure that all of an organization's critical data is protected. Novell iFolder also gives ISPs the ability to offer a user-trusted backup solution for their customers' critical business or personal data.

Reliable Data Security

In the past, executives fearing unauthorized access to sensitive data have been hesitant to store some confidential documents on the network. Novell iFolder eliminates this concern, encrypting all data before it moves it across the Internet and stores it on the Novell iFolder server, keeping it out of the hands of unauthorized users. With Novell iFolder encryption, stored data is not only secure from unauthorized network access, but it is now available for regularly scheduled backups.

Productive Mobile Users

Novell iFolder makes it significantly easier to support mobile users. VPN connections are no longer needed to deliver secure data access to mobile users. Users don't need to learn or perform any special procedures to access their files when working from home or on the road. Novell iFolder does away with version inconsistency, making it simple for users to access the most up-to-date version of their documents from any connected desktop, laptop, Web browser, or PDA.

With Novell iFolder, users' electronic bags are always packed. In preparation to hit the road, users no longer have to copy needed data to their laptops from various desktop and network

locations. Novell iFolder automatically updates users' laptops and desktops with the most current versions of their files. Even if a user loses a laptop, all those files can still be accessed with any computer connected to the Internet.

Cross-platform Support

The cross-platform capabilities of Novell iFolder enable it to easily mesh with any organization's Web infrastructure. The Novell iFolder server integrates with either the Apache Web server on NetWare®, Linux*, and Solaris* or the Microsoft* Internet Information Servers (IIS) Web server on Windows* NT/2000, enabling organizations to run Novell iFolder on their preferred platform. Additionally, the solution's LDAP support allows organizations to leverage Novell eDirectory™ for user authentication.

Simple Data and Account Management

Novell iFolder was designed to allow for easy setup and management by IT professionals. Novell iFolder servers can be managed from any location using a standard Web browser. Novell iFolder also frees up IT departments from routine maintenance tasks with its automatic file updates, synchronization and encryption. Also, since local files are automatically updated to the network, Novell iFolder ensures that data is protected on both corporate and individual levels. IT managers also have the option to manage Novell iFolder accounts using the power of Novell eDirectory.

No Training Requirements

IT personnel no longer have to condition or train users to perform any special tasks to ensure the

consistency of data stored on their laptops and on the network. With Novell iFolder, users simply store their files in their Novell iFolder directory on their PC and their files will be automatically updated to the Novell iFolder server and any other workstations that the users utilize. Novell iFolder works seamlessly behind the scenes so users don't even need to know it's there.

Facilitates New PC Deployment and Replacement

Novell iFolder can combine with ZENworks[®] for Desktops to greatly simplify users' transitions between outdated or broken PCs to new replacement PCs. Users simply login and ZENworks for Desktops automatically delivers the users' applications, while Novell iFolder updates the new PCs with all of the users' data files. If for some reason users have to wait for the arrival of a replacement machine, they can even use any co-workers' or any temporary workstation as if it were their own machine with their own familiar work environment. These Net services software solutions give IT managers the ability to give their users a consistent and productive work environment no matter how or where they connect.

Bandwidth Efficiencies

Competing data synchronization solutions often bog down IT traffic by sending entire files across the network every time a file changes. Novell iFolder maximizes bandwidth by sending only the changed portion of the file over the wire. So, whether synchronization traffic is from a

single user over a slow dial-up connection or thousands of users on the enterprise network, Novell iFolder enables users to be productive and IT infrastructures to operate at peak efficiency.

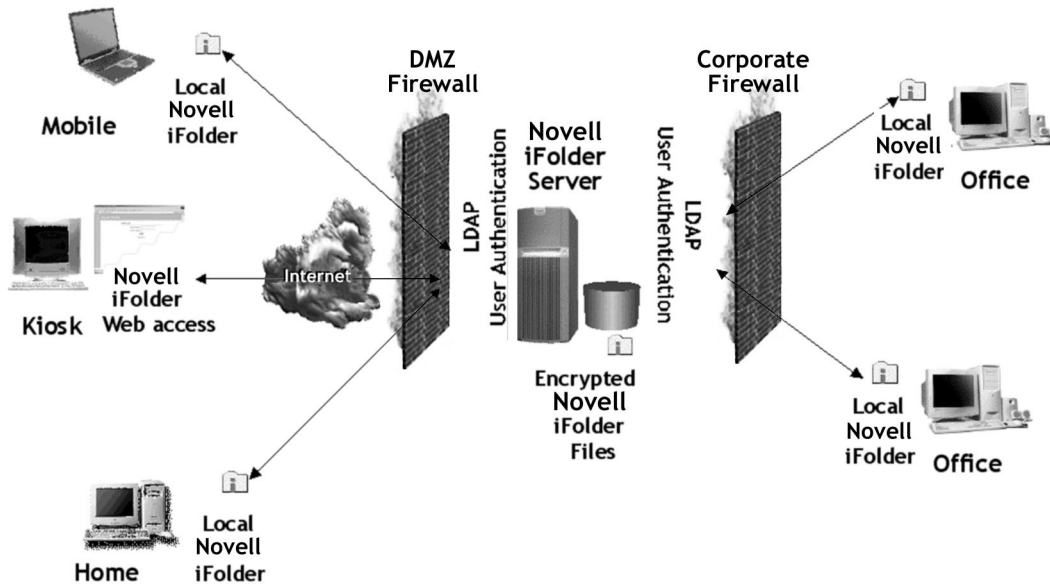
TECHNICAL OVERVIEW

Novell iFolder leverages proven Internet standards and technologies to deliver a secure, bandwidth efficient, and easily managed data synchronization solution that seamlessly drops into any organization's existing IT infrastructure. Novell iFolder encrypts and stores all of an organizations' user data on centralized Novell iFolder servers that leverage the capabilities of Apache or IIS Web servers for secure and efficient Web communication. Novell iFolder clients take advantage of proven Internet security technologies such as LDAP v3 authentication, SSL, and Blowfish encryption to protect user data from unauthorized access. Since Novell iFolder uses HTTP over TCP/IP on port 80, it acts just like a Web server, allowing users to access their data even from any Web browser client, including Web kiosks and PDAs—without the need of a VPN.

Novell iFolder Components and the IT Infrastructure

Novell iFolder consists of the following four main components that interact with an organization's IT infrastructure:

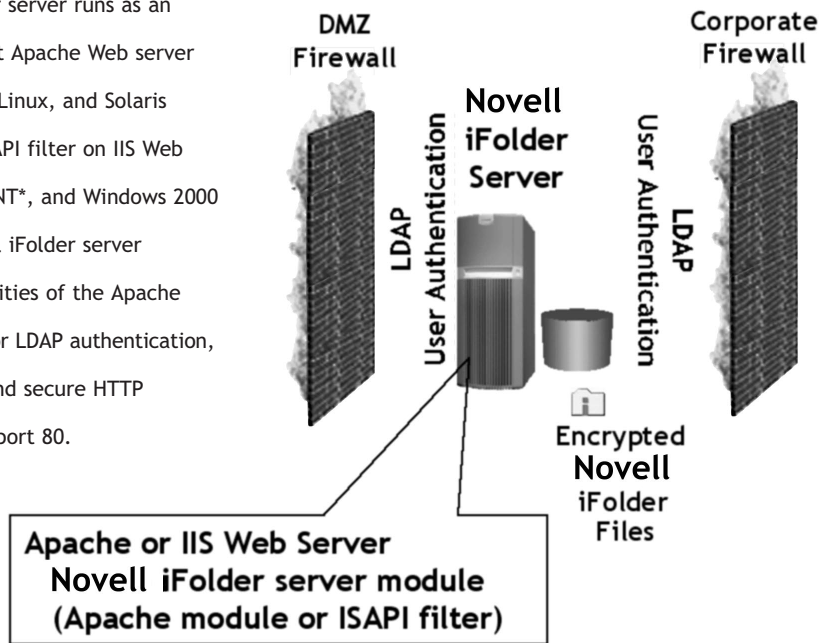
- Novell iFolder Server
- Novell iFolder Clients
- eDirectory
- Web Browser Clients



Novell iFolder Server

The Novell iFolder server provides a secure, centralized platform for storing, managing and backing up files. It provides the infrastructure for Novell iFolder clients to synchronize their data. It also has a management console that allows IT managers to monitor the server from a Web browser, as well as perform user administration.

The Novell iFolder server runs as an extremely lightweight Apache Web server module on NetWare, Linux, and Solaris servers, and as an ISAPI filter on IIS Web servers for Windows NT*, and Windows 2000 platforms. The Novell iFolder server leverages the capabilities of the Apache and IIS Web servers for LDAP authentication, Web page delivery, and secure HTTP communication over port 80.

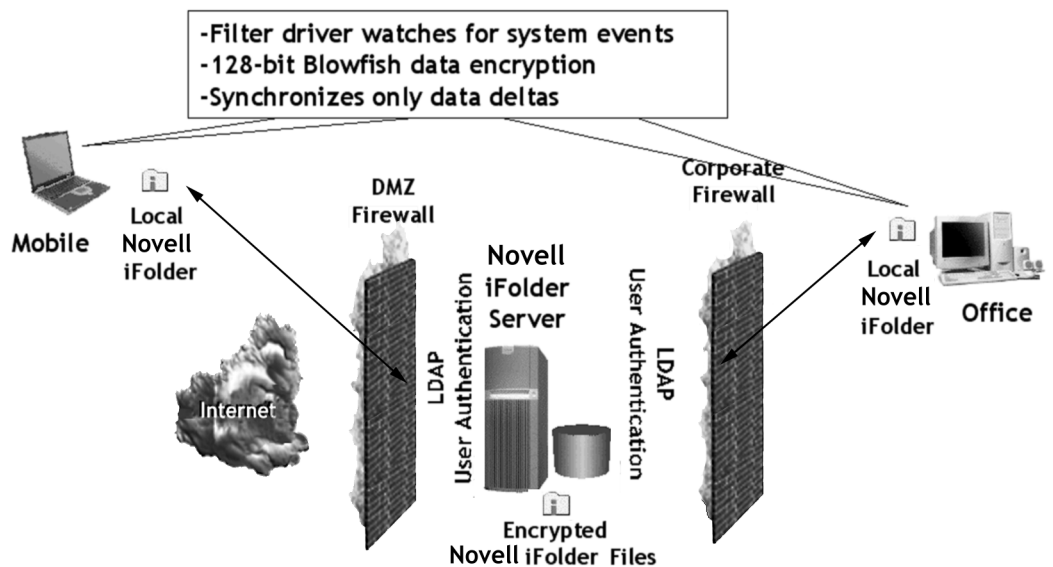


Typically, the Novell iFolder server resides between an organization's corporate firewall and DMZ firewall. The Novell iFolder server can have any standard type of disk storage attached to it where users' synchronized data will be stored in an encrypted format. Utilizing a Storage Area Network (SAN) solution in conjunction with the Novell iFolder server facilitates an organization's ability to manage, re-allocate, and augment data storage for the Novell iFolder server.

A single Novell iFolder server can service approximately 10,000 users. For large-scale deployment, organizations can deploy multiple Novell iFolder servers in a single system image, easily scaling support for larger user bases. This allows an organization to scale to thousands or even millions of users.

Novell iFolder Client

The Novell iFolder client software runs on Windows 95, 98, ME, NT, 2000, and XP workstations. It stores user data in a local Novell iFolder directory and watches for any changes to user files. The client software installs easily with only 700k of Novell files and about 1.3MB of Microsoft Windows DLLs. Under Windows NT, ME, 2000 and XP the Novell iFolder client runs as a filter driver and plugs right into the file system to facilitate its ability to watch for file system events that indicate that a modification has been made to file. On Windows 9x the client runs as a .vxd file.



Authentication

Novell eDirectory ships with Novell iFolder and Novell iFolder utilizes eDirectory for authentication to the Novell iFolder server. User credentials are sent encrypted to the Novell iFolder server and

then the Novell iFolder server performs an LDAP BIND to the LDAP Directory specified to authenticate the user. Novell iFolder clients communicate regularly with the Novell iFolder server to ensure that the most current information is distributed to

all of a user's client computers. When any change or discrepancy is detected in a user's personal Novell iFolder directory, the Novell iFolder client communicates the changed data in an encrypted format using Blowfish encryption to the Novell iFolder server for distribution to the user's other subscribing clients.

Encryption

Encryption occurs at the client for two key reasons. First of all, it fosters higher performance and greater scalability since the encryption algorithms can leverage the local client's processing power instead of consuming valuable server CPU cycles. Second, client-side encryption allows Novell iFolder to employ tighter security measures since all file updates will be encrypted before they go across the wire and while they reside on the Novell iFolder server.

Delta Block Synchronization

When the Novell iFolder client communicates file updates, it only sends the changed portion of the file and not the entire file. For example, if a user adds a new bitmap image to a 10MB presentation, Novell iFolder only sends the new bitmap across the wire and not the entire 10MB presentation. The Novell iFolder client is able to synchronize the changed portion of the file on a 4k block level.

Document Collisions

Novell iFolder also has the capability to deal with document collisions using what is known as its Conflict Bin. One way for a document collision

to occur is when a disconnected user works on a document but doesn't synchronize it to the Novell iFolder server due to the lack of a network connection. Later on, that user connects to the network from a different computer, works on that same document, and that document version is automatically updated to the Novell iFolder server. When the original client computer eventually connects to the network, it will try to send its own updated version of the document to the Novell iFolder server, but it won't be able to because that document version will have an earlier time stamp. Instead, Novell iFolder will send the document to the Novell iFolder Conflict Bin, where it can be retrieved and restored by the user at any time.

Customizable Local Novell iFolder Data Storage Location

When the Novell iFolder client is installed on a workstation, an Novell iFolder directory is automatically created on its local hard drive. This directory is used for storing all of the user's Novell iFolder files. By default, the path for this Novell iFolder directory is "My Documents/iFolder/[username]/home"; however, users have the option to change the location of their personal Novell iFolder directory on their client workstations.

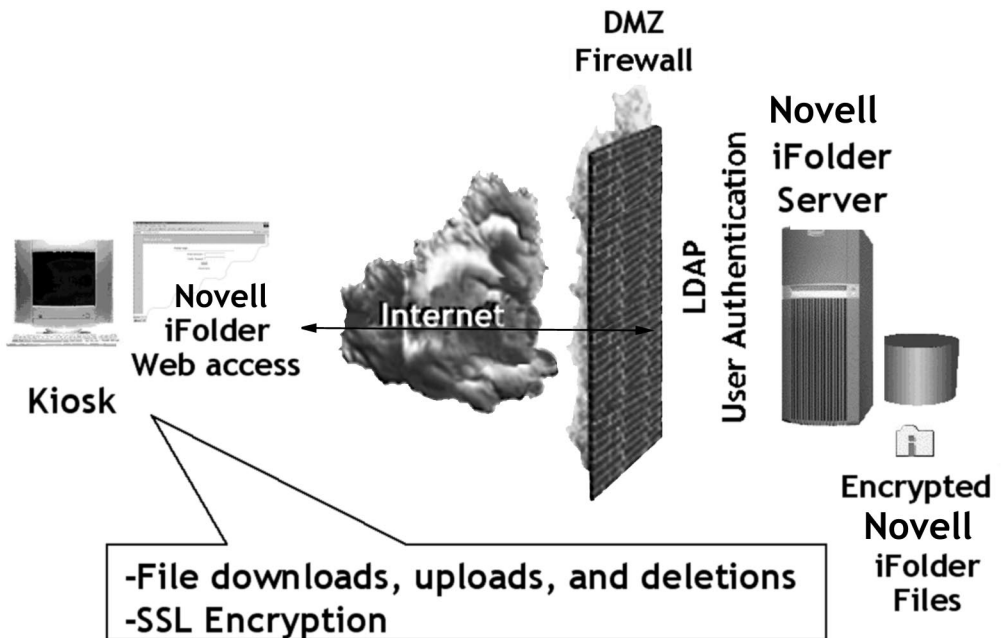
Novell iFolder gives administrators the ability to change the default directory path that Novell iFolder creates on their users' client workstations. Additionally, administrators can set a policy that prevents users from changing the location of their personal Novell iFolder directories, forcing them to use the defined default directory path.

Multiple User Accounts from the Same Client

Different Novell iFolder user accounts can be accessed from the same Novell iFolder client machine. Each account will simply have its own personal Novell iFolder directory (i.e. c:\my documents\ifolder\bob/ and c:\my documents\ifolder/lisa/). The Novell iFolder client also provides general account information, including user ID, local folder location, the Novell iFolder server, and Novell iFolder disk space availability. You also get access to the Novell iFolder conflict bin.

Web Browsers and PDAs

Novell iFolder also lets users access their files from computing devices that do not have the Novell iFolder client installed, but which have a Web browser interface, including Web kiosks, PDAs, and clients in terminal server farms. Through the Web browser interface, users can login with their username, password, and encryption pass phrase in order to view and access the contents of their personal Novell iFolder directory. Through this interface users can perform normal file operations such as file downloads, uploads, deletions, rename, and create new folders. All interaction and file transfers between the Web browser and Novell iFolder server are secured through SSL communication.



Even though the Web browser interface does allow users to download their files to work on them, any changes to those files will not be automatically synchronized with the Novell iFolder

server or the user's Novell iFolder clients. Instead, the user will have to upload the changed file to the Novell iFolder server through the Web browser interface. Upon uploading to the Novell iFolder

server, the file is then pushed to the other machines the user has subscribed to his or her account.

LDAP Directory

Novell iFolder Professional Edition 2.0 leverages the directory to store Novell iFolder system, user authentication, and access control information. Novell iFolder system and server information is stored in a Global Settings LDAP Directory, which contains information for the Novell iFolder service objects, Novell iFolder server objects, and Novell iFolder LDAP server objects. User authentication and access control information is stored in a User LDAP Directory. The Global Settings LDAP Directory and the User LDAP Directory do not need to be on the same server. This allows organizations to implement Novell iFolder without having to extend their directory schema or modify their production LDAP directory since they can install their Novell iFolder servers on separate directory trees. Also, this allows IT managers to have the Novell iFolder system simply reference the enterprise's own existing user directory as the Novell iFolder User LDAP Directory for user authentication and access control.

NOVELL iFOLDER DEPLOYMENT

To deploy Novell iFolder, an organization's IT departments sets up one or more Novell iFolder servers to provide secure and centralized platforms for storing, managing and backing up its users' files. The Novell iFolder server software can be simply installed on either an Apache Web server or a Microsoft IIS server. When the server software is installed, a default Novell iFolder Web site is

automatically created that users can access to easily download the Novell iFolder client software to their desktop or laptop workstations. The default Novell iFolder Web site also provides links to Novell iFolder help, a quick start guide, and a login link for Web browser access to the user's files.

In order to allow users to access their files from anywhere, inside or outside of the corporate firewall, Novell iFolder servers must be placed outside the corporate firewall inside the DMZ. Additionally, the Novell iFolder server's IP address and DNS name must be available from outside the firewall and access to the Novell iFolder server must be restricted to ports 80 and 443. Alternatively, organizations can employ an L4 switch in front of the Novell iFolder server.

SECURITY ISSUES

Utilizing 128-bit encryption, SSL communication and LDAP v3 authentication, Novell iFolder employs two levels of security to provide worry-free security for an organization's data assets. First, LDAP v3 authentication prevents unauthorized access to Novell iFolder accounts and data. Second, Novell iFolder encrypts the actual files before transmitting them over the Internet and delivering them to the Novell iFolder server. As a result, all files residing on the Novell iFolder server exist in an encrypted format so only file owners have the ability to decrypt and view the contents of their personal Novell iFolder files.

The enhanced security options provided by Novell iFolder eliminate the need to deploy a

SAFEGUARDING DESKTOP DATA

According to industry analysts, up to 80% of a company's business critical data resides on users' desktops and laptops. Novell iFolder provides a cost-effective and user-minded way to automatically store that data to multiple locations, including the network where it can be safeguarded through an organization's standard back-up processes.

virtual private network to allow users to externally access their information. In fact, the encrypted nature of the files stored on the Novell iFolder server makes it so secure that even someone with rights and access to the Novell iFolder server cannot view the contents of a user's personal Novell iFolder files unless they know that user's Novell iFolder pass phrase.

Data Encryption

Novell iFolder gives IT managers the ability to enforce data encryption for all of a user's files or to leave that decision to the user. If encryption is employed, users will be prompted for a pass phrase the first time they login to Novell iFolder. The pass phrase is used by the Novell iFolder client to generate a symmetric encryption key that is used to encrypt the data before sending it up to the Novell iFolder server. While data on the client is not stored in an encrypted format, all data sent across the wire and stored on the Novell iFolder server is encrypted, preventing unauthorized access to user files.

Communication between a Novell iFolder server and a Novell iFolder client leverages Blowfish 128-bit key encryption. Interaction between a Novell iFolder server and a Web browser client utilizes SSL communication.

LDAP Authentication

To ensure only authorized access to an organization's data assets, Novell iFolder leverages LDAP v3 for user authentication and access control. For communication between the Novell iFolder server and the LDAP server, organizations can

either use clear text for LDAP communication (port 389) or SSL (port 636). If the Novell iFolder and LDAP servers are the same server then clear text with LDAP is recommended since all communication will occur on the server. If the LDAP server is a separate server from the Novell iFolder server, then LDAP over SSL should be employed to allow encrypted LDAP communication.

NOVELL iFOLDER ADMINISTRATION

Organizations utilizing eDirectory in conjunction with Novell iFolder can leverage all the powerful management tools provided by Novell and third-party organizations for managing eDirectory environments.

Novell iFolder Server Management

Novell iFolder Professional Edition 2.0 provides a Web-based management console that gives IT managers the ability to easily perform administrative tasks and manage the activity between the server and the Novell iFolder clients from any location with Internet access.

Global Settings

The Novell iFolder management console's Global Setting interface enables IT managers to easily perform Novell iFolder system administration through a Web browser client. It enables IT managers to add, modify, or delete Novell iFolder servers and LDAP directories used by Novell iFolder for storing user-authentication and access-control information.

Through the Global Settings interface IT managers can also set policies to regulate Novell iFolder server behavior, such as how much disk

space will be allotted to each Novell iFolder client or how much time will pass before a session times out. Client policies can also be set and enforced such as requiring file encryption and not allowing users to store their account pass phrases in their workstations' system registry.

User Management

Through the Web management console's User Management interface, IT managers can enable, disable, and manage users' Novell iFolder accounts. It also gives IT staff members the ability to perform tasks such as changing users' client policies and set limits on their Novell iFolder server disk storage.

Reporting

The Web-based management console in Novell iFolder Professional Edition 2.0 provides IT managers four different categories of real-time reports.

- **General Information**—Total number of users, total disk quota, total disk space used.
- **Novell iFolder Servers**— Novell iFolder server uptime, host OS, Novell iFolder server version, total user accounts, current users, current sessions, total disk quota, and total disk spaced used.
- **LDAP Directories**—Information on the different LDAP directories being used, including IP or DNS name, status, number of LDAP users, and number of Novell iFolder users.
- **User Accounts**—Information on individual users' session start date and times, latest synchronizations, amount of data uploads and downloads, encryption type, number of files,

number of directories, Novell iFolder server being used, disk space quota, and the amount of disk space used.

Pass phrase Recovery

Novell iFolder pass phrase recovery enables IT managers or Corporate Security Officers to access encrypted Novell iFolder data stored on Novell iFolder servers when users forget their pass phrase or an employee leaves the company without telling management their personal pass phrase. For pass phrase recovery to be in effect, the pass phrase policy has to be enabled in the Global Settings. Also, an administrator can only recover a user's pass phrase after entering the correct administrator pass phrase. Additionally, users can establish pass phrase hints to help them remember their personal pass phrases.

DATA PROTECTION AND STORAGE BENEFITS

One of the greatest challenges that IT managers face is trying to condition users to store all of their data on the network. Whether it's concern for the protection of sensitive information or the need to have immediate up-to-date access to their work while on the road, many users store their most critical data only on their local PCs or laptops. Since this vital information doesn't reside on the network it immediately becomes vulnerable to data loss since it cannot take advantage of the data protection and recovery benefits inherent to the organization's standard network backup practices.

Novell iFolder Professional Edition 2.0 gives IT managers the means to safeguard an organization's

vital data by centralizing data storage, while still addressing the concerns of its users. Through its automatic synchronization capabilities, Novell iFolder enables users to always have immediate up-to-date access to their work whether they're in the office, at home, or on the road. Also, since Novell iFolder encrypts all data that resides on the Novell iFolder server, users no longer need to be afraid to store sensitive files on the network's Novell iFolder server.

Novell iFolder also delivers higher levels of data protection since files in users' personal Novell iFolder directories are stored both locally and centrally. Anytime a user saves a file, the data is immediately stored on the local computer and then automatically backed up and stored on the Novell iFolder server, as well as on any other workstations that the user has connected to the Novell iFolder server. Consequently, organizations and their users are less likely to lose data permanently when files are lost or systems crash. Obviously this replication of data will cause an increase in storage capacity demands, but the benefits of delivering higher levels of data protection in the majority of cases outweighs any additional storage costs.

HIGH PERFORMANCE AND SCALABILITY

Novell iFolder Professional Edition 2.0 not only gives companies a secure and easy-to-manage file-management solution that helps them keep their employees highly productive, but it does it in a way that doesn't sacrifice valuable IT bandwidth and CPU cycles. The Novell iFolder file synchronization process is highly efficient,

so network administrators don't have to worry about it degrading network performance.

Efficient File-Change Detection

The inherent design of competing file synchronization solutions often causes them to flood network bandwidth and significantly increase server utilization in order to simply detect file changes. These solutions dredge the entire directory doing comparisons on each individual file. This type of file comparison typically requires sending 1K data block across the wire for each file. This means that a single PC with only a thousand files on it would end up sending a 1MB block over the network just to see if any changes had occurred. In an enterprise environment with thousands of users that each have several thousands of files on their PCs, this inefficient operation results in significant degradation of network performance.

Novell iFolder employs a more efficient method to detect file changes. The Novell iFolder client runs as a filter driver on Windows NT/2000/XP and as a VXD on Windows 9x that integrates right into the client PC's Windows operating system and watches for system events that indicate file changes. When a file change event occurs, Novell iFolder sends only the changed portion of the file to the Novell iFolder server. In addition, when Novell iFolder checks the server for any file changes that may have occurred from other Novell iFolder client machines, Novell iFolder simply encapsulates 4 bytes of data into a server bound HTTP header in order to check for any changes. This quick and lightweight method of file-change detection allows for

frequent and immediate file synchronizations in large enterprise environments without adversely affecting network performance.

Delta Block Synchronization

When competing solutions synchronize modified files, they send the entire file across the network. So, even if a minor change is made to a 10MB file, the entire 10MB file gets sent across the network. In a productive working environment where users frequently save their work in process, whole file synchronization can severely bog down network performance. For mobile users on slow dial-up connections, this type of synchronization often results in significant user heartburn and a flood of complaints to the IT department.

When Novell iFolder synchronizes file changes, it sends only the changed portion of the file across the network during the synchronization process. To achieve this efficient synchronization, Novell iFolder parses each file into 4K blocks of data so it can easily identify what portion of a file actually changes. When a file changes, Novell iFolder only sends the associated 4K block of data that actually changed. So, when changes occur on that 10MB file, only the changed portion of the file is synchronized and sent across the wire, significantly minimizing network traffic.

Scalability

The efficient design of the Novell iFolder architecture enables a single Novell iFolder server to service approximately 10,000 users; however, Novell iFolder can easily accommodate significantly larger scale deployments by setting up multiple Novell iFolder servers as a single system image.

These multiple Novell iFolder servers not only provide load balancing for synchronization traffic, but it enables IT managers to strategically deploy Novell iFolder servers closer to its geographically dispersed users. This allows organizations to provide user authentication and URL access from a single point without requiring synchronization traffic to travel across expensive or slow WAN links.

Novell iFolder also makes it easy for organizations to stay ahead of the increasing demand from users for more storage capacity. Since Novell iFolder supports standard storage technologies, organizations can deploy SANs as part of their Novell iFolder implementation. So, as storage needs grow, organizations can easily add new drives and allocate the necessary storage for the Novell iFolder server without ever bringing the server down.

NEW REVENUE STREAM FOR ISPs

The solution's support for Linux, Solaris, NetWare, and IIS platforms also makes it easy for ISPs to take advantage of the secure file management and backup benefits that Novell iFolder delivers. It gives ISPs the ability to offer their subscribers new value-added services that can generate additional revenues for the ISPs business. ISPs can leverage Novell iFolder as a means to offer their customers a trusted "off-site" backup service for storing vital data. ISPs can also use the solution to give their customers secure and easy mobile access to all of their personal and business files from any Web connected computer as they travel between home, the office, business trips, and even vacations.

REAL-WORLD BENEFITS

In conjunction with its public release, Novell's IS&T department deployed Novell iFolder internally so that its own employees could take advantage of the many benefits that the Net services software provides. The Novell iFolder server at Novell runs on a Compaq* Proliant* DL360 with a fibre channel SAN attached to it. Novell has allocated a 500GB volume to serve the needs of the 3,000 users that are currently taking advantage of the file-management solution.

Protecting User Data

In discussing the affects of leveraging Novell iFolder, Ron Randquist, Systems Architect for Novell IS&T states, "Probably the biggest benefit we've seen from an IT perspective is the fact that our data is now actually sitting in one central place for backup. Before, we had a lot of data in the data center that got backed up, but there was still a lot of data floating around on people's notebooks that never got backed up. Novell iFolder lets us provide our users fast local access to their data, no matter what machine they're on. And now the data exists in more than one place, including a central location that we can easily backup. That has been a big benefit."

In the first few months that Novell began using Novell iFolder internally, it has already benefited a number of times from having users' data reside in multiple locations. In one instance, an employee had a two-month-old image of his disk's data put on his computer. Consequently, all the files and data he had worked on for the past two months

had become lost. Fortunately, he had been using Novell iFolder. All he had to do was login so his machine could synchronize with the Novell iFolder server. In a manner of a few minutes, all of his vital files from the past two months was updated back to his computer.

On a more personal note, Randquist tells of an incident that happened to him when the motherboard and disk drive on his laptop died. "I lost a little bit of mobility, but it wasn't a big deal," explains Randquist. "I had been synching to my desktop machine and my machine at home. So, it didn't phase me because I still had all my information available."

Randquist goes on to say, "Novell iFolder lets us provide a service that we previously couldn't provide our users. Solutions that actually backup entire laptops are very expensive and they don't provide any synchronization. Novell iFolder synchronizes our users' data to multiple locations and provides us a way to back it all up from a central location."

Efficient Bandwidth Usage

Even with more than 3,000 Novell employees taking advantage of the continual synchronization capabilities of Novell iFolder, it hasn't had a negative effect on network performance. On an average day the Novell iFolder server will have about a thousand active connections with the server utilization typically staying within a range of 6 to 18%. "Because of the way Novell iFolder does its synchronization, there hasn't been a huge bandwidth hit," says Randquist. "It doesn't dredge

for file changes so there aren't large conversations going on between the Novell iFolder client and the server whenever they do a synchronization."

Continuous User Productivity

Novell iFolder has also given the Novell IS&T group the ability to deliver a solution for its users that fosters continuous productivity. "Our users can be productive in more situations than they could before we had Novell iFolder," says Randquist. "Whenever they connect and no matter where they are, they have fast access to their data. They can even access their data if they're not on their own machine."

Scaling to Meet Growth

Novell IS&T eventually plans to service about 5,000 of its users from its one Novell iFolder server. And since they are using a SAN in conjunction with Novell iFolder, the IS&T team can easily increase its storage capacity as its demands for more data storage space grows. "We haven't seen any indication that it won't be able to handle all

5,000 of our users," says Randquist. "And since we're using a SAN, if we need more disk space, we just assign it and it's there."

CONCLUSION

Novell iFolder Professional Edition 2.0 provides organizations a simple and secure storage solution that enables their users to access and manage their personal files—from anywhere, at anytime. It simplifies the complexities associated with supporting a mobile workforce, allowing their files to automatically follow them wherever they go. It enables organizations to securely keep files synchronized and up-to-date between users different machines, while putting all user files in a position to be safeguarded through normal network backup operations. It also provides ISPs with a personal file back-up and disaster-recovery solution they can offer their customers. The Novell iFolder Net services software solution gives organizations the power to change how their employees work, enabling their users to be productive in the office, at home, or on the road.

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