

# Novell® Nterprise™ Linux Services on SUSE® LINUX

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SOLUTIONS WHITE PAPER

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**Novell®**

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on SUSE LINUX

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# Linux in the Limelight

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*“Linux is pervasive...*

*Everyone was always*

*pointing to the future.*

*But we’ve stopped pointing.*

*The future is here.”*

—Ross Mauri,  
General Manager  
of e-Business on  
Demand, IBM quoted in  
“What’s Next for Linux,”  
February 3, 2004, *eWeek*

Analysts’ forecasts regarding Linux\* in the enterprise server market largely concur that organizations are ready to adopt Linux. Forrester Research expects Linux adoption to “explode in every datacenter” this year. Researchers based this conclusion on findings from the firm’s recent survey, which revealed an impressive 72 percent of respondents with plans to deploy more Linux in 2004.<sup>1</sup> IDC predictions are equally impressive: its study of Linux projects that new, license-paid shipments for Linux servers will grow at a 2002-2007 compounded annual rate of 16.6 percent.<sup>2</sup>

Linux should surprise no one with this anticipated move into the enterprise limelight. The choice and flexibility of this popular platform pose an attractive, open source alternative to other server operating systems. IT executives have expounded for years on this and other cost savings associated with Linux server deployments and, recently, their anecdotal evidence has been substantiated. In a total cost of ownership (TCO) study, the Robert Frances Group concluded that Linux was the least expensive server platform to deploy and operate. In fact, the study proved Linux TCO over three years to be significantly less than half the TCO of its nearest competitor, a Windows server platform.<sup>3</sup>

Although Linux stands as a low-cost alternative to other server operating systems, that is not its only strength. Equally if not more important, Linux has a long-established reputation for being secure, reliable, efficient and fast performing. In addition, Linux is lean, and its notably small kernel enables organizations to leverage existing or new—but less expensive—Intel-based hardware.

Despite the appeal of the Linux package, many organizations are wary of adoption, a reluctance that stems from two common fears: lack of vendor support and lack of sophisticated, integrated network services. Novell® is addressing

these once-justifiable fears and, in so doing, accelerating the adoption of Linux in the enterprise.

Heralded by acquisitions of Linux leaders Ximian® and SUSE® LINUX, the Novell Linux initiative was solidified with its December 2003 release of Novell Nterprise™ Linux Services.

The first step in an evolutionary product line with revolutionary implications, Nterprise Linux Services offers organizations precisely what they’ve been looking for: proven, sophisticated infrastructure services—including directory, identity, file, print, messaging, portal and management services—backed by global,

<sup>1</sup>“The Linux Tipping Point,”  
*Forrester Research, March 2003*

<sup>2</sup>“Worldwide Linux Operating  
Environments Forecast and  
Analysis, 2002–2007:  
Transitioning to Mainstream,”  
*IDC, September 2003*

<sup>3</sup>“Total Cost of Ownership  
for Linux Web Servers in the  
Enterprise,” *Robert Frances  
Group, September 2002*

enterprise-class support on leading Linux operating systems.

### NOVELL NTERPRISE LINUX SERVICES: THE FREEDOM TO CHOOSE

With Nterprise Linux Services, Novell expands organizations' options in the enterprise server market. Existing Novell customers can maintain and protect their investment in NetWare®, knowing that Novell will continue to ensure that NetWare services comfortably coexist with complex environments, while exploring the possibility of incorporating Linux for the optimal environment of choice. Furthermore, organizations have the option to install Nterprise Linux Services on any one of the leading Linux platforms, namely the following:

- SUSE LINUX Enterprise Server 8.0 or higher
- Red Hat® Enterprise Linux AS 2.1 or higher
- Red Hat Enterprise Linux ES 2.1 or higher

As most organizations are aware, Novell distributes SUSE LINUX. However, rather than limiting customers' options to only its own distribution, Novell allows organizations the freedom to choose the platform that best suits their needs. Nterprise Linux Services atop SUSE LINUX simply affords organizations the option and convenience of purchasing the entire package from a single vendor.

Novell backs Nterprise Linux Services running atop SUSE LINUX (and Red Hat) with its entire support infrastructure. In doing so, Novell becomes the first major technology vendor to offer enterprise-class support for a Linux distribution with integrated network services. Through its training, developer and consultant services, Novell offers the support channel that organizations need to consolidate, install, deploy and migrate smoothly to a Linux environment. Once installed, Nterprise Linux Services automates the delivery of updates and patches for both platform and services through Novell Ximian Red Carpet™ technology. Finally, Novell technical support promises organizations that help with their Linux platform and integrated Novell services is only a phone call away.

Ultimately, Nterprise Linux Services running on SUSE LINUX offers organizations a compelling alternative to other solutions available today. Full-scale support by Novell for this offering opens the door to enjoying—without worry—recognized Linux benefits.

### SUSE LINUX ENTERPRISE SERVER 8: A SOLID FOUNDATION

SUSE LINUX has been a leading provider of Linux software and services since 1992. Acquired by Novell in January 2004, SUSE LINUX continues to

*“It’s a huge step forward for the open source community to gain strong support from a company like Novell. Initiatives like GNOME and Mono™ will only improve with Novell’s resources behind them. Novell has already made a strong commitment to open source with its recent decision to put the full range of its network services on Linux and its inclusion of MySQL\*, Apache and other open source technologies in NetWare. Ximian’s leadership within the open source community along with Novell’s strength and reputation in the enterprise market are a powerful combination that will help move GNOME and Mono forward.”*

—Miguel de Icaza,  
CTO,  
Novell Ximian Services

**Additional Resource:** For more information about Linux, visit these sites:

- <http://www.linux.org>
- Open Source Development Labs at <http://osdl.org>
- <http://www.linuxhq.com/>
- “The Strategic Value of Moving to Linux,” Novell White Paper at [http://www.novell.com/forms/form.jsp?survey=strategic\\_linux\\_value](http://www.novell.com/forms/form.jsp?survey=strategic_linux_value)

*“Novell Nterprise Linux Services completely changes the rules of the game for enterprise architectures. Most networking environments have been forced onto the Windows environment, but not necessarily because it was the best architectural fit. Now for the first time since the early nineties, CIOs have the option to put their enterprise-class networks on a widely supported operating system other than Windows.”*

—Anthony Hill,  
CIO,  
Golden Gate University

*“As Conectiva sees Linux adoption increase in the marketplace, we also see the value of software services that make the platform even more attractive to enterprise customers. Novell Nterprise Linux Services combines Novell’s technical expertise and proven market leadership to the benefit of the entire Linux community, including customers, developers and partners.”*

—Jaques Rosenzvaig,  
CEO,  
Conectiva

deliver enterprise-ready software and services that harness the innovation, speed-to-market and independence of the open source community.

The SUSE LINUX reputation for delivering solid products is evident in SUSE LINUX Enterprise Server 8, which can be deployed in heterogeneous IT environments of any size. Optimized for stability and security, SUSE LINUX Enterprise Server 8 offers a user-friendly interface and a set of tools that together simplify installation and configuration. This ease of use belies its power, which thrives in environments that require maximum speed and scalability from their servers: SUSE LINUX Enterprise Server 8 can use up to 32 processors and 64 GB of main memory. Through its asynchronous I/O and its ability to manage as many as 600 physical hard disks, the SUSE LINUX Enterprise Server 8 kernel ensures

high-availability as well as top-performance when interacting with Storage Area Network (SAN) systems.

SUSE LINUX Enterprise Server 8 enables organizations to choose the hardware platform that best suits their needs. The server supports a full range of hardware platforms, including x86 and AMD64 servers as well as IBM zSeries\* and iSeries\*/pSeries\* mainframes. The symbiosis of SUSE LINUX Enterprise Server 8 with either an x86-based system or a system from the Intel\* Itanium2\* Processor Family offers great performance for the lowest cost. For cases in which power is more important than cost, SUSE LINUX Enterprise Server 8 is available for AMD64. SUSE LINUX Enterprise Server 8 for AMD64 offers greater performance and higher processing speeds than today’s commonly used 32-bit servers allow.

**Additional Resource:** For more information about Novell’s Linux strategy, visit these sites:

- <http://www.novell.com/news/leadstories/inthenews.html>
- <http://forge.novell.com>

**Additional Resource:** For more information about SUSE LINUX, visit:

- <http://www.novell.com/linux/suse.html>. Also see “Bringing Linux to the Enterprise with SUSE,” January 14, 2004, *ServerWatch*, <http://www.serverwatch.com/sreviews/article.php/3299131>

*“2004 will be the year of Linux... Novell’s global sales and support channels provide tremendous new avenues to get Linux—and especially SUSE LINUX—to market. Leveraging open source in your enterprise just got a whole lot easier.”*

—Richard Seibt,  
President of SUSE LINUX,  
Novell, Inc.

### The Chameleon Migration

In December 2002, Novell IS&T mapped out a plan to migrate the Novell Web sites—namely [www.novell.com](http://www.novell.com), [developer.novell.com](http://developer.novell.com), [support.novell.com](http://support.novell.com) and [innerweb.novell.com](http://innerweb.novell.com)—from an aging, proprietary environment to a new, open-source environment. At the time, the Web sites were hosted on three Sun Microsystems' Sun E420s equipped with four 450 Mhz processors and 4 GB RAM.

Despite some concerns, Novell IS&T persevered along the roadmap of their own making, and one year later, they'd done it: Novell IS&T migrated the three Sun servers to three HP Proliant servers equipped with dual 3 Ghz processors and 5 GB RAM each. These Proliant servers run SUSE LINUX Enterprise Server 8.2.3 and Nterprise Linux Services 1.0.

The migration went smoothly: Novell IS&T personnel replaced the servers one machine at a time, running the load on two servers during transitions. Novell employees and customers continued to access the Novell Web sites without interruption throughout the migration process, the associated time- and cost-savings of which are impressive.

Migrating to Linux (rather than refreshing the former environment) enabled Novell to host its Web sites on inexpensive Intel-based hardware: the new HP Proliant servers cost U.S. \$12,000 each, for a grand total of approximately U.S. \$36,000. What was the cost of the previous system?

In a January 2004 internal press release on the subject of the Linux migration, the director of Novell IS&T Infrastructure Services Department reported that the Novell and Linux products were working well: "The performance screams," Don Morrison said, "and after one week, the environment already requires less care and feeding than our previous implementation."

*"We chose SUSE LINUX because they are a clear market leader in Linux technology for the enterprise. With this acquisition, Novell will be the only billion-dollar software company with a Linux distribution and a worldwide ecosystem around it. A worldwide technical staff of more than 600 has been trained to support Linux. The acquisition of SUSE LINUX completes our technology stack from the desktop to the server."*

—Jack Messman,  
CEO,  
Novell, Inc.

*"Novell Nterprise Linux Services offers Linux users proven infrastructure capabilities backed by enterprise-class support. Novell's announcement is confirmation that Linux is enterprise ready and should be considered by customers who want to take advantage of its benefits."*

—Stuart Cohen,  
CEO,  
Open Source Development  
Lab (OSDL)

*"We're very happy about Novell embracing Linux. We're not planning to move away from NetWare, but we are looking to incorporate some open source applications. As a large-scale enterprise though, we need reliable, consistent support. By introducing some enterprise-class applications and management into the open source world, Novell is giving Linux what it really needs."*

—Danny Wall,  
Network Administrator,  
Information Technology,  
Health First, Inc.

*“I tested a beta of NNLS 1.0... and was pleased... Installation was painless, and services were ready for configuration within half an hour... NNLS provides a big time-saver: an import/export wizard. Instead of re-creating users, I simply imported them from [my organization’s] AD server. If you’re familiar with LDAP, you’ll find the integration with directories a breeze... There’s a lot of product to NNLS, and though [sic] it’s a 1.0 release, the components making up the suite are not, on the whole, first-release products. Most of the products integrated—DirXML®, iManager, eDirectory™—are on second or later releases, and have been tested in the enterprise as individual products.”*

—Lori MacVittie,  
“Raising the Operating System Stakes,”  
Feb. 5, 2004,  
Network Computing

## ENTERPRISE-READY SERVICES

By distributing SUSE LINUX Enterprise Server, Novell offers businesses a stable, secure, cost-effective and, perhaps most important, globally supported open source alternative to other server operating systems.

Nterprise Linux Services improves upon this already attractive option by adding a rich set of network services built on mature Novell technologies and products. Running these services atop SUSE LINUX Enterprise Server 8 empowers organizations with the ability to incorporate and manage Linux servers in heterogeneous environments—and to do so with the confidence that only enterprise-class support from a trusted vendor allows.

The key services, previously available only on NetWare, that comprise Nterprise Linux Services have been tried and proven in enterprise networks worldwide and include the following:

SERVICES COMPONENT	DESCRIPTION
<b>Directory and Identity Services</b>	<ul style="list-style-type: none"> <li>Strengthens enterprise security</li> <li>Minimizes the cost and facilitates the task of managing cross-platform business systems</li> </ul>
<b>File Services</b>	<ul style="list-style-type: none"> <li>Enables secure anywhere, anytime access from browsers or Windows workstations to files on any-platform network server</li> <li>Automates synchronization and backup of Novell iFolder files on Windows workstations to networked servers, ensuring personal files are backed up and corporate assets are secure</li> <li>Eliminates the need for virtual private network (VPN) clients for file access</li> </ul>
<b>Print Services</b>	<ul style="list-style-type: none"> <li>Empowers users by enabling them to locate and print to any network printer—regardless of its location</li> <li>Reduces help desk calls with automatic installation of correct printer drivers on Windows workstations</li> <li>Simplifies IT workload to set up an Internet-based printing infrastructure</li> </ul>
<b>Messaging Services</b>	<ul style="list-style-type: none"> <li>Promotes productivity by facilitating collaboration</li> <li>Enables access to e-mail messages and calendaring schedule from any location</li> <li>Supports common e-mail, Internet and security standards, enabling organizations to leverage existing investments</li> <li>Scales to support as many as 20,000 users per server</li> </ul>
<b>Virtual Office Services</b>	<ul style="list-style-type: none"> <li>Offers a convenient one-stop-shop for everything users need to do their jobs</li> <li>Offers employees, customers, partners and suppliers single point of access to file, print, management and messaging services as well as corporate white pages</li> <li>Virtual Teams provide an automated browser-based infrastructure to facilitate team collaboration</li> <li>Significantly reduces help desk calls by providing Web interface to password self-service</li> </ul>
<b>Management Services</b>	<ul style="list-style-type: none"> <li>Simplifies and reduces cost of managing systems</li> <li>Enables Web-based management of eDirectory and all components of Nterprise Linux Services</li> <li>Delivers software updates automatically to Nterprise Linux Services servers using Red Carpet</li> </ul>

**Additional Resource:** For more information about Nterprise Linux Services, visit:

- <http://www.novell.com/products/linux>

## DIRECTORY AND IDENTITY SERVICES

The integration of Novell eDirectory 8.7.1 and Novell DirXML® Starter Pack, the Directory and Identity Services component of Nterprise Linux Services, strengthens enterprise security and decreases management of cross-platform business systems.

### Novell eDirectory

Novell eDirectory 8.7.1 is the keystone of Nterprise Linux Services and critical to the realization of one Net. Novell eDirectory provides the foundation for centralized identity management by providing administrators with a single location from which they can control users' access to all network resources based on users' organizational roles. This role-based identity management enables organizations to control with precision access privileges for all types of users—including employees, customers, partners and suppliers—across application, operating system and network boundaries.

### Novell DirXML Starter Pack

Novell DirXML Starter Pack is a subset of and convenient steppingstone to Novell Nsure™ Identity Manager (formerly called DirXML). Not available as a stand-alone product, DirXML Starter Pack enables organizations to exchange identity data and synchronize passwords among three directories that commonly co-exist on today's networks: eDirectory, MS Active Directory\* and MS NT Domains.

Data exchange and password synchronization is made possible through connectors to these systems. To control the flow of identity information, organizations configure these connectors, creating rules that dictate when and how DirXML should

propagate changes made in these systems.

Organizations configure these rules to control which system remains the authoritative source for particular fields of identity data. By eliminating the need to manually create and modify user identities in multiple systems, DirXML not only ensures data integrity, but also provides automated efficiency that facilitates management of cross-platform systems.

With DirXML Starter Pack, organizations experience the automated and bi-directional exchange of data between these few systems and, in the process, get a taste of the vast potential of Nsure Identity Manager. A full-scale deployment of Nsure Identity Manager enables organizations to share data between hundreds of network directories, databases and critical applications, including PeopleSoft\*, SAP HR, Lotus Notes\* and Novell GroupWise®, to name only a few examples.

## FILE SERVICES

The File Services component of Nterprise Linux Services integrates a version of Samba, Novell iFolder® and Novell NetStorage customized by Novell. With these valuable tools, users can securely access files not only on the Nterprise Linux Services server but also on any Linux, Windows or NetWare server on your network. Hence, with an Internet connection and a browser, users with privileges to File Services can access any file on their organization's network from anywhere at anytime.

The File Services component of Nterprise Linux Services facilitates user productivity and minimizes administrator workload. It also guards sensitive

*"We're excited to see Novell package the core services we've been using for a long time into one great product for Linux. Novell Nterprise Linux Services gives us all sorts of possibilities for the future... Large-scale enterprises need better support than going to a users' forum. Having Novell behind Linux makes all the difference. Novell gives us premier service, works diligently on our issues and really cares about our organization."*

—Daryl Waldrop,  
Senior Technician,  
University of Louisville



*“It’s great to see Novell bring a level of maturity and expertise to Linux that will only improve what an open source platform has to offer. We’ve been running large-scale enterprise systems for many years and know it’s essential to have confidence in our technology. Novell’s support for Linux generates a whole lot of comfort.”*

—Stephen R. Bennison,  
Director of  
Information Technology,  
University of Louisville

data from unauthorized eyes and protects files against unexpected mishaps.

### **Nterprise Linux Services-configured Samba**

An open-source software suite, Samba enables Windows users to access files on Linux servers in the same way they access files on Windows servers. The pre-configured version of Samba in Nterprise Linux Services greatly simplifies its setup and enhances its security.

After installing Nterprise Linux Services, organizations create eDirectory users, which Nterprise Linux Services by default also creates as Linux User Management (LUM) users to enable Samba use. Nterprise Linux Services then minimizes password problems by automatically making LUM users’ Samba password the same as their eDirectory password. When users change their eDirectory password (using the Nterprise Linux Services Virtual Office Change Password function), Nterprise Linux Services synchronizes their Samba password.

### **Novell iFolder 2.1**

Installed as part of Nterprise Linux Services, Novell iFolder stores files not only on Windows workstations’ hard drives but also on a tightly secured Novell iFolder server, which can be accessed—with proper credentials—from the Web. Web access enables users to access their files from anywhere at any time using the following devices:

- a Windows laptop or desktop running a Novell iFolder client
- a Web browser (no client required)
- a Pocket PC or Palm\* Web browser (no client required)

An invaluable service, Novell iFolder simplifies and accelerates users’ access to data, enabling them to access files saved in Novell iFolder from anywhere they have an Internet connection and a standard Web browser. Novell iFolder secures data by encrypting it as it crosses the wire and on the network servers. It protects files with automated back ups and synchronization across all users’ systems running the Novell iFolder client. Even under dire circumstances—such as a laptop theft or hard disk failure—users’ data is always current, available and safe with Novell iFolder. For organizations, this assurance of always-available data simplifies management, protects valuable corporate data on local machines and potentially increases productivity.

### **NetStorage**

The final link in the File Services chain, NetStorage enables users to access files on NetWare and Linux servers using either a browser or MS Web Folders. This single access point to multiple storage locations facilitates file system access and management for users and administrators, respectively. Perhaps more important, NetStorage and Novell eDirectory ensure that accessing files over the Internet is as secure as accessing them from within the network.

### **PRINT SERVICES**

The Print Services component of Nterprise Linux Services integrates Novell iPrint. As the industry’s most versatile print solution, Novell iPrint improves productivity and streamlines administration.

### **Novell iPrint**

Through Novell iPrint, Nterprise Linux Services grants users authorized in eDirectory—including

remote and mobile users—the ability to print from any Internet-connected computer to any network printer. Whether at corporate headquarters, telecommuting from home or attending a sales meeting halfway around the world, users print documents quickly, easily and reliably—without the aid of help desk personnel. With Novell iPrint, users conveniently select target printers from Web-based maps of their organization’s print environment and simply click to print.

For the IT administrator managing a large printing infrastructure, simplifies printer management. With its ability to scale to hundreds of printers per server, centralized management through eDirectory and iManager, and leverage auditing capabilities, iPrint can facilitate the most stringent print needs of any organization. Additionally, security is never compromised, so users and executives can rest assured that sensitive information will not fall into the wrong hands as it is distributed over the Internet.

### Novell iPrint Windows Client

For users at Windows workstations, the Novell iPrint client offers automated download and installation of correct printer drivers. Whether they know the printer’s name, make, model or driver specifications, Windows users can print worry free: from convenient Web-based maps, Windows users simply click to select the printer to which they’d like to send a job, and Novell iPrint takes care of the rest.

## MESSAGING SERVICES

The Messaging Services component in Nterprise Linux Services integrates Novell NetMail® 3.5 and

the Novell GroupWise 6.5 Collaboration Client, enabling users to stay connected and productive.

### Novell NetMail 3.5

Novell NetMail is a full-featured messaging and calendaring solution that integrates easily into any environment through its support for common messaging, Internet and security standards, including the following:

- POP3
- IMAP4
- SMTP
- LDAP
- HTTP
- iCAL

Novell NetMail helps organizations keep costs under control by easily scaling to support tens of thousands of users on a single Linux server. Whether an organization has 15 or 20,000 users, Novell NetMail grants them the full range of capabilities users have come to expect from an e-mail system: for example, NetMail users can send, receive, store, organize, archive, forward, copy and blind copy their e-mail messages. In addition to extensive messaging features, the NetMail component integrated with Nterprise Linux services provides calendaring and scheduling, task management and comprehensive anti-spam features.

With a template-based Web client and support for mobile devices, Novell NetMail enables users to access their messages using not only browsers running on laptops and workstations but also from cell phones as well as Palm and Pocket PC handhelds.

*“Our users like iPrint because it makes them self-sufficient, particularly our roaming users. They don’t need to know anything about drivers; they just click on the desired printer.”*

—Matthew Krieger,  
Associate Director  
of Global Network  
Architecture Services,  
*Reader’s Digest*

*“Novell’s Linux announcement was one of the most profound industry developments in the last year. GGU wanted to extend its Linux-based data center consolidation architecture to the rest of the enterprise computing environments. We wanted to consolidate our network, messaging, and database and application server environments onto one common OS platform—Novell’s Linux strategy gives us that opportunity.”*

—Anthony Hill,  
CIO,  
Golden Gate University

In addition, Novell NetMail supports any POP3 and IMAP4 client, so users can continue to use the e-mail client to which they’ve grown accustomed.

### Novell GroupWise 6.5 Collaboration Client

Nterprise Linux Services also includes the Novell GroupWise 6.5 Collaboration Client, which offers award-winning collaboration capabilities that help users work together more efficiently.

### VIRTUAL OFFICE SERVICES

Nterprise Linux Services enhances the Web experience by incorporating popular open source software, including The Apache Foundation’s Apache 2.0.48 Web server, Apache Jakarta Tomcat 4.1.28 Web application server and MySQL database server. In addition, the Virtual Office Services component of Nterprise Linux Services facilitates user productivity and reduces help desk loads.

### Novell Virtual Office

Virtual Office is an out-of-the-box browser-based productivity environment that is useable immediately after Nterprise Linux Services installation. Along with its ready-to-go gadgets to several integrated services—namely Novell iFolder, iPrint and NetMail—Virtual Office includes pre-configured gadgets to Novell eGuide, Password Self-Service and Virtual Teams.

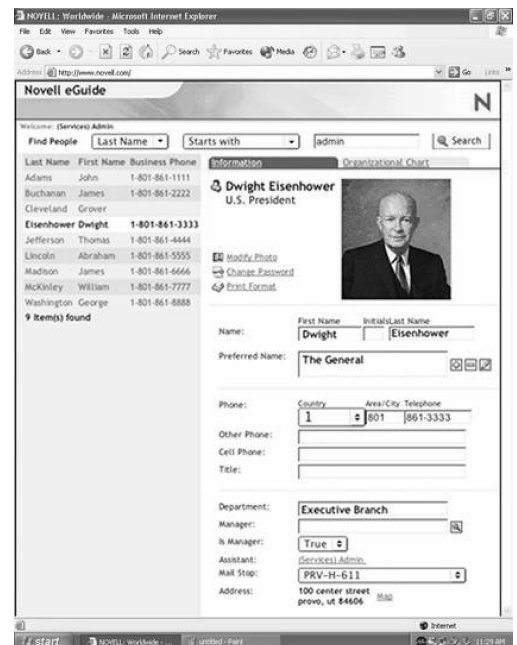
### Novell eGuide

Frequently described as a white pages application, Novell eGuide offers more than a search engine for locating names and numbers—although it serves this basic function well. Novell eGuide enables

users to search any LDAP-compliant directory and can search several directories at once. With Novell eGuide, users search for other users based on one of several criteria, after which eGuide can return any user information that an organization can store in Novell eDirectory.

In addition, Novell eGuide displays organizational charts that illustrate where a searched for—and found—user sits in relation to other users within the organization team. Novell eGuide facilitates collaboration by enabling users to click once to launch e-mail, instant messaging or video conferencing and, with that one click, communicate with anyone in the organization.

IT administrators can allow users to edit contact information, office location or any aspect of their identity, as determined by company policy. This allows users to keep their information current and eliminates workload for the IT staff.



## Password Self-service

From within Virtual Office, users can change their own eDirectory passwords, which automatically synchronize Samba and, with DirXML as the enabling technology, their Active Directory and NT Domains passwords as well. Empowering users with the ability to manage their own passwords significantly reduces helpdesk calls, 30 percent of which are typically password related.

## Virtual Teams

Virtual Teams enable users to work together easily with other users who might be scattered across the globe—without the cost and hassle of travel and long-distance communications. Virtual Team members can communicate freely, participating in discussions, sharing documents and ideas, and scheduling calendar events.

A Virtual Team is a Web-based collaboration environment to help bring team members together to work effectively. This location provides a single access point where team members can post and find all types of content about their project (including files, images, events and links). The Virtual Teams feature makes it easy for team members to stay abreast of their project's status. For example, the Virtual Team feature can automatically alert team members via e-mail when site content changes (e.g., a member posts a message or uploads a file).

Any user within an organization can create a Virtual Team. Team creators are team owners, who have rights to invite other members to participate and to make other members owners.

All team owners can invite or un-invite members and perform other team-configuration options, such as determining file locations and deciding upon communication methods. Among other methods, instant messaging enables Virtual Team members to communicate easily with other team members and to print or save their conversations.



## MANAGEMENT SERVICES

An essential Nterprise Linux Services component, Management Services integrates Novell iManager and Novell Resource Management, delivering an unmatched set of secure management services for the Linux platform. By enabling convenient Web-based administration and providing automated software distribution, the Management Services component simplifies management across the entire network and swiftly reduces administrative costs and efforts.

## Novell iManager

Novell iManager is a browser-based tool with an easy-to-use, point-and-click interface that takes

*“The newly integrated Virtual Teams technology allows all of our employees to collaborate. This is not technology which can only be used by administrators; this is simple enough for everyone!”*

—Chris Nevener,  
Networking Partner  
GmbH

*“We wanted to move to an open source solution, but needed one that could be centrally managed and supported. With Novell Nterprise Linux Services, we have the first industrial strength, vendor-supported network solution for Linux.”*

—Keith Rajecki,  
IT Infrastructure Manager,  
Golden Gate University

the drudgery out of—while enabling a proactive approach to—network administration. Securely accessible, Novell iManager enables administrators to complete virtually all setup, configuration and management tasks for Nterprise Linux Services from any workstation with a wired or wireless Internet connection and a standard browser. In addition, many administrative tasks can be completed from a browser running on either a Pocket PC or Palm handheld.

#### **Novell Resource Management**

Streamlining administration, Management Services in Nterprise Linux Services includes Ximian Red Carpet, the leading software management solution for Linux desktops and servers. With this technology, administrators can significantly reduce the amount of time they spend on repetitive management processes. For example, Management Services enable administrators to easily configure and automate the distribution of operating systems and Nterprise Linux Services updates.

Management Services simplifies and automates other time-consuming tasks as well, with version control, dependency detection and conflict resolution features. These features ensure that servers have the correct configurations for receiving distributed Linux software and that any problems are identified and resolved without manual intervention.

#### **WHEN NETWARE AND LINUX CONVERGE**

With its journey down the Linux path, Novell enables IT organizations to increase their agility by making available more choices and thereby allowing greater flexibility. Along this path, Novell will deliver an

experience where the best of NetWare and the best of Linux are brought together so organizations can leverage the strengths of these platforms working together.

Coined the “one Net Suite” by some Novell employees, this suite will include services currently available only on NetWare 6.5. Novell will back its one Net suite—as it currently backs Nterprise Linux Services—with enterprise support, training centers, trained administrators, channel partners, consultants and partner certifications. This suite will offer the gamut of network services, which will enable or facilitate all of these points:

- one Net user experience
- Identity management and security
- Enterprise management
- Business continuance

Nterprise Linux Services marks a sizeable first step toward realizing this plan. Through Novell iFolder, iPrint and Virtual Office features, such as Virtual Teams and Novell eGuide, Nterprise Linux Services already actualizes the one Net user experience. This experience is characterized by easy but secure access to the information users need to work alone and together.

In Nterprise Linux Services 2—slated to be released by the end of 2004—Novell will enhance the file services requisite to the one Net user experience with Novell Storage Services™ (NSS). Novell Storage Services supports volumes up to 8 TB each, mounts volumes of any size in seconds and takes only seconds to repair and mount volumes after a server crash. With Novell Storage Services, Novell introduces the strongest file security on the

market. Among other features, Novell Storage Services permits users to see only the directories to which they are entitled, enables users to salvage files without calling IT, and provides the technology for file versioning and information lifecycle management.

Through Novell eDirectory, DirXML Starter Pack, Virtual Office and support for auditing and multi-layer authentication, Nterprise Linux Services satisfies the one Net prerequisite for identity management and security. Nterprise Linux Services also offers organizations features that facilitate identity management and strengthen security—features that the Linux platform alone cannot offer. For example, Linux alone does not support the use of biometrics and smart tokens as Nterprise Linux Services does by way of the included Novell Modular Authentication Services (NMAS™). Nor does Linux alone enable users to update their own identity information, as users can do via Novell eGuide.

Through Novell eDirectory, Novell Resource Management and Novell iManager, Nterprise Linux Services offers a strong base for enterprise management. In Nterprise Linux Services 2.0 and in the one Net suite, Novell will improve its management offering by enabling pattern deployments and remote upgrades, among other enhancements. Pattern deployments allow organizations to designate a server function, after which the server is automatically configured for that function and tuned for the highest performance possible. Remote upgrades enable organizations to perform upgrades to any server, regardless of its locale, from the convenience of a single location.

In Nterprise Linux Services 2 and in the one Net suite, Novell will significantly strengthen the area of business continuance. For example, Nterprise Linux Services 2 will enable high-availability clustering, snap-shot backups and geosite failover. Geosite failover refers to a feature that enables organizations to mirror sites that are geographically separated for the ultimate data protection plan. Nterprise Linux Services 2 will also include support for iSCSI (Internet SCSI), an IP-based storage-networking standard that enables organizations to set up a cost-efficient SAN using standard Ethernet equipment.

#### THE ROAD TO ONE NET

Organizations are ready to adopt Linux but, until now, have been justifiably wary of doing so. Lack of vendor support and integrated network services posed worrisome obstacles to adoption. Breaking barriers along this open-source path, Novell now offers a full set of mature network services on a Linux distribution and backs this offering with its entire support infrastructure. With this move, Novell meets the needs of its existing and future customers for fully supported services on an open-source platform capable of running on commodity hardware.

Nterprise Linux Services on SUSE LINUX empowers organizations with the ability to introduce Linux—worry free—into their mixed environments and at last enjoy the associated cost savings and other benefits Linux has to offer. With this barrier-breaking offering, Novell takes a big step down the road toward actualizing its vision of one Net, a world without information boundaries.

*“We do not seek to change open source, we will embrace it... and we will contribute more than we take away.”*

—Jack Messman  
CEO, Novell, Inc.,  
LinuxWorld 2004  
Keynote Address

*“...What excited us about Novell’s strategy coming into the company was [that] Novell over the last 20 years has built all these services, servers, assets and infrastructure above the operating system: Novell iFolder, iPrint, GroupWise, ZENworks, eDirectory, Single Sign-on... [This functionality] doesn’t exist in Linux. Now Novell has the opportunity to really catalyze the Linux market by bringing all those assets to Linux. You have the Linux world, which has been trying to grow up into an enterprise-class, viable operating system environment. And you have Novell, which already has a lot of those assets... This is an incredible strategy.”*

—Nat Friedman,  
Vice President of  
Research and Development,  
Novell Ximian Services

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