Where to Start: Novell Open Enterprise Server

MIGRATION GUIDE MARCH 2005

www.novell.com

Novell.

WHY MOVE TO NOVELL OPEN ENTERPRISE SERVER

If you are a NetWare customer and are thinking about making the move to Novell Open Enterprise Server, one of the most obvious—and immediate—benefits you can realize is the addition of Linux to your IT environment. With Open Enterprise Server, you can add Linux to your current NetWare® environment at a pace that meets your needs without affecting end-user productivity or disrupting your current operations.

Organizations of all types are rapidly gaining confidence in Linux as an enterprise-ready operating environment. Linux delivers the performance, reliability and security that organizations demand for their critical business services. Plus, Linux brings advantages like lower cost, an abundance of applications and a richer development environment. The growing confidence in Linux is evidenced by its rapid growth in the marketplace; industry studies predict that the Linux market share will jump from 24 percent today to 33 percent by 2007.

Novell Open Enterprise Server is the latest generation of integrated networking services from Novell and includes proven file, print, management, directory, security, collaboration and application services. Open Enterprise Server includes both the NetWare® and SUSE® LINUX Enterprise Server* operating systems, and the networking services can run on either platform. Using integrated upgrade and migration utilities, you can select the platform mix that is best suited for your particular environment. Moreover, common management utilities enable you to manage both platforms using the same tools, simplifying administration. With Open Enterprise Server, you can move from NetWare to Linux at the pace best suited to your organization.

*Novell Open Enterprise Server includes SUSE LINUX Enterprise Server 9 for Intel-based x86 hardware.

ABOUT THIS GUIDE

This guide helps you determine where to start with Novell Open Enterprise Server. It features six services that are easy to set up and that will generate significant new value for your business. The guide outlines the processes for moving key Open Enterprise Server networking services from NetWare to SUSE LINUX Enterprise Server 9 and for deploying them in your organization for the first time. Regardless of whether the service is new to you or not, this guide will help you understand where to start and what the requirements for implementation are. This guide is not intended to provide every installation step; rather, it offers a high-level roadmap to help you understand the major processes you will follow as you plan your migration projects and begin to commit resources.

NOTE: For brevity's sake, this guide refers to “SUSE LINUX Enterprise Server 9” (included in Open Enterprise Server) simply as “Linux.”

The six projects outlined in this guide are:

- Deploying new standalone iFolder 2.1 on Linux
- Upgrading Novell queue-based printing on NetWare to iPrint on Linux
- Moving AMP from NetWare to Linux
- Setting up an iSCSI SAN on Linux
- Moving eDirectory from NetWare to Linux
- Moving Novell Storage Services from NetWare to Linux

Each of the six implementation guides features the following sections:

- A brief description of the networking service

- A project-summary list of the required prerequisites, including skillsets and hardware*
- What to expect and look for
- Major steps to be performed
- Time estimate
- Useful documentation and additional sources

In most cases, the Open Enterprise Server hardware requirements are sufficient for any of the six networking services. These requirements are as follows:

- A server-class computer
- Pentium* II processor minimum (Pentium 4 at 1.5 GHz recommended)
- 512 MB RAM minimum (1 GB recommended)
- 10 GB free disk space

*In some cases, specific components may require additional RAM and disk space.

PROJECT ONE: DEPLOY NEW STANDALONE NOVELL IFOLDER 2.1 ON LINUX

As you begin to investigate moving your NetWare environment to Open Enterprise Server, Novell iFolder™ is one of the first features that you will want to explore on Linux. One of the premier features of Novell Open Enterprise Server, iFolder is a simple and secure storage solution that can increase users' productivity by enabling them to back up, access and manage their personal files from anywhere, at anytime. Once you have installed iFolder, your users simply save their files locally, just as they have always done. They no longer need to e-mail files to themselves or save them to a disk; iFolder automatically updates the files on a network server and delivers them to the other machines that the users access.

Project Description

To deploy a standalone iFolder on SUSE LINUX Enterprise Server 9, install Open Enterprise Server using a pattern deployment on a new server. For now, assume that iFolder is only the Web service to be installed on this server at this time.

NOTE: It is unnecessary to install eDirectory on the same server as Linux-based Open Enterprise Server, so you must choose whether or not to also install eDirectory on this server now.

Prerequisites

The following outline the skills, hardware and other requirements for this project.

Required Skillsets

Familiarity with eDirectory, including Admin user and which ports LDAP uses to communicate

Directory Implications

- Ensure that eDirectory has been installed on the network.
- Determine what directory server you will use for authentication and what context you will use for authenticating users.
- If you do not already have iFolder running on NetWare, you will need to have rights to extend eDirectory schema so you can add the unique attributes that iFolder uses. (If you already have iFolder running on NetWare, you will not need additional rights because the eDirectory schema will have already been extended with the iFolder attributes.)
- Point iFolder to the LDAP server to be used for authentication. (This is the local server if you installed eDirectory on the same server as iFolder and is a remote server if you did not).

Hardware Requirements

In most cases, meeting the Open Enterprise Server hardware requirements will suffice. You should, however, take a close look at your disc-storage and network-card requirements:

- **Disc storage**. Depending on the storage quota you have established for users and the number of users to be accommodated, you may need additional disc capacity.
- **Network cards**. If you intend to install additional Web services on the same server as iFolder, you may want to install an additional network interface card to accommodate the increased traffic.

What to Expect and Look for

- **Storage quota.** When setting the user storage quota upon installation, be sure you set it sufficiently high. After installation, you will have to increase each user's quota individually; this can be a time-consuming process if you have hundreds or thousands of users.
- **Encryption.** When setting the encryption options during installation, you have the option of storing or not storing the users' passphrases on the iFolder server. (Passphrases are used as the encryption keys.) Not storing them provides a higher level of security because only the user can decrypt the information. However, if the user leaves the company and the encrypted information is business-critical, you cannot decrypt it without the original user's cooperation.

The Procedure at a Glance

There are four major steps to the installation procedure:

1. Determine the parameters for Open Enterprise Server installation that affect iFolder:
   - The directory tree into which you will install the server
   - Which additional Web services, if any, you intend to install on the same server as iFolder
   - User disc quota
2. Run Open Enterprise Server installation with pattern deployment. The iFolder install portion consists of three simple screens:
   - Admin ID
   - Authentication server (Here, you specify to which directory server you are going to authenticate. If you are installing eDirectory on the same server as iFolder, this screen is automatically populated.)
   - Data location
3. Log into the Admin page and enable iFolder for users. (Otherwise, users will be unable to access iFolder.)
4. Distribute iFolder client to users.

Time Estimate

This installation takes approximately one hour to perform.

Useful Documentation and Additional Resources

Refer to the following sources for more details:

- iFolder Installation and Administration Guide (**www.novell.com/documentation/ifolder21/pdfdoc/admin/admin.pdf**)
- iFolder support forum (**http://support.novell.com/forums/**)

PROJECT TWO: UPGRADE NOVELL QUEUE-BASED PRINTING ON NETWARE TO IPRINT ON LINUX

Novell iPrint is the popular, easy-to-use printing service Novell introduced in NetWare 6 that is now in Novell Open Enterprise Server. On Linux, iPrint gives you a standout printing solution to help you lower your print-related IT costs. You can rest assured that as you transition from NetWare to Open Enterprise Server, you maintain all the advantages of secure print services across Linux as well as other operating systems. With iPrint, your users can send documents to printers located throughout the Net. Whether a user is located in your office building, is telecommuting from home or is attending a sales meeting thousands of miles away, iPrint ensures that documents are printed quickly and reliably. Using Internet technologies—including the industry-standard Internet Printing Protocol (IPP)—iPrint provides global access to printers, customizable views of any print environment, flexible print deployment configurations and secure printing. iPrint is based on Novell Distributed Print Services™ (NDPS®), a time-tested print solution known for its manageability, scalability, reliability and ease of use.

Project Description

Upgrade from queue-based printing (QMS) on a NetWare server to iPrint on Linux. First, we will upgrade from QMS to iPrint on the NetWare server. Then, we will move iPrint to a Linux server. This description is written with the assumption that you have already installed Open Enterprise Server with iPrint on the target server.

Prerequisites

The following outline the skills, hardware and other requirements for this project.

Required Skillsets

Familiarity with iPrint

Hardware Requirements

In most cases, the Open Enterprise Server hardware requirements are sufficient.

What to Expect and Look for

The first step in the move is to upgrade from QMS to iPrint on the NetWare server. This involves the creation of a print manager and a print broker, plus the creation of an iPrint object for each printer. Be sure to use DNS for iPrint objects; otherwise, you will have to change individual printer IP addresses when you move iPrint from the NetWare server to Linux-based Open Enterprise Server.

The Procedure at a Glance

There are six major steps to the procedure:

1. Create your iPrint environment on NetWare.
2. Using iManager, associate QMS objects with the new iPrint printer.
3. Distribute the latest iPrint Client (version 4.05 or higher) to end users.
4. Turn on the migration module in iPrint by editing the iprint.ini file.
5. Each client's installed printers or captured queues will be automatically migrated from QMS to iPrint the next time that client accesses iPrint. This is done without end-user participation or awareness. End users continue to print to the same printers.

6. When all users have been migrated, move iPrint from the NetWare server to the Open Enterprise Server. (Novell is currently developing a tool to facilitate this migration. The tool will be available in the near future.) This move is also transparent to end users.

Time Estimate

It takes approximately two minutes to create each iPrint object and associate a printer with it. Once you have created all the iPrint objects, it takes approximately one hour to upgrade from QMS to iPrint on a NetWare server. Moving iPrint from a NetWare server to a Linux server will take an additional hour. Of course, the procedure steps —especially upgrading clients—is typically performed over time, so the total time for the upgrade will likely exceed the sum of the individual task times.

Useful Documentation and Additional Resources

Refer to the following source for more details:

- Novell Open Enterprise Server: iPrint Administration Guide for NetWare (**www.novell.com/documentation/oes/pdfdoc/iprint_nw/iprint_nw.pdf**)

PROJECT THREE: MOVE AMP FROM NETWARE TO LINUX

AMP is a popular Web-services framework that many have deployed on NetWare and is now available on Novell Open Enterprise Server. Other Open Enterprise Server components are MySQL, Apache, PHP, Perl, Tomcat (the leading JSP servlet container) and other Web-oriented technologies. And with a market share of more than 60 percent, Apache is the world's most widely-used Web server. For Web applications, Apache is often combined with Linux, the MySQL database and the programming languages PHP and Perl—a combination commonly referred to as LAMP. With LAMP, you can tap into thousands of available applications and utilities. What's more, you can combine the power of Perl, PHP and Python with the broad range of LDAP and Perl libraries available for Linux to create a rich development environment for creating dynamic Web content.

Project Description

Move AMP components from a NetWare 6.0 or NetWare 6.5 server to a single new server running Linux.

NOTE: You can install different AMP components on different servers if you need to.

This guide is written with the assumption that authentication will be through LDAP. The Apache RPM for SUSE LINUX includes the LDAP authentication module as part of the installation content. Simply create the appropriate directive in the httpd.conf file and point the LDAP module at the appropriate eDirectory tree.

Prerequisites

The following outline the skills, hardware and other requirements for this project.

Required Skillsets

Familiarity with Apache, MySQL, and scripting tools such as putty, Samba or CIFS

Directory Implications

Because we have assumed authentication through LDAP, there are no directory implications.

Hardware Requirements

In most cases, the Open Enterprise Server hardware requirements are sufficient.

Other Prerequisites

Be sure that all the browsers you intend to use are supported by AMP on the Linux side of Open Enterprise Server. Supported browsers include Firefox* (Linux and Windows), Internet Explorer* and Mozilla*.

What to Expect and Look for

- You will need to move the files associated with AMP—html files, script files and MySQL database files—from NetWare to Open Enterprise Server. You can use tools such as secure ssh, FTP, putty and winscp to perform the move.
- NetWare uses 15 attributes in eDirectory to secure access at the file-system level whereas Linux uses only nine attributes. Make certain that wwwrun, the Apache user on Linux, has sufficient rights to execute the PHP, Perl and HTML scripts that you have moved to Linux.

The Procedure at a Glance

There are five major steps to the move:

1. Run Open Enterprise Server installation with pattern deployment and install the AMP components. (Be sure you understand the differences in file structure between NetWare and Linux; AMP components are located in different places and labeled differently in Linux than they are in NetWare.)
2. Using wwrun, set up access rights in Linux to match those in NetWare.
3. Run a test PHP script in Apache to validate successful installation.
4. Move the files associated with AMP from the NetWare server to Open Enterprise Server.
5. Move passwords and user IDs from the NetWare server to Open Enterprise Server. You can put a Linux eDirectory server in the same tree with existing NetWare servers, or you can simply LUM-enable (Linux User Management, a utility in iManager) the Linux users so the directory tree on NetWare is aware of them.

Time Estimate

This installation and setup take approximately one hour.

NOTE: Some additional time may be required to tweak scripts to accommodate the move of Apache to a different server and directory tree.

Useful Documentation and Additional Resources

Refer to the following sources for more details:

- Apache Web Site (**http://httpd.apache.org/docs-2.0/**)
- Apache Web Server for NetWare Administration Guide for Open Enterprise Server (**www.novell.com/documentation/oes/index.html?page=/documentation/oes/web_apache/data/hz8pck9v.html#bktitle**)
- Configuring LDAP Services for Novell eDirectory (**www.novell.com/documentation/edir873/index.html?page=/documentation/edir873/edir873/data/ahlmb7h.html#ahlmb7h**)
- MySQL Reference Manual (**http://dev.mysql.com/doc/mysql/en/index.html**)
- Novell Linux User Management Technology Guide (**www.novell.com/documentation/oes/index.html?page=/documentation/oes/lumadgd/data/front.html#bktitle**)

PROJECT FOUR: SET UP AN ISCSI SAN ON LINUX

Support for iSCSI was introduced in NetWare and is now available on Linux through Novell Open Enterprise Server. As you transition from NetWare to Open Enterprise Server, storage needs will likely be one of your top priorities. Storage-area network (SAN) technologies help by enabling you to consolidate, provision and re-provisioning storage, as well as improve backup and archives. Traditional SANs, however, cost hundreds of thousands of dollars in hardware, software, management and training. Novell provides a much lower-cost SAN solution.

Internet Small Computer System Interface (iSCSI) SAN for Open Enterprise Server on Gigabit Ethernet hardware delivers SAN functionality a fraction of the cost of a Fibre Channel SAN solution. Because of the universality of IP networks, an iSCSI SAN can be used to transmit data over local area networks, wide area networks and the Internet. Furthermore, it can support up to 32-node server clusters. The bottom line: iSCSI SANs allow you to build high-availability clustered storage systems at a very low cost.

Project Description

Set up a Linux server to access an iSCSI SAN. This guide is written with the assumption that you have already installed Open Enterprise Server. If you currently have a NetWare 6.5 or an Open Enterprise Server NetWare side Target Storage Array and wish to continue to use it with Linux, you can preserve data through the transition.

NOTE: There are no viable software iSCSI target storage arrays supported on Linux at this time. Consequently, if you wish to continue to use your NetWare 6.5 or Open Enterprise Server on the NetWare side Target Storage Array, you will have to continue to run it on NetWare. If you are currently using a third-party iSCSI target storage array, you will need to test it for compatibility with the Linux-based Open Enterprise Server initiator.

Prerequisites

The following outline the skills, hardware and other requirements for this project.

Required Skillsets

Familiarity with iSCSI, TCP/IP, Ethernet LAN hardware and file-system and volume management

Directory Implications

If you are not currently using an iSCSI SAN or will continue using your third-party iSCSI target storage array, there are no directory implications. If you are currently using iSCSI SAN with a NetWare 6.5 or Open Enterprise Server NetWare side Target Storage Array, you will need to ensure that the Linux-side Open Enterprise Server object is a trustee of the NetWare 6.5 or Open Enterprise Server on the NetWare side iSCSI target object in eDirectory.

Hardware Requirements

In most cases, the *Open Enterprise Server* hardware requirements are sufficient.

What to Expect and Look for

- If you use a third-party iSCSI target storage array, you should first set up a test environment to ensure compatibility of the Linux-based Open Enterprise Server iSCSI initiator with your third-party array.
- If the NetWare server on which you are currently running the initiator is a NetWare 6.5 server, then the NSS data on the target storage array is already in a format that can be directly mounted by the Linux server.
- If the NetWare server on which you are currently running the initiator is an earlier NetWare version (5.1 or 6.0), you have two options for converting or migrating the NSS data currently on the target storage array:

- If you intend to keep the same iSCSI target storage array, upgrade the NetWare server currently running the initiator to NetWare 6.5 or NetWare side of Open Enterprise Server. The next time the disc is mounted on that server, the NSS and NetWare partitions on the target storage array will be automatically updated to the format that Linux-based Open Enterprise Server is able to utilize directly.
- If you are moving to a new iSCSI target storage array, use the Server Consolidation and Migration Utility to copy the data from the old target storage array to the new target storage array.

- If you use the NetWare 6.5 or NetWare side of Open Enterprise Server iSCSI Target Storage Array, you will use the Linux-based Open Enterprise Server object in eDirectory to allow Open Enterprise Server to access the NetWare 6.5 or Open Enterprise Server NetWare side Target Storage Array.

The Procedure at a Glance

There are four steps to set up your Linux-based Open Enterprise Server to access the target storage array:

1. If necessary, prepare the NSS data for migration as previously described.

2. Install the iSCSI initiator on Linux-based Open Enterprise Server. (Use YAST -> Install/remove software -> Linux-iscsi.)

3. Set up iSCSI on Open Enterprise Server.

   - Edit the iscsi.conf file (/etc/iscsi.conf) to set the "DiscoveryAddress" to the IP address of your iSCSI storage array.
   - If you are using a NetWare 6.5 or NetWare Open Enterprise Server iSCSI Target Storage Array, you need to set the iSCSI initiator burst and buffer size parameters in the Operational Parameter Settings section of the iscsi.conf file and edit the initiatorname.iscsi file, replacing the numbers that follow the colon with the full name of your Linux-based Open Enterprise Server eDirectory object.

1. Start the initiator and connect (iscsi start).

2. Configure the system to automatically start the initiator at bootup (chkconfig iscsi on).

Time Estimate

Assuming that you have already installed Linux-based Open Enterprise Server, it takes approximately 30 minutes to set up the server to access an iSCSI SAN.

Useful Documentation and Additional Resources

Refer to the following sources for more details:

- iSCSI 1.1.3 Administration Guide for NetWare (**www.novell.com/documentation/iscsi1_nak/index.html**)
- iSCSI Initiator 1.1.3 Administration Guide (**www.novell.com/documentation/iscsi10/index.html?treetitl.html**)

PROJECT FIVE: MOVE EDIRECTORY FROM NETWARE TO LINUX

Novell eDirectory is the industry's best choice for large-scale, high-end directory deployments. This standalone cross-platform directory service gives you a strong foundation for secure identity management in your enterprise. It facilitates the management of user identities by indicating the business resources users can access based on their roles and relationships with the company. Secure identity management, based on Novell eDirectory, helps you simplify complex, heterogeneous networks; securely extend business resources to internal and external users; and provide a secure, manageable foundation for the deployment of Web services. With its unmatched scalability and reliability, flexible yet strong security architecture, compatibility with key industry standards and operating

systems, and manageability second to none, Novell eDirectory Server is the optimum choice for your business as you move from NetWare to Linux-based Open Enterprise Server.

Project Description

We will migrate eDirectory from a NetWare server to Linux that will be added as a new server. This guide is written with the assumption that the source server is running NetWare 5.1 or later and has the latest support pack installed. It also assumes that the Linux server will be installed to the same tree as the source NetWare server.

Prerequisites

The following outline the skills, hardware and other requirements for this project.

Required Skillsets

- Familiarity with eDirectory network architecture and tree design
- Familiarity with managing eDirectory partitions and replicas

Directory Implications

Because it is the directory itself that we are moving, there are no other directory implications.

Hardware Requirements

In most cases, the *Open Enterprise Server* hardware requirements are sufficient.

What to Expect and Look for

You must understand the context and where you will place the Linux Server in the eDirectory tree. You also need to know the replicas you are going to store in this partition—what portions of the tree this server stores.

The Procedure at a Glance

There are three major steps to move the eDirectory from NetWare to Linux:

1. Install the new Linux server into an existing tree using Open Enterprise Server pattern deployment. If the Linux server is one of the first three servers to be placed in the tree, a read/write replica of the root partition is automatically placed in eDirectory. Otherwise, you must run iManager to manually place this replica in eDirectory.
2. Once you have installed the new Linux server into an existing tree and placed a replica on the new server, all the appropriate eDirectory objects will be copied to the eDirectory database on the new server. The new server will now appear as just another server in the eDirectory tree.
3. Depending on what other services you will be running on the Linux server, you may have to make additional adjustments to eDirectory to accommodate these services. (Default Open Enterprise Server pattern deployment installs all services except NSS, Cluster Services and iFolder.)

Time Estimate

Installing Open Enterprise Server with eDirectory and setting it up on the server takes approximately one hour. (Additional time may be required depending on such factors as directory size and synchronization.)

Useful Documentation and Additional Resources

Refer to the following sources for more details:

- Open Enterprise Server for Linux Installation Guide (**www.novell.com/documentation/oes/index.html**)
- eDirectory 8.7.3 Administration Guide (**www.novell.com/documentation/oes/index.html**) Select "Identity and Directory Services."

PROJECT SIX: MOVE NOVELL STORAGE SERVICES FROM NETWARE TO LINUX

Novell Storage Services™ (NSS) delivers a robust and reliable storage solution for Novell Open Enterprise Server. Novell Storage Services scales to accommodate the needs of your growing business, is easy to maintain and protects your files against corruption. A secure and manageable file system, Novell Storage Services provides an efficient way to use and protect your storage-device space. It allows you to store data securely in the long-honored Novell trustee access-control model. The Novell trustee model is heralded as the most secure, flexible and easily managed access-control model for large shared file systems.

Project Description

Move files from a NetWare file server to a Linux server. This document is written with the assumption that you have already installed a Linux server with eDirectory and the NSS file system on top and that you have installed NCP on Linux. (You will need it to run the Server Consolidation Utility program.)

NOTE: Novell recommends using NSS on Linux to preserve the metadata from the NetWare file server.

Prerequisites

The following outline the skills, hardware and other requirements for this project.

Required Skillsets

- Familiarity with installing Open Enterprise Server services on SUSE LINUX Enterprise Server 9
- Familiarity with NSS file system
- Familiarity with Windows application installation (for installing the Server Consolidation Utility)

Hardware Requirements

In most cases, the *Open Enterprise Server* hardware requirements are sufficient.

What to Expect and Look for

You need to understand the types of data—such as user's home directory, backup files and application data—on the NetWare file server because the Server Consolidation Utility also moves metadata.

The Procedure at a Glance

There are three major steps to migrate a basic file server from NetWare to a Linux server:

1. Install Server Consolidation Utility 4.0 or later on a Windows workstation.
2. Run the Server Consolidation Utility to copy the desired folders or volumes from the NetWare server to the Linux server.
3. Change the drive mappings in clients from the NetWare side to the Linux side of Open Enterprise Server.

Time Estimate

The time to perform this upgrade depends on the amount of information to be moved and the transfer speed of your network. Copying is fast with the Server Consolidation Utility because it copies data directly from the NetWare side of Open Enterprise Server to the Linux side without having to go through the client.

Useful Documentation and Additional Resources

Refer to the following sources for more details:

- Novell Server Consolidation Utility 4.0 Administration Guide (**http://download.novell.com**) Search for Server Consolidation Utility.
- Novell Storage Services Administration Guide (**www.novell.com/documentation/nw65/index.html**) Search for Novell Storage Services Administration Guide for NetWare 6.5.

TAKE THE NEXT STEP

We hope this information has been helpful to you as you decide how best to introduce Open Enterprise Server—particularly its Linux side—into your environment. With SUSE LINUX Enterprise Server 9 included in Open Enterprise Server, you are able to take full advantage of the many the NetWare services you trust on a platform that offers significant new functionality and choice. Novell plans to document additional projects that will help you further extend the capabilities of Open Enterprise Server.

To find out more about how Open Enterprise Server can help your organization reap the full benefits of the Linux environment, visit **www.novell.com/oes**. For additional information and deployment assistance, please visit **http://support.novell.com/products/openenterpriseserver/**