

VERSION 5

Novell

Licensing

Services

NetWare⁵TM
NETWORK SOFTWARE

Novell[®]

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Contents

Preface

1 Understanding

Changes to NLS.	2
How NetWare 5 is Packaged	3
For the Regular Distribution Channel	3
For Accounts with Agreements	6
Introduction to NLS	6
Basics about NDS	6
Key NLS Terms	7
Maintaining Security.	14
How NLS Works.	14
Introduction to NLS Manager	16
Quick View of licenses	17
Tree View of licenses	18

2 Planning

Is NLS Installed and Configured on the NetWare 5 Server?	22
NetWare Servers in a Mixed Environment	23
Upgrading Servers	24
Updating NetWare 4.11 Servers	24
Plan to Update the NDS Database	24
Plan to Install NLS.	25

3 Setting Up

How to License a NetWare 5 Server	28
Using SETUPNLS.NLM	28
Using NWCONFIG.NLM	29
Installing NetWare 5 into a Mixed Environment	30
Installing Directly into the NDS Tree	30
Upgrading a NetWare 4.11 Server	30
Updating NetWare 4.11 Servers	31
If You Are an MLA Account	39

4 Managing

Install a License Certificate	42
Create a Metered Certificate	44
Install an Envelope	46
Assign Licenses to Users	47
Assign a New Owner to a License Certificate	49
Create a Licensing Catalog	50
Make Server Assignments	52
Move a License Certificate	54
View Information about License Containers	55
Using NetWare Administrator	55
Using NLS Manager's Quick View	55
Using NLS Manager's Tree View.	57
View Information about License Certificates	58
View Information about LSPs	61
Update Views	63
Create and Use Reports	63
Create reports	64
Customize reports	65
Save reports	66
Print reports	67
Open a report.	67
View a report	67

5 Troubleshooting

Tips	69
No access to licenses	69
Can't manage a license certificate	70
Merging two trees seems to have caused a problem	71
Server beeps at one-second intervals.	71
Updating is too slow	71
Usage doesn't change.	72
System Messages.	72
Duplicate License	72
Unable to Find NLSLSP.NLM	72
Unable to Write License Info to NDS	73
Questions and Answers.	73
About Policy Manager	73
About NLS Manager.	74
About user assignments.	74

Trademarks

Novell Trademarks	75
Third-Party Trademarks.	82

Preface

Novell® Licensing Services (NLS) provides features and tools for monitoring and managing license usage on your network.

For a general discussion of components, processes, and management tools, see Chapter 1, “Understanding,” on page 1.

For requirements for using NLS, see Chapter 2, “Planning,” on page 21.

For steps for installing NLS on a NetWare® 5™ server, see “How to License a NetWare 5 Server” on page 28.

For steps for installing NLS on a NetWare 4.11 server, see “Installing NetWare 5 into a Mixed Environment” on page 30.

chapter **1** *Understanding*

Novell® Licensing Services (NLS) helps you monitor and control the use of licensed software on your Novell network.

In NetWare® 5, Novell has made several changes concerning NLS.

Novell has also changed the way it packages NetWare. NetWare 5 Server Plus 5 Connections kits and NetWare 5 Connection Licenses kits allow you flexibility in purchasing, installing, and managing licenses.

As a network administrator, you need to know basics about NDS™, key NLS terms, NLS objects in NDS, NLS clients, and how NLS works. Once you understand NDS and NLS, you can maintain access to and security of licensing services.

After NLS is installed on a server, you can use the NLS Manager and NetWare Administrator utilities to install and create license certificates and then monitor and manage license usage. NLS Manager allows you to create reports to see the usage of licenses over a period of time.

Changes to NLS

In NetWare 4™, licensing was a proprietary system tied to SERVER.EXE and had limited capabilities for managing and reporting licensing. During installation, the NDS schema was extended and licensing services were installed.

In NetWare 5™, licensing is not tied to SERVER.EXE. Instead, licenses are stored in NDS and represented by NDS objects. This separation enables more robust management and reporting of licenses, and Novell can change license models without changing SERVER.EXE. NetWare 5 has the ability to support many different licensing models, providing licensing models for the customer as well as allowing Novell to provide license distributions.

During installation of NetWare 5, the installation program extends the NDS schema, converts old NLS objects (if they exist), configures the server as a License Service Provider, installs a server base license, and installs NetWare 5 connection licenses.

In NetWare 5, every partition in the NDS tree (but not every server) running NetWare 5 requires licensing services to be run on a server with a read / write replica. This read / write replica communicates with NDS to install licensing objects, authenticate, and complete other NDS tasks.

Novell changed the licensing model to

- ◆ Simplify the purchasing and installation processes. You can now purchase and install additional connection licenses without having to reinstall NetWare.
- ◆ Get products to you more quickly. In some cases, electronic commerce allows you to purchase NetWare from a reseller and then, instead of having to accommodate an extended waiting period, install NetWare within 30 minutes.
- ◆ Provide technology that allows you to monitor usage and meet licensing requirements. The NLS Manager utility allows you to create, customize, and print reports of license usage on your network.
- ◆ Provide flexibility so that developers can customize and enhance licensing without modifying server.exe.

How NetWare 5 is Packaged

Licenses for NetWare 5 are available through regular distribution channels (from Novell resellers), agreements for large account. Although not covered here, special licenses (demo, evaluation, First Look fulfillment, and education) are also available.

For the Regular Distribution Channel

Novell resellers provide you with “off-the-shelf” NetWare. To avoid duplication and simplify packaging, Novell is standardizing its packaging of NetWare products. You can now customize orders by purchasing a NetWare 5 Server Plus 5 Connections kit and (optionally) NetWare 5 Connection License kits.

These kits allow you to install new NetWare 5 servers, upgrade from NetWare 3 and 4, and add connection licenses to existing NetWare 5 servers.

Server Plus 5 Connections Kits

The NetWare 5 Server Plus 5 Connections kit is required. It is the only way to license your server. The kit includes:

- ◆ CDs that have server and client software and documentation
- ◆ A license diskette that has digital licenses for the server-plus-5 software (a server base license plus five connection licenses) on
- ◆ A language-specific installation manual
- ◆ A registration or Activation Key card

The server base licenses and connection licenses in these kits require a server assignment. The server installation program will automatically assign a server.

If you select Install Without Licenses during the server installation, you can later use NWCONFIG.NLM, NetWare Administrator or NLS Manager to install the license certificates. If you use NWCONFIG.NLM, the file server assignments are made automatically. If you use NetWare administrator or NLS Manager, you need to set the server assignments automatically.

Connection Licenses Kits

NetWare 5 Connection Licenses kits are optional. Because you can purchase combinations of connection licenses that you need, these kits allow flexible configurations for your network. Options include 5-, 10-, 25-, 50-, 100-, 250-, and 500-licenses certificates.

Connection Licenses kits include:

- ◆ A diskette that has a digital licenses for the client connections
- ◆ A registration or Activation Key card
- ◆ Information that tells you how to install the license certificates

These connection licenses also require a server assignment. If you use NWCONFIG.NLM, the file server assignments are made automatically. If you use NetWare administrator or NLS Manager, you need to set the server assignments automatically.

Scenario 1 The VMP Company plans to place 340 employees on a new NetWare 5 network. The company purchases and installs the Server Plus Five kit. The GUI installation program assigns the license certificates to the server.

To provide 335 additional connection licenses, the company purchases the following Connection Licenses kits:

- ◆ Three 100- licenses kits
- ◆ One twenty-five-licenses kit
- ◆ One ten-licenses kit

Using NWCONFIG.NLM, the network administrator installs the additional license certificates, and NWCONFIG.NLM automatically makes file server assignments.

Scenario 2. The OptionsPlus Company, with 530 employees, plans to upgrade four NetWare 3 servers and provide licenses for 1,070 connections. The company purchases four Server Plus Five kits. The GUI installation program assigns license certificates to the servers they are installed on. Because the connections cannot be shared across servers, the OptionsPlus Company also purchases the following Connection Licenses kits:

- ◆ One 500-licenses kit and one 25-licenses kit for server ROS (the mail server, so that all 530 employees can connect to it)
- ◆ One 250-licenses kit and one 100-licenses kit for server GRANITE (to allow 355 connections for Development and Production)
- ◆ One 100-licenses kit, one 50-licenses kit, and one 10-licenses kit for server KNOX1 (to allow 165 connections for employees in Commerce)
- ◆ One 50-licenses kit and two 10-licenses kits for server IST (to allow 75 connections to the database server)

Using NWCONFIG.NLM, the network administrator installs the additional license certificates.

(The network administrator could optionally use NetWare Administrator or NLS Manager to install the certificates and manually assign each certificate to a server.)

Scenario 3. The Puffin Company has already installed NetWare 5 on five servers. Because the company is hiring an additional 50 employees, the company purchases five 50-licenses kits.

Using NWCONFIG.NLM, the network administrator installs a 50-licenses kit on each of the five servers, placing certificates into contexts accessible to the employees. With the additional licenses on each server, the fifty new employees are able to log in to each of the five servers.

(The network administrator could optionally use NetWare Administrator or NLS Manager to install the certificates and manually assign each certificate to a server.)

For Accounts with Agreements

Novell provides various agreements, depending upon the size of the account: Master License Agreement (MLA), Corporate License Agreement (CLA), and Volume License Agreement (VLA).

MLAs are for global organizations. An MLA license is a Server Plus Unlimited Connections license. You can install the license certificate for as many connections as the license agreement allows. See “If You Are an MLA Account” on page 39.

For more information about MLAs, see <http://www.novell.com/programs/ncc/mla.html>.

CLAs are for medium-to-large-size organizations. See <http://www.novell.com/programs/ncc/cla.html>.

VLAs are for small-to-medium-size organizations. See <http://www.novell.com/programs/ncc/vla.html>.

For a comparison of these agreements, see <http://www.novell.com/programs/ncc/3progs.html>.

Introduction to NLS

Basics about NDS

Because NLS is integrated with NDS, you need to be familiar with the basics of NDS and understand NDS objects, partitions, and replicas of partitions. For background information, refer to the glossary in the Reference section

- ◆ On the NetWare 5 Documentation CD-ROM
- ◆ At www.novell.com/documentation/lg/nw5/docui

Key NLS Terms

Understanding the following terms helps you maintain licensing on your network.

- ◆ **License Service Provider (LSP):** Licensing software that you install and run on NetWare servers; is contained in the NLSLSP.NLM program running on a NetWare 4.11 or later server

An LSP provides the actual licensing service. It handles requests from NLS clients and maintains the license certificates, which are stored within NDS.

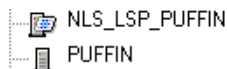
When you install NLS on a NetWare server, NLS installs the LSP software on the server and creates an LSP object (NLS_LSP_[servername]) in the NDS tree. NLS also extends the schema for licensing and, if older NLS objects exist, converts them to NetWare 5 objects.

You need to have an LSP running on a server with a writable replica. This replica can be a master or read / write replica. You can run LSPs on servers without replicas as long as they can communicate with the LSP with a writable replica. The server with the writable replica can make changes to the NDS database in the other servers' behalf.

- ◆ **NLS_LSP_[servername]:** An object in NDS; one of the evidences that NLS is installed on a server and that a server is an LSP.

The NLS installation process installs the LSP software on the server and creates a corresponding LSP object (NLS_LSP_[servername]) in the NDS tree

LSP objects are created in the same NDS context as the server running the LSP software (NLSLSP.NLM). For example, if you install NLS on server Puffin, NLS creates an LSP object named NLS_LSP_Puffin in the NDS database. Using NetWare Administrator, you can view this object in the same context as server Puffin, as shown below:



The LSP object stores configuration information about an LSP running on the server: a transaction database name, information about how to search for a license certificate (whether to search to the partition root or to the root of the tree), and other associated data.

NLS adds an attribute on the NCP Server object. This attribute points to the LSP so that NLS has a link between the NCP Server object and the LSP.

- ◆ **NLS client:** Software that requests licensing services from LSPs; runs on client workstations or on NetWare servers.

NLS client software supports four platforms: DOS, 16-bit Windows, 32-bit Windows, and NetWare Loadable Modules. When you install NLS on a server, all of the files that enable an application to use NLS are copied to the following directories on the server:

- ◆ SYS:\PUBLIC\WIN95 for Windows 95 clients
- ◆ SYS:\PUBLIC\WINNT for Windows NT clients
- ◆ SYS:\SYSTEM for DOS and Windows clients
- ◆ SYS:\PUBLIC\WIN32 for 32-bit applications

Other than Novell client software, no additional files need to be installed on client workstations. Applications written to use NLS load client libraries that communicate with NLS components running on a NetWare server.

However, as the network administrator you may need an updated version of the COMCTL32.DLL file on your Windows workstation. (Version 4.70 or later is required.) This file allows you to use the NLS Manager utility.

You can copy this file from the NetWare 5 CD-ROM—for example, from the CLIENTS\PRODUCTS\WIN95\IBM_ENU folder. This file goes in the WINDOWS\SYSTEM (for Windows 95) or WINNT\SYSTEM32 (for Windows NT*) folder.

If the client has an existing connection to a NetWare server running an LSP, the client communicates directly with the LSP. If the client does not already have a connection to a server running an LSP, the client searches to the root of the NDS tree for an LSP.

Example 1: NLS client software on a client workstation

At your Windows* 95* workstation you want to use OptionsPlus, an NLS-enabled application. After you click the icon for OptionsPlus, that application loads on your client workstation. OptionsPlus then requests a license. The NLS component (a .DLL file linked to OptionsPlus software) locates an LSP (an NLS component running on a server). That LSP searches NDS for a License Certificate object that has license units available. The LSP responds to the NLS client in OptionsPlus and allows you to use the application.

Example 2: NLS client software on a server

To bring up server Puffin, you load SERVER.EXE, the NetWare 5™ operating system. NetWare 5 loads and runs NDS and an LSP, necessary components of an NLS server. Before completing its bootup, NetWare 5 uses NLS client software (an NLM library for NLS) to request a server base license from an LSP (already running on Puffin). The LSP checks NDS for a license certificate. If a license is available, the LSP allows server Puffin to run the NetWare 5 operating system.

NLS itself does not enforce licensing. Instead, it tells applications whether a license is available. The application then determines whether the user can use the application.

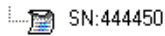
NetWare purchased through the distribution channel has a “hard stop.” This means that if no additional licenses are available, NetWare prevents users from using the application--in this case, a connection to the server. (NetWare for MLAs does not have a hard stop.)

Example 3: Metering

A client workstation requests an application that is not NLS-enabled. Z.E.N.works™, integrated with NLS, requests a license on behalf of the application. (Z.E.N.works is the directory-enabled, cross-platform networking solution for Windows-based computers.) Depending on the response from NLS, Application Launcher in Z.E.N.works chooses whether or not to load the application. Thus, Application Launcher can be configured as a license requester for applications that are not NLS-aware.

- ◆ **License Certificate object:** An object in NDS; represents a license certificate.

License certificates correspond to the printed license statement that is typically included in the packaging for software products. The icon for a License Certificate object looks like a single sheet of paper representing a license certificate. When you view the object in NetWare Administrator, the certificate displays the serial number, as shown below:



Certificates can be secure or unsecure:

- ◆ A **license certificate** is a digital license that is secured by secrets. It is an .NLS file in an envelope. For additional security, NetWare license certificates are digitally signed. They cannot be modified.
- ◆ A **metered certificate** does not have secrets. It is an unsecure license. Z.E.N.works functions as the NLS client and requests licenses on behalf of applications.

NLS creates a License Certificate object when you install license certificates for NLS-enabled applications or when you create metered certificates.

When you install or create a license certificate, you choose the context (location in an NDS tree) for this object.

- ◆ **Activation Key:** A sequence of numbers and letters stored in a .KEY file that allows you to complete the installation of a license for a product you purchased.

Software vendors provide this key at the time of purchase. Usually, the Activation Key is included in an envelope (.nlf) file and is automatically installed during installation. However, if the installation program can't locate an Activation Key, a prompt allows you to enter it.

- ◆ **Envelope:** A simple method that enables multiple license certificates to be distributed; an .NLF file that contains one or more license certificates.

Because multiple license certificates can exist in an envelope, envelopes allow you to install several license certificates at the same time. Envelopes can contain an embedded activation key for license certificates.

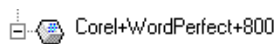
In NetWare 5, envelope (.NLF) files replace SERVER.ML.

A sample envelope file is 42C1F1D.NLF. See “Install an Envelope” on page 46.

- ◆ **License Container object:** An object in NDS; contains one or more License Certificate objects.

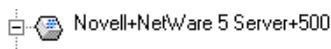
A License Container object is a special container object in NDS. (Other container objects include [Root], Country, Organization, and Organizational Unit.) License Container objects can contain one or more License Certificate objects.

License Container objects are named using publisher, product, and version. For example, Corel* WordPerfect* version 8 could appear as follows in an NDS tree:

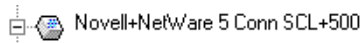


When you install a license certificate or create a metered certificate, NLS creates a Licenses Container object *and* a License Certificate object. (If a license container already exists, NLS places the additional license certificate in that existing container.)

NLS creates two License Container objects for NetWare 5: one for a server base license and one for a connection license. The *server base license* allows the NetWare 5 operating system to provide authenticated connections for clients. Its License Container object displays as follows:



Connection licenses allow users to log in and use NetWare services. A License Container object for a server connection license displays as follows:



If licensing is not installed properly, (for example, if you choose not to install NLS during installation of NetWare 5), you have two login connections (but not the 5, 50, or 1000 that you purchased). That is, you have a two-user server. These connections allow you to log in, troubleshoot, and install NLS.

Each license container has one or more license certificates (unless you move or delete them). The following figure shows:

- ◆ A license container and certificate for a server connection license
- ◆ A license container and certificate for a server base license



Using NetWare Administrator or the Tree View in NLS Manager, you can view License Container objects as they appear in the NDS tree.

Using the Quick View in NLS Manager, you can view License Container objects grouped by product.

- ◆ **SETUPNLS.NLM:** Software that configures NLS.

SETUPNLS.NLM extends the NDS schema, creates NLS objects in the NDS tree, and converts older NLS objects to NetWare 5 objects in NDS.

When installing or upgrading to NetWare 5, the GUI installation program installs NDS and creates the NLS_LSP_*[servername]* object. However, the GUI installation does not convert old NLS objects to objects in NetWare 5. To convert NetWare 4.11 NLS objects, you need to run SETUPNLS.NLM.

- ◆ **NWCONFIG.NLM:** Replaces INSTALL.NLM.

NWCONFIG.NLM allows you to set up NLS, install envelopes and additional license certificates, and delete licenses.

Unlike SETUPNLS.NLM, NWCONFIG.NLM does not extend the NDS schema.

- ◆ **Policy Manager (Gatekeeper):** A program that makes decisions based on requests from a licensing system; requests a licenses and decides whether to grant access to licensed services

You can have policy managers running on the client to support the four NLS client platforms. For NetWare 5, the policy manager is contained in SERVER.EXE and uses LSAPI.NLM to make its licensing calls. (LSAPI.NLM and NLSAPI.NLM constitute the client component. NLSLSP.NLM is the server component.)

- ◆ **NLS Manager:** A graphical management utility that (along with NetWare Administrator) enables you to monitor license usage and analyze licensing requirements

NLS Manager also enables you to create, customize, and print reports of license usage on your network.

- ◆ **Licensing Catalog object:** An optional object in NDS; periodically scans the NDS tree and stores information about licenses

NLS does not require a Licensing Catalog object. The NLS Manager utility takes advantage of Catalog Services by using a License Catalog object. This NDS object is set up to search the NDS tree for license containers and license certificates, thereby providing frequently updated information about licensing on the network.

Without a Licensing Catalog object, NLS must walk the NDS tree when you first use NLS Manager or when you update the Quick View in NLS Manger. For large networks or networks with WAN links, a Licensing Catalog object enables the NLS Manager utility to provide usage information more quickly.

Maintaining Security

Network users should have easy and efficient access to licenses. However, you may want to prevent unauthorized access to some licenses.

Access and security are maintained by ownership of, and assignments to, license certificates.

Each License Certificate object has an owner. By default, this owner is the complete NDS name of the object that installed the license certificate or created the metered certificate. Admin (or the equivalent) is typically the owner. (You may have created an Admin equivalent and then deleted Admin.)

Only the object that owns a certificate (or an object that is security-equivalent to the owner) can transfer ownership of a license certificate.

Ownership of a certificate is independent of any NDS object trustee assignments. A trustee assigned to a License Certificate object is not the owner of the certificate.

An owner of a License Certificate object can assign users or other NDS objects to a license certificate. Once an assignment is made, only those objects that are explicitly assigned to a certificate can use the license units associated with that certificate. (Otherwise, any object at or below the NDS context of the certificate can request licenses from the certificate.)

An object that is security-equivalent to an assigned object can also access those license units.

How NLS Works

The following list illustrates how LSPs handle requests from NLS clients by interacting with the NDS database.

1. An application issues a request to the NLS client.

In NetWare 5, for example, the server requests a license on behalf of the workstation that is connecting to the server. The server issues this request to the NLS client.

2. The NLS client library packages the request from the application and submits it to an LSP.

If the client has an existing connection to a NetWare server running an LSP, the client communicates directly with the LSP. If the client does not already have a connection to a server running an LSP, the client searches for an LSP, starting from the context of the user and continuing, if necessary, up to the root of the NDS tree. The client attempts to connect to the server corresponding to the LSP object found in the NDS tree.

In NetWare 5, for example, the NLS client communicates with the LSP on that server.

3. The LSP examines the request and determines whether it can fill the request. It does this by checking the NDS context of the user for the specific information or license being requested.

In NetWare 5, for example, the LSP searches the context of the server for a NetWare license.

4. If the requested resource is available, the LSP fills the request. If the LSP cannot fill the request, it can check the next-higher context in NDS for the requested resources. The LSP continues to search until it reaches the Root of the partition or the top of the NDS tree, depending on how the LSP is configured.

In NetWare 5, for example, the LSP searches up the NDS tree for a NetWare license.

5. The LSP returns status to the client library.

In NetWare 5, for example, if the LSP finds a NetWare license, it returns a successful status to the library. Otherwise, it returns an error code.

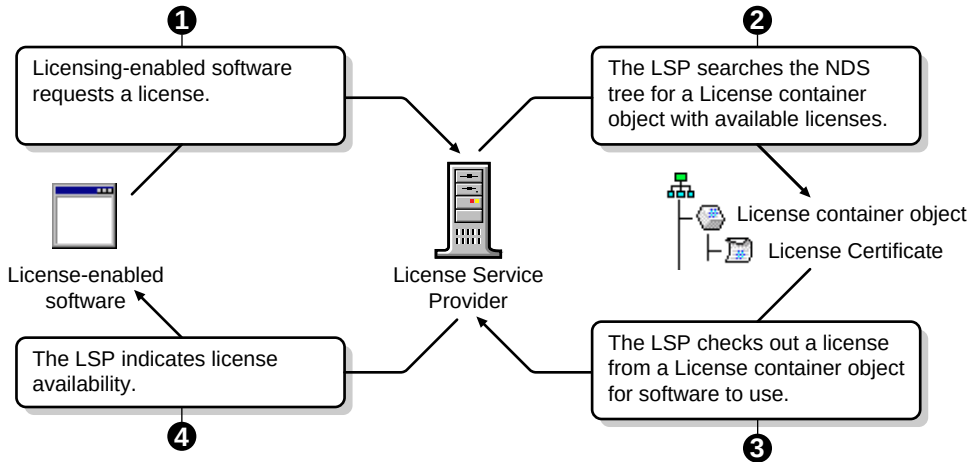
6. The library returns status to the application.

In NetWare 5, for example, the library returns licensing status to the server.

7. The application determines action based upon license status.

In NetWare 5, for example, the server determines an action. If the license status is successful, the server allows a connection to the server. Otherwise, the server allows a grace connection (if one is available).

The following figure illustrates how NLS works.



Introduction to NLS Manager

The NLS Manager utility is a graphical utility for Windows 95 and Windows NT. It allows you to install and create license certificates and monitor license usage so that users on the network comply with licensing requirements.

You can also create, customize, and print reports.

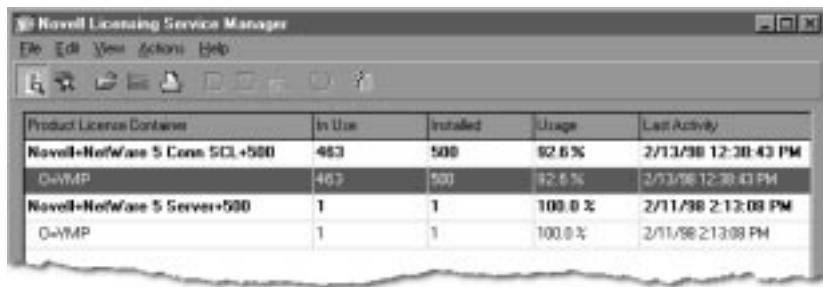
To access NLS Manager, run NLSMAN32.EXE from the PUBLIC\WIN32 folder (on the server).

NLS Manager has two views: a Quick View and a Tree View.

Quick View of licenses

In NLS Manager, the Quick View is the default view. It alphabetically lists product license containers installed on the network and displays their context.

The following figure illustrates the Quick View.



The screenshot shows the 'Novell Licensing Service Manager' window. It has a menu bar (File, Edit, View, Actions, Help) and a toolbar with icons for file operations and a magnifying glass. The main area displays a table of product license containers.

Product License Container	In Use	Installed	Usage	Last Activity
Novell-NetWare 5 Core SCL+500	463	500	92.6 %	2/13/98 12:38:43 PM
Q-WMP	463	500	92.6 %	2/13/98 12:38:43 PM
Novell-NetWare 5 Server+500	1	1	100.0 %	2/11/98 2:13:08 PM
Q-WMP	1	1	100.0 %	2/11/98 2:13:08 PM

From the Quick View, you can quickly get information about license usage, create reports to capture that information, open and view reports, and get updated information from a Licensing Catalog (if you have created one).

To get to the Quick View, do one of the following from NLS Manager:

- ◆ Click the View icon (a magnifying glass and a list) on the tool bar.

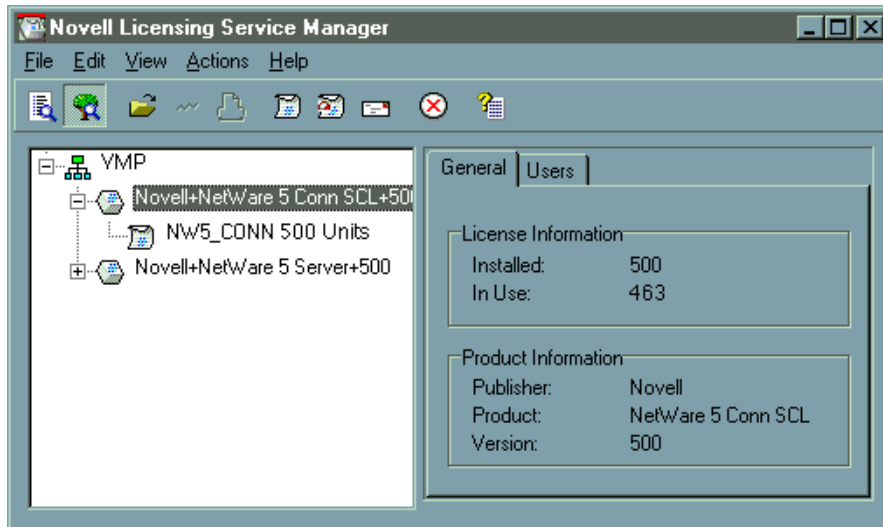


- ◆ Select View > Quick View of Licenses.
- ◆ Right-click and select Go to Quick View of Product Licenses.
- ◆ Press Ctrl + Q.

Tree View of licenses

The Tree View allows you to view License container objects and License Certificate objects in their NDS context or location.

The following figure illustrates the Tree View.



You can locate license containers and certificates by browsing the tree. After selecting a license container, you can get information by toggling between the General and Users property pages.

After selecting a license certificate, you can get information by toggling between the General, Users, Owner, Assignments, and Policy Information property pages.

To get to the Tree View, do one of the following from NLS Manager:

- ◆ Click the tree icon on the tool bar.



- ◆ Select View > Tree View of Licenses.
- ◆ Right-click and select Go to Tree View of Licenses.
- ◆ Press Ctrl + T.

chapter **2** *Planning*

To use Novell® Licensing Services (NLS), you must

- ◆ Be running the NetWare® 5™, NetWare 4.11, or NetWare for Small Business operating system.
- ◆ Install NLS on your network.
- ◆ Install or create license certificates in the appropriate NDS™ context.
- ◆ For each NDS partition, ensure that NLS is installed on at least one server with a read / write replica.
- ◆ Optionally, configure Z.E.N.works™ to function as the NLS client for non-license-enabled applications you wish to manage and monitor.

You don't need special software installed on client workstations. Licensing-enabled software communicates with License Service Providers by using .DLL or .NLM files that are installed on NetWare servers.

Is NLS Installed and Configured on the NetWare 5 Server?

When you install a NetWare 5 server or upgrade from NetWare 3™ or NetWare 4™, NLS is automatically installed on that server.

During installation or an upgrade, you can select not to install licenses for NetWare 5. Although *licenses* aren't installed at that time, licensing *services* are installed. You can later configure the licensing services and install licenses.

Important: License certificates with a nine-digit serial number cannot be installed while upgrading an existing server to NetWare 5. If the serial number printed on your license diskette has nine digits, you must check the Install Without Licenses box on the License Installation screen during the server installation or upgrade.

After the installation or upgrade, you can use NWCONFIG or the NetWare Administrator utility to install licenses. See "Using NWCONFIG.NLM" on page 29.

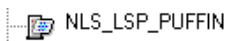
You can detect that NLS is installed on a server by observing the following.

- ◆ Nlslsp.nlm is running on the server.

This licensing services program is installed on a NetWare 5 server when you install or upgrade to NetWare 5. You can verify that NLSLSP.NLM is running by entering **modules** at the server console.

- ◆ NLS_LSP_servername is a leaf object in NDS.

You can view this object by using NetWare Administrator or the Tree View in NLS Manager. The following figure represents an LSP object for server Puffin.



For NLS to work properly, nlslsp.nlm must be running on the server *and* an NLS_LSP_[servername] object must be associated with that server.

By default, the NLS_LSP_*[servername]* object is created on a NetWare 5 server when you install or upgrade to NetWare 5. If you choose not to install licenses while installing or upgrading to NetWare 5, you can create this object later and install licenses.

The NLS_LSP_*[servername]* object is created for a NetWare 4.11 server using SETUPNLS.NLM.

NetWare Servers in a Mixed Environment

NLS is not automatically installed on NetWare 4.11 servers. However, you *can* have NetWare 5 servers and NetWare 4.11 servers in the same NDS tree.

To accomplish this mixed environment, plan to

- ◆ Update NDS on all NetWare 4.11 servers in the NDS tree.
- ◆ In each partition of the NDS tree, do one of the following:
 - ◆ Install a NetWare 5 server.
The server must have a read / write replica.
 - ◆ Upgrade one of the NetWare 4.11 servers to NetWare 5.
The server must have a read / write replica.
 - ◆ Update NetWare 4.11 servers.
You install NetWare Support Pack 1 or later and then install NLS.

Novell does not support NLS on NetWare 4.10 servers.

Upgrading Servers

Before installing a NetWare 5 server into an NDS tree that has NetWare 4.11 servers, you must prepare that NDS environment. One way to do that is to upgrade a NetWare 4.11 server to NetWare 5.

The NetWare 4.11 server must have a read / write replica. The replica does not have to have NLS installed before the upgrade.

When you upgrade the server to NetWare 5, NLS is installed on the server. Any other NetWare 5 servers installed into that partition will synchronize NLS to that read / write replica.

After you upgrade a NetWare 4.11 server to NetWare 5, you need to run `setupnls.nlm` on that server. Doing this converts old NLS objects (if they exist) and extends the NDS schema.

To upgrade a NetWare 4.11 server to NetWare 5, see “Upgrading an Existing Server to NetWare 5” in *NetWare 5 Overview and Installation*.

Updating NetWare 4.11 Servers

Plan to Update the NDS Database

Before you install the first NetWare 5 server into the NDS tree, plan to install DS 600 or later on each NetWare 4.11 server. To accomplish this, see “Updating NDS on All NetWare 4.11 Servers” on page 32.

If updating all NetWare 4.11 servers is not feasible, see “Updating NDS on Selected NetWare 4.11 Servers” on page 33.

DS 600 is a collection of files that includes DS.NLM version 6.00, DSREPAIR.NLM version 4.56, and ROLLCALL.NLM. These files are available on the NetWare 5 Operating System CD-ROM. For details about these files, refer to the 411_UPG file in the `PRODUCTS\411_UPG\NDS` directory on the NetWare 5 Operating System CD-ROM.

Plan to Install NLS

Before installing a NetWare 5 server into an NDS tree that has NetWare 4.11 servers, ensure that in every partition of the NDS tree NLS is running on one of the following:

- ◆ At least one NetWare 4.11 server that has a read / write replica.
- ◆ A server that has a read / write replica and has been upgraded from NetWare 4.11 to NetWare 5.

By using NDS Manager, you can

- ◆ Quickly update NDS on many NetWare 4.11 servers.
- ◆ View which partition a server is in.
- ◆ View the type of replica on the server.
- ◆ Quickly create a read / write replica on a NetWare 4.11 server (so you can install NLS on that server).

chapter **3** *Setting Up*

During installation of, or an upgrade to, NetWare® 5™, Novell® Licensing Services (NLS) is automatically installed on NetWare 5 servers. If you choose not to install licenses during an installation or upgrade to NetWare 5, you can license the server later.

Three options enable you to have a NetWare 5 server and NetWare 4.11 servers in the same NDS™ tree.

If you are an MLA account, special considerations apply.

How to License a NetWare 5 Server

During an installation or upgrade, you may have chosen not to install licenses for NetWare 5. Although the installation software installed `nlsdp.nlm` on the NetWare 5 server, you need to complete the installation of NLS and install licenses.

Important: License certificates with a nine-digit serial number cannot be installed while upgrading an existing server to NetWare 5. If the serial number printed on your license diskette has nine digits, you must check the Install Without Licenses box on the License Installation screen during the server installation or upgrade.

After the installation or upgrade, you can use `SETUPNLS.NLM` or `NWCONFIG.NLM` to install licenses.

Using `SETUPNLS.NLM`

To license NetWare 5, first complete the installation of NLS and then install licenses.

Complete the Installation of NLS

1. **At the server console, load `SETUPNLS.NLM` by entering `setupnls`.**
2. **At the Directory Services Login/Authentication screen, enter the administrator's complete NDS name and password.**

For example, enter `.admin.sales.vmp`.

3. **Allow `SETUPNLS` to make modifications by selecting Yes.**

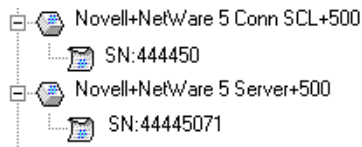
`SETUPNLS` modifies old NLS objects (if they exist) and the NDS schema.

4. **At the NLS Setup Utility screen, acknowledge the successful installation by pressing Enter.**

NLS has installed `NLSLSP.NLM`, `NLSAPI.NLM`, and `NLSI.NLM`.

Install NetWare 5 Licenses

1. **At the server console, load NWCONFIG.NLM by entering `nwconfig`.**
2. **Select License Options > Install Licenses.**
3. **Select a path to the .NLF file that has the license.**
For example, select D:\LICENSE.
4. **Log in.**
Enter the complete name and password of the administrator.
5. **At the Installable Licenses screen, select an envelope file.**
An envelope file contains one or more licenses. A sample envelope file is 42C1F1D0.NLF.
6. **Exit NWCONFIG.**
You can now view the installed licenses by using NetWare Administrator or the Tree View in NLS Manager. The licenses are similar to those in the following figure.



Using NWCONFIG.NLM

1. **At the server console, enter `nwconfig`.**
2. **Install NLS.**
 - 2a. **Select License Options > Set Up Licensing Services.**
 - 2b. **Log in.**
Use the complete name and password of the administrator. For example, enter `.admin.vmp`.

3. Install Licenses.

Select Install Licenses, then specify the path to the licenses. For example, specify A:\LICENSES.

From License Options, select an envelope file. For example, select 42C1F110.NLF, which contains a server base license and a server connection license.

4. Exit.

Press Alt +F 10 > Yes or repeatedly press Esc, then Yes.

Installing NetWare 5 into a Mixed Environment

The options for installing NetWare 5 into an NDS tree that has NetWare 4 servers are:

- ◆ Install a NetWare 5 server directly into the NDS tree.
- ◆ Upgrade a NetWare 4.11 server to NetWare 5.
- ◆ Update NDS and other files on all the NetWare 4.11 servers before introducing a NetWare 5 server into the NDS tree.

Installing Directly into the NDS Tree

You can install a NetWare 5 server directly into an NDS tree that has NetWare 4.11 servers if the NetWare 5 server has a read / write replica of the partition in which the server is contained.

Important: Only experienced network administrators should use this option. If the NDS tree already has a master replica and two read/write replicas, you won't be able to use this option.

Upgrading a NetWare 4.11 Server

Before installing a NetWare 5 server into this environment, install NLS on at least one NetWare 4.11 server in every partition of the NDS tree. One way to do this by upgrading one NetWare 4.11 server in each partition of the NDS tree to NetWare 5.

1. **Select a NetWare 4.11 server that has a read/write replica.**

2. Follow instructions in “Upgrading an Existing Server to NetWare 5” in *NetWare 5 Overview and Installation*.

3. (Optional) Run SETUPNLS.NLM.

If you have old or existing licenses in the NDS tree, run SETUPNLS.NLM after upgrading the NetWare 4 server. This utility extends the NDS schema as required by NLS and converts old NLS objects to new ones.

Updating NetWare 4.11 Servers

Information in this section will help you update NetWare 4.11 servers. You need to

- ◆ Update NDS on all the NetWare 4.11 servers.
- ◆ Identify strategic NetWare 4.11 servers in the NDS tree.
- ◆ Install NetWare 5 Support Pack 1 or later on those servers.
- ◆ Install the Novell Licensing Services Installation Kit on those servers.

Update NDS

We recommend that you update the NDS version on all NetWare 4.11 servers. If doing this is not feasible, update NDS on selected servers. See “Updating NDS on Selected NetWare 4.11 Servers” on page 33.

Checking NDS Versions

Dsdiag.nlm is a new utility that ships with NetWare 5. It provides useful diagnostic information about the state of an NDS tree.

One useful report you can generate uses the Check NDS Versions option. This report allows you to see what versions of NDS are running on servers in an NDS tree. You can use this information to ensure that an NDS tree is ready for NetWare 5 by checking to see that all NetWare 4.10 servers are running NDS version 5.15 or later, and all NetWare 4.11 servers are running NDS version 6.00 or later.

To use this utility, refer to the 411_UPG.TXT file in the PRODUCTS\411_UPG directory on the NetWare 5 Operating System CD-ROM.

Updating NDS on All NetWare 4.11 Servers

- 1. Select a NetWare 4.11 server in the NDS tree.**
- 2. At the server console, load INSTALL.NLM.**
- 3. Select Products Options > Install a Product Not Listed.**
- 4. Specify the path to the Novell Directory Services version 6.00 for NetWare 4.11 files.**

The version number may be later than version 6.00.

Press F3, backspace to remove the reference to drive A:, and enter the path.

For example, enter D:\PRODUCTS\411_UPG\NDS.

- 5. Select Novell Directory Services version 6.00 for NetWare 4.11.**

After verifying that the check box is checked, press F10.

- 6. Use NDS Manager to distribute files.**

You can manually copy files from the NetWare 5 Operating System CD-ROM to the NetWare 4.11 server. However, if the NDS tree has multiple NetWare 4.11 servers, use NDS Manager to quickly deploy DS.NLM and ROLLCALL.NLM throughout the entire NDS tree.

- 6a. Run NDSMGR32.EXE, version 1.25.**

NDSMGR32.EXE version 1.25 should be in the SYS:\PUBLIC\WIN32 directory. If it isn't, you can copy it from the PRODUCTS\411_UPG\NDS\PUBLIC\WIINNT directory on the NetWare 5 Operating System CD-ROM.

Run this program from a client workstation. The workstation must be running Novell client software that ships with NetWare 5.

6b. Select the server object that you copied the updated files to.

6c. From the Object menu, select NDS Version > Update > Settings > Entire Subtree > OK.

Note: If Update is grayed out, you have selected a container instead of a server object.

6d. Select servers to be updated.

From the Name window, select servers you want to update. Using the right-arrow, move these server names into Target Servers to Be Updated.

6e. Click OK.

The NDS files are distributed to the target servers. You can view the results of the distribution. From the NDS Version Update window, click Settings > NDS Update Log > OK.

Updating NDS on Selected NetWare 4.11 Servers

This section assumes that not all NetWare 4.11 servers in an NDS tree will receive updated DS.NLM and DSREPAIR.NLM files. Before continuing, you may want to review 411_UPG.TXT in the PRODUCTS\411_UPG directory on the NetWare 5 Operating System CD-ROM.

1. On servers that do not have a replica, update DS.NLM and reset the local schema.

Any server that did not have a replica at one time, and then later received a replica, might have inconsistent schema from deletions that occurred before adding the replica.

1a. Update DS.NLM.

Copy DS.NLM version 6.00 and DSREPAIR.NLM version 4.56 from the PRODUCTS\411_UPG\NDS directory on the NetWare 5 CD-ROM to SYS:\SYSTEM. Then bring the server down, then up again.

Note: DS.NLM version 6.00 or later is *only* for NetWare 4.11 servers. Do not use this version on NetWare 4.10 servers.

1b. (Optional) Reset the local schema.

Load DSREPAIR.NLM and select Advanced Options Menu > Global Schema Operations. Log in as administrator. (Remember to use the complete name--for example, .admin.vmp.) Then select Reset Local Schema.

This option is unavailable if executed from the master replica of the [Root] partition. This exception ensures that not all servers in the tree are reset at once.

2. Update servers that display an error message relating to NLS.

A server may display the following message:

Novell Licensing Services (NLS): An older NLS schema extension has been detected. If you have not converted your old licensing data, you may do so by running setupnls.nlm.

If the server displays this message, run SETUPNLS.NLM at the server console. See "Install NLS" on page 38.

If the message continues to display, upgrade DS.NLM and reset the local schema. See Step 1.

3. Address issues relating to inherited Access Control Lists.

Install DS.NLM version 6.00 on any server in the same replica ring as a NetWare 5 server. Do this whether or not you use the inherited ACL feature. Doing this ensures that synchronization of the inherited ACLs is consistent.

If you plan to use the inherited ACL feature, complete two steps.

3a. Upgrade all servers in the replica to NetWare 5.

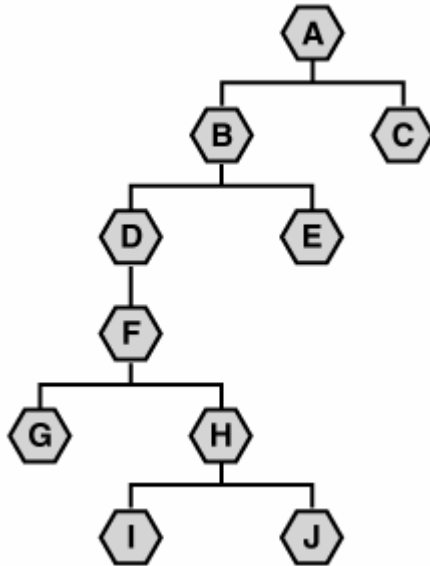
This step allows inherited ACLs to be consistent.

Also, this step ensures that no matter what server in the ring a user attaches to, the inherited rights will be available. (Remember that an inherited ACL is a feature of NetWare 5 servers only.)

3b. Install DS.NLM version 6.00 on all NetWare 4.11 servers located between NetWare 5 servers.

This step ensures that ACL rights flow to the NetWare 5 servers.

Suppose the following figure illustrates your NDS tree.



If you want the subtree consisting of partitions H, I, and J to use inherited ACLs, upgrade (to NetWare 5) all servers holding replicas of partitions H, I, and J.

If you then decide to use inherited ACLs in the subtree consisting of partitions B, D, and E, and you want those ACLs to flow to the other NetWare 5 servers, do the following:

- ◆ Upgrade (to NetWare 5) all NetWare 4.11 servers holding replicas of partitions B, D, and E.
- ◆ Upgrade (to DS.NLM version 6.00) all NetWare 4.11 servers holding a replica of partition F.

Even with DS.NLM version 6.00 installed, partition F will not act upon the inherited ACLs because the servers holding replicas are NetWare 4.11. DS.NLM version 6.00 is necessary for the ACLs to flow to the NetWare 5 servers below.

4. Install DS.NLM version 6.00 on any server on which an object referenced by a NetWare 5 server must be restored.

This step addresses the issue of restoring an object reference on a NetWare 5 server.

5. Enable the new NetWare 5 Tree Root schema extension to be properly synchronized from one NetWare 4.11 server to another.

Upgrade to NetWare 5 or install DS.NLM version 6.00 on at least one server in every replica ring that is more than one partition level removed from a NetWare 5 server (or from where a NetWare 5 schema exists.)

Until the first server in the replica ring has finished updating or upgrading its schema, all servers that are not upgraded to NetWare 5 or DS.NLM version 6.00 will receive error messages that the schema cannot be extended. These messages discontinue as soon as the first server is finished.

If you need to install a new server into the ring before the schema has finished upgrading, you must ensure that the master replica is running DS.NLM version 6.00. Doing this enables the new server to receive the schema and to finish installing successfully.

Identify Partitions and Servers

If you plan to install NLS on every NetWare 4.11 server, skip to the next topic, “Install NetWare 5 Support Pack 1 or Later.” Otherwise, you need to identify

- ◆ Partitions in the NDS tree.
- ◆ At least one server (in each partition) with a read / write replica.

1. Identify partitions in the NDS tree.

You need to install NLS on at least one server in each partition of the NDS tree.

Using NDS Manager, identify the partitions by browsing the NDS tree. An icon (the green box with a yellow partition) appears for each partition. When you click on an icon for a partition, the context or container that the partition is in appears in the Partition field.

2. Identify a NetWare 4.11 server in each partition.

Identify a server with a read / write replica.

Using NDS Manager, browse to identify the servers in the NDS tree. When you click the root-most partition, NDS Manager displays the servers and type of replica on each server.

Install NetWare 5 Support Pack 1 or Later

NetWare Support Packs contain upgraded files necessary for NLS.

1. Create an empty directory on the NetWare 4.11 server.

For example, create PUFFIN\SYS:\SUPPORT.

2. Copy NetWare 5 Support Pack 1 or later into the empty directory.

A NetWare Support Pack is a self-extracting file. A sample filename for NetWare 5 Support Pack 1 is b3nw5sp1.exe.

NetWare Support Packs are available at <http://support.novell.com>. Select Minimum Patch List > NetWare 5, then a Support Pack.

For example, copy b3nw5sp1.exe to PUFFIN\SYS:\SUPPORT.

3. Extract the files.

You can do this from the DOS prompt or using the Windows* Run option.

For example, at PUFFIN\SYS:\SUPPORT, enter **b3nw5sp1**.

Because the file is at least 16 MB, extracting the file may take a few minutes. The files are extracted to a subdirectory (in this example, to PUFFIN\SYS:\SUPPORT\B3NW5SP1).

4. Install the files.

Review cautionary statements and other instructions found in the B3NW5.TXT file.

For example, using the text editor in Windows 95*, enter **edit b3nw5sp1.txt**. Follow instructions under Installing the NetWare 5 Support Pack.

Install NLS

By installing NLS on a NetWare 4.11 server, you

- ◆ Extend the NDS schema as required by NLS.
- ◆ Configure the server to be a License Service Provider.

1. Install the Novell Licensing Services Installation Kit.

1a. At the server console, load install.nlm.

1b. Select Product Options > Install a Product Not Listed.

1c. Specify the path to the Novell Licensing Services Installation Kit.

Press F3, backspace to remove the reference to drive A:, and enter the path.

For example, enter **D:\PRODUCTS\411_UPG\NLSKIT.**

1d. Select Novell Licensing Services (NLS) Installation Kit.

After verifying that the check box is checked, press F10.

2. (Conditional) Convert old NLS objects.

If SETUPNLS detects an old schema in the NDS database, the screen displays the following:

Old NLS schema extensions detected. Convert old NLS objects?

2a. Select Yes.

If you select No, you may have to reinstall licenses (if there are any).

2b. Log in to either the NDS tree or to a container.

If SETUPNLS detects an old schema, you are prompted to log in as administrator for the NDS tree and complete the next two conditional steps. Otherwise, SETUPNLS prompts you to log in as administrator of the container.

Remember to enter the complete name of the administrator. For example, enter **.admin.vmp.**

3. (Conditional) Allow the setup program to make modifications.

Select Yes. SETUPNLS.NLM then extends the NDS schema as required by NLS.

4. (Conditional) Select whether to remove the old schema extensions.

SETUPNLS.NLM displays a dialog box, Do You Wish to Remove Old Schema Extensions. If old NLS objects did not convert in Step 2a, select No. Otherwise, select Yes.

SETUPNLS.NLM sets up the NetWare 4.11 server to be a License Service Provider (LSP).

5. Press Enter to complete the installation, then press Enter to return to the Install program.

6. Exit the Install program.

If You Are an MLA Account

The license certificate for an MLA account does not come with a server limit or connection limit. You can install the license certificate for as many connections as the license agreement allows.

The license certificate has one common serial number. Although multiple occurrences of the same serial number can reside in the same NDS tree, the license certificate cannot be installed more than once in an NDS context. (Attempting to reinstall the certificate into the NDS context generates a system message stating that the license already exists.) Therefore, when installing the certificate on other servers in a single NDS partition, check the Install Without Licenses check box.

During a typical installation, the NICI foundation keys (FKs) are automatically copied from the MLA license diskette to the server. However, when you select Install Without Licenses, you need to manually copy the NICI foundation keys from the MLA license diskette to each server. Instructions in the MLA package tell you how to do this.

For best performance, install the license certificate in each partition that contains a NetWare 5 server. Although you could install the server base license and server connection license at the root of the tree, doing so might not provide the best performance. (When the first license is requested, the LSP has to scan the tree to find the certificate. After finding the license certificate, the server stores that certificate in memory.)

The license certificate does not require a server assignment. In fact, you shouldn't assign a server. If you make a server assignment, other servers will not be able to use the license certificate.

chapter **4** *Managing*

With Novell® Licensing Services (NLS) installed on one or more servers, you can manage NLS from a client workstation.

You can use the NLS Manager or NetWare® Administrator utility to complete the following tasks:

- ◆ Install a license certificate
- ◆ Create a metered certificate
- ◆ Install an envelope
- ◆ Assign licenses to users
- ◆ Assign a new owner to a license certificate
- ◆ Create a License Catalog
- ◆ Make server assignments
- ◆ Move a license certificate
- ◆ View information about license containers
- ◆ View information about license certificates
- ◆ View information about LSPs
- ◆ Create and use reports

Install a License Certificate

When a certificate for an NLS-aware application is installed, NLS adds a License container object to the NDS™ tree and a License Certificate object to that container object. You select the context or location in the NDS tree for that License container object.

If you purchase and install additional licenses, they will also be added to the NDS tree as objects in the appropriate License container object.

When adding license certificates to the NDS tree, you should be aware of where in the tree you want to install the license. This location or context will determine who can use the license units associated with that license certificate. See “Tips” on page 69.

You install license certificates by accessing .NLS files.

To install license certificates using the NetWare Administrator utility, select Tools > Install License > Install License Certificate. Then use the instructions in the online help. (The steps are similar to those for the NLS Manager utility.)

You can also use the NLS Manager utility by completing the following steps.

- 1. Select View > Tree View.**
- 2. Select Actions > Install License Certificate.**

You can also click the first license certificate icon on the tool bar.



- 3. Enter the path and filename of the certificate.**

To locate the filename, click the folder icon next to the filename field. Then navigate the directory structure. The file may be on a diskette in drive A: or on a CD-ROM.

The .NLS file is linked to an activation password file (key) and automatically retrieves the password.

4. Select the NDS context where the certificate object will be installed.

To locate the context, click the tree icon next to the NDS Context field, browse the tree, and select a context.

If you are installing an additional certificate in an existing License container object, select the parent of the container, not the License Container object.

5. With both fields filled, click OK to install the license certificate, OK to acknowledge the “need to update” message, and then OK to acknowledge the successful installation.

6. (Optional) In the Activation Key window, enter the key that you received for this license.

Note: If the file containing the activation key is in the same directory as the license file you select, the key will be read automatically. You only see the Activation Key window when the file containing the activation key is not detected in the same directory or on the diskette or CD-ROM containing the file.

A license certificate requires an activation key. If the NLS Manager utility can't find an activation key while you are installing a certificate, an Activation Key window allows you to enter a key.

An activation key is like a password. It is a sequence of numbers and letters that allows you to complete the installation of a license for a product you purchased. Software vendors provide this key at the time of purchase. During installation, you enter the activation key, which allows you to complete an installation.

With electronic purchases and distribution, activation keys allow you to install additional licenses for a product you already have.

You may have purchased a product that came in a suite. You can subsequently purchase the additional products in that suite and then use them by activating keys for them. That is, you already have the software; you merely need a license certificate and activation key to use it.

If you know the activation key, you can enter it without browsing for the file. However, to browse for the file containing the activation key, click Import.

Create a Metered Certificate

Metered certificates allow you to track usage of applications, even those not written to the Licensing Service Application Programming Interface (LSAPI) specifications. Most likely, you have already invested in legacy applications that are not NLS-aware. By using metered certificates, you can allow users to continue using these applications while you track and manage the licenses for those applications.

You can configure Z.E.N.works™ to function as the NLS client for non-license-enabled applications. Z.E.N.works will then request licenses on behalf of the applications.

To create metered certificates by using the NetWare Administrator utility, select Tools > Install License > Create Metered Certificate. Then use the instructions in the online help. (The steps are similar to those for the NLS Manager utility.)

You can also use the NLS Manager utility by completing the following steps.

- 1. Select View > Tree View.**
- 2. Select Actions > Create Metered Certificate.**

You can also click the second certificate icon on the tool bar.



- 3. Enter the publisher's name.**

This is the name of the software company, such as Novell, Microsoft*, or Corel*.

- 4. Enter the product name.**

This is the name of the software, such as GroupWise®, Word, or WordPerfect*.

5. Enter the version.

This is the version number, for example, 8 for Corel WordPerfect 8. If a period (.) is used as part of the version number, the License container object will add a backslash to its NDS name. For example, 5.00 will display in an NDS tree as 5\.00.

6. Choose the NDS context for the certificate.

To locate the desired context, click the Browse button next to the NDS Location field. Browse by clicking the + or - symbols in the Select window. Double-click the desired context or select it and click OK.

7. Enter or select the number of licenses for the certificate.

This is the number of licenses you have purchased. For example, if you own a 50-user version of WordPerfect, enter 50.

8. Enter or select the number of grace licenses you will allow.

This option enables additional users to run applications until you have time to purchase additional licenses. That is, this option helps you comply with your software license agreement without interrupting users' work flow or productivity.

If you don't enter a number here, users will not be allowed to open additional applications beyond the number specified in Number of Licenses.

To ensure that no one is denied access to an application, enter a number that protects the users while also protecting the software vendor.

9. Select an update interval.

This setting determines how often an application is to check whether a license is still being used and to inform the LSP of the status.

10. Select whether or not users use a single license when launching an application multiple times from one workstation.

11. Click OK > OK.

The first OK acknowledges that Quick View must be updated. (A new product license container for the certificate may not appear until you refresh the screen.)

The second OK acknowledges that the certificate installed successfully.

You can see the License container object (for example, Corel+WordPerfect+8) and the License Certificate object in the Tree View.

Install an Envelope

An envelope is a file containing one or more license certificates. (It may have just one certificate because the envelope also contains other information—for example, for NIS-enabled installations—associated with the product.)

Envelopes allow you to install more than one license certificate at a time into License container objects. For example, you may have purchased three products in a suite. An envelope allows you to simultaneously install license certificates for all three products.

To install envelopes by using the NetWare Administrator utility, select Tools > Install License > Install Envelope. Then use the instructions in the online help. (The steps are similar to those for the NLS Manager utility.)

You can also use the NLS Manager utility by completing the following steps.

- 1. Select View > Tree View.**
- 2. Select Actions > Install Envelope.**

You can also click the envelope icon on the tool bar.

3. Follow on-screen prompts in the Envelope Installation Wizard.

3a. Select an envelope.

Click Next, click the folder icon, navigate to the folder containing the envelope, and select the envelope (.NLF file).

3b. Choose certificates within the envelope.

Click Next, select the certificates to install, and click Next.

3c. Specify where in the NDS tree to install the certificates.

Browse by clicking the tree icon and the + and - symbols. Click the desired context, then click OK.

3d. Select whether or not to install all certificates in the same location or context, then click Next.

Click Next for each certificate you selected.

3e. Verify that you selected the correct certificates, then click Finish.

3f. Acknowledge that the certificates installed successfully by clicking Close.

Assign Licenses to Users

Access to license certificates is determined by

- ◆ The location of the license certificate.
- ◆ Whether any assignments have been made to the license certificate.

The owner of a license certificate is the NDS object (typically a user) that installed the license certificate. As an owner, you can assign the following objects access to the licenses: User, Group, Organization, Organizational Unit, and Server.

If you assign a container object to use a certificate, all users in and below that container will be able to use the certificate. If you do not want to restrict access to licenses this way, do not make any assignments to the license certificates.

Once you make assignments, only those objects that have been assigned to the license certificates can use the license.

You can add and delete assignments to licenses through the Assignments property page.

You can assign licenses by using the NetWare Administrator utility. After you select a certificate in the Browse window, right-click > Details > Assignments > Add. Then browse, select an object, and click OK > OK. (Steps in the online help are similar to those for the NLS Manager utility.)

You can also use the NLS Manager utility by completing the following steps.

- 1. Select View > Tree View.**
- 2. Select the license certificate that you want users to access.**
- 3. Select the Assignments property page.**
- 4. Click Add.**
- 5. Locate and select the object that allows appropriate users to access the certificate's licenses, then click OK.**

Browse the NDS tree by clicking the + or - symbols in the Select Object(s) window.

Delete assignments to a license certificate by completing the following steps.

- 1. Navigate to the Assignments property page of the License Certificate object as explained above.**
- 2. Select the object you would like to remove from the list of assigned users and click Remove > Yes.**

Assign a New Owner to a License Certificate

The NDS object (typically a user) that installs a certificate becomes the owner of that certificate. At some point, you might want to reassign ownership of a license certificate.

Note: Only a certificate's owner can reassign ownership of the certificate.

You can assign a new owner by using the NetWare Administrator utility. After selecting a certificate in the Browse window, right-click > Details > Owner > browse > select OK. Then use the instructions in the online help. (The steps are similar to those for the NLS Manager utility.)

You can also use the NLS Manager utility by completing the following steps.

- 1. Select View > Tree View.**

You can also press Ctrl + T.

- 2. Select the license certificate.**

- 3. Click the Owner property page.**

- 4. Click the tree icon next to the License Owner field.**

- 5. Locate and select the object you want to assign as owner of this certificate, then click OK.**

Browse by clicking the + or - symbols in the Select the New Owner window.

Create a Licensing Catalog

A Licensing Catalog is an object in an NDS tree. This object “walks” the NDS tree to discover License container objects found in the tree.

When you access the NLS Manager utility, you can direct NLS Manager to get information from the Licensing Catalog object. That way, NLS Manager won’t have to walk the tree.

A Licensing Catalog object has one disadvantage: data may be temporarily inaccurate because the Licensing Catalog won’t report recent changes to licensing resources until it rewalks the NDS tree.

You can create a Licensing Catalog using the NetWare Administrator utility. However, Catalog Services must be installed in NDS before you can do this.

- 1. From NetWare Administrator’s Browse window, create a Master Catalog object.**
 - 1a. Select Object > Create > NDSCat:Master Catalog.**
 - 1b. Name the catalog Licensing Catalog.**
 - 1c. Click Define Additional Properties > Create.**
- 2. Set Identification page parameters.**
 - 2a. In the Host Server field, enter the name of the server where dscat.nlm will run.**

This is the server where you installed Catalog Services. Browse to the context of the server and then select it.
 - 2b. In the Label field, set Primary and Secondary parameters.**

Click New.

In the Primary field, enter Novell.

In the Secondary field, enter Licensing.

Click OK.

3. Set Filter page parameters

In the Filter field, enter "Object Class"="NLS:Product Container".

4. Set Schedule page parameters.

4a. Select Automatic.

4b. Set the frequency.

Frequency is how often the Licensing Catalog will scan the NDS tree. Consider tradeoffs between three factors:

- ◆ How accurate the data is—perhaps you only need updates hourly instead of every few minutes.
- ◆ System performance—scanning the tree fewer times maximizes system performance.
- ◆ Cost to the wide area network—costs include dial-up connections.

5. Set Attributes/Indexes page parameters.

5a. Select Selected Attributes > Select Attributes.

5b. From the Available list, select items you need in the Licensing Catalog's summary.

Select NLS:Product > Add.

Select NLS:Publisher > Add.

Select NLS:Version > Add.

Click OK.

6. Click OK.

7. Add the new Licensing Catalog as a trustee of the root.

7a. If you are not at [Root], press Backspace until you change to this context.

7b. Right-click and select Trustees of This Object.

7c. Click Add Trustee, browse to the new master catalog's context, and select the Licensing Catalog.

8. Allow Read and File Scan (browse) rights.

8a. Under Object Rights, select Browse. Deselect other options.

8b. Under Property Rights, select Read. Deselect other options.

8c. Click OK.

Note: Installing a Licensing Catalog loads DSCAT.NLM. However, after creating a Licensing Catalog, you may need to unload and reload DSCAT.NLM for its first scan.

Make Server Assignments

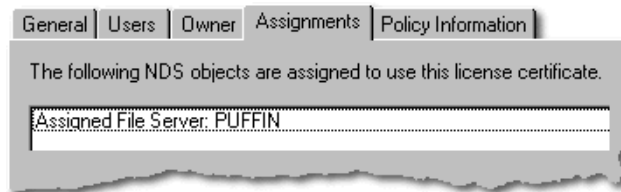
Through the Assignments property page, you can allow only designated servers to grant requests for licenses. Such an assignment is a *file server assignment*.

- ◆ Only one file server assignment can be made for each license certificate.
- ◆ No other server can allow use of units from that license certificate.
- ◆ A server with the file server assignment can have multiple license certificates assigned to it.

For example, if you bought a 1,000-user license and made a file server assignment for that license certificate to a server called Puffin, no other servers could grant use of that license certificate. You could, however, buy a 500-user license and make a file server assignment to Puffin for that license certificate in addition to the original 1,000-user license.

One server can carry the file server assignment for several license certificates. Each new license certificate is additive to the previous license certificate for the total number of connections that can be granted for use. In this example, server Puffin is the only license server that can grant these 1,500 units after both file server assignments are made.

The following figure illustrates a file server assignment as viewed in the NLS Manager utility.



You can make server assignments from NetWare Administrator. Select the certificate you want to assign to a file server, right-click > Details > Assignments, browse, then select.

You can also use the NLS Manager utility by completing the following steps.

1. **Select View > Tree View.**
2. **Select the License Certificate object you want to assign to a server.**
3. **Click Assignments > Add.**
4. **Locate the Server object you want to assign as owner of this License Certificate object, select the server, and click OK.**

Browse by clicking the + or - symbols in the Select window.

To delete a server assignment, complete the following steps in the NLS Manager utility. You cannot delete a server assignment using the NetWare Administrator utility.

1. **Navigate to the Assignments property page as explained above.**
2. **Select the server object you want to delete.**
3. **Click OK.**

Move a License Certificate

You can move license certificates from one context or location to another by using the NetWare Administrator utility. After you select a certificate in the Browse window, select Tools > Move License, browse, select the new context, and click OK

Then use the instructions in the online help. (The steps are similar to those for the NLS Manager utility.)

To view the changes, refresh the Browse window.

The easiest way to move license certificates is to “drag and drop” within the NLS Manager Tree View. You can also follow the steps below.

1. **From NLS Manager’s Browse window, select View > Tree View.**
2. **Select a license certificate.**
3. **Select Edit > Move.**

You can also press Ctrl + M or right-click > Move.

4. **Select the new NDS context for the license certificate.**

Click the tree icon next to the Destination field.

Browse by clicking the + or - symbols in the Select Context window.

Double-click the location you prefer, or click the location and then click OK.

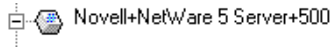
Note: You cannot move a License container object. However, you can move License Certificate objects within the container.

Also, if you move a certificate to a context that doesn't have a License container object, NLS will create that container.

5. **Click OK > Yes to confirm the new location, then OK to acknowledge that the certificate object was successfully moved.**

View Information about License Containers

You can use the NetWare Administrator or NLS Manager utility to view information about License container objects. The following figure illustrates a License container object for a server base license.



Using NetWare Administrator

1. **From NetWare Administrator's Browse window, select a License container object and click the right mouse button.**
2. **Select Details.**
3. **View information by toggling between the General and Users property pages.**

You view the same information that is available through the Tree View in NLS Manager.

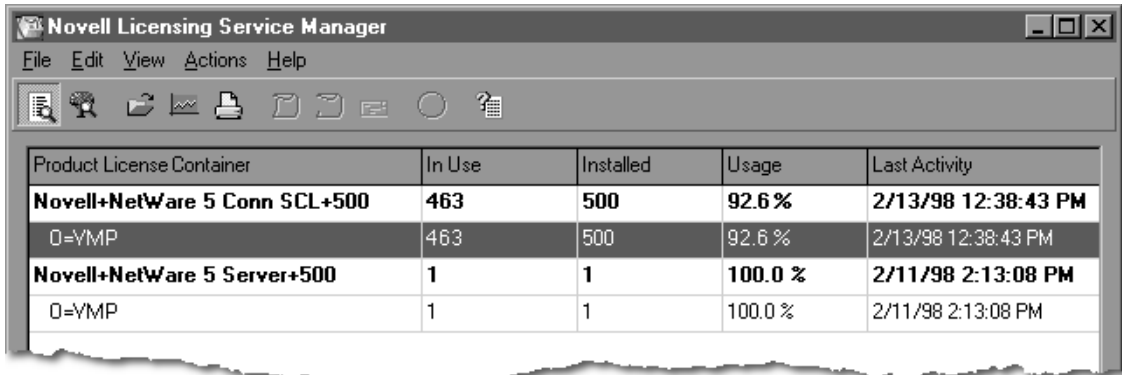
Using NLS Manager's Quick View

With the Quick View in NLS Manager, you can quickly get information about licenses for a product by viewing columns relating to the product license container.

- ◆ In Use—how many licenses are being used
- ◆ Installed—how many licenses for a product are installed on the network
- ◆ Usage—what percent of installed and metered licenses are being used

- ◆ Last Activity—when a license was last used or released from being used; also, when the server last updated information about licenses
- ◆ The context (in an NDS tree) where each License container object is located

The following figure illustrates the Quick View:



The screenshot shows the 'Novell Licensing Service Manager' window with the 'Quick View' tab selected. The window displays a table with the following data:

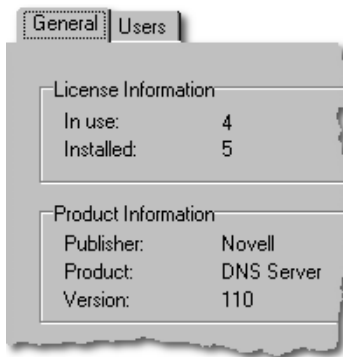
Product License Container	In Use	Installed	Usage	Last Activity
Novell+NetWare 5 Conn SCL+500	463	500	92.6 %	2/13/98 12:38:43 PM
O=YMP	463	500	92.6 %	2/13/98 12:38:43 PM
Novell+NetWare 5 Server+500	1	1	100.0 %	2/11/98 2:13:08 PM
O=YMP	1	1	100.0 %	2/11/98 2:13:08 PM

To view information about license usage from the Quick View, complete the following steps.

1. From NLS Manager's Browse window, select **View > Quick View**.
2. Scroll to the desired product.

Using NLS Manager's Tree View

You can view information about license usage from the Tree View. The following figure illustrates information on a General property page.



1. **From NLS Manager's Browse window, select View > Tree View.**

2. **Select a License container object.**

Browse by clicking the + or - symbols in the Tree View.

3. **View information on the General property page.**

You can view usage (the number of licenses installed and used) as well as information about the product.

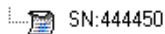
4. **View information about users by clicking the Users property page.**

These users are currently using licenses from the license certificates of the selected product container. The user of a server base license will be a file server.

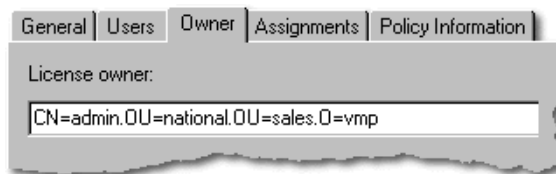
View Information about License Certificates

When you install a license certificate or create a metered certificate, a License Certificate object is added to the NDS database. (NLS also adds a License container object, if one doesn't already exist, and places the License Certificate object in that container.)

The following figure illustrates a License Certificate object for a server connection license.



You can view information about license usage, users, ownership, assignments, and other general information. The following figure illustrates the various property pages and information on an owner property page.



1. From NLS Manager's Browse window, select **View > Tree View**.
2. Select a License Certificate object.
3. View general information by clicking the **General** property page.

◆ In use

This entry shows the number of licenses currently in use. This is the only field that includes grace licenses if licenses are unavailable. The maximum number allowed in this field is the total of Number of Licenses and Grace Licenses for all license certificates in the License container object.

◆ **Installed**

This entry shows the sum total of licenses installed for a particular product. For example, if one certificate has 50 licenses and another for that product has 100 licenses, the Installed field will display 150.

If you have a license certificate that allows unlimited usage, Quick View displays “Unlimited.”

◆ **Product Information**

This section lists the publisher, product, and version number (for example, Corel, WordPerfect, 8).

4. Check which users are using licenses by clicking the Users property page.

5. Check which user owns the certificate by clicking the Owner property page.

The user object that created the License Certificate object is the original owner.

If the owner is a container object, all users in and below that container object will own the certificate.

A certificate can have only one owner (object) at a time.

6. View information about assignments by clicking the Assignments property page.

An Assignments property page displays NDS objects that are assigned to use the license certificate.

If no objects appear in the field, all users at and below the specified NDS context can use the license.

If NLS is using a server connection License, the Assignments property page displays an assigned file server.

7. Find summary and updated information by clicking the Policy Information property page.

The Policy Information property page provides information that was entered when you installed or created the License Certificate object. It also provides recently updated information.

- ◆ Publisher (for example, Novell)
- ◆ Product (for example, NetWare 5)
- ◆ Version (for example, 500 or 5\00)
- ◆ How many licenses are installed with the certificate (for example, 25)
- ◆ The certificate's ID (for example, NW5_SERV_ UNIT LICENSE V:500 SN:62438586)
- ◆ When the certificate expires
- ◆ How often the certificate gets updated (for example, every 45 minutes)
- ◆ Whether the license must be assigned to a file server
- ◆ How many overdrafts or "grace logins" the certificate allows
- ◆ Who owns the certificate

Property pages for installed certificates also display Default Consumption (for example, 1 unit).

Property pages for metered certificates also display information from two other fields:

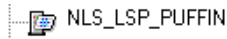
- ◆ When to activate the certificate
- ◆ Whether users have access from more than one workstation

You can also use the NetWare Administrator utility to view information about licenses certificates. Select a certificate, right-click > Details, and toggle between the five property pages.

View Information about LSPs

When you install NLS on a server, an LSP object is added to the NDS database.

For example, if you install NLS on server Puffin, the LSP object displays as follows:



You can view information about this object by doing one of the following:

- ◆ From the NLS Manager Tree View, click the object.
- ◆ From the NetWare Administrator Browse window, select an LSP Server object, click the right mouse button, then click Details.

A General page in NLS Manager (or an LSP Configuration property page in NetWare Administrator) provides the following information:

- ◆ Host Server

This field identifies the server running the LSP software (nlsrsp.nlm). The field also identifies the server's context.

- ◆ License Search Method

Whenever you access the NLS Manager utility or update the Tree View or Quick View, NLS Manager searches the License container objects to get information about license usage. Options under the License Search Method allow you to direct the LSP to search to the root of the NDS tree or to search to the root of the local NDS partition.

You can also direct the NLS Manager utility how to search by placing a line in the `autoexec.ncf` or `startup.ncf` file.

- ◆ NLS Search Type = 0

This line directs NLS Manager to search to the root of the NDS tree.

- ◆ NLS Search Type = 1

This line directs NLS Manager to search to the root of the local NDS partition.

The line can appear anywhere in the `.NCF` files.

However, if you set the parameter in both places, `startup.ncf` or `autoexec.ncf` will override the NLS Manager or NetWare Administrator utility's setting.

The parameters will not take effect until you unload and reload `nlsrsp.nlm` or reboot the server.

- ◆ Enable Transaction Database

The transaction database logs the activity of the LSP. To enable this functionality, click the check box.

If you enable the transaction database, enter information in the two fields under Transaction Database Settings:

- ◆ File Name

A sample filename is `august.log`.

- ◆ Size

Typically, file size ranges from 2 MB to 20 MB. An especially busy server running an LSP would use the larger file size. (The log file will loop—or begin again—if it goes beyond the given size.)

To view the log, click View Log. You can also view the log by using `Btrieve*`-enabled utilities at the server console. If you have an IP-only server and want to use `Btrieve`, load `SCMD.NLM`.

Update Views

When you open the NLS Manager utility, you select whether to have NLS Manager get information by walking the NDS tree or by contacting a Licensing Catalog. NLS Manager then displays current information about product license containers and license usage.

A Licensing Catalog walks the NDS tree at specified intervals. If you use a Licensing Catalog and need updated information between intervals, you can get it from the Quick View and Tree View.

With or without a Licensing Catalog, you can update the Quick View or Tree View at any time by doing one of the following:

- ◆ Pressing F5
- ◆ Selecting Edit > Update

Create and Use Reports

The NLS Manager utility tracks data about licensed and metered products. You can create reports that help you assess and monitor usage and compliance concerning these products.

The reports provide data covering the past 15 months.

You can create aggregate reports or reports for license containers in a specific context. An aggregate report provides information about all license certificates being used for a given product name, such as NetWare 5 Server Connection licenses.

Create reports

To create an aggregate report, complete the following steps.

1. **From NLS Manager's Browse window, select View > Quick View.**
2. **Select a product license container.**
3. **Access the Usage Report Wizard by double-clicking the product license container object. Follow the on-screen prompts.**

You can also right-click and select Create Product Usage Report.

To create a report about a single license certificate, complete the following steps.

1. **From NLS Manager's Browse window, select View > Quick View.**
2. **Select a license container's context (for example, OU=SALES.O=VMP).**
3. **Access the Usage Report Wizard by double-clicking the License container object. Follow on-screen prompts.**

You can also right-click and select Create Product Usage Report.

The Graph tab displays a bit-mapped graph of data collected for up to 15 months. You can use the start and end dates to view data for a particular time period.

The Usage Summary tab provides a textual version of the data:

- ◆ The date and time you created the report
- ◆ The product
- ◆ The location or NDS context of the product License container or License Certificate objects
- ◆ Current usage (the number of license units used and installed)

- ◆ The time period (start date to end date) being reported
- ◆ When usage exceeded installed licenses

Customize reports

To customize a new report, complete the following steps. To customize an existing report, open it and complete Steps 4 through 6.

1. **From NLS Manager's Browse window, select View > Tree View.**
2. **Select a product license container or context.**
3. **Create a report.**
4. **Select Actions > Customize Graph.**

You can also click the graph icon on the tool bar or press Ctrl + G.

5. **Select the number of datapoints you want the screen to display.**

A datapoint is data for a point in time.

Customized graphs (and reports, if you save the information) have the following datapoints: 24 for one day, 168 for one week, 744 for one month, and 4,344 for half a year.

For example, suppose that on January 1 you installed several license certificates for a product and that now, on June 30, you want to view data concerning usage through June 30. Using the Start Date and End Date fields in the License Usage Report, you have already set the start (1/1/98) and end (6/30/98) dates for that period. Because the NLS Manager utility takes snapshots of the data every hour for up to 15 months, the report contains 4,344 (181 days times 24 hours) datapoints.

You can enter the maximum number of datapoints (4,344). However, you probably won't want that many. By using the default setting (500), you view a graph with 500 datapoints. (The NLS Manager utility blends the other datapoints into the curves of the graph.)

6. Click OK.

Save reports

1. With the report open, select File > Save.

You can also press Ctrl + S.

2. Select a format.

- ◆ Save Graph as Bitmap

This option saves the data as a bit-map file, with the .BMP extension. The Graph tab on the report allows you to view this data.

- ◆ Save Summary as Text

This option saves the data as a text file, with the .TXT extension. The Summary tab on the report allows you to view this data.

- ◆ Save Reloadable Data

This option saves the data to a .DAT file. The data is a 15-month snapshot of the product's usage on the network.

To open these files, from the Browse window of NLS Manager, select File > Open > *filename*.

- ◆ Save Tab-delimited Data

This options saves the data in a two-column tabbed format. You can import these files into a database or spreadsheet.

To save the report in all four formats, select Save All.

3. Navigate to the folder where you will save the report, or create a folder.

To create a folder, click the folder icon on the tool bar, enter a name, and double-click the new folder.

4. Name the report and click Save.

5. Enter the name in the File Name field.

Print reports

If you have just created a report, go to Step 3.

1. **From NLS Manager's Browse window, select File > Open.**

You can also press Ctrl + P.

2. **Navigate to the desired file and double-click it.**

3. **Select File > Print > Graph (or File > Print > Summary).**

The Summary option prints the text file you saved for.

4. **Select a printer and click OK.**

Open a report

1. **From NLS Manager's Browse window, select Quick View > File > Open.**

You can also press Ctrl + P.

2. **Navigate to the desired file and double-click it.**

View a report

Having created or opened a report in the NLS Manager utility, you can toggle between a graphical view of the report and the report's text.

Getting information from the Graph view

To use the graphical view, click Graph. This view displays the number of license units installed and the number used.

Dates along the bottom of the graph show the start and end dates that the report covers. You can change these dates by doing one of the following:

- ◆ Click in the Start Date or End Date box and enter a date
- ◆ Click a Down arrow and select a date from the calendar

You can also customize the graph by doing one of the following:

- ◆ Select Action > Customize Graph
- ◆ Click the graph icon on the tool bar
- ◆ Press Ctrl+G

Getting information from the Summary view

To use the Summary or textual view, click Summary. This view provides the following information:

- ◆ The date and time you created the report
- ◆ The product
- ◆ The location of the NDS context
- ◆ Current usage (number of licenses used and installed)
- ◆ The range (start date to end date) being reported
- ◆ Peak usage (the peak percentage of licenses used and the date the peak occurred during the selected range)
- ◆ The number of units used and installed during peak usage
- ◆ A list of possible dates out of compliance

chapter **5** *Troubleshooting*

Some tips, explanations about system messages, and answers to questions might help you manage and monitor license usage.

Tips

No access to licenses

Some NLS clients might not have access to licensing services if LSP objects are not well-placed in the NDS™ tree.

For example, since siblings of container objects are not searched, a client might not have access to licensing services if you place all your LSP objects at a single level of the NDS tree.

The principle is to place license certificates as close as practical to the actual users but high enough in the NDS tree so that everyone who needs to access them can do so.

Consider the following guidelines:

- ◆ Place license certificates so that NLS clients do not have to traverse slow WAN links to access license units.
- ◆ Place at least one LSP object in a container near the root of the tree. Also, consider loading LSP software on servers that many or most users log in to in the NDS tree. These two actions distribute requests for licenses.
- ◆ Identify license certificates that many users throughout the NDS tree will use. Place these license certificates in a context near the root of the NDS tree.

- ◆ Identify license certificates that a small group will use. Place these license certificates in the same NDS context as those users' objects.
- ◆ Identify license certificates that larger groups will use. Place these certificates in the NDS context that represents the root-most context for the group.

Can't manage a license certificate

Problem: No one can delete or move a license certificate, change the file server assignment, remove user assignments, or change ownership of a license certificate.

Possible causes:

- ◆ The distinguished name (DN) of the owner has an upper ASCII character
- ◆ The owner was renamed or deleted
- ◆ The distinguished name of the owner was changed during a merge

Explanation: The NLS client does not have rights to complete the task

Action: Make sure you have the license certificate. Using NetWare Administrator (nwadmin32.exe; not NLS Manager), delete the certificate. Do not delete the license container. Otherwise, historical usage information will be lost. Log in as a user; do not use upper ASCII in your full distinguished name. Using NetWare Administrator or nwconfig.nlm, reinstall the certificate.

Merging two trees seems to have caused a problem

Possible causes: With the first shipping version of NetWare 5, licenses may not be consumed for up to one minute. Also, the Policy Manager may send messages to the server console. If the distinguished name of the owner changes during the merge, no one can manage the license certificate.

Action: Wait for a few minutes; the messages should stop appearing. Support Pack 1 resolves this situation. See “Can’t manage a license certificate” on page 70.

Server beeps at one-second intervals

The server base license may not be consuming a license. Possible causes and solutions:

- ◆ No license is installed.

Install a license by running `setupnls.nlm` and then `nwconfig.nlm` at the server console. Select License Options > Install Licenses.

- ◆ The server base license is not assigned to a server.

Assign a server using the NLS Manager or NetWare® Administrator utility.

Updating is too slow

If listing or updating License container objects takes more than a few minutes, consider installing Catalog Services and then creating a Licensing Catalog. This only applies if you are using NLSMAN32.EXE.

Usage doesn't change

Problem: When someone consumes a license, NetWare Administrator doesn't report or reflect the change.

Explanation: To enhance performance, NLS caches licensing requests on the server and then updates NDS every minute. Also, licensing information might be written to one replica but not yet synchronize to the other replicas. Therefore, information *about* usage might lag *actual* usage.

System Messages

Duplicate License

Problem: The screen displays "DUPLICATE LICENSE: <Full DN of license>".

Explanation: This message comes in pairs. It is sent to all servers and all ADMIN equivalents logged in to the NDS tree.

Action: Delete one of the license certificates.

Unable to Find NLSLSP.NLM

Problem: The screen displays "NLSLSP.NLM: Unable to find NLSLSP.NLM running on a server with a Master or Read / Write replica of the partition containing <partition name>."

Explanation: The server is in a mixed NetWare 4 and NetWare 5 environment.

Action: Install the licensing service on a server with a master or read / write replica of the partition.

Unable to Write License Info to NDS

Problem: The screen displays “NLSLSP.NLM: Unable to write license info to NDS. Please check <partition name> partition synchronization status.”

Explanation: This message is sent to all servers in the replica ring and to all ADMIN equivalents logged in to a server in the replica ring of the partition. This message appears when a server in the replica ring is down for an extended time.

Questions and Answers

About Policy Manager

Question: Why do I get Policy Manager errors when I move a Server object in the NDS tree?

Answer: You might also have to move the license certificates to the server's new context.

Question: Why do I get Policy Manager errors when I use nwconfig.nlm to uninstall and then reinstall NDS?

Answer: If you uninstall NDS from a server and then reinstall NDS on that server, you have to run NWCONFIG > License Options > Setup Licensing Service. You might also have to reinstall or move the license certificates.

Question: Why do I get Policy Manager errors when I rename a server that is using a Server Plus 5 license certificate?

Answer: You have to change the file server assignment on the license certificate so that it matches the new name of the server.

Question: What do Policy Manager error codes mean?

Answer:

Error Code	Explanation
C0001002	No license has been installed at or above the server's context.
C0001003	Nlslsp.nlm is not running, NDS is not running, or you must run nwconfig>License Options>Setup Licensing Service.
C0001005	The licence certificate is assigned to a different file server. If user assignments have been made, the user is not assigned to the license certificate.
C0001006	The license certificate has been installed, but all licenses (units) are in use.
C0001008	A network problem has occurred, probably relating to NDS.
C000100C	The license certificate has expired.

About NLS Manager

Question: Why is data missing from trending information in NLS Manager (nlsman32.exe)?

Answer: The summary data is stored in the License Container object. If that object is deleted and the license certificates are reinstalled, all previous trending information is lost.

About user assignments

Question: Why do user assignments not work if there is an upper ASCII character in the assigned distinguished name of the user?

Answer: User assignments have the same problem as an assigned owner. The assignments are stored in an octet string, local code page. If the corresponding object is moved or has an upper ASCII character, the user assignment will become invalid.

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