

Novell Open Enterprise Server

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IP ADDRESS MANAGEMENT FOR
NETWARE ADMINISTRATION GUIDE

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About This Guide

This guide discusses how to administer the IP Address Management Framework on NetWare® 6.5. The discussion includes how to deploy and manage the framework.

This guide is divided into the following sections:

- ♦ Chapter 1, “Understanding IP Address Management,” on page 9
- ♦ Chapter 2, “Setting Up IP Address Management,” on page 13
- ♦ Chapter 3, “Using the IP Address Management Framework,” on page 15
- ♦ Appendix A, “Applications Integrated with the Framework,” on page 23
- ♦ Appendix B, “Troubleshooting IP Address Management,” on page 25

IMPORTANT: OES NetWare and NetWare 6.5 share the same code base and are the same in every way. Installing the OES NetWare product or associated support pack is the same as installing the simultaneously released NetWare 6.5 product or associated support pack.

Audience

This guide is intended for network administrators.

Feedback

We want to hear your comments and suggestions about this manual and the other documentation included with this product. Please use the User Comment feature at the bottom of each page of the online documentation, or go to [Novell online documentation \(http://www.novell.com/documentation/feedback.html\)](http://www.novell.com/documentation/feedback.html).

Documentation Updates

For the most recent version of the *IP Address Management Administration Guide*, see the [OES 2 Documentation Web site \(http://www.novell.com/documentation/oes2/mgmt_ip_nw/index.html?page=/documentation/oes2/mgmt_ip_nw/data/ai0fpcs.html#ai0fpcs\)](http://www.novell.com/documentation/oes2/mgmt_ip_nw/index.html?page=/documentation/oes2/mgmt_ip_nw/data/ai0fpcs.html#ai0fpcs).

Documentation Conventions

In Novell® documentation, a greater-than symbol (>) is used to separate actions within a step and items in a cross-reference path.

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When a single pathname can be written with a backslash for some platforms or a forward slash for other platforms, the pathname is presented with a backslash. Users of platforms that require a forward slash, such as UNIX* or Linux*, should use forward slashes as required by your software.

Understanding IP Address Management

1

IP Address Management is a centralized framework that stores and displays the IP address : port configuration of applications present on a server. The framework helps you in managing the IP address-application association when changing the server's IP address. It also helps in resolving IP address and port conflicts.

This guide helps you understand the framework and solve the problems that arise out of IP address and port conflicts.

This section covers the following:

- ♦ [Section 1.1, “Analyzing IP Address Scenarios,” on page 9](#)
- ♦ [Section 1.2, “Benefits of the IP Address Management Framework,” on page 10](#)

1.1 Analyzing IP Address Scenarios

Whenever a server's IP address changes, the following problems occur:

- ♦ Many critical applications might stop working and might not work even after a reboot of the server
- ♦ Restarting broken applications requires extensive modification of configuration files with the new IP address
- ♦ There are too many configuration files, making it difficult to figure out which application is using which IP address

Until now, the workaround was to manually modify the configuration files of each application with the new IP address. Some of you might have opted to reinstall the server.

Port conflicts occur when there are multiple applications contending for the same port, IP address, and protocol combination. Even here, the workaround was to manually modify the configuration files of each application with the new IP address. Again, some of you might have opted to reinstall the server.

This section further discusses the following:

- ♦ [“Scenarios for IP Address Configuration Changes” on page 9](#)
- ♦ [“Scenarios for Port Conflicts” on page 10](#)

1.1.1 Scenarios for IP Address Configuration Changes

This section discusses the scenarios that you might encounter when you need to change the IP address of a server.

- ♦ [“When Applications Bind to a Wildcard Address \(0.0.0.0\)” on page 10](#)
- ♦ [“When Applications Bind to a Specific Address” on page 10](#)
- ♦ [“When Applications Bind to a Nonspecific Address \(Default IP\)” on page 10](#)

When Applications Bind to a Wildcard Address (0.0.0.0)

Applications that bind to a wildcard address (INADDR_ANY) are bound to 0.0.0.0. These applications use any available IP address for connections; such applications continue to work without any problem when the IP address on the system is changed.

When Applications Bind to a Specific Address

These applications bind only to a specific IP address. When this address is changed, these applications stop working. These applications do not work even after they are reloaded or the server is restarted.

When Applications Bind to a Nonspecific Address (Default IP)

These applications do not care which IP address they are listening to as long as they connect to one of the IP addresses on the server.

NOTE: If a default IP address is not configured, the TCP/IP stack assigns the first bound IP address on the server as the default IP address.

To configure the default IP address, refer to the [OES 2: Novell TCP/ IP for NetWare Administration Guide](http://www.novell.com/documentation/oes2/ntwk_ipv4_nw/index.html?page=/documentation/oes2/ntwk_ipv4_nw/data/front.html#front) (http://www.novell.com/documentation/oes2/ntwk_ipv4_nw/index.html?page=/documentation/oes2/ntwk_ipv4_nw/data/front.html#front)

1.1.2 Scenarios for Port Conflicts

This section discusses the scenarios related to port conflicts during IP Address : Portl.c. on “address” and “port” configuration changes.

- ♦ “When Applications Compete for Ports” on page 10
- ♦ “When Applications Do Not Compete for Ports” on page 10

When Applications Compete for Ports

When multiple applications contend for the same port : IP address : protocol combination, this results in port conflicts. Port conflicts can be resolved by using either a different port or a different IP address.

When Applications Do Not Compete for Ports

Applications that do not compete for ports toggle between the valid and invalid status. These applications have their ports marked as N/A.

1.2 Benefits of the IP Address Management Framework

The IP Address Management framework is a centralized repository that provides you a bird’s eye view of all the application’s IP address : port : protocol configurations on a server. The prominent features of this framework are listed below:

- ♦ Provides a Web-based user interface to access the framework.

- ♦ Notifies you of any change in the server's IP address : Port configuration.
- ♦ Classifies application configurations as valid, invalid, or conflict and provides a centralized interface to edit and resolve an application's configuration.
- ♦ When you use the framework to change an application's ' IP Address : Port configuration, it also automatically updates the application's configuration file. When the server restarts, the application receives the correct configuration information.
- ♦ The framework also accommodates and displays any change in an application's configuration done outside the framework UI.
- ♦ When any change occurs in the server's IP address, it automatically updates the `etc\hosts` and `etc\hostname` files with the right IP address.
- ♦ Displays a list of configured IP addresses on the server.
- ♦ Schedules changes to an application's IP address configuration for a specified date and time.

Setting Up IP Address Management

2

The IP Address Management framework is automatically installed during NetWare® 6.5 installation, including the modules that enable the framework.

2.1 IP Address Management Modules

The following NetWare Loadable Module™ (NLM™) programs enable the IP Address Management framework:

- ♦ **Ipmgmt.nlm:** Can be loaded by using `ipminit.ncf` and provides the basic framework to handle applications' IP address and port configuration.
- ♦ **Ipmcfg.nlm:** Can be loaded using `inetstrt.ncf` and provides the Netware Remote Manager (NRM) user interface for IP address management. This NLM auto-loads the `ipmgmt.nlm`.

Using the IP Address Management Framework

3

This section discusses how the features of IP Address Management framework available in Novell® Remote Manager can be used:

- ♦ [Section 3.1, “Understanding the Novell Remote Manager’s IP Address Management Framework,” on page 15](#)
- ♦ [Section 3.2, “Changing the IP Address and Port,” on page 17](#)
- ♦ [Section 3.4, “Viewing the Configured IP Address,” on page 19](#)
- ♦ [Section 3.5, “Scheduling Configuration Changes,” on page 19](#)
- ♦ [Section 3.3, “Resolving IP Address and Port Conflicts,” on page 18](#)

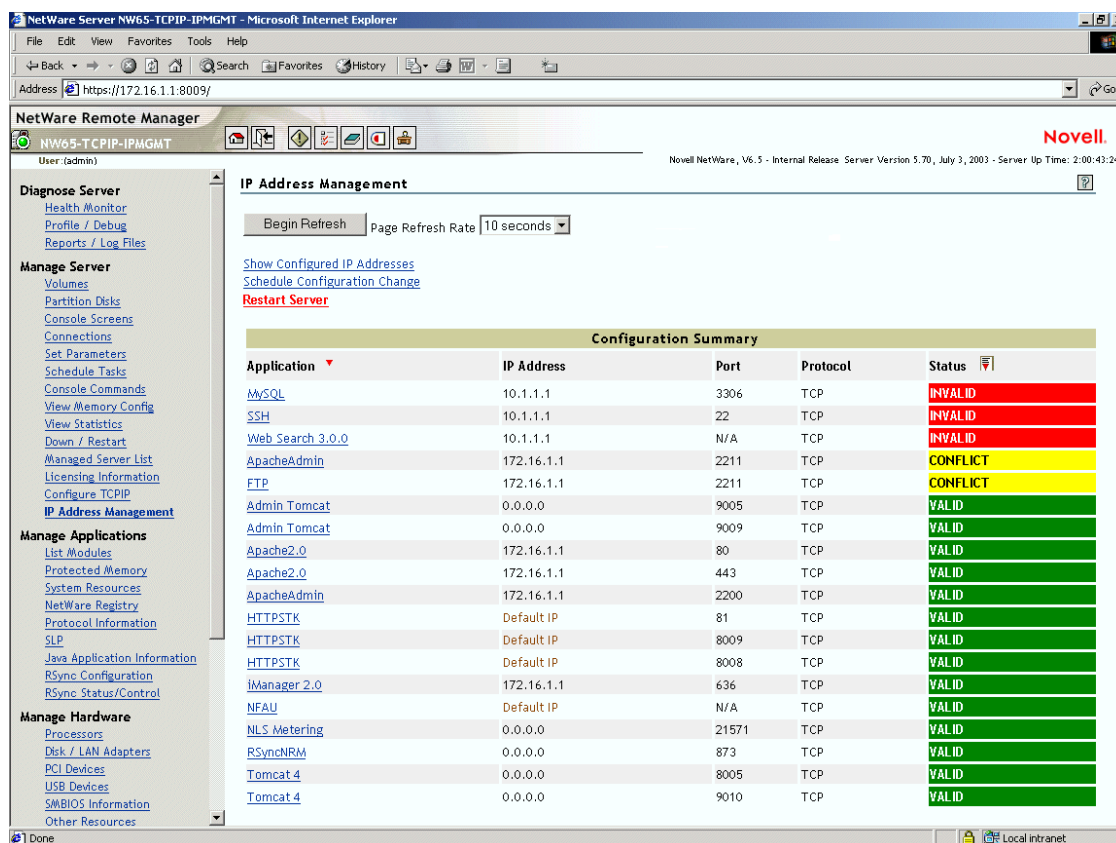
3.1 Understanding the Novell Remote Manager’s IP Address Management Framework

Log in to Novell Remote Manager (<http://ipaddress:8008/>), then click the *IP Address Management* link in the left pane. The IP Address Management page displays as shown in [Figure 3-1 on page 16](#).

The following information is available on this page:

- ♦ **Application:** The list of applications being served by the framework.
- ♦ **IP Address:** The IP address associated with the application. The supported address types are IPv4 and DNS.
- ♦ **Port:** The port number that the application is currently listening on. Consider the following:
 - ♦ You can select a port within the range of 1 to 65535.
 - ♦ If N/A is displayed in this field, it indicates that this application is not competing for ports. This value is not editable.
- ♦ **Protocol:** The Transport Layer Protocol being used by the application.
- ♦ **Status:** The current configuration status of the application. The status could be valid, conflict, or invalid:
 - ♦ **Valid** Indicates the application is configured with an IP address configured on the server.
 - ♦ **Invalid:** Indicates the application is configured with an IP address that is not available on the server.
 - ♦ **Conflict:** Indicates that at least two applications are using the same IP address : port : protocol combination.

Figure 3-1 IP Address Management Page



The applications can be grouped based on either the application name or the configured status. The sample page in the above figure is grouped on the basis of Status. Click the *Group By* ▼ icon next to *Application/Status* to group the list by either Application or Status.

When the Group By icon is visible next to a field, it indicates that the list is grouped by that field.

NOTE: The same application might have more than one configuration record. Currently, the configuration for an application needs to be managed on a per-record basis.

The options available on the IP Address Management page are discussed below:

Show Configured IP Addresses

Use this link to view the configured IP addresses on the server. Refer to [Section 3.4, “Viewing the Configured IP Address,” on page 19](#) for more information.

Schedule Configuration Change

Use this link to schedule configuration changes for applications by selecting the date and time when the changes need to take place. Refer to [Section 3.5, “Scheduling Configuration Changes,” on page 19](#) for more information.

Restart Server

For the *Restart Server* link to appear on the IP Address Management page, you need to change any one application's configuration.

3.2 Changing the IP Address and Port

To change an application's configuration, click the *Application_name* on the **IP Address Management** page. The Configuration Change for Application *Application_name* page displays.

Figure 3-2 Configuration Change for Application: *Application_name* Page

The screenshot shows the NetWare Remote Manager interface. The title bar reads "NetWare Remote Manager" and "TCPIP-IPMGMT". The user is "admin". The status bar indicates "Novell NetWare 6.5 (513) Server Version 5.70, May 9, 2003 - Server Up Time: 1:19:23:37". The main title is "Configuration Change for Application Admin Tomcat".

The left sidebar contains the following links:

- Diagnose Server
 - Health Monitor
 - Profile / Debug
 - Reports / Log Files
- Manage Server
 - Volumes
 - Partition Disks
 - Console Screens
 - Connections
 - Set Parameters
 - Schedule Tasks
 - Console Commands
 - View Memory Config
 - View Statistics
 - Down / Restart
 - Managed Server List
 - Licensing Information
 - Configure TCPIP
 - IP Address Management
- Manage Applications
 - List Modules
 - Protected Memory
 - System Resources
 - NetWare Registry
 - Protocol Information
 - SLP
 - Java Application Information
 - RSync Configuration
 - RSync Status/Control

The main content area displays the configuration for "Admin Tomcat":

Application Name	Admin Tomcat
Application Description	Tomcat Admin Instance
Address Type	IPv4
New IP Address/DNS	0.0.0.0
Address Category	Primary
Protocol	TCP
Port	9005

Below the table are "Apply" and "Cancel" buttons.

Other Configuration Instances

Address Type	IP Address/DNS	Address Category	Protocol	Port
IPv4	0.0.0.0	Primary	TCP	9009

This page provides the following information:

- ♦ **Application Name:** The name of the application.
- ♦ **Application Description:** A description of the application.

- ♦ **Address Type:** The type of address. If the address type of the application is Default IP Address, that IP address cannot be changed.
- ♦ **New IP Address/DNS:** A configurable value. You can choose one of the addresses from the drop-down list. If the application has opted for the IP address to be noneditable, then it is not configurable.
- ♦ **Address Category:** Indicates whether the address is primary, secondary, or default.
 - ♦ **Primary IP Address:** The first address bound on an interface card.
 - ♦ **Secondary IP Address:** Any other address bound to the interface card, apart from the Primary address.
 - ♦ **Default IP Address:** One of the Primary IP addresses configured as the default on the server. The default IP address is not configurable from the IP Address Management page.
- ♦ **Protocol:** The protocol (TCP or UDP) of the application.
- ♦ **Port:** The port that the application is listening on. This is a configurable value, so you can enter a new value here. If the application has opted for the port to be noneditable, then it is not configurable.

Other Configuration Instances

All other configurations associated with that application are shown in the lower pane of the [Configuration Change for Application *Application_name*](#) page.

3.3 Resolving IP Address and Port Conflicts

This section discusses how to resolve IP address and port conflicts:

- ♦ [“Resolving Invalid Addresses” on page 18](#)
- ♦ [“Resolving Port Conflicts” on page 18](#)

3.3.1 Resolving Invalid Addresses

You can resolve an invalid IP address to a valid (configured) IP address from the new *IP Address/DNS* drop-down list on the [Configuration Change for Application *Application_name*](#) page.

The status of the application will move from Invalid (red) to Valid (green). If the Status changes to Conflict, refer to [“Resolving Port Conflicts” on page 18](#).

3.3.2 Resolving Port Conflicts

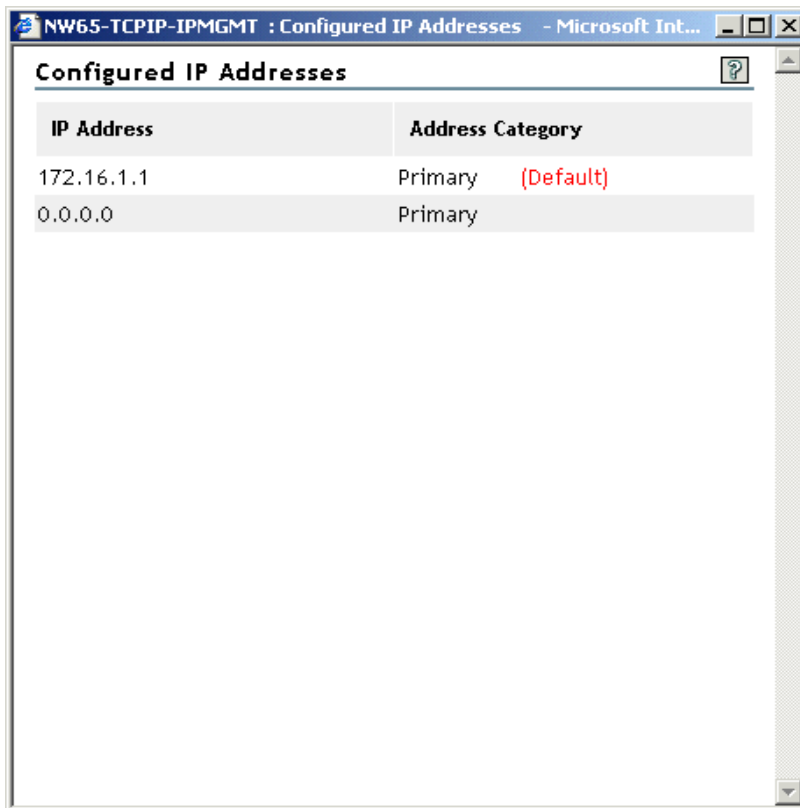
You can resolve port conflicts either by selecting a new IP address or by changing the port value on the [Configuration Change for Application *Application_name*](#) page.

The status of the application will move from Conflict (yellow) to Valid (green). For the applications to start working with the new configuration, you need to restart the server.

3.4 Viewing the Configured IP Address

Click the *Show Configured IP Addresses* link on the **IP Address Management** page to display the Configured IP Addresses window. This window displays all the IP addresses currently configured on the server.

Figure 3-3 Configured IP Address Window



This view-only window lists the following information:

- ♦ All configured IP addresses
- ♦ The category that each address belongs to.
- ♦ The default IP address for the server.

3.5 Scheduling Configuration Changes

Click the *Schedule Configuration Change* link on the **IP Address Management** page to display the Schedule Configuration Change window. In this window, you can schedule configuration changes for applications by selecting the date and time when the changes need to take place.

IMPORTANT: You can use this window only for scheduling changes for IP address configuration.

Figure 3-4 *Schedule Configuration Change Window*

Schedule Configuration Change

October 02 2002 17:36

Date: October 02

Time: 00 : 00

From **To**

10.1.1.1 172.16.1.1


+

Apply Cancel

The server's current date and time are displayed in the upper right corner.

- ♦ **Date:** Specifies the date on which the changes need to take place. Select the month and day from the drop-down lists.
- ♦ **Time:** Specifies the time by when (on a particular date) the changes need to take place. Select the hour and minutes from the drop-down lists.
- ♦ **From:** Specifies the current IP address of an application that needs to be configured to use a new IP address. All the currently configured IP addresses are available in this drop-down list.
- ♦ **To:** Specifies the new IP address that the application can listen on after the scheduled date and time.

NOTE: The IP addresses available in the *To* drop-down list need to be configured by using INETCFG or by using the *Configure TCP/IP* link in Novell Remote Manager. However, do not reinitialize the server after configuring the new IP addresses because this might result in loss of the current connection.

Click the plus  icon below the *From* drop-down list to display another set of drop-down lists. You can select up to three IP addresses for scheduling configuration changes.

Make any desired changes, then click *Apply* for the changes to take place and to return to the previous page.

Click *Cancel* to close the window without saving any changes.

Click *Delete* to cancel a scheduled change. For the Delete button to appear in the Schedule Configuration Change window, a scheduled change should exist.

NOTE: After you save a schedule for configuration changes, the next time you open the Schedule Configuration Changes window, the previous schedule details are displayed.

When configuration changes occur on the scheduled date and time, the server is automatically restarted.

3.6 Updating the Etc\hosts and Etc\hostname Files

Whenever you change a server's IP address and you need to update the `etc\hosts` and `etc\hostname` files, do the following:

- 1 Ensure that all applications have a Valid status.

If any of the applications have a Conflict or Invalid status, resolve all the IP address and port conflicts.

- 2 After the status of all applications is changed to Valid, click *Restart Server* to activate the changes.

Applications Integrated with the Framework

A

Applications that are integrated with the IP Address Management framework are listed below.

Table A-1 *Applications integrated with IP Address Management*

Application name	Description
Admin Tomcat	Tomcat Admin Instance
Apache 2.0	Apache 2.0 Web Server
ApacheAdmin	Apache Administration Web Server
exteNdAppServer	exteNd™ Application Server
DNS Server	eDirectory™ Integrated DNS Server
FTP	NetWare® FTP Server
HTTPSTK	Novell® Small HTTP Interface
iManager 2.0	iManager 2.0 Framework
MySQL	MySQL* Database Server
NDPS Broker	Host for brokered services: SRS, ENS, and RMS
NFAU	Native File Access for UNIX
NLS Metering	NLS Usage Metering
RSyncNRM	RSync Novell Remote ManagerManagement Utility
SMDR	SMS Storage Data Requestor
SSH	SSH Server
Tomcat 4	Tomcat User Instance
Web Search 3.0.0	NetWare Web Search Server 3.0.0

Troubleshooting IP Address Management

B

This section contains the troubleshooting information to resolve IP Address Management issues.

B.1 Troubleshooting Strategies

- ♦ “Sys:\system\ipconf\..\appconf.xml File Open Failed” on page 25
- ♦ “An Application Is Not Visible in the Framework” on page 25

Sys:\system\ipconf\..\appconf.xml File Open Failed

Problem: In the Logger Screen, you encounter the following error message:

```
sys:\system\ipconf\..\appconf.xml file open failed
```

Action: Do the following:

- 1 At the server console, increase the Set parameter IPMGMT Fetch Expiry Time to a higher value.

Range: 1 to 60

Default: 5
- 2 On the **IP Address Management** page, click *Begin Refresh* and use 10 seconds as the refresh interval.

An Application Is Not Visible in the Framework

Problem: One of the configured applications is not visible in the framework.

Action: Do the following:

- ♦ Verify whether the application is integrated with the framework. Refer to **Appendix A, “Applications Integrated with the Framework,”** on page 23.
- ♦ Verify whether the application that you are looking for is loaded.
- ♦ Verify that in the Logger Screen, you have not encountered a `sys:\system\ipconf\..\appconf.xml open failed` message.
- ♦ On the IP Address Management page, click *Begin Refresh* and use 10 seconds as the refresh interval.
- ♦ If you still encounter the problem, follow the procedure under “Sys:\system\ipconf\..\appconf.xml File Open Failed” on page 25.

Documentation Updates

C

- ♦ [Section C.1, “March 20, 2008,” on page 27](#)
- ♦ [Section C.2, “April 28, 2008,” on page 27](#)

C.1 March 20, 2008

- ♦ Updated the preface with a section for Audience and Feedback.
- ♦ Updated the guide with common edits and structure.
- ♦ Updated the book to the December 11, 2007 template.

C.2 April 28, 2008

- ♦ Updated the book to the April 24, 2008 template.