NetIQ® iManager
Installation Guide

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Contents

About this Book and the Library

The *Installation Guide* describes how to install the NetIQ iManager (iManager) product.

For the most current version of the *NetIQ iManager Installation Guide*, see the English version of the documentation at the NetIQ iManager online documentation site (https://www.netiq.com/documentation/imanager/).

Intended Audience

This guide is intended for network administrators, and describes how to install, upgrade, or uninstall iManager.

Other Information in the Library

The library provides the following information resources:

Administration Guide

Provides conceptual information about the iManager. This book defines terminology and includes implementation scenarios.

About NetIQ Corporation

We are a global, enterprise software company, with a focus on the three persistent challenges in your environment: Change, complexity and risk—and how we can help you control them.

Our Viewpoint

Adapting to change and managing complexity and risk are nothing new

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We believe that providing as much control as possible to IT organizations is the only way to enable timelier and cost effective delivery of services. Persistent pressures like change and complexity will only continue to increase as organizations continue to change and the technologies needed to manage them become inherently more complex.

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Driving your success is our passion

We place your success at the heart of how we do business. From product inception to deployment, we understand that you need IT solutions that work well and integrate seamlessly with your existing investments; you need ongoing support and training post-deployment; and you need someone that is truly easy to work with — for a change. Ultimately, when you succeed, we all succeed.

Our Solutions

- Identity & Access Governance
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- Systems & Application Management
- Workload Management
- Service Management

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1 Planning to Install iManager

This section provides the prerequisites, considerations, and system setup needed to install iManager. First, consult the checklist to understand the installation process.

- ◆ "Checklist for Installing iManager" on page 9
- ◆ "Understanding the Server and Client Versions of iManager" on page 10
- ◆ "Understanding Installation for iManager Plug-ins" on page 10
- ◆ "Prerequisites and Considerations for Installing iManager" on page 11
- ◆ "System Requirements for iManager Server" on page 14
- ◆ "System Requirements for iManager Workstation (Client Version)" on page 16

Checklist for Installing iManager

Before beginning the installation, NetIQ recommends that you review the following steps.

	Checklist Items
❑	1. Understand the difference between iManager and iManager Workstation. For more information, see "Understanding the Server and Client Versions of iManager" on page 10.
❑	2. (Conditional) To ensure that Linux computers meet the prerequisites for installing iManager and iManager Workstation, review the following considerations: ◆ For iManager, see "Considerations for Installing iManager on a Linux Server" on page 12 ◆ For iManager Workstation, see "Considerations for Installing iManager Workstation on Linux Clients" on page 13
❑	3. (Conditional) To ensure that Windows computers meet the prerequisites for installing iManager and iManager Workstation, review the following considerations: ◆ For iManager, see "Considerations for Installing iManager on a Windows Platform" on page 13 ◆ For iManager Workstation, see "Considerations for Installing iManager Workstation on Windows Clients" on page 14
❑	4. Review the hardware and software requirements for the computers that will host iManager: ◆ For iManager, see "System Requirements for iManager Server" on page 14 ◆ For iManager Workstation, see "System Requirements for iManager Workstation (Client Version)" on page 16
❑	5. Access the installation files for iManager from the iManager installation package. Alternatively, download the installation files from the NetIQ Downloads website. Search for iManager products, select the iManager version that you want, then download the `.tgz` and `tar.bz2` or `win.zip` file to a directory on your server. For example, `iMan_300_linux_x86_64.tgz` and `iMan_300_workstation_linux_x86_64.tar.bz2` or `iMan_300_win_x86_64.zip`.

	Checklist Items
❑	6. (Optional) To learn more about the process for installing plug-ins, see "Understanding Installation for iManager Plug-ins" on page 10.
❑	7. (Optional) To review actions that you can perform after installing iManager, see Chapter 3, "Post-Installation Tasks for iManager," on page 33.
❑	8. To install iManager and iManager Workstation, see the following sections: ◆ For Linux computers, see "Installing iManager Server and iManager Workstation on Linux" on page 19 ◆ For Windows computers, see "Installing iManager Server and iManager Workstation on Windows" on page 23 ◆ For a silent installation, see "Installing iManager Silently" on page 28

Understanding the Server and Client Versions of iManager

You must install iManager on a server that can access an eDirectory tree. To install iManager on a workstation instead of a server, you need the client-based version of iManager, the **iManager Workstation**. Use the following guidelines to decide which version fits best in your environment, or whether your eDirectory management policies would benefit from installing both versions:

◆ If you have a single administrator who always manages eDirectory from the same client workstation, you can take advantage of iManager Workstation. iManager Workstation is fully self-contained and requires little setup. It automatically starts and stops the resources it needs when it loads or unloads. iManager Workstation installs and runs on various Linux or Windows client workstations, has no dependencies on server-based iManager, and it can coexist with any other versions of iManager installed on your network.

iManager plug-ins do not automatically synchronize between iManager instances. If you have multiple administrators and use customized plug-ins, iManager Workstation and these plug-ins must be installed on each administrator's client workstation.

◆ If you manage eDirectory from multiple client workstations, or have multiple administrators, install iManager Server so that it is available from any connected workstation. Additionally, customized plug-ins only need to be installed once per iManager Server.

Understanding Installation for iManager Plug-ins

By default, the plug-in modules are not replicated between iManager servers. You must install the plug-in modules that you want on each iManager server.

In a clean install, the setup program preselects the "typical" plug-ins. For an upgrade, only plug-ins that need to be updated are preselected. You can override the default selections and add new plug-ins to download. However, for an upgrade, NetIQ recommends that you do not unselect any plug-in that was pre-selected. As a general rule, you should always upgrade plug-ins that you installed with a previous version of iManager. Also, more recent plug-ins might not be compatible with previous versions of iManager.

The base plug-ins for iManager are available only as part of the complete iManager software download (for example, eDirectory administrative plug-ins). Unless there are specific updates to these plug-ins, you can only download and install them with the entire iManager product.

The installation program uses an XML descriptor file, `iman_mod_desc.xml`, to identify the plug-ins that are available for downloading. The default URL for the file is http://www.novell.com/products/consoles/imanager/iman_mod_desc.xml. However, you can point the installation program to an alternative network URL. For example, you might be installing iManager behind a proxy or firewall that prevents the installation program from accessing the default URL.

IMPORTANT: You must use the latest iManager SDK to re-compile any custom plug-ins that you want to use with the newly installed version environment.

For instructions about downloading and installing plug-ins, see the steps in one of the following sections:

- **Linux**: "Installing iManager Server and iManager Workstation on Linux" on page 19
- **Windows**: "Installing iManager Server and iManager Workstation on Windows" on page 23
- **Silent installation**: "Installing iManager Silently" on page 28

For more information about customizing the process for downloading and installing plug-ins, see "Downloading and Installing Plug-in Modules".

Prerequisites and Considerations for Installing iManager

This section provide information for installing server and workstation versions of iManager.

- "Considerations for Installing iManager" on page 11
- "Considerations for Installing iManager on a Linux Server" on page 12
- "Considerations for Installing iManager on a Windows Platform" on page 13
- "Considerations for Installing iManager Workstation on Linux Clients" on page 13
- "Considerations for Installing iManager Workstation on Windows Clients" on page 14

Considerations for Installing iManager

Before installing iManager, review the following considerations:

- If the iManager server setup program detects a previously installed version of iManager 2.7.7.x, you can stop the installation process or remove the existing iManager, JRE, and Tomcat installations.
- Because iManager Workstation is a self-contained environment, you can install multiple versions on the same workstation, including older versions of Mobile iManager. However, you should not attempt to run them simultaneously. If you need to use different versions, run one version, close it, and then run the other version.
- You cannot run iManager Workstation from a path that includes spaces. For example, `C:\NetIQ\iManager Workstation\working`.
- You must have `root` access rights for Linux servers or Administrator access for Windows servers.
- To create a Role-Based Services (RBS) collection in the eDirectory tree, you must have admin-equivalent rights.

- To run the iManager RBS Configuration Wizard, you must have admin-equivalent rights.
- To manage the same eDirectory tree with multiple versions of iManager, you must update your RBS Collection(s) to the latest iManager version.

Considerations for Installing iManager on a Linux Server

Your Linux server must have specific packages already installed before you install iManager. In general, you can download the `.rpm` files from a website such as http://rpmfind.net/linux.

Red Hat Enterprise Linux (RHEL)

- compat?libstdc++?33 (RHEL 5)
- compat-libstdc++-33-*.el6.i686.rpm (RHEL 6 64-bit)
- compat-libstdc++-33-*.el6.x86_64.rpm (RHEL 6 64-bit)
- libstdc++-4.4.*.el6.i686.rpm (RHEL 7, RHEL 6 64-bit)
- libstdc++-4.4.*.el6.x86_64.rpm (RHEL 7, RHEL 6 64-bit for GUI installation mode)
- glibc-2.12-*.el6.i686 (RHEL 7, RHEL 6 64-bit)
- libXau-*.el6.i686.rpm (RHEL 7, RHEL 6 64-bit)
- libxcb-*.el6.i686.rpm (RHEL 7, RHEL 6 64-bit)
- libX11-*.el6.i686.rpm (RHEL 7, RHEL 6 64-bit)
- libXext-*.el6.i686.rpm (RHEL 7, RHEL 6 64-bit)
- libXi-*.el6.i686.rpm (RHEL 7, RHEL 6 64-bit)
- libXtst-*.el6.i686.rpm (RHEL 7, RHEL 6 64-bit)
- libstdc++-*.el6.i686.rpm (RHEL 7, RHEL 6 64-bit)
- libgcc-*.el6.i686.rpm (RHEL 7, RHEL 6 64-bit)
- libXrender-0.9.5-1.el6.i686.rpm (RHEL 7, RHEL 6 64-bit)

When you install iManager on 64-bit version of RHEL, ensure that the 32-bit versions of the RHEL libraries are also installed.

SUSE Linux Enterprise Server (SLES) 64-bit

- libstdc++33?32bit (SLES 11)
- libstdc++43?32bit (for SLES 11 SP1)
- libstdc++46?32bit (for SLES 11 SP2)
- libXtst6-32bit (for SLES 12 64-bit)

To use PKI plug-in, you must also install the following RPM on the iManager server:

- **SLES 11 64-bit:** `compat-32bit` (`compat-32bit-2009.1.19-2.1`)

Considerations for Installing iManager on a Windows Platform

If you are using Microsoft Internet Information Services (IIS) or Apache HTTP Server for Windows, you must manually integrate iManager with these web server infrastructures. By default, iManager uses Tomcat on Windows servers.

Considerations for Installing iManager Workstation on Linux Clients

Your Linux clients must have the following packages already installed before you install iManager Workstation:

- GTK2
- GLIBC 2.3
- libstdc++33
    - SUSE Linux Enterprise Desktop (SLED) 11 (32-bit)
    - SLED 12 (32-bit)
    - SLED 11 SP1 (32-bit)
    - openSUSE 11.x (32-bit)
    - openSUSE 12.x (32-bit)
    - openSUSE 13.2 (32-bit)
- libstdc++33-32 bit
    - SLED 11 (64-bit)
    - SLED 11 SP1 (64-bit)
    - SLED 12 (64-bit)
    - openSUSE 11.x (64-bit)
    - openSUSE 12.x (64-bit)
    - openSUSE 13.2 (64-bit)
- libgtk-2_0-0-32bit
    - openSUSE 12.x (64-bit)
    - openSUSE 13.2 (32-bit)
    - openSUSE 13.2 (64-bit)
- libXt6-32bit
    - openSUSE 12.x (64-bit)
    - openSUSE 13.2 (32-bit)
    - openSUSE 13.2 (64-bit)
- libgthread-2_0-0-32bit
    - openSUSE 12.x (64-bit)
    - openSUSE 13.2 (32-bit)
    - openSUSE 13.2 (64-bit)

- libXtst6-32bit
  - openSUSE 12.x (64-bit)
  - openSUSE 13.2 (32-bit)
  - openSUSE 13.2 (64-bit)
  - SLED 12 (64-bit)

Considerations for Installing iManager Workstation on Windows Clients

Before installing iManager Workstation on your Windows clients, NetIQ recommends that you review the following considerations:

- To enable Internet Explorer to use a proxy server for your LAN, you must specify **Bypass Proxy Server for Local Addresses** under **Tools** > **Internet Options** > **Connections** > **LAN Settings**.
- To run a Novell Client earlier than version 4.91, the NetIQ Modular Authentication Service (NMAS) client must be installed on the workstation before you launch iManager Workstation.
- If you run iManager Workstation from a path where any directory contains `temp` or `tmp` in the name, such as `c:\programs\temp\imanager`, iManager plug-ins do not install. Instead, run iManager Workstation from `C:\imanager` or a non-temporary directory.
- The first time that you run iManager Workstation on a Windows workstation, use an account that is a member of the workstation's Administrators group.

System Requirements for iManager Server

This section provides the minimum requirements to help you set up the server that hosts iManager. For more information about the server version of iManager, see "Understanding the Server and Client Versions of iManager" on page 10.

IMPORTANT: To prepare for the installation, review the considerations and system requirements listed in the Release Notes accompanying the release. For more information, see the product documentation page.

IMPORTANT: iManager 3.0 is not yet supported with Identity Manager 4.5.x and Open Enterprise Server (OES) platforms.

- 1.4 GHz 64-bit processor
- 1 GB memory
- Disk space
  - 200 MB for Linux
  - 500 MB for Windows
- Web browser
  - Internet explorer 11,10 (Normal and Compatibility modes)

    NOTE: iManager does not support Internet Explorer 10 Metro user interface view on Windows 7 and 8.

  - Google Chrome 47, 42, 38, 37, 31, and 30

- Mozilla Firefox 42, 37, 33, 32, 26, 25, 23, 22, and 21
- Apple Safari 8.0 and 7.0.6
- Application Server
  - iManager installs Tomcat on Windows servers.
  - iManager 3.0 supplies Tomcat 8.0.37.

NOTE

- You can manually integrate an existing IIS or Apache web server infrastructure with iManager on a Windows server.
- Do not install standalone iManager package on a tomcat server running other applications.

- iManager 3.0 is compatible with eDirectory 9.0 directory services.

NOTE: iManager 3.0 should only be installed with eDirectory 9.0 and above on the same server.

- 8080, 8443, and 9009 default ports.
- One of the following operating systems:

The following table contains a list of the certified and supported server operating systems that eDirectory can run on.

IMPORTANT: Certified means the Operating System has been fully tested and supported. However, if an Operating System is listed as Supported it means that it has not yet been tested, but it is expected to work.

Certified Server Operating System Version	Supported Operating Systems	Notes
Windows Server 2012, Windows Server 2012 R2, and 2016 (64-bit)	Supported on later versions of service packs	iManager runs only in 64-bit mode.
SUSE Linux Enterprise Server 11 SP3 (64-bit), SP4 (64-bit)	Supported on later versions of support packs	iManager runs only in 64-bit mode.
SUSE Linux Enterprise Server 12, SP1, SP2 (64-bit)	Supported on later versions of support packs	iManager runs only in 64-bit mode.
Red Hat 6.6, 6.7 (64-bit)	Supported on later versions of support packs	iManager runs only in 64-bit mode.
Red Hat Enterprise Linux (RHEL) Server 7.0, 7.1, 7.2, 7.3, 7.4 (64-bit)	Supported on later versions of support packs	iManager runs only in 64-bit mode.

System Requirements for iManager Workstation (Client Version)

This section provides requirements to help you set up the computer hosting iManager Workstation. For more information about the client version of iManager, see "Understanding the Server and Client Versions of iManager" on page 10.

IMPORTANT: To prepare for the installation, review the considerations and system requirements listed in the Release Notes accompanying the release. For more information, see the product documentation page.

- 1 GHz 64-bit processor
- 1 GB memory
- 300 MB of disk space
- Application Server
  - iManager installs Tomcat on Windows servers.
  - iManager 3.0 supplies Tomcat 8.0.37.

  NOTE
  - You can manually integrate an existing IIS or Apache web server infrastructure with iManager on a Windows server.

- 8080, 8443, and 9009 default ports.
- Java 1.8.0_144 (64-bit) software, bundled with iManager Workstation
- One of the following operating systems:

  The following table contains a list of the certified and supported server operating systems that eDirectory can run on.

IMPORTANT: Certified means the Operating System has been fully tested and supported. However, if an Operating System is listed as Supported it means that it has not yet been tested, but it is expected to work.

Certified Server Operating System Version	Supported Operating Systems	Notes
Windows 7 Enterprise Edition (64-bit)	Supported on later versions of service packs	iManager runs only in 64-bit mode.
Windows 7 Ultimate Edition (64-bit)	Supported on later versions of service packs	iManager runs only in 64-bit mode.
Windows 7 Professional Edition (64-bit)	Supported on later versions of support packs	iManager runs only in 64-bit mode.
Windows 7 SP1 (64-bit)	Supported on later versions of support packs	iManager runs only in 64-bit mode.
Windows 8, 8.1 Enterprise Edition (64-bit)	Supported on later versions of support packs	iManager runs only in 64-bit mode.
Windows 10 (64-bit)	Supported on later versions of support packs	iManager runs only in 64-bit mode.

Certified Server Operating System Version	Supported Operating Systems	Notes
OpenSUSE 13.2 (64-bit)	Supported on later versions of support packs	iManager runs only in 64-bit mode.
SLED 12 (64-bit)	Supported on later versions of support packs	iManager runs only in 64-bit mode.

2 Installing iManager Server and Workstation

This chapter describes the process for installing iManager. To prepare for the installation, review the prerequisites and system requirements provided in "Prerequisites and Considerations for Installing iManager" on page 11.

To review the full installation process, see the "Planning to Install iManager" on page 9.

- "Installing iManager Server and iManager Workstation on Linux" on page 19
- "Installing iManager Server and iManager Workstation on Windows" on page 23
- "Installing iManager Silently" on page 28
- "Installing iManager Patch" on page 30

Installing iManager Server and iManager Workstation on Linux

This section provides the steps for installing iManager and iManager Workstation on Linux servers and clients. To prepare for the installation, review the prerequisites and system requirements:

- **iManager**: "Considerations for Installing iManager on a Linux Server" on page 12 and "System Requirements for iManager Server" on page 14
- **iManager Workstation**: "Considerations for Installing iManager Workstation on Linux Clients" on page 13 and "System Requirements for iManager Workstation (Client Version)" on page 16.
- Also see the Release Notes accompanying the release.

Installing iManager Server on Linux

The following procedure describes how to install the server version of iManager on a Linux server using an installation wizard, either in GUI format or from the console. To perform a silent, unattended installation, see "Installing iManager Silently" on page 28.

If the setup program for iManager Server detects a previously installed version of iManager, it might give you the option to stop the installation process or remove the existing iManager, JRE, and Tomcat installations.

When you install iManager, the process lays down the following products on your server:

- Tomcat 8.0.45
- Java 1.8.0_144 (64-bit)

After a successful installation, the setup program generates a configuration file, by default `/var/log/install.properties`, with values based on the questions asked during the installation. You can modify this file for use in a silent installation. For more information, see "Installing iManager Silently" on page 28.

To install iManager on Linux:

1 At the NetIQ Downloads Web site (http://dl.netiq.com/), search for iManager products, select the iManager version that you want to use, then download it to a directory on your server. For example, `iMan_300_linux_x86_64.tgz`.

2 Extract to the downloaded file in to the iManager folder:

For example, use the follwoing command:

`tar -zxvf iMan_300_linux_x86_64.tgz`

3 Open a shell and change to the `/extracted_directory/iManager/installs/linux` directory.

This path is relative to the directory where you copied or extracted the iManager files.

4 Enter one of the following commands while logged in as `root` or `root`-equivalent.

To do a command-line (text) install:

`./iManagerInstallLinux.bin`

To do a GUI install:

`./iManagerInstallLinux.bin -i gui`

After a successful install, the installer generates a configuration file (`/var/log/installer.properties`) with values based upon the questions asked during the install. You can modify this file for use in a silent installation. See "Installing iManager Silently" on page 28.

5 At the splash screen, specify a language, and then click **OK**.

6 Read the Introduction, and then click **Next**.

7 Accept the License Agreement, and then click **Next**.

8 For the components that you want to install, specify **iManager, Tomcat, JVM**.

NOTE: You must select this option *only*. iManager will not work as expected if you select either of the other two options.

---

9 Click **Next**.

10 (Optional) To use IPv6 addresses with iManager, click **Yes** in the Enable IPv6 window.

You can enable IPv6 addresses after you install iManager. For more information, see "Configuring iManager for IPv6 Addresses after Installation" on page 36.

11 Click **Next**.

12 (Optional) To download and install plug-ins as part of the installation, complete the following steps:

12a Specify that you want to download and install plug-ins, and then click **Next**.

12b (Conditional) For a console install, enter a comma-separated list of the plug-in numbers that you want to download.

12c (Conditional) If you are using the wizard program, select the check boxes of the plug-ins that you want to download.

(Optional) To download plug-ins from an different network location, specify an alternative **Network URL**.

When using an alternative URL for downloading plug-ins, you must verify the URL contents, and verify that the plug-in is appropriate for your use. By default, the installation program downloads plug-ins from http://www.novell.com/products/consoles/imanager/iman_mod_desc.xml. For more information, see "Understanding Installation for iManager Plug-ins" on page 10.

12d Click **Next**.

12e (Conditional) The setup program might display the following message:

```
No new or updated plug-ins found. All plug-ins are downloaded or updated or
the iManager download server is unavailable.
```

If this occurs, one or more of the following conditions exist:

- There are no updated plug-ins available from the download site.
- There is a problem with your Internet connection. Verify your connection and try again.
- Connection to the Descriptor File (http://www.novell.com/products/consoles/imanager/iman_mod_desc.xml) was not successful. This URL refers to an XML descriptor file of available iManager plug-ins.
- The iManager installation is behind a proxy that does not allow a connection to the above URL.

12f Specify whether you want to install plug-ins from a local drive, and then click **Next**.

12g (Conditional) To install plug-ins from a local directory, specify the directory path that contains the appropriate plug-in (`.npm`) files.

The default path is `/extracted location/iManager/installs/plugins`, but you can specify any valid mount point here.

12h Click **Next**.

13 Specify the ports on which you want Tomcat to run.

The default ports are 8080 for HTTP, 8443 for HTTPS, and 9009 as the MOD_JK connector port.

14 Click **Next**.

15 Specify the certificate public key algorithm that you want the TLS certificate to use, then click **Next**.

The options are:

- **RSA:** The certificate uses a 2048-bit RSA key pair.
- **ECDSA 256:** The certificate uses a ECDSA key pair with curve secp256r1.
- **ECDSA 384:** The certificate uses a ECDSA key pair with curve secp384r1.

By default, **RSA** is selected.

16 Based on the certificate selected in Step 15, iManager allows you to configure the following cipher levels for TLS communication.

- **RSA:** This certificate allows four cipher levels.
  - **NONE:** Allows any type of cipher.
  - **LOW:** Allows a 56-bit or a 64-bit cipher.
  - **MEDIUM:** Allows a 128-bit cipher.
  - **HIGH:** Allows ciphers that are greater than 128-bit.
- **ECDSA 256:** This certificate allows only one cipher level.
  - **SUITEB 128 ONLY:** Allows a 128-bit cipher.
- **ECDSA 384:** This certificate allows two cipher levels.
  - **SUITEB 128:** Allows a 128-bit cipher or 256-bit cipher.
  - **SUITEB 192:** Allows a 256-bit cipher.

For ECDSA certificates, iManager allows only Suite B ciphers.

By default, the cipher level is set to **NONE**. The selected cipher level is activated after Tomcat server is restarted.

17 (Optional) Specify an authorized user and the appropriate eDirectory tree name that this user will manage.

> **NOTE**
>
> - NetIQ does not recommend leaving these settings blank. If you leave these fields blank, iManager allows any user to install plug-ins and make changes to iManager server settings. You can specify an authorized user after completing the installation process. For more information, see "Specifying an Authorized User for eDirectory" on page 37.
> - The installation program does not validate the specified user credentials with eDirectory.

18 Click **Next**.

19 Read the Pre-Installation Summary page, and then click **Next**.

20 When the installation completes, click **Done**.

21 When the initialization of iManager finishes, click the first link in the Getting Started page, an then log in. For more information, see "Accessing iManager" in the *NetIQ iManager Administration Guide*.

> **NOTE:** If you plan to run iManager Workstation as a non-root user in the future, do not run iManager as `root` the first time. For more information, see "Installing iManager Server and iManager Workstation on Windows" on page 23.

22 Use the `chmod` command to change the permissions on the following InstallAnywhere files to `644` (read) to prevent modifications:

`/var/opt/novell/tomcat8/webapps/nps/UninstallerData/.com.zerog.registry.xml`

`/var/opt/novell/tomcat8/webapps/nps/UninstallerData/Uninstall_PluginName/`
`.com.zerog.registry.xml`

Do not modify the content in these files. Changing the content might affect other installations that use InstallAnywhere.

Installing iManager Workstation on Linux Clients

iManager Workstation is a self-contained environment. You can install multiple versions on the same workstation (including older versions of Mobile iManager). However, you should not attempt to run them concurrently. If you need to use different versions, run one version, close it, and then run the other version.

When you install iManager, the process lays down the following products on your server:

- Tomcat 8.0.45
- Java 1.8.0_144 (64-bit)

> **NOTE:** You cannot run iManager Workstation from a path that includes spaces. For example, `products/iManager Workstation/working`.

To install iManager Workstation on Linux clients:

1 At the NetIQ Download Web site (http://www.dl.netiq.com/), search for iManager products, select iManager 3.0, then download `iMan_300_workstation_linux_x86_64.tar.bz2` to a directory on your server.

2 Use the following command to extract the file:

```
tar -xjvf iMan_300_workstation_linux_x86_64.tar.bz2
```

The extraction creates an `imanager` folder in the same folder where iManager Workstation's `tar.bz2` file is located.

3 To install or upgrade the Novell International Cryptography Infrastructure (NICI) software, log in as `root` or a `root`-equivalent because the required NICI packages are used system-wide.

NetIQ requires you to install both 32-bit and 64-bit NICI.

4 To install NICI, enter the following commands from 32-bit and 64-bit NICI directories:

- **32-Bit NICI:** `rpm -Uvh nici.i586.rpm`

- **64-Bit NICI:** `rpm -Uvh nici64.x86_64.rpm`

On desktops where NICI is not installed, these commands install NICI. On desktops where NICI is already installed, these commands upgrade NICI.

5 (Conditional) To run iManager Workstation as a non-root user in the future, do not run iManager as `root` the first time. Navigate to the `imanager/bin` directory and execute the iManager Workstation startup script.

```
./iManager.sh
```

6 In the iManager login window, specify a user name, password, and an eDirectory tree.

For more information about accessing iManager, see "Accessing iManager" in the *NetIQ iManager Administration Guide*.

7 (Optional) To enable IPv6 addresses, complete the following steps:

1. Open the *User_Install_Directory*/Tomcat/conf/catalina.properties file.

2. Set the following configuration entries in the `catalina.properties` file:

   ```
   java.net.preferIPv4Stack=false
   ```

   ```
   java.net.preferIPv4Addresses=true
   ```

3. Restart Tomcat.

Installing iManager Server and iManager Workstation on Windows

This section provides the steps for installing iManager and iManager Workstation on Windows servers and clients. To prepare for the installation, review the prerequisites and system requirements:

- **iManager**: "Considerations for Installing iManager on a Linux Server" on page 12.

- **iManager Workstation**: "Considerations for Installing iManager Workstation on Linux Clients" on page 13.

- Also see the Release Notes accompanying the release.

Installing iManager Server on Windows

The following procedure describes how to install the server version of iManager on a Windows server using an installation wizard. To perform a silent, unattended installation, see "Installing iManager Silently" on page 28.

If the setup program for iManager Server detects a previously installed version of iManager, it might give you the option to stop the installation process or remove the existing iManager, JRE, and Tomcat installations. When the setup program removes the previously installed version of iManager, it backs up the directory structure to the old *TOMCAT_HOME* directory to preserve any previously created custom content.

For information about running iManager Server on the same machine as NetIQ eDirectory, see "Running eDirectory and iManager on the Same Computer (Windows only)" in the *NetIQ iManager Administration Guide*.

When you install iManager server, the process lays down the following products on your server:

- Tomcat 8.0.45
- Java 1.8.0_144 (64-bit)

To install iManager Server on Windows:

1 Log in as a user with administrator privileges on the computer where you want to install iManager.

2 At the NetIQ Downloads Web site, search for iManager products, select iManager 3.0, then download `iMan_300_win_x86_64.zip` to a directory on your server.

3 Extract the file into the iManager folder.

4 Run `iManagerInstall.exe` (*extracted_directory*`\iManager\installs\win`).

5 (Optional) To view the debug output of the installation program, hold the `Ctrl` key immediately after launching the installation program until a console window appears. For more information about debugging, see "Troubleshooting" in the NetIQ iManager Administration Guide.

6 In the iManager welcome window, select a language, and then click **OK**.

7 In the **Introduction** window, and then click **Next**.

8 Accept the License Agreement, and then click **Next**.

9 (Conditional) If your server already has a version of JVM or Tomcat or other supporting components that are installed as part of iManager, in the **Detection Summary** window, complete the following steps:

   9a Under **Install the following components**, verify that the versions listed for the components match the versions that you want to install.

   9b (Optional) If the setup program does not list the versions that you want to install, browse to the appropriate components in the installation folder.

10 Click **Next**.

11 In the **Get PORT Input** window, specify the port numbers on which Tomcat server must run, and then click **Next**.

   By default, the HTTP port and SSL port values are 8080 and 8443, respectively. However, if you have another service or Tomcat server using the default ports, you can specify different ports.

12 (Optional) To use IPv6 addresses with iManager, click **Yes** in the **Enable IPv6** window.

   You can enable IPv6 addresses after you install iManager. For more information, see "Configuring iManager for IPv6 Addresses after Installation" on page 36.

13 Click **Next**.

14 In the **Choose Install Folder** window, specify the folder to store the installation files, and then click **Next**.

The default installation location is `C:\Program Files\Novell`.

15 (Optional) To download and install plug-ins as part of the installation, complete the following steps:

15a In the **Select Plug-ins to Download and Install** window, select the plug-ins that you want.

15b (Optional) To download plug-ins from an different network location, specify an alternative **Network URL**.

When using an alternative URL for downloading plug-ins, you must verify the URL contents, and verify that the plug-in is appropriate for your use. By default, the installation program downloads plug-ins from http://www.novell.com/products/consoles/imanager/ iman_mod_desc.xml. For more information, see "Understanding Installation for iManager Plug-ins" on page 10.

15c Click **Next**.

15d (Conditional) The setup program might display the following message:

```
No new or updated plug-ins found. All plug-ins are downloaded or updated or
the iManager download server is unavailable.
```

If you see this error, one or more of the following conditions exist:

- There are no updated plug-ins available from the download site.
- There is a problem with your Internet connection. Verify your connection and try again.
- Connection to the Descriptor File (http://www.novell.com/products/consoles/imanager/ iman_mod_desc.xml) was not successful. This URL refers to an XML descriptor file of available iManager plug-ins.
- The iManager installation is behind a proxy that does not allow a connection to the above URL.

15e (Optional) To install plug-ins from a local directory, in the Select Plug-ins to Install from Disk window, specify the directory path that contains the appropriate `.npm` plug-in files.

This step allows you to install previously downloaded or custom plug-ins. The default path is `/extracted location/iManager/installs/plugins`. However, you can specify any valid path.

15f Click **Next**.

16 Specify the certificate public key algorithm that you want the TLS certificate to use, then click **Next**.

You can select one of the following options:

- **RSA:** The certificate uses a 2048-bit RSA key pair.
- **ECDSA 256:** The certificate uses a ECDSA key pair with curve secp256r1.
- **ECDSA 384:** The certificate uses a ECDSA key pair with curve secp384r1.

The default option is **RSA**.

17 Based on the certificate you choose in Step15, iManager allows you to configure the following cipher levels for TLS communication.

- **RSA:** This certificate allows four cipher levels.
    - **NONE:** Allows any type of cipher.
    - **LOW:** Allows a 56-bit or a 64-bit cipher.

- ◆ **MEDIUM:** Allows a 128-bit cipher.
- ◆ **HIGH:** Allows ciphers that are greater than 128-bit.
- ◆ **ECDSA 256:** This certificate allows one cipher level.
  - ◆ **SUITEB 128 ONLY:** Allows a 128-bit cipher.
- ◆ **ECDSA 384:** This certificate allows two cipher levels.
  - ◆ **SUITEB 128:** Allows a 128-bit cipher or 256-bit cipher.
  - ◆ **SUITEB 192:** Allows a 256-bit cipher.

For ECDSA certificates, iManager allows only Suite B ciphers.

By default, the cipher level is set to **NONE**. The selected cipher level is activated after Tomcat server is restarted.

18 (Optional) In the **Get User and Tree Names** window, specify an authorized user and the name of the eDirectory tree that this user will manage.

NOTE

- ◆ If eDirectory uses a port other than the default port 524, you can specify the IP address or DNS name of the eDirectory server plus the port number. Do not use `localhost`. For example, to specify an IPv6 address, enter `https://[2001:db8::6]:1080/nps/servlet/webacc?taskId=fw.Startup&forceMaster=true`.
- ◆ NetIQ does not recommend leaving these settings blank. If you leave these fields blank, iManager allows any user to install plug-ins and make changes to iManager server settings. You can specify an authorized user after completing the installation process. For more information, see "Specifying an Authorized User for eDirectory" on page 37.
- ◆ The installation program does not validate the specified user credentials with eDirectory.

---

19 Click **Next**.

20 Read the Pre-installation summary page, and then click **Install**.

21 When the installation completes, the **Install Complete** window displays relevant messages about the success of the process.

NOTE: Despite a successful installation, the **Install Complet**e window might display the following error message:

```
The installation of iManager version is complete, but some errors occurred
during the install.
Please see the installation log Log file path for details. Press "Done" to quit
the installer.
```

---

22 (Conditional) If the installer displays the error message shown in Step 21, complete the following steps:

22a Note the path to the log file that the error message displays.

22b In the **Install Complete** window, click **Done**.

22c Open the log file.

22d (Conditional) If you find the following error in the log file, you can ignore the error message. The installation was successful, and iManager functions properly.

```
Custom Action: com.novell.application.iManager.install.InstallDLLs
Status: ERROR
Additional Notes: ERROR - class
com.novell.application.iManager.install.InstallDLLs
NonfatalInstallException C:\WINDOWS\system32\msvcr71.dll (The process
cannot access the file because it is being used by another process)
```

22e (Conditional) If the log file does not contain the error listed in Step 22d, NetIQ recommends that you retry the installation.

23 Click **Done**.

24 When the initialization of iManager finishes, click the first link in the Getting Started page, an then log in. For more information, see "Accessing iManager" in the *NetIQ iManager Administration Guide*.

Installing iManager Workstation on Windows

iManager Workstation is a self-contained environment. You can install multiple versions on the same workstation (including older versions of Mobile iManager). However, you should not attempt to run them concurrently. If you need to use different versions, run one version, close it, and then run the other version.

NOTE: You cannot run iManager Workstation from a path that includes spaces. For example, `C:\NetIQ\iManager Workstation\working`.

When you install iManager workstation, the process lays down the following products on your server:

- Tomcat 8.0.45
- Java 1.8.0_144 (64-bit)

To install iManager Workstation on Windows:

1 At the NetIQ Download Web site (http://www.dl.netiq.com/), search for iManager products, select iManager version, then download the file. For example, `iMan_300_workstation_win.zip`.

2 Extract the `iMan_300_workstation_win.zip` file to a folder.

3 To install NICI, run the NICI files from 32-bit and 64-bit NICI directories from the `imanager\preinstalls\windows` folder.

- **32-Bit NICI:** `NICI_w32`
- **64-Bit NICI:** `NICI_wx64`

On desktops where NICI is not installed, these commands install NICI. On desktops where NICI is already installed, these commands upgrade NICI.

NetIQ requires you to install both 32-bit and 64-bit NICI.

4 To install Microsoft Visual C++ 2012 Redistributable Package, run `vcredist_x64` from the `imanager\preinstalls\windows` folder.

5 From the `imanager\bin` folder, run the `iManager.bat` file.

6 In the iManager login window, specify the credentials for an authorized user and the eDirectory tree that this user manages.

For more information about accessing iManager, see "Accessing iManager" in the *NetIQ iManager Administration Guide*.

7 (Optional) To enable IPv6 addresses, complete the following steps:

    1. Open the *User_Install_Directory*/Tomcat/conf/catalina.properties file.

    2. Set the following configuration entries in the catalina.properties file:

        java.net.preferIPv4Stack=false

        java.net.preferIPv4Addresses=true

    3. Restart the Tomcat service.

Installing iManager Silently

A silent (non-interactive) installation does not display a user interface or ask the user any questions. Instead, InstallAnywhere uses information from a default install.properties file. You can run the silent installation with the default file or edit the file to customize the installation process.

To prepare for the installation, review the prerequisites and system requirements:

- **iManager**: "Considerations for Installing iManager on a Linux Server" on page 12.
- **iManager Workstation**: "Considerations for Installing iManager Workstation on Linux Clients" on page 13.
- Also see the Release Notes accompanying the release.

You can perform a standard silent install on Linux or Windows server using the default install values or customize the installation process and then run the installation silently using the following steps:

1 Open a console window and navigate to the directory containing the iManager file you downloaded.

2 In the command line, enter one of the following:

- For Linux:

    ./iManagerInstall<*platform*>.bin -i silent

- For Windows:

    iManagerInstall.exe -i silent

Editing the Properties File for a Customized Silent Installation

For more control over which modules are installed, you can customize the silent installation process.

1 Open the install.properties file, located by default in the same directory that contains the installer executable file.

NOTE: If you previously installed the current version of iManager on a server, you can use the installer.properties file that setup program generated. The file, located by default in the /var/log directory, contains the values that you specified during the installation.

---

2 In the properties file, add the following parameters and values:

$PLUGIN_INSTALL MODE$

    Specifies the property that controls whether plug-ins are installed. Add one of the following values:

- DISK - (default) instructs the setup program to install the plug-ins from the local disk.

- NET - instructs the setup program to install the plug-ins from the network.
- BOTH - instructs the setup program to install the plug-ins from both disk and network.
- SKIP - does not install the plug-ins.

$PLUGIN_DIR$

Specifies an alternate path to plug-ins located on the local disk. The default path is *installer_root_directory*/iManager/installs/*platform path*/plugin.

The installation program installs all modules in the plug-in directory, except for subdirectories.

$PLUGIN_INSTALL_URL$

Specifies the network URL where the installation program can download the plug-ins, by default http://www.novell.com/products/consoles/imanager/iman_mod_desc.xml. If you specify an alternative URL, you must verify the URL contents, and verify that the plug-in is appropriate for your use. For more information, see "Understanding Installation for iManager Plug-ins" on page 10.

$LAUNCH_BROWSER$

Specifies whether the installation program launches the gettingstarted.html file launches once the installation process completes.

$USER_INSTALL_DIR$

Specifies the path where you want iManager to be installed.

USER_INPUT_ENABLE_IPV6

Specifies whether to enable iManager to use IPv6 addresses. By default, the installation program sets this value to yes.

USER_INPUT_CERTIFICATE_TYPE

Specifies whether to use RSA or Suite B certificate based on your security requirement.

If you choose RSA, add one of the following values:

- NONE
- LOW
- MEDIUM
- HIGH

If you choose ECDSA 256, add the following value:

- SUITEB 128 ONLY

If you choose ECSDSA 384, add one of the following values:

- SUITEB 128
- SUITEB 192

For ECDSA certificates, iManager allows only Suite B ciphers.

By default, this value is set to **NONE**.

3 For each plug-in module that you want to download and install, specify the module ID and version from the MANIFEST.MF file, located in the META-INF/ folder of the .npm (plug-in module). For example:

```
$PLUGIN_MODULE_ID_1$=eDirectoryBackupAndRestore

$PLUGIN_VERSION_1$=2.7.20050517

$PLUGIN_MODULE_ID_2$=ldap

$PLUGIN_VERSION_2$=2.7.20050517
```

- If you do not specify any modules, the program installs the most commonly installed modules, tagged as "selected" in the `iman_mod_desc.xml` files on the download website.

- If you do not define a version for a module, the setup program installs any module that matches the `.npm` name.

Running a Silent Installation for iManager

You can silently install iManager on a Linux or Windows server using the default values in the `install.properties` file, located by default in the same directory that contains the installer executable file.

1 In a console window, go to the directory containing the `install.properties` file that you downloaded.

2 On the command line, enter one of the following commands:

- **Linux**: `./iManagerInstall`*platform*`.bin -i silent`

- **Windows**: `iManagerInstall.exe -i silent`

Installing iManager Patch

To prepare for the installation, review the prerequisites and system requirements:

- **iManager**: "Considerations for Installing iManager on a Linux Server" on page 12.

- **iManager Workstation**: "Considerations for Installing iManager Workstation on Linux Clients" on page 13.

- Also see the Release Notes accompanying the release.

You can perform a standard silent install on Linux or Windows server using the default install values or customize the installation process and then run the installation silently using the following steps:

1 Open a console window and navigate to the directory containing the iManager patch file you downloaded.

2 In the command line, enter one of the following:

- For Linux:

  - In Silent Mode:

    `./patchInstall.bin -i silent`

  - In Console Mode:

    `./patchInstall.bin.bin`

  - In GUI Mode:

    `./patchInstall.bin -i GUI`

- For Windows:

  - In Silent Mode:

    `\>patchInstall.exe -i silent`

  - In GUI Mode: On Windows, the patch installer always runs in GUI mode by default.

FORCE Installation of iManager Patch Silently

To do a FORCE installation of iManager patch, perform the following steps:

NOTE: FORCE installation of iManager patch is performed only in silent mode on both linux and windows.

---

1 Uncomment `FORCE_INSTALL_MODE=true` from the `install.properties` file.
2 In the command line, enter one of the following:
   - For Linux:

     ```
     ./patchInstall.bin.bin -i silent -f path_to_properties_file
     ```
   - For Windows:

     \>patchInstall.bin.exe -i silent -f path_to_properties_file

3 Post-Installation Tasks for iManager

After you install iManager, you can modify the configuration settings, such as enabling IPv6 addressing or changing the authorized user for an eDirectory tree. Also, NetIQ recommends that you replace the self-signed certificates that the installation process created.

- ◆ "Replacing the Temporary Self-Signed Certificates for iManager" on page 33
- ◆ "Configuring iManager for IPv6 Addresses after Installation" on page 36
- ◆ "Specifying an Authorized User for eDirectory" on page 37

Replacing the Temporary Self-Signed Certificates for iManager

Standalone iManager installations include a temporary, self-signed certificate for use by Tomcat. It has an expiration date of one year. NetIQ provides this certificate to help you get your system up and running so you can securely use iManager immediately after you install the product. NetIQ and OpenSSL do not recommend using self-signed certificates except for testing purposes. Instead, you should replace the temporary certificate with a secure one.

Tomcat stores the self-signed certificate in a keystore that uses Tomcat (JKS) format file. Normally, you would import a private key to replace the certificate. However, the `keytool` that you use to modify the Tomcat keystore cannot import a private key. The tool only uses a self-generated key.

This section explains how to generate a public/private key pair in eDirectory using NetIQ Certificate Server and to replace the temporary certificate. If you are using eDirectory, you can use NetIQ Certificate Server to securely generate, track, store, and revoke certificates with no further investment.

Replacing the iManager Self-Signed Certificates on Linux

This section describes how to create a keypair in eDirectory and export the Public, Private, and Root Certificate Authority (CA) keys with a `PKCS#12` file on the Linux platform. This includes modifying Tomcat's `server.xml` configuration file to use the PKCS12 directive and point the configuration to an actual P12 file rather than use the default JKS keystore.

This process uses the following files:

- ◆ `/var/opt/novell/novlwww/.keystore`, which holds the temporary keypair
- ◆ `/opt/novell/jdk1.8.0_66/jre/lib/security/cacerts`, which holds the trusted root certificates
- ◆ `/etc/opt/novell/tomcat8/server.xml`, which is used for configuring Tomcat's use of certificates

To replace the self-signed certificates on Linux:

1 To create a new certificate, complete the following steps:

   1a Log in to iManager.

   1b Click **NetIQ Certificate Server** > **Create Server Certificate**.

    1c Select the appropriate server.

    1d Specify a nickname for the server.

    1e Accept the rest of the certificate defaults.

2 To export the server certificate to the Tomcat home directory, complete the following steps:

    2a In iManager, select **Directory Administration** > **Modify Object**.

    2b Browse to and select the Key Material Object (KMO) object.

    2c Click **Certificates** > **Export**.

    2d Specify a password.

    2e Save the server certificate as a PKCS#12 (`.pfx`) in the `/var/opt/novell/novlwww` directory.

3 To convert the `.pfx` file to a `.pem` file, complete the following steps:

    3a Enter a command, such as `openssl pkcs12 -in newtomcert.pfx -out newtomcert.pem`.

    3b Specify the same password for the certificate that you specified in Step 2.

    3c Specify a password for the new `.pem` file.

    You can use the same password, if desired.

4 To convert the `.pem` file to a `.p12` file, complete the following steps:

    4a Enter a command, such as `openssl pkcs12 -export -in newtomcert.pem -out newtomcert.p12 -name "New Tomcat"`.

    4b Specify the same password for the certificate that you specified in Step 3.

    4c Specify a password for the new `.p12` file.

    You can use the same password, if desired.

5 To stop Tomcat, enter the following command:

```
/etc/init.d/novell-tomcat8 stop
```

6 To ensure that Tomcat uses the newly created `.p12` certificate file, add `keystoreType`, `keystoreFile`, and `keystorePass` variables to the Tomcat configuration file, by default `/etc/opt/novell/tomcat8.0.22/server.xml`. For example:

```
<Connector className="org.apache.coyote.tomcat8.CoyoteConnector"
 port="8443" minProcessors="5" maxProcessors="75" enableLookups="true"
 acceptCount="100" debug="0" scheme="https" secure="true"
 useURIValidationHack="false" disableUploadTimeout="true">
   <Factory className="org.apache.coyote.tomcat8.CoyoteServerSocketFactory"
 clientAuth="false" protocol="TLS" keystoreType="PKCS12"
 keystoreFile="/var/opt/novell/novlwww/newtomcert.p12" keystorePass="password"
 />
</Connector>
```

NOTE: When setting the keystore type to PKCS12, you must specify the entire path to the certificate file, as Tomcat will no longer default to using the Tomcat home path.

7 To ensure that the `.p12` certificate file functions appropriately, complete the following steps:

7a Change the file's ownership to the appropriate Tomcat user/group, by default `novlwww`. For example, `chown novlwww:novlwww newtomcert.p12`.

7b Change the file permissions to `user=rw`, `group=rw`, and `others=r`. For example, `chmod 654 newtomcert.p12`.

8 To restart Tomcat, enter the following command:

```
/etc/init.d/novell-tomcat8 start
```

Replacing the iManager Self-Signed Certificates on Windows

This section describes how to create a keypair in eDirectory and export the Public, Private, and Root Certificate Authority (CA) keys with a `PKCS#12` file on the Windows platform. This includes modifying Tomcat's `server.xml` configuration file to use the PKCS12 directive and point the configuration to an actual P12 file rather than use the default JKS keystore.

This process uses the following files:

- `C:\Program Files\Novell\Tomcat\conf\ssl\.keystore`, which holds the temporary keypair
- `C:\Program Files\Novell\jre\lib\security\cacerts`, which holds the trusted root certificates
- `C:\Program Files\Novell\Tomcat\conf\server.xml`, which is used for configuring Tomcat's use of certificates

To replace the self-signed certificates on Windows:

1 To create a new certificate, complete the following steps:

1a Log in to iManager.

1b Click **NetIQ Certificate Server** > **Create Server Certificate**.

1c Select the appropriate server.

1d Specify a nickname for the server.

1e Accept the rest of the certificate defaults.

2 To export the server certificate, complete the following steps:

2a In iManager, select **Directory Administration** > **Modify Object**.

2b Browse to and select the Key Material Object (KMO) object.

2c Click **Certificates** > **Export**.

2d Specify a password.

2e Save the server certificate as a PKCS#12 (`.pfx`).

3 To convert the `.pfx` file to a `.pem` file, complete the following steps:

> **NOTE:** OpenSSL is not installed on Windows by default. However, you can download a version for the Windows platform from OpenSSL website. Alternatively, you can convert the certificate on a Linux platform, on which OpenSSL is installed by default. For more information about using Linux to convert the file, see "Replacing the Temporary Self-Signed Certificates for iManager" on page 33.

3a Enter a command, such as `openssl pkcs12 -in newtomcert.pfx -out newtomcert.pem`.

3b Specify the same password for the certificate that you specified in Step 2.

3c Specify a password for the new `.pem` file.

You can use the same password, if desired.

4 To convert the `.pem` file to a `.p12` file, complete the following steps:

4a Enter a command, such as `openssl pkcs12 -export -in newtomcert.pem -out newtomcert.p12 -name "New Tomcat"`.

4b Specify the same password for the certificate that you specified in Step 3.

4c Specify a password for the new `.p12` file.

You can use the same password, if desired.

5 Copy the `.p12` file to the Tomcat certificate location, by default `C:\Program Files\Novell\Tomcat\conf\ssl\`.

6 To stop the Tomcat Service, enter the following command:

```
/etc/init.d/novell-tomcat8 stop
```

7 To ensure that Tomcat uses the newly created `.p12` certificate file, add `keystoreType`, `keystoreFile`, and `keystorePass` variables to the Tomcat `server.xml` file. For example:

```
<Connector className="org.apache.coyote.tomcat8.CoyoteConnector"
 port="8443" minProcessors="5" maxProcessors="75" enableLookups="true"
 acceptCount="100" debug="0" scheme="https" secure="true"
 useURIValidationHack="false" disableUploadTimeout="true">
   <Factory className="org.apache.coyote.tomcat8.CoyoteServerSocketFactory"
 clientAuth="false" protocol="TLS" keystoreType="PKCS12"
 keystoreFile="/conf/ssl/newtomcert.p12" keystorePass="password" />
```

When setting the keystore type to `PKCS12`, you must specify the entire path to the certificate file, as Tomcat will no longer default to using the Tomcat home path.

8 Start the Tomcat service.

Configuring iManager for IPv6 Addresses after Installation

After installing iManager, you can enable iManager to use IPv6 addresses.

1. Open the `catalina.properties` file in the installation directory, located by default in the following directories:

   Linux: `/var/opt/novell/tomcat8/conf/` directory

   Windows: `installation_directory\Tomcat\conf` folder

2. Set the following configuration entries in the properties file:

```
java.net.preferIPv4Stack=false

java.net.preferIPv4Addresses=true
```

3. Restart Tomcat.

Specifying an Authorized User for eDirectory

After installing iManager, you can modify the credentials for the authorized user and the appropriate eDirectory tree name that this user manages. For more information, see "iManager Authorized Users and Groups" in the *NetIQ iManager Administration Guide*.

1 Log in to iManager.

2 In the Configure view, select **iManager Server** > **Configure iManager** > **Security**.

3 Update the user credentials and tree name.

4 Upgrading iManager

Upgrading or migrating NetIQ iManager to 3.0 depends on the currently installed iManager version on the server. This section explains the following procedures:

Upgrade Scenarios

The following sections describe various upgrade scenarios of iManager:

Upgrading to iManager 3.0

The following is a generic scenario to upgrade the iManager version from $2.7.7.x$ to iManager 3.0. Patches and support packs are cumulative, so you only need to install the latest available pack or patch to upgrade your iManager installation.

Perform the following steps to upgrade iManager:

1 Log in to iManager.

2 Click **Configure > Plug-in Installation > Available Novell Plug-in Modules**. The Available Novell Plug-in Modules page is displayed.

3 Navigate to the Novell Downloads Web site (http://download.novell.com) and download the latest support pack or patch.

4 In iManager, under **Novell Plug-in Modules**, click **Add**.

5 Browse to select the NPM file downloaded with the support pack or patch, then click **OK**.

6 In the Novell Plug-in Modules list, select the support pack or patch to which you want to upgrade iManager 3.0 and click **Install**.

7 If iManager displays the License Agreement page, read the License Agreement, select **I Agree**

8 Click **OK**. The progress indicator is displayed. If you want to stop the installation, click **Stop**.

9 After the installation is completed, click **Close**. The following successful message is displayed.

```
Success: The plug-in module has been successfully installed.
You must now restart Tomcat in order for the changes to take effect.
After Tomcat restarts, if Role Based Services is installed you will need to
configure the newly installed modules.
```

> **IMPORTANT:** While upgrading iManager, plugins do not get upgraded automatically. You must install the latest plugins from the list of available pugins.

10 Open a command-line interface and enter the following commands to restart Tomcat:

```
/etc/init.d/novell-tomcat8 stop

/etc/init.d/novell-tomcat8 start
```

Upgrading to iManager 3.0 on Linux

If the iManager installation detects a previously installed version of iManager 2.7.7.x, it prompts you to upgrade the installed version. If you choose to upgrade it, the installer replaces the existing JRE and Tomcat versions with the latest versions. This will also upgrade the iManager to the latest version.

To prepare for the installation, review the checklist of prerequisites provided in "Prerequisites and Considerations for Installing iManager" on page 11 and "Considerations for Installing iManager on a Linux Server" on page 12.

When you install iManager, the process lays down the following products on your server:

- Tomcat 8.0.45
- Java 1.8.0_144 (64-bit)

1 (Conditional) If you have modified the `server.xml` and `context.xml` configuration files, make a backup copy of the files in a different location before performing the upgrade. The upgrade process replaces the configuration files.

2 At the NetIQ Downloads Web site (http://dl.netiq.com), search for iManager products, select iManager 3.0, then download `iMan_30_linux.tgz` to a directory on your server.

3 To extract to the iManager folder, use the following command:

`tar -zxvf iMan_30_linux.tgz`

4 Open a shell and change to the */extracted_directory*/iManager/installs/linux directory.

This path is relative to the directory where you copied or extracted the iManager files.

5 Enter one of the following commands while logged in as root or root?equivalent:

To do a command-line (text) installation, enter:

`./iManagerInstallLinux.bin`

To do a GUI install, enter:

`./iManagerInstallLinux.bin -i gui`

After a successful installation, the installer generates a configuration file (`/var/log/installer.properties`) if eDirectory is installed along with iManager. In case of stand alone iManager installation, the `installer.properties` file is stored in the extracted path, ie. `/iManager/installs/linux`. This file can then be modified and used for a silent installation. See "Installing iManager Silently" on page 28.

6 On the iManager splash screen, select a language, then click **OK**.

7 At the Upgrade prompt, select **Upgrade**.

8 Read through the Introduction, then click **Next**.

9 Accept the license agreement, then click **Next**.

NOTE: By default, the HTTP port and SSL port values that were configured in the previous version of iManager will be used to configure the latest version of iManager.

10 On the Enable IPV6 window, click **Yes** to enable IPv6, then click **Next**.

Alternatively, you can enable IPv6 after installing iManager using the following steps:

1. Open `<USER_INSTALL_DIR>\Tomcat\conf\catalina.properties` file.

2. Set the following configuration entries in the `catalina.properties` file:

   `java.net.preferIPv4Stack=false`

   `java.net.preferIPv4Addresses=true`

3. Restart Tomcat.

11 Specify the certificate public key algorithm that you want the TLS certificate to use, then click **Next**.

The options are:

- **RSA:** The certificate uses a 2048-bit RSA key pair.
- **ECDSA 256:** The certificate uses a ECDSA key pair with curve secp256r1.
- **ECDSA 384:** The certificate uses a ECDSA key pair with curve secp384r1.

By default, **RSA** is selected.

12 Based on the certificate selected in Step 15, iManager allows you to configure the following cipher levels for TLS communication.

- **RSA:** This certificate allows four cipher levels.
    - **NONE:** Allows any type of cipher.
    - **LOW:** Allows a 56-bit or a 64-bit cipher.
    - **MEDIUM:** Allows a 128-bit cipher.
    - **HIGH:** Allows ciphers that are greater than 128-bit.
- **ECDSA 256:** This certificate allows only one cipher level.
    - **SUITEB 128 ONLY:** Allows a 128-bit cipher.
- **ECDSA 384:** This certificate allows two cipher levels.
    - **SUITEB 128:** Allows a 128-bit cipher or 256-bit cipher.
    - **SUITEB 192:** Allows a 256-bit cipher.

For ECDSA certificates, iManager allows only Suite B ciphers.

By default, the cipher level is set to **NONE**. The selected cipher level is activated after Tomcat server is restarted.

13 Click **Next**.

14 Read the Pre-Upgrade Summary page and click **Next.**

During upgrade, new iManager files are installed and they cause configuration changes. Upgrade can take several minutes. After the upgrade completes, the Upgrade Complete page displays the success or failure status of the installation.

15 Click **Done** to quit the installer.

When the Getting Started page appears, wait for iManager to initialize before attempting access.

To access iManager, click the first link on the Getting Started page, then log in. For more information, see "Accessing iManager" in the *NetIQ iManager Administration Guide*.

16 (Conditional) If you made backup copies of the `server.xml` and `context.xml` configuration files prior to starting the upgrade process, replace the new configuration files with the backup copies.

Upgrading to iManager 3.0 on Windows

If the iManager 3.0 installation detects a previously installed version of iManager 2.7.x, it prompts you to upgrade the installed version. If you choose to upgrade it, the installer replaces the existing JRE and Tomcat versions with the latest versions. This will also upgrade iManager to the latest version.

For information about running iManager Server on the same machine as eDirectory, see "Running eDirectory and iManager on the Same Computer (Windows only)" in the *NetIQ iManager Administration Guide*.

1 (Conditional) If you have modified the `server.xml` and `context.xml` configuration files, make a backup copy of the files in a different location before performing the upgrade. The upgrade process replaces the configuration. files.

2 Extract the `iMan_30_win.zip` file into the iManager folder.

3 Run the `iManagerInstall.exe` file from the `extracted_directory\iManager\installs\win` folder.

4 On the iManager splash screen, select a language, then click **OK**.

5 On the introduction page, then click **Next**.

6 Accept the license agreement, then click **Next**.

7 At the Upgrade prompt, select **Upgrade**.

NOTE: By default, the HTTP port and SSL port values that were configured in the previous version will be used to configure the latest version of iManager.

---

8 Read the Detection Summary page, then click **Next**.

The Detection Summary displays the latest version of Servlet container and JVM software that iManager will use once it is installed.

9 Specify the certificate public key algorithm that you want the TLS certificate to use, then click **Next**.

You can select one of the following options:

   ◆ **RSA:** The certificate uses a 2048-bit RSA key pair.
   ◆ **ECDSA 256:** The certificate uses a ECDSA key pair with curve secp256r1.
   ◆ **ECDSA 384:** The certificate uses a ECDSA key pair with curve secp384r1.

The default option is **RSA**.

10 Based on the certificate you choose in Step15, iManager allows you to configure the following cipher levels for TLS communication.

   ◆ **RSA:** This certificate allows four cipher levels.

      ◆ **NONE:** Allows any type of cipher.
      ◆ **LOW:** Allows a 56-bit or a 64-bit cipher.
      ◆ **MEDIUM:** Allows a 128-bit cipher.
      ◆ **HIGH:** Allows ciphers that are greater than 128-bit.

- **ECDSA 256:** This certificate allows one cipher level.
  - **SUITEB 128 ONLY:** Allows a 128-bit cipher.
- **ECDSA 384:** This certificate allows two cipher levels.
  - **SUITEB 128:** Allows a 128-bit cipher or 256-bit cipher.
  - **SUITEB 192:** Allows a 256-bit cipher.

For ECDSA certificates, iManager allows only Suite B ciphers.

By default, the cipher level is set to **NONE**. The selected cipher level is activated after Tomcat server is restarted.

11 On the Enable IPV6 window, click **Yes** to enable IPv6, then click **Next**.

Alternatively, you can enable IPv6 after installing iManager using the following steps:

1. Open `<USER_INSTALL_DIR>\Tomcat\conf\catalina.properties` file.

2. Set the following configuration entries in the `catalina.properties` file:

   `java.net.preferIPv4Stack=false`

   `java.net.preferIPv4Addresses=true`

3. Restart Tomcat.

12 Read the Pre-installation summary page, then click **Install**.

The upgrade process can take several minutes.

After the upgrade completes, the Upgrade Complete page displays the success or failure status of the installation.

NOTE: On Windows, the Install Complete page displays the following error message in spite of a successful installation.

```
The installation of iManager Install 3.0 is complete, but some errors occurred
during the install.
Please see the installation log <Log file path> for details. Press "Done" to
quit the installer.
```

If the specified error message is displayed, do the following:

1. Make note of the log file path that is specified within the error message in the Install Complete page.

2. In the Install Complete page, click **Done**.

3. Open the log file.

4. If you find the following error in the log file, you can ignore the error message. The installation was successful, and iManager properly functions.

   ```
   Custom Action: com.novell.application.iManager.install.InstallDLLs
   Status: ERROR
   Additional Notes: ERROR - class
   com.novell.application.iManager.install.InstallDLLs
   NonfatalInstallException C:\WINDOWS\system32\msvcr71.dll (The process
   cannot access the file because it is being used by another process)
   ```

---

13 Click **Done** to quit the installer.

A browser window appears which displays the Getting Started page.

Wait for iManager to initialize before attempting access.

To access iManager, click the first link on the Getting Started page, then log in. For more information, see "Accessing iManager" in the *NetIQ iManager Administration Guide*.

14 (Conditional) If you made backup copies of the `server.xml` and `context.xml` configuration files prior to starting the upgrade process, replace the new configuration files with the backup copies.

Silent Upgrade of iManager

A silent (non-interactive) upgrade does not display a user interface or ask the user any questions. Instead, InstallAnywhere uses information from a properties file for this purpose.

To perform a standard silent install on Linux server and Windows Server, use the default install values.

1 Open a console window and browse to the directory that contains the iManager file you downloaded.

2 On the command line, run the following command:

For Linux:

`./iManagerInstall<platform>.bin -i silent`

For Windows:

`iManagerInstall.exe -i silent`

Authorized Users

When upgrading iManager you will not see the Authorized User screen during the upgrade process if an existing `configiman.properties` file is detected. The upgrade will use the existing Authorized User settings from that file.

Updating Role Based Services

The first time you use iManager to log in to an eDirectory tree that already contains an RBS collection, it is possible that not all of the roles and tasks are displayed. This is working as expected because some of the plug-ins require updates so that iManager can fully utilize them. The RBS Configuration task lists which RBS modules are out-of-date. We recommend that you update your RBS modules to the latest version so that you can see and use all of the available functionality in iManager.

Be aware that you might have multiple roles with the same name. When plug-ins were updated for iManager 3.0, some plug-in developers changed task IDs or module names but retained the same display names, thus causing the roles to appear to be duplicated when, in fact, one instance is from one version and the other is from a newer version.

NOTE: Because different installations of iManager might have a different number of plug-ins locally installed, you might see discrepancies in the module report for any given collection from the **Role Based Services** > **RBS Configuration** page. In order for the numbers to match between iManager installations, make sure that the same subset of plug-ins is installed on each iManager instance in the tree.

To check whether you have outdated RBS objects:

1 From the Configure view, select **Role Based Services** > **RBS Configuration**.

The table on the 2.*x* Collections tabbed page displays any out-of-date modules.

2 To update them, select the number in the **Out-Of-Date** column for the Collection you want to update.

The list of outdated modules is displayed.

3 Select the module you want to update, then click **Update** at the top of the table.

NOTE: When updating to iManager, or re-installing the product, existing plug-ins are not updated automatically. To update plug-ins manually, launch iManager and browse to **Configure** > **Plug-in Installation** > **Available Novell Plug-in Modules**. For more information, see "Plug-In Module Installation" in the *NetIQ iManager Administration Guide*.

Re-Installing or Migrating Plug-in Studio Plug-ins

To migrate or replicate Plug-in Studio plug-ins to another iManager instance, or a new or updated version of iManager, do the following:

1 From the iManager Configure view, select **Role Based Services > Plug-in Studio.** The Content frame displays the Installed Custom Plug-ins list, including the location of the RBS collection to which the plug-ins belong.

2 Select the plug-in you want to re-install or migrate, then click **Edit**. You can only edit one plug-in at a time.

3 Click **Install**. You should receive a message saying it was successful. Do this for every plug-in you need to re-install or migrate.

5 Uninstalling iManager

This section explains how to uninstall iManager on the following platforms:

IMPORTANT: As a precaution, before uninstalling iManager, back up any custom content or other special iManager files that you want to preserve.

There is no specific sequence in which iManager or the associated third-party components must be uninstalled.

There are, of course, ramifications to uninstalling any of these components. For example, if you uninstall either the Web server or the servlet container, you cannot run iManager. Also, on all platforms, the uninstall removes only files that it installed in the first place. If there are files that were created by the application (for example, the log files and auto-generated configuration files that are created while Tomcat runs), these are not deleted by the uninstall because it did not install them.

Likewise, if you have created new files or modified existing files within the directory structure that was originally laid down during the install, these files are not removed by the uninstall. This is a safeguard so that data is not unintentionally deleted when a product is uninstalled.

Uninstalling iManager does not affect any of the RBS configurations that you have set in your tree. The uninstall procedure does not remove log files or custom content.

If you try reinstalling iManager when these directories are not cleaned, the installation does not successfully complete and the installer throws some errors.

Linux

`Root` access is required for uninstalling.

1 Open a shell and execute the following command:

`/var/opt/novell/iManager/Uninstaller/Uninstaller.sh`

NOTE: Executing the above command will also remove the following directories along with the `JDK` file:

- ◆ `/var/opt/novell/iManager`
- ◆ `/var/opt/novell/novlwww`
- ◆ `/etc/opt/novell/iManager/`
- ◆ `/opt/novell/iManager/`
- ◆ `/var/opt/novell/tomcat8/`
- ◆ `/etc/opt/novell/tomcat8/`
- ◆ /etc/novell/iManager/

As noted during the uninstall routine, the iManager uninstall process does not uninstall NICI. You can uninstall NICI separately, if desired. Once the standalone iManager is uninstalled completely, you can see the `NetIQ_iManager_3.0.2.0_UninstallLog.log` in the `/var/log/` path.

IMPORTANT: If eDirectory is installed on the same server as iManager, NICI is required to continue to run eDirectory.

Windows

Uninstall iManager using Windows Add or Remove Programs applet in the Control Panel.

Tomcat and NICI are listed separately. If you are no longer using them, you can uninstall each program separately.

IMPORTANT: If eDirectory is installed on the same server as iManager, NICI is required to continue to run eDirectory.

When you remove iManager, only some files in the file system are removed. You are asked if you want to remove all iManager files. If you select Yes, all iManager files are removed, including all custom content. However, the RBS objects are not removed from the eDirectory tree, and the schema remains in the same state.

iManager Workstation

To uninstall iManager Workstation, delete the directory where you extracted the files. You can remove NICI through Add or Remove Programs in the Control Panel on Windows or with the `rpm` command on Linux.