



NetIQ® iManager Installation Guide

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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](#).

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

In fact, of all the challenges you face, these are perhaps the most prominent variables that deny you the control you need to securely measure, monitor, and manage your physical, virtual, and cloud computing environments.

Enabling critical business services, better and faster

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.

Our Philosophy

Selling intelligent solutions, not just software

In order to provide reliable control, we first make sure we understand the real-world scenarios in which IT organizations like yours operate — day in and day out. That's the only way we can develop practical, intelligent IT solutions that successfully yield proven, measurable results. And that's so much more rewarding than simply selling software.

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
- ♦ Access Management
- ♦ Security Management
- ♦ Systems & Application Management
- ♦ Workload Management
- ♦ Service Management

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Qmunity, the NetIQ online community, is a collaborative network connecting you to your peers and NetIQ experts. By providing more immediate information, useful links to helpful resources, and access to NetIQ experts, Qmunity helps ensure you are mastering the knowledge you need to realize the full potential of IT investments upon which you rely. For more information, visit <http://community.netiq.com>.

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 11](#)
- ♦ [“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 15](#)

Checklist for Installing iManager

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

	Checklist Items
<input type="checkbox"/>	1. Understand the difference between iManager and iManager Workstation. For more information, see “Understanding the Server and Client Versions of iManager” on page 10 .
<input type="checkbox"/>	2. (Conditional) To ensure that Linux computers meet the prerequisites for installing iManager and iManager Workstation, review the following considerations: <ul style="list-style-type: none">♦ For iManager, see “Considerations for Installing iManager Server on a Linux Server” on page 12♦ For iManager Workstation, see “Considerations for Installing iManager Workstation on Linux Clients” on page 13
<input type="checkbox"/>	3. (Conditional) To ensure that Windows computers meet the prerequisites for installing iManager and iManager Workstation, review the following considerations: <ul style="list-style-type: none">♦ For iManager, see “Considerations for Installing iManager Server on a Windows Platform” on page 13♦ For iManager Workstation, see “Considerations for Installing iManager Workstation on Windows Clients” on page 13
<input type="checkbox"/>	4. Review the hardware and software requirements for the computers that will host iManager: <ul style="list-style-type: none">♦ For iManager, see “System Requirements for iManager Server” on page 14♦ For iManager Workstation, see “System Requirements for iManager Workstation (Client Version)” on page 15

	Checklist Items
<input type="checkbox"/>	<p>5. Access the installation files for iManager from the iManager installation package.</p> <p>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_320_linux_x86_64.tgz and iMan_320_workstation_linux_x86_64.tar.bz2 or iMan_320_win_x86_64.zip.</p>
<input type="checkbox"/>	<p>6. (Optional) To learn more about the process for installing plug-ins, see “Understanding Installation for iManager Plug-ins” on page 11.</p>
<input type="checkbox"/>	<p>7. (Optional) To review actions that you can perform after installing iManager, see Chapter 4, “Post-Installation Tasks for iManager,” on page 39.</p>
<input type="checkbox"/>	<p>8. To install iManager Server and iManager Workstation, see the following sections:</p> <ul style="list-style-type: none"> ◆ For Linux computers, see “Installing iManager Server and iManager Workstation on Linux” on page 17 ◆ For Windows computers, see “Installing iManager Server and iManager Workstation on Windows” on page 22 ◆ For a silent installation, see “Installing iManager Silently” on page 26

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 loads and unloads the resources it needs when starts and stops. iManager Workstation installs and runs on various Linux or Windows client workstations and has no dependencies on server-based iManager. 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, you must select the plug-ins that need to be installed. You can override the default selections and add new plug-ins to download. 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 17
- ♦ **Windows:** “Installing iManager Server and iManager Workstation on Windows” on page 22
- ♦ **Silent installation:** “Installing iManager Silently” on page 26

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 12
- ♦ “Considerations for Installing iManager Server on a Linux Server” on page 12
- ♦ “Considerations for Installing iManager Server 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 13

Considerations for Installing iManager

Before installing iManager, review the following considerations:

- ◆ If the iManager server setup program detects a previously installed version of iManager which is prior to 2.7.7.x, installation process stops automatically and you need to manually 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 Server on a Linux Server

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

Red Hat Enterprise Linux (RHEL)

- ◆ `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)
- ◆ `glibc-32.rpm`

SUSE Linux Enterprise Server (SLES) 64-bit

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

- ♦ **SLES 15 64-bit:** `libstdc++6-32bit` and `net-tools-deprecated` package. On SLES 15, you must also install `glibc-32.rpm`.

NOTE: Ensure to install `net-tools deprecated` package before installing iManager on SLES 15 otherwise the installation will fail.

Considerations for Installing iManager Server 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)
- ♦ NICE, OpenSSL RPMs and `novell-libstdc`

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**.

- ♦ 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.

- ♦ 1.4 GHz 64-bit processor
- ♦ 2 GB memory
- ♦ Disk space
 - ♦ 200 MB for Linux
 - ♦ 500 MB for Windows
- ♦ Web browser
 - ♦ Latest version of Internet explorer

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

- ♦ Latest version of Google Chrome
- ♦ Latest version of Mozilla Firefox
- ♦ Latest version of Apple Safari
- ♦ Application Server
 - ♦ iManager installs Tomcat on Windows servers.
 - ♦ iManager 3.2 SP6 supplies Tomcat 9.0.55-1.

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 3.2 is compatible with eDirectory 9.2 directory services.

NOTE: iManager 3.2 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 2016, Windows Server 2019, and Windows 2022 (64-bit)	Supported on later versions of service packs	iManager runs only in 64-bit mode.
SUSE Linux Enterprise Server 12 SP3, SP4 and SP5 (64-bit)	Supported on later versions of support packs	iManager runs only in 64-bit mode.
SUSE Linux Enterprise Server 15, SLES 15 SP1, SP2, and SP3	Supported on later versions of support packs	iManager runs only in 64-bit mode.
Red Hat Enterprise Linux (RHEL) Server 7.6, 7.7, 7.8, and 7.9 (64-bit)	Supported on later versions of support packs	iManager runs only in 64-bit mode.
Red Hat Enterprise Linux (RHEL) Server 8.0, 8.1, 8.2, 8.3, 8.4, and 8.5 (64-bit)	Supported on later versions of support packs	iManager runs only in 64-bit mode. NOTE: You must set SELinux either to disable mode or permissive mode on RHEL 8.

NOTE: On Linux, logrotate utility handles the log rotation of `catalina.out` file. The log rotation configuration is stored in the `netiq-tomcat` file in `/etc/logrotate.d` directory. If logrotate is not scheduled to run daily, the logs are not rotated. NetIQ recommends you to rotate the logs at 12:00 a.m (midnight).

If SELinux is configured to run in Enforcing mode, logrotate might not work as expected. To troubleshoot, run the following command:

```
semanage fcontext -a -t var_log_t '/var/opt/novell/tomcat/logs(/.*)?'\nrestorecon -Frvv /var/opt/novell/tomcat/logs
```

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

- ♦ 2 GB memory
- ♦ 300 MB of disk space
- ♦ Application Server
 - ♦ iManager installs Tomcat on Windows servers.
 - ♦ iManager 3.2 SP6 supplies Tomcat 9.0.55-1.

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.
- ♦ Azul ZuluOpenJDK 1.8.0_312 (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.
OpenSUSE 13.2 (64-bit)	Supported on later versions of support packs	iManager runs only in 64-bit mode.
SLED 12 and SLED 15 (64-bit)	Supported on later versions of support packs	iManager runs only in 64-bit mode.

NOTE: iManager Workstation does not work on SLED 12 SP3, SLED 15 and OpenSUSE Leap 42.3, OpenSUSE 13.2, and onward. To workaround this issue, launch iManager using the `iManager.sh` command and access the workstation through other browser using the URL: <http://localhost:8080/nps>. The port number can differ. You can find the port number in the `iManager.log` file located at `<extracted_directory>/imanager/bin/iManager.log` location.

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 17](#)
- ♦ [“Installing iManager Server and iManager Workstation on Windows” on page 22](#)
- ♦ [“Installing iManager Silently” on page 26](#)
- ♦ [“Installing iManager Patch” on page 28](#)

Installing iManager Server and iManager Workstation on Linux

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

- ♦ **iManager:** [“Considerations for Installing iManager Server 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 15](#).
- ♦ 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 26](#).

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 9.0.55-1
- ♦ Azul ZuluOpenJDK 1.8.0_312 (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 26](#).

To install iManager on Linux:

1 At the [NetIQ Downloads Web site \(http://dl.netiq.com/\)](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_320_linux_x86_64.tgz`.

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

For example, use the following command:

```
tar -zxvf iMan_320_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
```

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 42](#).

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 11.

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 \(http://www.novell.com/products/consoles/imanager/iman_mod_desc.xml\)](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 You can specify the ports on which you want Tomcat to run. Ensure that the custom ports you are mentioning are available.

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.

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.

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 43](#).

- ♦ The installation program does not validate the specified user credentials with eDirectory.
- ♦ You should not enter the IP address of the eDirectory tree in the tree name field. Otherwise, some of the iManager functionalities will be impacted.

-
- 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, and 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 22](#).

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

```
/var/opt/novell/tomcat9/webapps/nps/UninstallerData/  
.com.zerog.registry.xml
```

```
/var/opt/novell/tomcat9/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 9.0.55-1
- ♦ Azul ZuluOpenJDK 1.8.0_312 (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 \(http://www.dl.netiq.com/\)](http://www.dl.netiq.com/), search for iManager products, select iManager 3.2, then download `iMan_320_workstation_linux_x86_64.tar.bz2` to a directory on your server.

- 2 Use the following command to extract the file:

```
tar -xjvf iMan_320_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 64-bit NICI.

- 4 To install NICI, enter the following commands from the `preinstalls` folder:

- ♦ `rpm -Uvh nici*.rpm`

On desktops where NICI is not installed, use the above mentioned command to install NICI. On desktops where NICI is already installed, use the above mentioned command to upgrade NICI.

- 5 To install OpenSSL rpm, enter the following command from the `preinstalls` folder:

- ♦ `rpm -Uvh netiq-openssl*.rpm`

- 6 (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
```

- 7 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*.

- 8 (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 iManager.

Installing iManager Server and iManager Workstation on Windows

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

- ♦ **iManager Server:** [“Considerations for Installing iManager Server on a Windows Platform” on page 13.](#)
- ♦ **iManager Workstation:** [“Considerations for Installing iManager Workstation on Windows 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 26.](#)

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 9.0.55-1
- ♦ Azul ZuluOpenJDK 1.8.0_312 (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 3.2, then download `iMan_320_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 on which you want Tomcat to run. Ensure that the custom ports you are mentioning are available.
- 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 42](#).
- 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/soles/imanager/iman_mod_desc.xml. For more information, see [“Understanding Installation for iManager Plug-ins” on page 11](#).
 - 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 \(http://www.novell.com/products/consoles/imanager/iman_mod_desc.xml\)](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`.

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.
 - ◆ **SUITE B 128 ONLY**: Allows a 128-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 43](#).
 - ◆ 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: Sometimes the **Install Complete** 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, and 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 machine:

- ◆ Tomcat 9.0.55-1
- ◆ Azul ZuluOpenJDK 1.8.0_312 (64-bit)

To install iManager Workstation on Windows:

- 1 At the [NetIQ Download Web site \(http://www.dl.netiq.com/\)](http://www.dl.netiq.com/), search for iManager products, select iManager version, then download the file. For example, `iMan_320_workstation_win.zip`.
- 2 Extract the `iMan_320_workstation_win.zip` file to a folder.
- 3 From the `imanager\bin` folder, run the `iManager.bat` file.

NOTE: The above step installs NICI 64-bit and Microsoft Visual C++ 2012 Redistributable Package. If you have any older version of NICI installed, you will be prompted to upgrade NICI to the latest version.

- 4 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](#).

- 5 (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 Server:** “[Considerations for Installing iManager Server 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:

```
./iManagerInstallLinux.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 11.

`$LAUNCH_BROWSER$`

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

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
```

NOTE: ♦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:** `./iManagerInstallLinux.bin -i silent`
 - ♦ **Windows:** `iManagerInstall.exe -i silent`

Installing iManager Patch

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

- ♦ **iManager Server:** [“Considerations for Installing iManager Server 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 Deploying iManager Using Docker Container

This chapter explains how to deploy iManager using Docker container.

- ♦ “Why Docker?” on page 31
- ♦ “Planning to Deploy iManager Using Docker Container” on page 31
- ♦ “Deploying iManager Container” on page 32
- ♦ “Post-Installation Tasks” on page 36
- ♦ “Managing iManager Data Storage” on page 37
- ♦ “Upgrading iManager Using Docker Container” on page 38

IMPORTANT: We are shipping a preview version of Docker Container-based deployment with iManager 3.2 for customers to use and provide feedback. Customers wishing to deploy in production will be supported only with a Professional Services engagement.

Why Docker?

Docker is the most common application containerization technology. It is a platform designed to make it easier to create, deploy, and run applications by using containers. Containers encapsulate an application with its own operating system and all other dependencies, such as libraries and packages. Deploying iManager using Docker containers has the following advantages:

- ♦ **High Portability:** Any application running in containers can be deployed easily to any Docker supported operating systems and hardware platforms.
- ♦ **Easy to Deploy:** Containers allow applications to be more rapidly deployed, upgraded or even scaled through Orchestration tools.
- ♦ **Consistency:** There will be no impact on the functionality of eDirectory regardless of where the containers are deployed.

For more information on Docker and its components, see, [Docker Overview](#).

Planning to Deploy iManager Using Docker Container

This chapter explains the system requirements and prerequisites for deploying iManager as Docker Container.

System Requirements

Platform Requirements

- Docker Community Edition version 18.06 and above is sufficient for deploying eDirectory Docker container.
- `overlay2` is the recommended Docker storage driver. BTRFS is not a supported file system of the host on which Docker can be installed.
- Linux kernel version 3.10 or higher.

Hardware Requirements

- A minimum of 4 GB RAM and 30 GB Hard disk space is to be provisioned on the Docker Host machine.

NOTE: Memory, CPU and Hard Disk requirements will vary depending on the type of deployment and the number of containers to be deployed. Always provision more resources than the current requirement to handle any possible scale up in future.

Prerequisites

- Docker should be installed. For more information on supported platforms, see [Docker Documentation](#).
- Docker daemon should be up and running.
- iManager Docker image tarball should be downloaded from [NetIQ download website](#).

Docker CLI

The explanation of various commands used in the Docker CLI is found [here](#).

Deploying iManager Container

The OS base image of the iManager Docker image is openSUSE Leap 15.2. iManager image archive file should be downloaded to the Docker Host machine. After downloading the archive file, it has to be extracted and then the image has to be loaded into the local Docker registry by using the following commands to install standalone iManager container:

```
# tar -xvf iManager_326_Container.tar.gz
# docker load --input iManager_326/iManager_326.tar.gz
```

The above command will load a Docker image named `imanager:3.2.6`.

NOTE: To enable iManager container deployment along with Identity Manager, the iManager image is bundled along with other Identity Manager images into a single `.tar.gz` file. For more information on iManager container deployment with Identity Manager, see [Deploying iManager Container](#) in the *NetIQ Identity Manager 4.8.5: Installation and Upgrade Guide*.

Before deploying iManager, you must consider the following recommendations:

- ◆ Docker containers do not have any resource constraints by default. This provides every container with the access to all the CPU and memory resources provided by the host's kernel. You must also ensure that one running container should not consume more resources and starve other running containers by setting limits to the amount of resources that can be used by a container.
 - ◆ Docker container should ensure that a Hard Limit is applied for the memory used by the container using the `--memory` flag on Docker run command.
 - ◆ Docker container should ensure that a limit is applied to the amount of CPU used by a running container using the `--cpuset-cpus` flag on the Docker run command.
 - ◆ `--pids-limit` should be set to 300 to restrict the number of kernel threads spawned inside the container at any given time. This is to prevent DoS attacks.
- ◆ You must set the container restart policy to `on-failure` with number of retries as 5 using the `--restart` flag on Docker run command. Containers will have to be manually restarted if the Docker daemon on the host machine gets restarted.
- ◆ You must only use the iManager container once the health status shows as **healthy** after the container comes up. To check the container's health status, run the following command:

```
docker ps --filter status="running"
```

- ◆ Docker containers usually have a default list of Linux capabilities enabled. You must ensure to keep only the following capabilities enabled for iManager container and drop the others:
 - ◆ AUDIT_WRITE
 - ◆ CHOWN
 - ◆ DAC_OVERRIDE
 - ◆ SETGID
 - ◆ SETUID
 - ◆ FOWNER
 - ◆ SYS_PTRACE (Only if using utilities that make use of Linux `ptrace`. Such as `gdb`)For more information on how to add and drop capabilities, see [Runtime privilege and Linux capabilities](#).
- ◆ iManager container will always start as non-root user (`novlwww`). As an additional security measure, enable user namespace remapping on the daemon to prevent privilege-escalation attacks from within the container. For more information on user namespace remapping, see [Isolate containers with a user namespace](#).

Configuring iManager Using Environment File

The `iManager.env` file is found at `/etc/opt/novell/iManager/conf` inside the iManager container. A sample configuration file with default values for the parameters is shown below:

```

# Certificate Public Key Algorithm
# Allowed Values: RSA, ECDSA256, ECDSA384
CERTIFICATE_ALGORITHM=RSA
# Cipher Suite
# Allowed Values:
# For RSA - NONE, LOW, MEDIUM HIGH
# For ECDSA256 - SUITEB128ONLY
# For ECDSA384 - SUITEB128, SUITEB192
CIPHER_SUITE=NONE
# Tomcat Server HTTP Port
TOMCAT_HTTP_PORT=8080
# Tomcat Server SSL Port
TOMCAT_SSL_PORT=8443
# iManager Authorized User (admin_name.container_name.tree_name)
AUTHORIZED_USER=

```

To start an iManager container with non-default values for any of the above parameters, you should create the `iManager.env` file in the Docker host file-system and bind mount it to the path `/etc/opt/novell/iManager/conf` inside the iManager container using `--volume` option. For example,

```
docker run --name=iMan320 --volume /path/to/iManager.env:/etc/opt/novell/iManager/conf/iManager.env imanager:3.2.0
```

Parameters can be modified after the container is started by editing the `/path/to/iManager.env` file and restart the container. To change the configuration of a running container, perform the following steps:

- ◆ Modify the `/path/to/iManager.env` file.
- ◆ Restart the container using `docker restart iMan320`

Installing the iManager Plug-Ins During Container Startup

To install plug-ins from a local directory on the Host machine during Container startup, you must mount the directory path that contains the appropriate plug-in (`.npm`) files to the `/var/opt/novell/iManager/nps/packages/` location on the iManager container using `-v` option in the `docker run` command.

```
docker run --name=iMan322 --volume /path/to/iManager.env:/etc/opt/novell/iManager/conf/iManager.env -v /path/to/plugins:/var/opt/novell/iManager/nps/packages imanager:3.2.2
```

The plug-ins which are available in the directory path, get installed automatically during the container bring up and can be viewed under the **Installed NetIQ Plug-in Modules** in iManager.

NOTE: ◆The Container must be restarted after it comes up.

- ◆ New plug-ins can be added to the available iManager plug-ins list after the container comes up, using the same bind mount. New plug-ins need to be copied to the same local directory on the Host machine mounted to `/var/opt/novell/iManager/nps/packages/` location on the iManager container. A container restart has to be performed afterwards to get the new plug-ins listed.
-

iManager Docker container supports Host and Overlay network drivers for deployment in a multi-host Docker environment:

- ♦ “Deploying iManager Container in Host Network” on page 35
- ♦ “Deploying iManager Container in User Defined Overlay Network” on page 35

Deploying iManager Container in Host Network

iManager containers can be configured using the Host network driver to access eDirectory servers that are deployed on the network. For information on Docker networks, see [Configure Networking](#).

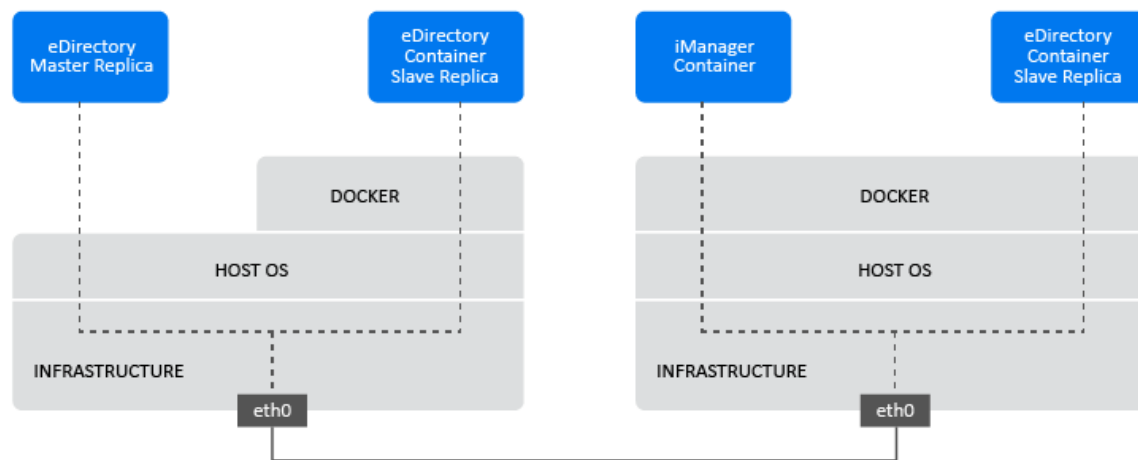
The following example shows how to configure iManager container using the Host network driver:

```
docker run -it --name=iMan320 --net=host --restart on-failure:5 --memory="1000M" --cpuset-cpus="2" --volume iManager-volume:/config --volume /path/to/iManager.env:/etc/opt/novell/iManager/conf/iManager.env imanager:3.2.0
```

NOTE: ♦ `--net=host` flag is used to deploy the container using the Host network driver.

- ♦ `iManager-volume` should be created before deploying iManager in the Host network. For more information, see “Managing iManager Data Storage” on page 37.
-

Figure 3-1 Deploying iManager Container in Host Network



Deploying iManager Container in User Defined Overlay Network

A User Defined Overlay network can be used to create a distributed network of eDirectory containers running on multiple Docker daemon hosts. An iManager container that is deployed in this overlay network can be used to manage all of these eDirectory servers. User defined overlay

network can be deployed in both Linux and Windows. Ensure that the iManager Docker host is a part of the same Docker Swarm as the eDirectory Docker hosts. For more information on how to deploy containers in Overlay network, see [Use Overlay Networks](#).

Before deploying iManager container in a user defined Overlay network, you must consider the following recommendations:

- eDirectory containers and the iManager container must be deployed within the same Overlay network.
- You must publish the container ports when the ports are accessed from outside the Docker Overlay network. Docker publishes the container ports on 0.0.0.0 by default which is the wild card IP address. This will match any possible incoming port on the host machine. Docker containers should be made to publish ports on a particular interface of the Host machine by using the following Docker run option:

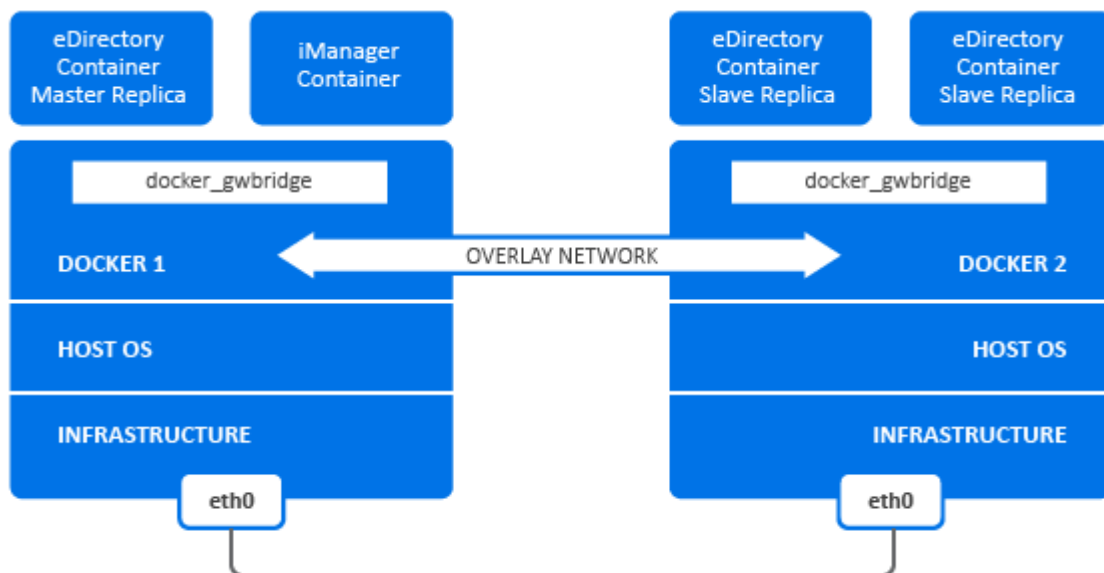
```
--publish <Host_IP Address>:host_port:container_port
```

The following example shows how to configure iManager container in user defined overlay network:

```
docker run -it --name=iManager320 --net=eDir-overlay-nw --restart on-failure:5 --memory="1000M" --cpuset-cpus="2" --volume iManager-volume:/config --volume /path/to/iManager.env:/etc/opt/novell/iManager/conf/iManager.env --publish 443:8443 imanager:3.2.0
```

NOTE: eDir-overlay-nw is the name of the Overlay network in Docker swarm inside which eDirectory containers are deployed. For more information on how to configure an Overlay network in Docker swarm, see [Use Overlay Networks](#).

Figure 3-2 Deploying iManager Container in User Defined Overlay Network



Post-Installation Tasks

Perform the following tasks after deploying the iManager container:

Installing iManager Plug-Ins

To install the Plug-ins, perform the following steps:

- 1 Login to iManager.
- 2 Go to **Configure > Plug-in Installation**.
- 3 Add the Plug-ins from the local file system if the required plug-ins cannot be downloaded from the external download site. Alternatively, you can add plugins to the available iManager plug-ins list using bind mount. For more information, see [“Installing the iManager Plug-Ins During Container Startup” on page 34](#).
- 4 Install the required plug-ins from the available iManager plug-ins list.
- 5 Restart the iManager container using `docker restart iMan320`

NOTE: Restarting iManager will restart Tomcat and populate the plug-ins inside `iManager-volume`.

Replacing the Temporary Self-Signed Certificates

After deploying the iManager container, you must replace the temporary self-signed certificates for iManager. For more information, see [“Replacing the Temporary Self-Signed Certificates for iManager” on page 39](#).

Managing iManager Data Storage

Docker Volume is the preferred mechanism for persistently storing iManager data and configuration. For more information on persistent storage, see [Manage data in Docker](#).

iManager application data that requires persistent storage will be placed under the `/config` directory in the container during startup. A Docker volume has to be mounted to the `/config` path in the iManager container to persistently store the data on the Docker host file system outside the container. Even if a container is stopped or removed for administrative purposes, application data inside the volume is retained.

This practice is useful for retaining old configuration and data during an upgrade of iManager container. For information on upgrading iManager container, see [“Upgrading iManager Using Docker Container” on page 38](#).

The following example shows how to create a Docker volume called `iManager-volume`:

```
docker volume create iManager-volume
```

The following command shows how to start an iManager container with a volume attached to it for storage purpose:

```
docker run -it --name=iMan320 --net=host --restart on-failure:5 --memory="1000M" --cpuset-cpus="2" --volume iManager-volume:/config --volume /path/to/iManager.env:/etc/opt/novell/iManager/conf/iManager.env imanager:3.2.0
```

In the above command, `iManager-volume` is the Docker volume that is created and mounted to `/config` location in the iManager container.

NOTE: After the iManager container is configured, you must restart the container using `docker restart iMan320` command before using iManager.

The packages directory under `/config` will preserve the `npm` files for plug-ins. While upgrading the container, if the older volume is attached to the container, it will re-install the older plug-ins from the volume.

Upgrading iManager Using Docker Container

When a new version of iManager image (for example `imanager:3.2.1`) is available, the administrator can perform an upgrade procedure to deploy container with the latest version of iManager. Ensure to store all necessary application related data persistently in Docker volumes before performing an upgrade. Perform the following steps to upgrade iManager using Docker container:

- 1 Stop and remove the running iManager container. Since the running containers cannot use the new image, they should be stopped and removed before performing an upgrade.
- 2 Start a new container using the new iManager image and the application data of the old container stored in Docker Volumes:

The following example shows how to start an iManager container with the Volume of the old container:

```
docker run -it --name=iMan321 --net=host --restart on-failure:5 --memory="1000M" --cpuset-cpus="2" --volume iManager-volume:/config --volume /path/to/iManager.env:/etc/opt/novell/iManager/conf/iManager.env imanager:3.2.1
```

NOTE: You must use the `iManager.env` file in the Docker run command to retain the configuration of the old iManager container.

4 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 39](#)
- ♦ [“Configuring iManager for IPv6 Addresses after Installation” on page 42](#)
- ♦ [“Specifying an Authorized User for eDirectory” on page 43](#)

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 (PKCS12) 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 PKCS12 keystore.

This process uses the following files:

- ♦ `/var/opt/novell/novlwww/.p12`, which holds the temporary keypair
- ♦ `/opt/novell/jdk1.8.0_222/jre/lib/security/cacerts`, which holds the trusted root certificates
- ♦ `/etc/opt/novell/tomcat9/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:

```
/usr/sbin/rcnovell-tomcat9 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/tomcat9/server.xml. For example:

```
<Connector className="org.apache.coyote.tomcat9.CoyoteConnector"
  port="8443" minProcessors="5" maxProcessors="75" enableLookups="true"
  acceptCount="100" debug="0" scheme="https" secure="true"
  useURISValidationHack="false" disableUploadTimeout="true">
  <Factory
className="org.apache.coyote.tomcat9.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 start Tomcat, enter the following command:

```
/usr/sbin/rcnovell-tomcat9 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 PKCS12 keystore.

This process uses the following files:

- ♦ `C:\Program Files\Novell\Tomcat\conf\ssl\p12`, 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 39](#).

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:

```
net stop tomcat9
```

- 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.tomcat9.CoyoteConnector"
  port="8443" minProcessors="5" maxProcessors="75" enableLookups="true"
  acceptCount="100" debug="0" scheme="https" secure="true"
  useURISValidationHack="false" disableUploadTimeout="true">
  <Factory
    className="org.apache.coyote.tomcat9.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 by entering the following command:

```
net start tomcat9
```

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/tomcat9/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.

5 Upgrading iManager

Upgrading NetIQ iManager to 3.2 depends on the currently installed iManager version on the server. This section explains the following procedures:

- ♦ “Upgrade Scenarios” on page 45
- ♦ “Authorized Users” on page 50
- ♦ “Updating Role Based Services” on page 50
- ♦ “Re-Installing or Migrating Plug-in Studio Plug-ins” on page 51

Upgrade Scenarios

The following sections describe various upgrade scenarios of iManager:

- ♦ “Upgrading to iManager 3.2 on Linux” on page 45
- ♦ “Upgrading to iManager 3.2 on Windows” on page 47
- ♦ “Silent Upgrade of iManager” on page 49
- ♦ “Upgrading iManager Plug-In Modules” on page 50

Upgrading to iManager 3.2 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 Server on a Linux Server” on page 12.

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

- ♦ Tomcat 9.0.55-1
 - ♦ Azul ZuluOpenJDK 1.8.0_312 (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 \(http://dl.netiq.com\)](http://dl.netiq.com), search for iManager products, select iManager 3.2, then download `iMan_320_linux.tgz` to a directory on your server.
 - 3 To extract to the iManager folder, use the following command:

```
tar -zxvf iMan_320_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 user:

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 26](#).

- 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`.

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.

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 3.2 on Windows

If the iManager 3.2 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_320_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.

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.

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 3.2 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:

```
./iManagerInstallLinux.bin -i silent
```

For Windows:

```
iManagerInstall.exe -i silent
```

Upgrading iManager Plug-In Modules

The following is a generic scenario to upgrade the iManager plug-in modules.

Perform the following steps to upgrade iManager:

- 1 Log in to iManager.
- 2 Click **Configure > Plug-in Installation > Available NetIQ Plug-in Modules**. The Available NetIQ Plug-in Modules page is displayed. The user can select any of the available plug-ins from the list or install their custom NPM file.
- 3 If you want to install one of the available plug-in modules, select the respective plug-in from the list and click **Install**. After clicking the install button, follow the instructions mentioned in [Step 7](#).
- 4 If you want to install any custom plug-ins, click **Add** on the **NetIQ Plug-in Modules** page.
- 5 Browse to select the NPM file of the plug-in on your file system, click **OK**.
- 6 Your custom plug-in module will now be listed under the **Available NetIQ Plug-in Modules** list. Select the plug-in from the list 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, plug-ins do not get upgraded automatically. You must install the latest plug-ins from the list of available plug-ins.

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

```
/usr/sbin/rcnovell-tomcat9 stop  
  
/usr/sbin/rcnovell-tomcat9 start
```

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 3.2, 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.

6 Uninstalling iManager

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

- ♦ [“Linux” on page 53](#)
- ♦ [“Windows” on page 54](#)
- ♦ [“iManager Workstation” on page 54](#)

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/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 NCI. You can uninstall NCI separately, if desired. Once the standalone iManager is uninstalled completely, you can see the `NetIQ_iManager_3.2.0.0_UninstallLog.log` in the `/var/log/` path.

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

Windows

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

Tomcat and NCI 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, NCI 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 NCI through Add or Remove Programs in the Control Panel on Windows or with the `rpm` command on Linux.