Sun Java System Message Queue 4.3 Installation Guide

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Part No: 820–6361
December, 2008

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Preface

This *Sun Java™ System Message Queue 4.3 Installation Guide* provides instructions and general information needed to install the Sun Java System Message Queue 4.3 product.

This preface consists of the following sections:

Who Should Use This Book

This manual is intended for Message Queue administrators and application developers. Sun Java Enterprise System (JES) users may also need to refer to it for reference information about installed images.

Before You Read This Book

Before reading this manual, you should read the *Message Queue Technical Overview*, which describes the concepts, features, and components of Message Queue and the *Message Queue Release Notes*, which describe new features and enhancements, known issues and limitations, and other information related to the current Message Queue release.

How This Book Is Organized

Table P–1 describes the contents of this manual. All readers should read Chapter 1, "Introduction," followed by the chapter pertaining to their own particular platform.

TABLE P–1 Contents of This Manual

Chapter/Appendix	Description
Chapter 1, "Introduction"	Describes Message Queue product editions, software modules, and supported platforms and components, as well as migration issues for those upgrading from a previous Message Queue release.
Chapter 2, "Solaris Installation"	Provides detailed instructions for installing and uninstalling Message Queue 4.3 on the Solaris platform, along with information on hardware requirements, package dependencies, installed directory structure, and the use of Solaris 10 zones to maintain multiple Message Queue installations.
Chapter 3, "Linux Installation"	Provides detailed instructions for installing and uninstalling Message Queue 4.3 on the Linux platform, along with information on hardware requirements, package (RPM) dependencies, and installed directory structure.
Chapter 4, "AIX Installation"	Provides detailed instructions for installing and uninstalling Message Queue 4.3 on the AIX platform, along with information on hardware requirements and installed directory structure.
Chapter 5, "Windows Installation"	Provides detailed instructions for installing and uninstalling Message Queue 4.3 on the Windows platform, along with information on hardware requirements and installed directory structure.
Appendix A, "Command Line Options"	Describes the command line options available for the Message Queue Installer.

Documentation Conventions

This section describes the following conventions used in Message Queue documentation:

- "Typographic Conventions" on page 10
- "Symbol Conventions" on page 11
- "Shell Prompt Conventions" on page 12
- "Directory Variable Conventions" on page 12

Typographic Conventions

The following table describes the typographic conventions that are used in this book.

TABLE P–2 Typographic Conventions

Typeface	Meaning	Example
`AaBbCc123`	The names of commands, files, and directories, and onscreen computer output	Edit your `.login` file. Use `ls -a` to list all files. `machine_name% you have mail.`
`AaBbCc123`	What you type, contrasted with onscreen computer output	`machine_name%` **`su`** `Password:`
aabbcc123	Placeholder: replace with a real name or value	The command to remove a file is `rm` *filename*.
AaBbCc123	Book titles, new terms, and terms to be emphasized	Read Chapter 6 in the *User's Guide*. A *cache* is a copy that is stored locally. Do *not* save the file. **Note:** Some emphasized items appear bold online.

Symbol Conventions

The following table explains symbols that might be used in this book.

TABLE P–3 Symbol Conventions

Symbol	Description	Example	Meaning
`[ ]`	Contains optional arguments and command options.	`ls [-l]`	The `-l` option is not required.
`{ | }`	Contains a set of choices for a required command option.	`-d {y|n}`	The `-d` option requires that you use either the `y` argument or the `n` argument.
`${ }`	Indicates a variable reference.	`${com.sun.javaRoot}`	References the value of the `com.sun.javaRoot` variable.
-	Joins simultaneous multiple keystrokes.	Control-A	Press the Control key while you press the A key.
+	Joins consecutive multiple keystrokes.	Ctrl+A+N	Press the Control key, release it, and then press the subsequent keys.

TABLE P–3 Symbol Conventions *(Continued)*

Symbol	Description	Example	Meaning
→	Indicates menu item selection in a graphical user interface.	File → New → Templates	From the File menu, choose New. From the New submenu, choose Templates.

Shell Prompt Conventions

The following table shows the conventions used in Message Queue documentation for the default UNIX® system prompt and superuser prompt for the C shell, Bourne shell, Korn shell, and for the Windows operating system.

TABLE P–4 Shell PromptConventions

Shell	Prompt
C shell on UNIX, Linux, or AIX	*machine-name*%
C shell superuser on UNIX, Linux, or AIX	*machine-name*#
Bourne shell and Korn shell on UNIX, Linux, or AIX	$
Bourne shell and Korn shell superuser on UNIX, Linux, or AIX	#
Windows command line	C:\>

Directory Variable Conventions

Message Queue documentation makes use of three directory variables; two of which represent environment variables needed by Message Queue. (How you set the environment variables varies from platform to platform.)

The following table describes the directory variables that might be found in this book and how they are used on the Solaris, Linux, AIX, and Windows platforms. On AIX and Windows, Message Queue is installed in a directory referred to as *mqInstallHome*, and some of the directory variables in Table P–5 reference this *mqInstallHome* directory.

Note – In this book, directory variables are shown without platform-specific environment variable notation or syntax (such as `$IMQ_HOME` on UNIX). Non-platform-specific path names use UNIX directory separator (`/`) notation.

TABLE P–5 Directory Variable Conventions

Variable	Description
`IMQ_HOME`	Message Queue home directory, if any: ■ Unused on Solaris and Linux; because there is no *mqInstallHome* directory on these platforms, there is no corresponding Message Queue home directory. ■ On AIX, `IMQ_HOME` denotes the directory *mqInstallHome*`/mq`, where *mqInstallHome* is specified when you install the product (by default, *home-directory*`/MessageQueue`). ■ On Windows, `IMQ_HOME` denotes the directory *mqInstallHome*`\mq`, where *mqInstallHome* is specified when you install the product (by default, `C:\Program Files\Sun\MessageQueue`). **Note –** The information above applies only to the standalone installation of Message Queue. When Message Queue is installed and run as part of a Sun Java System Application Server installation, `IMQ_HOME` is set to *appServerInstallDir*`/imq`, where *appServerInstallDir* is the Application Server installation directory.
`IMQ_VARHOME`	Directory in which Message Queue temporary or dynamically created configuration and data files are stored; `IMQ_VARHOME` can be explicitly set as an environment variable to point to any directory or will default as described below: ■ On Solaris, `IMQ_VARHOME` defaults to `/var/imq`. ■ On Linux, `IMQ_VARHOME` defaults to `/var/opt/sun/mq`. ■ On AIX, `IMQ_VARHOME` defaults to *mqInstallHome*`/var/mq`. ■ On Windows, `IMQ_VARHOME` defaults to *mqInstallHome*`\var\mq`. **Note –** The information above applies only to the standalone installation of Message Queue. When Message Queue is installed and run as part of a Sun Java System Application Server installation, `IMQ_VARHOME` is set to *appServerDomainDir*`/imq`, where *appServerDomainDir* is the domain directory for the domain starting the Message Queue broker.

TABLE P–5 Directory Variable Conventions *(Continued)*

Variable	Description
`IMQ_JAVAHOME`	An environment variable that points to the location of the Java runtime environment (JRE) required by Message Queue executable files: ■ On Solaris, Message Queue looks for the latest JDK, but you can optionally set the value of `IMQ_JAVAHOME` to wherever the preferred JRE resides. ■ On Linux, Message Queue looks for the latest JDK, but you can optionally set the value of `IMQ_JAVAHOME` to wherever the preferred JRE resides. ■ On AIX, `IMQ_JAVAHOME` is set to point to an existing Java runtime when you perform Message Queue installation. ■ On Windows, `IMQ_JAVAHOME` is set to point to an existing Java runtime if a supported version is found on the system when you perform Message Queue installation. If a supported version is not found, one will be installed.

Related Documentation

The information resources listed in this section provide further information about Message Queue in addition to that contained in this manual. The section covers the following resources:

Message Queue Documentation Set

The documents that comprise the Message Queue documentation set are listed in the following table in the order in which you might normally use them. These documents are available through the Sun documentation Web site at

```
http://www.sun.com/documentation/
```

Click "Software," followed by "Application & Integration Services," and then "Message Queue."

For a content reference to topics with the Message Queue documentation set, see the *Message Queue Documentation Center* at the above location.

TABLE P–6 Message Queue Documentation Set

Document	Audience	Description
Sun Java System Message Queue 4.3 Technical Overview	Developers and administrators	Describes Message Queue concepts, features, and components.
Sun Java System Message Queue 4.3 Release Notes	Developers and administrators	Includes descriptions of new features, limitations, and known bugs, as well as technical notes.
Sun Java System Message Queue 4.3 Installation Guide	Developers and administrators	Explains how to install Message Queue software on Solaris, Linux, AIX, and Windows platforms.
Sun Java System Message Queue 4.3 Developer's Guide for Java Clients	Developers	Provides a quick-start tutorial and programming information for developers of Java client programs using the Message Queue implementation of the JMS or SOAP/JAXM APIs.
Sun Java System Message Queue 4.3 Administration Guide	Administrators, also recommended for developers	Provides background and information needed to perform administration tasks using Message Queue administration tools.
Sun Java System Message Queue 4.3 Developer's Guide for C Clients	Developers	Provides programming and reference documentation for developers of C client programs using the Message Queue C implementation of the JMS API (C-API).
Sun Java System Message Queue 4.3 Developer's Guide for JMX Clients	Administrators	Provides programming and reference documentation for developers of JMX client programs using the Message Queue JMX API.

Java Message Service (JMS) Specification

The Message Queue message service conforms to the Java Message Service (JMS) application programming interface, described in the *Java Message Service Specification*. This document can be found at the URL

```
http://java.sun.com/products/jms/docs.html
```

JavaDoc

JMS and Message Queue API documentation in JavaDoc format is included in your Message Queue installation at the locations shown in Table P–7, depending on your platform. This

documentation can be viewed in any HTML browser. It includes standard JMS API documentation as well as Message Queue–specific APIs.

TABLE P–7 JavaDoc Locations

Platform	Location
Solaris	`/usr/share/javadoc/imq/index.html`
Linux	`/opt/sun/mq/javadoc/index.html`
AIX	`IMQ_HOME/javadoc/index.html`[1]
Windows	`IMQ_HOME\javadoc\index.html`[1]

[1] `IMQ_HOME` is the Message Queue home directory.

Example Client Applications

Message Queue provides a number of example client applications to assist developers.

Example Java Client Applications

Example Java client applications are located in the following directories, depending on platform. See the `README` files located in these directories and their subdirectories for descriptive information about the example applications.

Platform	Location
Solaris	`/usr/demo/imq/`
Linux	`/opt/sun/mq/examples`
AIX	`IMQ_HOME/demo/`[1]
Windows	`IMQ_HOME\demo\`[1]

[1] `IMQ_HOME` is the Message Queue home directory.

Example C Client Programs

Example C client applications are located in the following directories, depending on platform. See the `README` files located in these directories and their subdirectories for descriptive information about the example applications.

Platform	Location
Solaris	`/opt/SUNWimq/demo/C/`

Platform	Location
Linux	`/opt/sun/mq/examples/C/`
AIX	`IMQ_HOME/demo/C/`[1]
Windows	`IMQ_HOME\demo\C\`[1]

[1] `IMQ_HOME` is the Message Queue home directory.

Example JMX Client Programs

Example Java Management Extensions (JMX) client applications are located in the following directories, depending on platform. See the `README` files located in these directories and their subdirectories for descriptive information about the example applications.

Platform	Location
Solaris	`/opt/SUNWimq/demo/imq/jmx`
Linux	`/opt/sun/mq/examples/jmx`
AIX	`IMQ_HOME/demo/jmx`[1]
Windows	`IMQ_HOME\demo\jmx`[1]

[1] `IMQ_HOME` is the Message Queue home directory.

Online Help

Online help is available for the Message Queue command line utilities; for details, see Chapter 15, "Command Line Reference," in *Sun Java System Message Queue 4.3 Administration Guide* for details. The Message Queue graphical user interface (GUI) administration tool, the Administration Console, also includes a context-sensitive help facility; see the section "Administration Console Online Help" in Chapter 2, "Quick-Start Tutorial," in *Sun Java System Message Queue 4.3 Administration Guide*.

Documentation, Support, and Training

The Sun Web site provides information about the following additional resources:

- Documentation (`http://www.sun.com/documentation/`)
- Support (`http://www.sun.com/support/`)
- Training (`http://www.sun.com/training/`)

Third-Party Web Site References

Where relevant, this manual refers to third-party URLs that provide additional, related information.

Note – Sun is not responsible for the availability of third-party Web sites mentioned in this manual. Sun does not endorse and is not responsible or liable for any content, advertising, products, or other materials available on or through such sites or resources. Sun will not be responsible or liable for any actual or alleged damage or loss caused or alleged to be caused by or in connection with the use of or reliance on any such content, goods, or services available on or through such sites or resources.

Searching Sun Product Documentation

Besides searching Sun product documentation from the docs.sun.com web site, you can use a search engine by typing the following syntax in the search field:

search-term `site:docs.sun.com`

For example, to search for "broker," type the following:

```
broker site:docs.sun.com
```

To include other Sun web sites in your search (for example, java.sun.com, www.sun.com, and developers.sun.com), use "`sun.com`" in place of "`docs.sun.com`" in the search field.

Sun Welcomes Your Comments

Sun is interested in improving its documentation and welcomes your comments and suggestions. To share your comments, go to `http://docs.sun.com` and click Send Comments. In the online form, provide the full document title and part number. The part number is a 7-digit or 9-digit number that can be found on the book's title page or in the document's URL. For example, the part number of this book is 820-6361.

◆ ◆ ◆ CHAPTER 1

Introduction

This chapter provides an overall introduction to installing the Sun Java™ System Message Queue 4.3 product. It covers the following topics:

Product Editions

Before the release of Version 3.7 UR1, the Sun Java System Message Queue product was available in two editions, Platform and Enterprise, each containing different features and corresponding to a different licensed capacity. Versions beginning with 3.7 UR1 combine the functionality of both editions. If you have an earlier version installed under a Platform Edition license, upgrading to Version 4.3 will give you access to the full range of Message Queue functionality, including the following features formerly available only under the Enterprise Edition license:

- Multiple-broker clusters
- Scalable connection capability
- Secure connection services
- Hypertext Transfer Protocol (HTTP) and Secure Hypertext Transfer Protocol HTTPS) connections
- Queue delivery to more than three consumers
- C client support

In addition, the following features, added since the Platform and Enterprise Editions were combined, are available to all users of Version 4.3:

- High-availability message services
- Support for plug-in client authentication using Java Authentication and Authorization Services (JAAS)
- Connection event notification
- Client runtime logging
- Enhanced broker administration
- Programmatic configuration and monitoring of Message Queue operations by means of the Java Management Extensions (JMX) API and monitoring by means of the Java Enterprise System Monitoring Framework (JESMF)

Supported Platforms and Components

Message Queue 4.3 is supported on Solaris, Linux, and Windows operating system platforms. Table 1–1 shows the supported versions of each of these platforms. The chapters that follow describe the hardware requirements for each of these platforms and provide platform-specific installation instructions.

TABLE 1–1 Supported Platform Versions

Platform	Supported Versions
Solaris	Solaris 9 (SunOS 5.9), all updates (SPARC, *x*86)
	Solaris 10 (SunOS 5.10), all updates (SPARC, *x*86, *x*64)
Linux	Red Hat Enterprise Linux Advanced Server 3.0, 4.0, 5.0, all updates, 32– and 64–bit versions (*x*86, *x*64)
	Red Hat Enterprise Linux Enterprise Server 3.0, 4.0, 5.0, all updates, 32– and 64–bit versions (*x*86, *x*64)
AIX	AIX 6.1
Windows	Windows Vista
	Windows XP Professional, SP2 (*x*86)[1]
	Windows 2000 Advanced Server, SP4 (*x*86)[2]
	Windows Server 2003 Standard and Enterprise Editions, SP2, 32– and 64–bit versions (*x*86, *x*64)[3]
	Windows Server 2008 Standard and Enterprise Editions, SP2, 32– and 64–bit versions (*x*86, *x*64)[3]

[1] No Home, Tablet PC, or Media Center Edition support

[2] No Professional or Server Edition support

[3] No Web or Small Business Server Edition support

In addition to platform-specific requirements, Message Queue 4.3 also depends on a number of required and optional software components. These components, which include the Java Runtime Environment (JRE) and Java Software Development Kit (JDK), are specified in "Component Dependencies" in *Sun Java System Message Queue 4.3 Release Notes*. Please check these software dependencies before installing Message Queue 4.3.

Note – The Message Queue 4.3 Installer automatically installs the required JDK version as of the time of release.

Message Queue Software Modules

Table 1–2 shows the full set of software modules included with the Message Queue 4.3 product.

TABLE 1–2 Software Modules

Module	Contents
Broker	Server-side software for routing and delivering messages. Requires the Java runtime module
Administration tools	Command-line utilities and GUI tools for administering a Message Queue messaging system. Requires the client runtime and Java runtime modules
Java client runtime	`.jar` files needed to write and compile Java clients using the Message Queue Java application programming interface (API)
C client runtime	Libraries and header files needed to write and compile C clients using the Message Queue C application programming interface (API)
Documentation	API documentation needed by Java client application developers, in JavaDoc format
Example applications	Sample client applications

Upgrade Issues

This section covers issues you need to be aware of when migrating to Message Queue 4.3 from earlier versions of Message Queue. These issues fall into two general categories: platform issues and compatibility issues.

Note – Upgrade from Message Queue versions earlier than 3.6 is not supported.

Platform Issues

This section describes issues specific to the Solaris, Linux, and Windows platforms.

Solaris

On the Solaris platform, you can upgrade to Message Queue 4.3 from an existing installation of Version 3.6 or 3.7, and your existing instance data (configuration properties, file-based persistent data store, log files, flat-file user repository, access control properties file) will be used by Version 4.3 (see "Compatibility Issues" on page 23).

Linux

On the Linux platform, you can upgrade to Message Queue 4.3 from an existing installation of Version 3.6 or 3.7, and your existing instance data (configuration properties, file-based persistent data store, log files, flat-file user repository, access control properties file) will be used by Version 4.3 (see "Compatibility Issues" on page 23).

Windows

Upgrading directly to Message Queue 4.3 from earlier versions is not supported on the Windows platform, but Version 4.3 can coexist with Versions 3.6 and 3.7 in different locations on the same system. How you treat existing Message Queue installations when installing Message Queue 4.3 depends on the previously installed version:

- If you have an existing installation of Message Queue 3.5 or earlier, you should uninstall it (or upgrade it to Version 3.6 or later), using the uninstallation procedures described in the edition of the *Message Queue Installation Guide* corresponding to that version, before installing Message Queue 4.3.
- If you have an existing installation of Message Queue 3.6 or 3.7, you can either uninstall it or leave it intact and simply install Message Queue 4.3 in a different location in your file system.

If you choose to uninstall your previous version before installing Message Queue 4.3, you may first want to back up any instance data (configuration properties, file-based persistent data store, log files, flat-file user repository, access control properties file) that you want to preserve. Instance data is not automatically migrated to the new Message Queue 4.3 location, so you must move or copy it manually from its old location in the previous installation's `IMQ_VARHOME\instances` directory to that of the new installation (by default, `C:\Program Files\Sun\MessageQueue\var\instances`). After installing Message Queue 4.3, remove any references to uninstalled versions' `IMQ_HOME\bin` directories from the system's `PATH` environment variable and add the new Message Queue 4.3 installation's `IMQ_HOME\bin` directory.

Compatibility Issues

Message Queue 4.3 is generally compatible with Message Queue Versions 3.6 and 3.7. However, changes have been made in broker properties, administered objects, persistence schemas, file locations, and administration tools that can affect upgrade from the earlier versions to Version 4.3.

The Message Queue 4.3 Installer does not remove or overwrite the Message Queue 3.6 or 3.7 `IMQ_VARHOME` directory. This directory contains configuration and security-related files (see "Broker Compatibility" on page 23). Most of this data is compatible with Message Queue 4.3, and can be preserved using the instructions in the following sections.

Compatibility issues that you may need to address when migrating from Message Queue 3.6 or 3.7 to Message Queue 4.3 include the following:

Broker Compatibility

A Message Queue 4.3 message broker will interoperate with one from Versions 3.0.*x*, 3.5, 3.6, or 3.7, and is able to migrate data from Versions 3.6 or 3.7. However, some changes have been made in broker properties and the persistent store schema. The degree of compatibility depends on the earlier Message Queue version from which you are upgrading:

- Message Queue 3.7 data is fully compatible with Message Queue 4.3 and requires no data migration.
- Message Queue 3.6 data is generally compatible with Message Queue 4.3 and requires no data migration.
- Data from Message Queue 3.5 must be migrated by upgrading to Message Queue 3.6 or later before installing Message Queue 4.3.

When upgrading from Message Queue 3.6 or 3.7 to Message Queue 4.3, you can choose either of two approaches to handling the older versions' instance configuration (`config.properties`) files:

- Use the older `config.properties` files directly.
- Copy the files to another location and consult the property settings they contain when you configure Message Queue 4.3 brokers.

Any persistent Message Queue 3.6 or 3.7 data (messages, destinations, and durable subscriptions) is automatically converted to Message Queue 4.3 data when starting up a Message Queue 4.3 broker for the first time. For example, existing destinations will be converted to Message Queue 4.3 destinations, preserving existing attributes and using default values for new attributes.

For Message Queue 3.6, the automatic upgrade leaves the original data intact in its original location. You can delete this data in either of the following ways:

- Use the Broker utility's `-upgrade-store-nobackup` option when starting up the Message Queue 4.3 broker for the first time:

  ```
  imqbrokerd  -upgrade-store-nobackup
  ```

- Manually delete the old file-based persistent data store, located at

  .../`instances`/*instanceName*/`fs350`

If you mix Message Queue 3.5, 3.6, or 3.7 brokers together with Message Queue 4.3 brokers in a cluster, you should consider the following issues:

- Mixed broker versions. A conventional cluster can contain brokers of different versions if all brokers have a version at least as great as that of the master broker. If the cluster is not configured to use a master broker, then all brokers must be of the same version.
- Matching broker property values. In addition to cluster configuration properties, the following broker properties also must have the same value for all brokers in a cluster:
  - imq.service.activelist
  - imq.autocreate.queue
  - imq.autocreate.topic
  - imq.autocreate.queue.maxNumActiveConsumers
  - imq.autocreate.queue.maxNumBackupConsumers

  This restriction is particularly important when a cluster contains mixed broker versions that might contain properties with different default values. For example, If you are clustering a Message Queue version 4.3 broker together with versions 3.*x*, you must set the value of the `imq.autocreate.queue.maxNumActiveConsumers` property, which has different default values before and after version 4.1 (`1` and `-1`, respectively), to be the same. Otherwise the brokers will not be able to establish a cluster connection.

Note – When upgrading a broker cluster from versions 3.*x* to versions 4.*x*, it is recommended that you shut down all client applications and all brokers in the cluster, perform the Message Queue upgrades, check any data migrations, and then restart the cluster and client applications. It is *not* recommended that you attempt a rolling upgrade in which you successively upgrade brokers while maintaining messaging operations.

Client Compatibility

Message Queue 4.3 message brokers and Java clients (applications and components) are two-way compatible with those from Message Queue 3.6 or 3.7: that is, a Message Queue 4.3 broker will support a Message Queue 3.6 or 3.7 Java client, and a Message Queue 4.3 Java client can connect to a Message Queue 3.6 or 3.7 broker. Expanded Message Queue 4.3 capabilities are unavailable in such cases, however.

Administered Object Compatibility

Message Queue 4.3 administered objects have been enhanced with new attributes, and some attributes have been renamed from earlier versions. Although you can continue to use object stores and administered objects created in Message Queue 3.6 or 3.7, it is best to upgrade your administered objects after installing Message Queue 4.3.

When performing an update operation, the Administration Console (`imqadmin`) and the Object Manager utility (`imqobjmgr`) will automatically convert administered objects from Versions 3.6 and 3.7 to Message Queue 4.3 form, using default values for the new attributes. The Message Queue 4.3 client runtime will also look up and instantiate administered objects from those earlier versions and convert them for use by Message Queue 4.3 clients, but this will *not* convert the objects permanently in the object store in which they reside.

Existing Message Queue clients that directly instantiate administered objects are compatible with Message Queue 4.3. For attributes that have been renamed in Message Queue 4.3, the old names will still work. (Recompiling the client with Message Queue 4.3 will show which attributes have been renamed.) However, clients will need to be rewritten if they are to use any of the new administered object attributes. Similarly, scripts that start Java clients and set administered object attribute values using command line options are compatible with Message Queue 4.3,but must be rewritten in order to use the new attributes.

Administration Tool Compatibility

Because of the addition of new commands and new administrative capabilities, the Message Queue 4.3 administration tools (Administration Console and command line utilities) will work only with Message Queue 4.3 brokers. All commands and command options from earlier Message Queue versions remain supported, however.

Where to Go Next

Before proceeding to install Message Queue 4.3, be sure to consult the section "Installation Issues" in *Sun Java System Message Queue 4.3 Release Notes* for the latest information on issues and limitations affecting Message Queue 4.3 installation. The *Release Notes* are also an important general resource for up-to-date code and documentation changes, open bugs, and important technical notes relating to the current Message Queue release.

In addition, the following sources provide further useful information on Sun Java System Message Queue:

- For information on where to find documentation, news, and updates and how to send feedback, see the `README` file included in your Message Queue installation.
- For an introduction to Message Queue concepts, see the *Message Queue Technical Overview*.
- For details on configuring brokers and managing a Message Queue messaging system, see the *Message Queue Administration Guide.*

- For an introduction to writing and compiling Message Queue client applications, see the *Message Queue Developer's Guide for Java Clients* or the *Message Queue Developer's Guide for C Clients*.
- For information on the Message Queue Java Management Extensions (JMX) API, see the *Message Queue Developer's Guide for JMX Clients*.
- For class and member information useful when writing a client application, browse the API documentation in JavaDoc format included in your Message Queue installation; see Table P–7 for locations, depending on your platform.

◆ ◆ ◆ CHAPTER 2

Solaris Installation

This chapter covers the following topics as they apply to a Solaris installation of Message Queue 4.3:

Hardware Requirements

In order to install Message Queue 4.3, your Solaris system should satisfy the minimum hardware requirements shown in Table 2–1. See "Supported Platforms and Components" on page 20 for information on software requirements.

TABLE 2–1 Minimum Hardware Requirements for Solaris Installation

Component	Minimum Requirements
CPU	Sun UltraSPARC Intel Pentium 2 (or compatible)
RAM	256 MB (2 GB recommended for high-availability or high-volume deployments)

TABLE 2–1 Minimum Hardware Requirements for Solaris Installation *(Continued)*

Component	Minimum Requirements
Disk space	**SPARC platform:** Compressed installation (`.zip`) file: approximately 148 MB Temporary working directory (for extracting installation files): approximately 310 MB Installed product: approximately 19 MB (Message Queue only, not including shared components). More space may be needed if broker stores persistent messages locally. **x86 platform:** Compressed installation (`.zip`) file: approximately 131 MB Temporary working directory (for extracting installation files): approximately 290 MB Installed product: approximately 19 MB (Message Queue only, not including shared components). More space may be needed if broker stores persistent messages locally.

Upgrading from Previous Versions

Because Message Queue is installed with other products (such as Solaris 9, Solaris 10, and Sun Java™ System Application Server), you should check whether it has already been installed on your system. To do so, enter the command

```
imqbrokerd  -version
```

If Message Queue is already installed, its version number will be displayed. The Message Queue 4.3 Installer will upgrade automatically to Version 4.3 from any Version 3.6 or later. If you have a version earlier than 3.6 installed, you will need to uninstall it before running the Message Queue 4.3 Installer.

Caution – The Message Queue 4.3 Installer does not share the same product registry with other installers, such as those of the Sun Java Enterprise System (JES) and Sun Java System Application Server, which include Message Queue as a component. The Message Queue Installer also installs or upgrades shared software components that Message Queue depends on, such as the Java Software Development Kit (SDK), Netscape Portable Runtime (NSPR), Network Security Services (NSS), and JavaHelp. Using this Installer to upgrade an earlier version of Message Queue that was installed with another installer may upgrade such shared components without correctly updating their version numbers in the other installer's product registry, leaving that registry in an inconsistent state.

If you later run the other installer, the inconsistent registry entries may in turn cause that installer to inadvertently remove Message Queue 4.3. The safest and cleanest way to upgrade an earlier version of Message Queue that was installed with a different installer is as follows:

1. Use the other installer's uninstaller to remove Message Queue.
2. Use the Message Queue 4.3 Installer to install Message Queue 4.3.

Installation Procedure

You can run the Message Queue Installer in any of three modes:

- In *GUI (graphical user interface) mode,* the Installer presents a series of graphical screens with which you interact using mouse clicks and keyboard text entry.
- In *text mode,* the Installer uses plain text displayed directly in your terminal window to simulate the appearance of the GUI screens. Instead of the mouse, you use keyboard keys such as Tab, Return, and arrow keys to interact with these screens. This is convenient for situations in which you do not have access to a windowing system to display the Installer's full graphical user interface.
- In *silent mode,* the Installer operates from a predefined *answer file* representing your responses to the GUI screens. This allows you to script the installation process in advance and then perform it in batch mode without actually displaying the GUI (or text) screens and responding to them interactively.

The following sections describe each of these three modes of Installer operation.

Installing in GUI Mode

The following procedure shows how to use the Message Queue Installer in GUI mode to install the Message Queue 4.3 product on your Solaris system.

To Install Message Queue in GUI Mode

1 Become the root user.

You must have root user privileges to run the Message Queue Installer. Enter the command

```
su
```

and provide a valid root user password when prompted to do so.

2 Create a temporary directory.

From your system's command line, enter the command

```
# mkdir tempDir
```

where *tempDir* is any name you choose for your temporary directory.

3 Download the Message Queue Installer to the temporary directory.

The Installer is available for download from the Message Queue product Web site at

```
http://www.sun.com/software/products/message_queue
```

It is distributed as a compressed archive (`.zip`) file named

```
mq4_3-installer-SunOS.zip
```

(for the SPARC platform) or

```
mq4_3-installer-SunOS_X86.zip
```

(for the *x*86 platform).

4 Go to the temporary directory.

Enter the following command:

```
# cd tempDir
```

where *tempDir* is the temporary directory to which you downloaded the Installer in step 3.

5 Decompress the Installer archive.

Enter the following command:

```
# unzip mq4_3-installer-SunOS.zip
```

or

```
# unzip mq4_3-installer-SunOS_X86.zip
```

depending on your platform. This creates a subdirectory named

```
mq4_3-installer
```

containing the files needed for Message Queue 4.3 installation.

6 Switch to the Installer subdirectory.

Enter the following command:

```
# cd mq4_3-installer
```

7 Start the Installer.

Enter the following command:

```
# installer
```

The Installer's Welcome screen (Figure 2–1) appears.

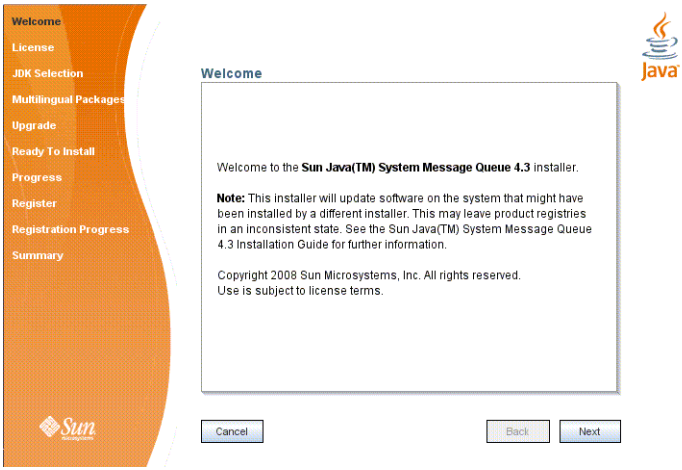

FIGURE 2–1 Installer Welcome Screen

8 Click the Next button.

The Installer's License screen (Figure 2–2) appears.

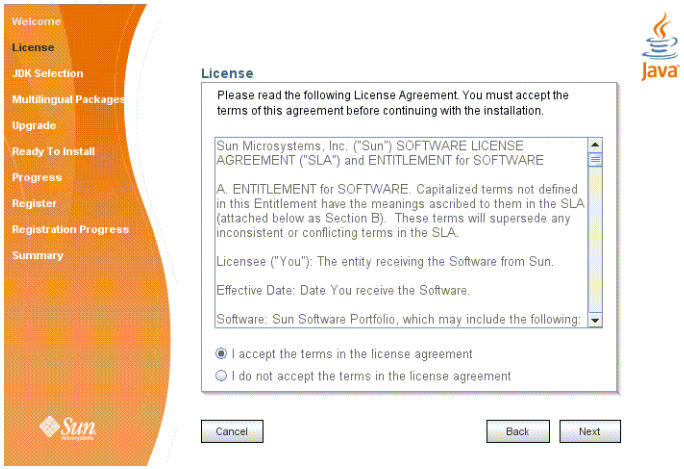

FIGURE 2–2 Installer License Screen

9 Read and accept the product license agreement.

Installation and use of the Message Queue product are subject to your acceptance of the license agreement. You must read and accept the terms of the license agreement before installing the product.

a. Read the product license agreement.

b. Make sure the radio button labeled "I accept the terms in the license agreement" is selected.

If you instead select "I do not accept the terms in the license agreement," the Next button becomes disabled. You cannot proceed with installation without accepting the license terms.

c. Click the Next button.

The Installer's JDK Selection screen (Figure 2–3) appears.

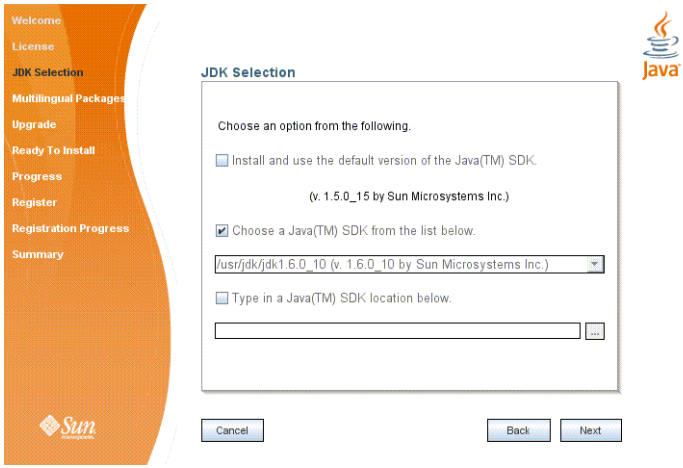

FIGURE 2–3 Installer JDK Selection Screen

10 Specify the version of the Java SDK for Message Queue to use.

a. Select a Java SDK.

You can do this in any of three ways:

- **Install the default SDK.**

  Select the option labeled "Install and use the default version of the Java SDK."

- **Choose an SDK already installed on your system.**

  The drop-down menu under the option "Choose a Java SDK from the list below" lists existing SDKs found in standard locations on your system. You can use this option to specify one of these SDKs for Message Queue to use.

- **Provide an explicit path to an existing SDK.**

  To use an SDK from a location other than the standard ones, enter its path in the text field under the option "Type in a Java SDK location below," or use the button marked with an ellipsis (…) to browse to it interactively.

b. Click the Next button.

The Installer's Multilingual Packages screen (Figure 2–4) appears.

FIGURE 2–4 Installer Multilingual Packages Screen

11 Specify whether to install multilingual packages.

By default, Message Queue is installed to operate in the English language only. The Multilingual Packages screen allows you to install it for use in another language.

a. If you will be using Message Queue in a language other than English, select the checkbox labeled "Install Message Queue multilingual packages."

If you will be using Message Queue only in English, leave this checkbox deselected.

Caution – If you choose not to install the multilingual packages and later decide that you do need them after all, there is no convenient way to install them incrementally: you will have to uninstall Message Queue and then repeat the entire installation procedure with the multilingual packages selected. Before proceeding to install without the multilingual packages, be sure you will not be needing them in the future.

b. Click the Next button.

The Installer's Upgrade screen (Figure 2–5) appears.

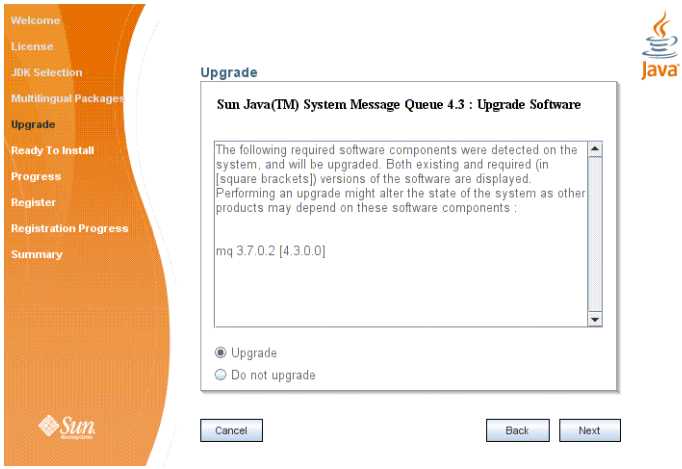

FIGURE 2–5 Installer Upgrade Screen

12 Specify whether to upgrade Message Queue and its shared components.

If an earlier version of Message Queue exists on your system, or if any of the shared components on which Message Queue depends need to be upgraded from earlier versions, the Upgrade screen displays them in a scrollable list along with their current and required versions. If no upgrades are needed, the existing components are simply listed with their version numbers and a notation that they will remain at their current versions. In this case, the "Upgrade" and "Do not upgrade" radio buttons do not appear; just click Next to proceed to the next step.

Caution – It is possible that upgrading Message Queue's shared components may break other software components on your system that depend on the earlier versions previously installed. Be sure there are no such dependencies before proceeding with the upgrade.

To proceed with the upgrade:

a. Make sure the radio button labeled "Upgrade" is selected.

If you instead select "Do not upgrade," the Next button becomes disabled; your only options at this point are Back (to return to the previous screen) or Cancel (to exit the Installer without completing installation).

b. Click the Next button.

The Installer's Ready screen (Figure 2–6) appears.

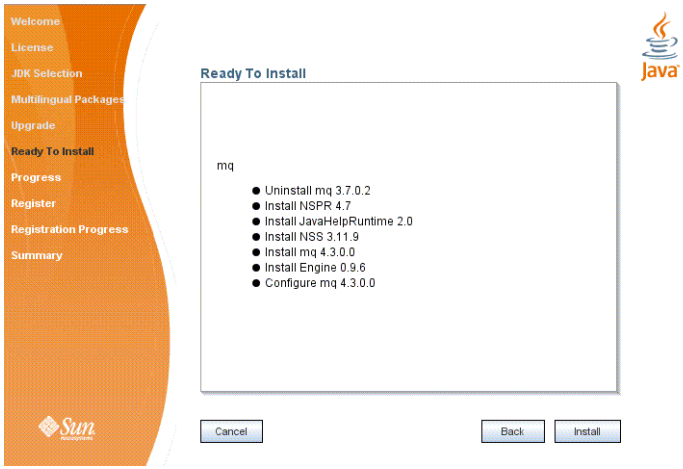

FIGURE 2–6 Installer Ready Screen

13 Click Install to begin the installation.

The Installer's Progress screen (Figure 2–7) appears, tracking the progress of the installation as it proceeds.

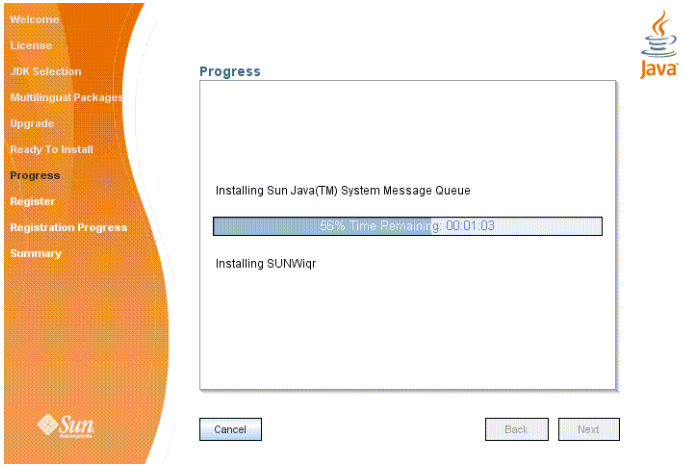

FIGURE 2–7 Installer Progress Screen

When installation is complete, the Installer's Sun Connection Registration screen (Figure 2–8) appears.

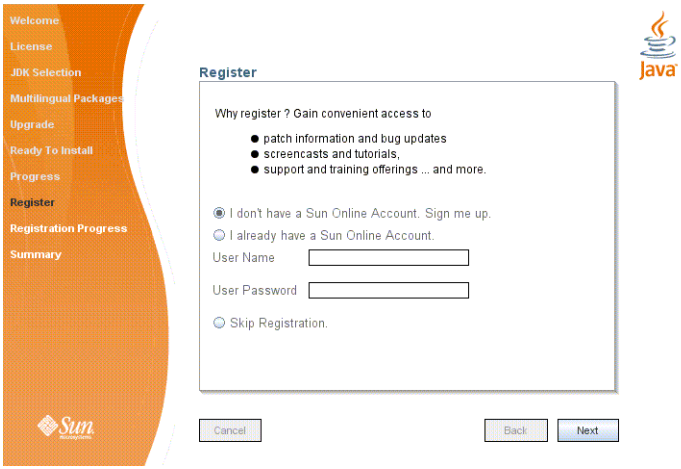

FIGURE 2–8 Sun Connection Registration Screen

14 Register Message Queue with Sun Connection.

Sun Connection is a Sun-hosted service that helps you track, organize, and maintain Sun hardware and software. When you register a Message Queue installation with Sun Connection, information such as the release version, host name, operating system, installation date, and other such basic information is securely transmitted to the Sun Connection database. The Sun Connection inventory service can help you organize your Sun hardware and software, while the update service can inform you of the latest available security fixes, recommended updates, and feature enhancements.

Registration requires that you have a Sun Online account or create one. If you do not already have an account, the installer provides the following screen (Figure 2–9) for creating a Sun Online account:

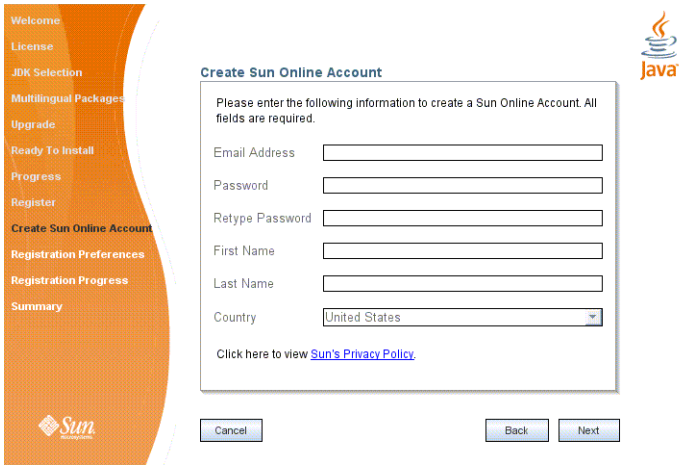

FIGURE 2–9 Create Sun Online Account Screen

Note – If you choose not to register Message Queue during installation, you can subsequently register Message Queue by running the installer in register-only mode, as follows:

```
# installer -r
```

The register-only mode requires that Message Queue 4.3 already be installed and will display only the installer screens related to registration.

When Sun Connection registration is complete, the Installer's Summary screen (Figure 2–10) appears, summarizing the steps that were performed during installation.

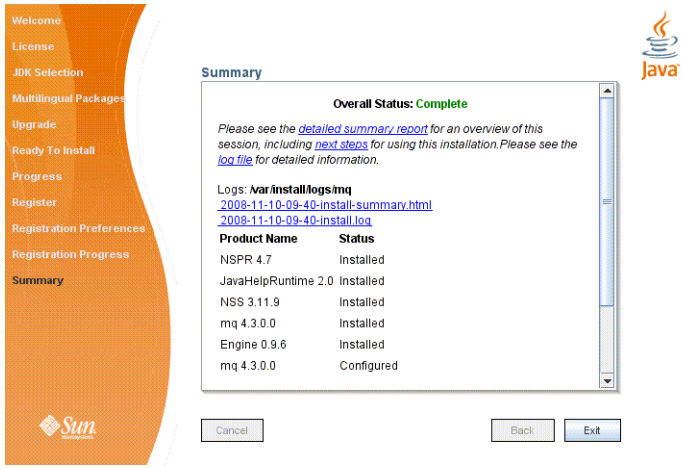

FIGURE 2–10 Installer Summary Screen

You can click the links on this screen for a detailed summary report and a log file giving more details on the installation.

15 Click the Exit button to dismiss the Summary screen.

Message Queue installation is now complete.

Tip – After installation is complete, you can check that the expected versions of Message Queue and the Java runtime have been installed by navigating to the Message Queue `/bin` directory and executing the following command:

```
# imqbrokerd -version
```

The output from this command identifies the versions of Message Queue and the Java SDK that are installed on your system.

Installing in Text Mode

For situations in which you do not have access to a windowing system to display the Installer's full graphical user interface, the Message Queue Installer provides an alternate *text mode* that simulates the operation of the GUI using plain text displayed directly in your terminal window. For example, Figure 2–11 shows the text-mode counterpart of the Welcome screen shown earlier in Figure 2–1. Instead of clicking the Next button with the mouse, you would use the Tab key to advance the cursor to that button, then select it by pressing Return.

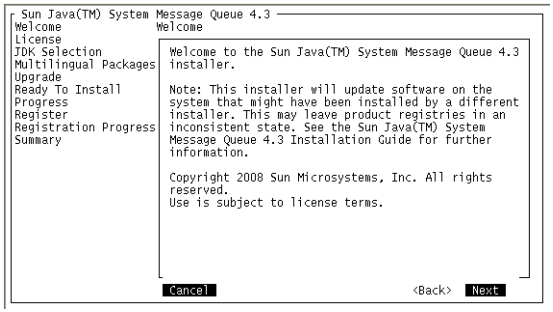

FIGURE 2–11 Installer Welcome Screen in Text Mode

To start the Installer in text mode, use the `-t` option when invoking it from the command line:

```
# installer -t
```

The rest of the installation process is essentially the same as described above under "To Install Message Queue in GUI Mode" on page 30, except that instead of the mouse, you must use keyboard keys such as Tab, Return, and arrow keys to select the various elements of the Installer screens.

Installing in Silent Mode

In *silent mode,* the Installer operates from a predefined *answer file* representing your responses to the GUI screens. This allows you to script the installation process in advance and then perform it in batch mode without actually displaying the GUI screens and responding to them interactively.

To create an answer file, start the Installer with the `-n` option:

```
# installer -n answerFile
```

where *answerFile* identifies the file in which to record your responses. This causes the Installer to execute a "dry run," presenting the sequence of GUI screens without actually performing the installation. Your input responses are recorded in the specified answer file. You can then perform the installation at a later time by starting the Installer with the `-s` ("silent") option, specifying the same answer file:

```
# installer -s -a answerFile
```

This performs a silent installation as defined by the answer file, without visibly displaying the GUI (or text) screens.

Manually Configuring the Java Runtime Environment

The Message Queue Installer's JDK Selection screen is not the only way to specify a version of the Java Runtime Environment for Message Queue to use. The JRE used by the Message Queue command line utilities (`imqadmin`, `imqbrokerd`, `imqcmd`, `imqobjmgr`, `imqdbmgr`, `imqusermgr`, `imqkeytool`) is determined by the following sources, in order of precedence:

1. The `-jrehome` or `-javahome` command line option to the `imqbrokerd` command. (If both are specified, the one occurring last on the command line takes precedence).
2. The J2SE file location specified in the `jdk.env` file. (This file is deprecated, but is still supported for backward compatibility. For historical reasons, it has higher priority than anything else except option 1.)
3. The `IMQ_JAVAHOME` environment variable.
4. The environment variable `IMQ_DEFAULT_JAVAHOME` in the `imqenv.conf` file.
5. The system default locations, as specified in the documentation for your platform.

To check which version of the Java runtime Message Queue will use, enter the command

```
# imqbrokerd -version
```

The output from this command includes the version and pathname of the configured JRE: for example,

```
Java Runtime: 1.5.0_12 Sun Microsystems Inc. /usr/jdk/instances/jdk1.5.0/jre
```

When you specify a JRE location through the Installer's JDK Selection screen, the Installer saves that location as the value of `IMQ_DEFAULT_JAVAHOME` in the `imqenv.conf` file (option 4 in the list above). On Solaris, this file is located at

```
/etc/imq/imqenv.conf
```

After a successful Message Queue installation, it should include something like the following:

```
IMQ_DEFAULT_JAVAHOME=/usr/jdk/jdk1.5.0_12
```

You can override this setting, however, either by editing the `imqenv.conf` file or by setting one of the other options higher in the list. This can be useful, for instance, for testing or reconfiguring the broker when a newer JRE version becomes available. Understanding how the JRE is determined can also help in troubleshooting problems. For instance, if the `imqbrokerd -version` command shows that Message Queue is using an unexpected JRE, it may be that one of the higher-precedence options has been set inadvertently (such as by an old `jdk.env` file that should have been deleted).

Configuring Message Queue for Automatic Startup

To configure the Message Queue message broker to start up automatically at boot time, become the root user and edit the configuration file `/etc/imq/imqbrokerd.conf`. Table 2–2 shows the startup properties you can set in this file.

TABLE 2–2 Configuration Properties for Automatic Startup

Property Name	Values	Default Value	Description
AUTOSTART	YES NO	NO	Start broker automatically at boot time?
ARGS	String	None	Command line options and arguments for broker startup command See the section "Broker Utility" inChapter 15, "Command Line Reference," in *Sun Java System Message Queue 4.3 Administration Guide* for Broker Utility command line options.
RESTART	YES NO	YES	Restart broker automatically on abnormal exit?

To check that startup changes are correct without booting the system, you can, as the root user, explicitly run the Message Queue initialization script in debug mode with the following command:

```
# env DEBUG=1 /etc/init.d/imq start
```

Message Queue Packages

Table 2–3 lists the packages used by Message Queue on the Solaris platform.

TABLE 2–3 Message Queue Packages (Solaris)

Name	Description
Message Queue Product	
SUNWiqr	Message Queue root package (configuration files)
SUNWiqu	Message Queue broker runtime
SUNWiqlen	Message Queue commercial product broker
SUNWiquc	Message Queue Java client runtime

TABLE 2–3 Message Queue Packages (Solaris) *(Continued)*

Name	Description
SUNWiqfs	Message Queue Java Naming and Directory Interface (JNDI) File System Service Provider
SUNWiqjx	Message Queue Java API for XML Messaging (JAXM) client runtime
SUNWiqum	Message Queue JMS/SOAP Message Transformer
SUNWiqdoc	Message Queue Java client API JavaDoc and example applications
SUNWiqcdv	Message Queue C client development (API header files and demo files)
SUNWiqcrt	Message Queue C client runtime
SUNWiqinst	Message Queue Installer metadata
Message Queue Multilingual Packages	
SUNWfiqu	Message Queue broker runtime for French language
SUNWfiquc	Message Queue Java client runtime for French language
SUNWeiqu	Message Queue broker runtime for Spanish language
SUNWeiquc	Message Queue Java client runtime for Spanish language
SUNWdiqu	Message Queue broker runtime for German language
SUNWdiquc	Message Queue Java client runtime for German language
SUNWhiqu	Message Queue broker runtime for Traditional Chinese
SUNWhiquc	Message Queue Java client runtime for Traditional Chinese
SUNWciqu	Message Queue broker runtime for Simplified Chinese
SUNWciquc	Message Queue Java client runtime for Simplified Chinese
SUNWjiqu	Message Queue broker runtime for Japanese language
SUNWjiquc	Message Queue Java client runtime for Japanese language
SUNWkiqu	Message Queue broker runtime for Korean language
SUNWkiquc	Message Queue Java client runtime for Korean language
J2SE™ Development Kit (JDK)	
SUNWj5rt	Java platform virtual machine and core class libraries
SUNWj5rtx	Java platform virtual machine and core class libraries (64–bit)
SUNWj5cfg	Java platform host-specific configuration
SUNWj5dev	Java platform development tools

TABLE 2–3 Message Queue Packages (Solaris) *(Continued)*

Name	Description
SUNWj5dvx	Java platform development tools (64–bit)
SUNWj5man	Java platform manual pages
SUNWj5jmp	Java platform manual pages (Japanese language)
SUNWj5dmo	Java platform demonstration applications and applets
SUNWj5dmx	Java platform demonstration applications and applets (64–bit)
NSPR/NSS	
SUNWpr	Netscape Portable Runtime (NSPR) interface
SUNWtls	Network Security Services (NSS) libraries
SUNWtlsu	Network Security Services (NSS) utilities
Sun Installation Framework	
SUNWinstall-engine-core	Sun installation software support files
SUNWinstall-resources	Sun installation software resources
JavaHelp	
SUNWjhrt	JavaHelp runtime
SUNWjhdev	JavaHelp developer toolkit
SUNWjhdoc	JavaHelp documentation
SUNWjhdem	JavaHelp demos

Installed Directory Structure

Table 2–4 shows the installed directory structure for a full installation of Message Queue 4.3 on the Solaris platform.

Note – The directory structure may vary if you have installed Message Queue as part of a Sun Java System Application Server installation.

TABLE 2–4 Installed Directory Structure (Solaris)

Directory	Contents
`/usr/bin`	Executable files for Message Queue administration tools: ■ Administration Console (`imqadmin`) ■ Broker utility (`imqbrokerd`) ■ Command utility (`imqcmd`) ■ Object Manager utility (`imqobjmgr`) ■ Database Manager utility (`imqdbmgr`) ■ User Manager utility (`imqusermgr`) ■ Key Tool utility (`imqkeytool`)
`/usr/share/lib`	Support files for Message Queue Java client runtime: ■ `.jar` files for building and running Java Message Service (JMS) client applications ■ `.rar` files for JMS Resource Adapter
`/usr/share/lib/imq`	Support files for Message Queue tools and processes: ■ `.jar` files used by Message Queue system ■ `.war` files for HTTP servlet and Universal Message Service (UMS) deployment
`/usr/share/lib/imq/props`	Broker's default configuration files
`/usr/share/lib/imq/ext`	`.jar` or `.zip` files to be added to broker's `CLASSPATH` environment variable Typically used for configuring JDBC-based persistence or Java Authentication and Authorization Service (JAAS) login modules.
`/usr/share/lib/imq/images`	Administration GUI image files
`/usr/share/lib/imq/help`	Administration GUI help files
`/usr/share/javadoc/imq`	Message Queue and JMS API documentation in JavaDoc format
`/usr/demo/imq`	Example Java client applications
`/opt/SUNWimq/demo/C`	Example C client applications
`/opt/SUNWimq/include`	Header files to support C client applications
`/opt/SUNWimq/lib`	Libraries to support C client applications **Note –** The versions of Netscape Portable Runtime (NSPR) and Network Security Services (NSS) needed to support the C API are the same as those for Sun Java Enterprise System 5.
`/var/imq`	Message Queue working storage

TABLE 2–4 Installed Directory Structure (Solaris) *(Continued)*

Directory	Contents
`/var/imq/instances`	Configuration properties, file-based persistent data stores, log files, flat-file user repositories, access control properties files for individual broker instances
`/var/opt/install/contents/mq`	Message Queue Uninstaller
`/var/opt/install/logs/mq`	Message Queue installation/uninstallation logs and summary file
`/etc/imq`	Message Queue configuration files, instance template files, sample password file, `rc` script configuration files for automatic startup

Working with Solaris 10 Zones

Zones are a Solaris™ Containers technology, introduced in Solaris 10, that provides separate operating environments on a machine and logically isolates applications from one another. Zones allow you to create virtual operating system environments within an instance of the Solaris operating system. Running applications in different zones allows you to run different instances or different versions of the same application on the same machine while, at the same time, permitting centralized administration and efficient sharing of resources.

Zone Basics

A zone environment includes a *global zone* and one or more *nonglobal zones.* When Solaris 10 is first installed on a system, there is only a single, global zone. An administrator can then create one or more nonglobal zones as children of the global zone. Each zone appears as an independent system running Solaris, with its own IP address, system configuration, instances of running applications, and area of the file system.

The global zone contains resources that can be shared among nonglobal zones. This allows the centralization of certain administrative functions: for example, packages installed in the global zone are available (propagated) to all existing nonglobal zones. This enables you to centralize life-cycle management like installation, upgrade, and uninstallation. At the same time, the isolation provided by nonglobal zones results in greater security and allows you to have differently configured instances or different versions of the same application running on the same machine.

Nonglobal zones are of two types: *whole-root* and *sparse-root.* Which of these you choose as an environment for an application depends on how you want to balance administrative control with resource optimization.

- A *whole-root zone* contains a read/write copy of the global zone's file system. Packages installed in the global zone are automatically copied (with their registry information) to the whole-root zone. This maximizes administrative control at the expense of resource sharing.
- A *sparse-root zone* contains a read/write copy of *a portion of* the global zone's file system; other file systems are mounted as read-only file systems. Packages installed in the global zone are available to the sparse-root zone by means of read-only file systems and through the automatic synchronization of registry information. Sparse-root zones optimize resource sharing at the cost of centralized administration.

Sun Java Enterprise System Zone Limitations

The components that make up the Sun Java Enterprise System (JES) depend on some shared components; this creates some limitations in working with zones. As a JES component, Message Queue is subject to these limitations. In a zone environment, shared components are governed by the following rules:

- All shared components within a zone must be of the same JES version. This requirement has three consequences:
  - If you want to install different versions of shared components, each version must reside in a separate zone.
  - Within a zone, if a shared component is upgraded or a later version is installed, then all shared components must be upgraded.
  - When you install shared components in the global zone, you must take care that shared components in nonglobal zones are upgraded if necessary.
- Shared components cannot be installed in sparse-root zones because of the read/only file system. Instead, they must be installed in the global zone. Those product components that depend on shared components must first be installed in the global zone and then propagated to nonglobal zones. In particular, since Message Queue is installed in the `/usr` directory, it must be installed or upgraded in the global zone first.

For more information on zones and their use in JES, see the following sources:

- *Sun Java Enterprise System Installation Guide for UNIX,* Chapter 2 ("Example Installation Sequences"), section "Solaris 10 Zones Examples"
- *Sun Java Enterprise System Installation Planning Guide,* Appendix A ("Java ES and Solaris 10 Zones")

Message Queue Cases

When Message Queue is installed in the global zone, it is configured to propagate to all nonglobal zones. After installing Message Queue in the global zone, you will have the same version installed in all zones: if you log into any zone and execute the following command:

```
# pkginfo -l SUNWiqu
```

you will see the same version installed as in the global zone. You can then run independent instances of the Message Queue broker in each zone, since they do not share the instance and configuration data kept in the `/var` and `/etc` directories. Most other JES components are not propagated if they are installed in the global zone.

Because Message Queue is propagated to nonglobal zones, the global instance is forever linked to the installations in the nonglobal zones. Therefore, any time you uninstall or upgrade Message Queue in the global zone, it will affect instances running in the nonglobal zones. Always be aware of this cascading effect; the following example shows how it might cause unintended results:

1. You install Message Queue 4.3 in the global zone. This results in the Message Queue 4.3 packages also being installed in all nonglobal zones.
2. You uninstall Message Queue 4.3 in a whole-root zone.
3. You install Message Queue 3.7 UR1 in the whole-root zone. You now have different versions of Message Queue running in different zones, a configuration you might find useful.
4. You uninstall Message Queue 4.3 from the global zone. This will uninstall Message Queue from all other zones, *including the Message Queue 3.7 UR1 instance in the whole-root zone.*

The following two use cases show how to install different instances and different versions of Message Queue in different zones.

Note – If you want to install Message Queue in a whole-root zone on Solaris 10, 10U1, or 10U2, you must upgrade Lockhart in the global zone first. See the workaround for bug 645030 for additional information.

▼ To Install the Same Version of Message Queue in Different Zones

1 Install the desired version of Message Queue in the global zone.

This version will be propagated to all existing nonglobal zones. If you create additional nonglobal zones, Message Queue will also be propagated to these zones. Note that you can install different instances in whole-root zones as well as sparse-root zones, but using sparse-root zones allows you to make more efficient use of disk space and other resources.

2 If you want Message Queue to be propagated to any other nonglobal zones, create these zones now.

3 Run an instance of Message Queue in each nonglobal zone.

▼ To Install Different Versions of Message Queue in Different Zones

1. **Uninstall Message Queue from the global zone.**

   This will automatically uninstall it from all nonglobal zones as well.

2. **Create whole-root zones and configure each zone not to share the `/usr` directory.**

3. **Install different versions of Message Queue in each whole-root zone.**

Note – Remember that later installing or uninstalling Message Queue in the global zone will affect all instances (and versions) running in whole-root zones.

Uninstallation Procedure

Like the Installer, the Message Queue Uninstaller can be run in any of three modes of operation:

- In *GUI (graphical user interface) mode,* the Uninstaller presents a series of graphical screens with which you interact using mouse clicks and keyboard text entry.
- In *text mode,* the Uninstaller uses plain text displayed directly in your terminal window to simulate the appearance of the GUI screens. Instead of the mouse, you use keyboard keys such as Tab, Return, and arrow keys to interact with these screens. This is convenient for situations in which you do not have access to a windowing system to display the Uninstaller's full graphical user interface.
- In *silent mode,* the Uninstaller operates from a predefined *answer file* representing your responses to the GUI screens. This allows you to script the uninstallation process in advance and then perform it in batch mode without actually displaying the GUI screens and responding to them interactively.

The following sections describe each of these three modes of Uninstaller operation.

Caution – The Message Queue installation includes several scripts and executables named `uninstaller`, both in the Installer `.zip` bundle and on your system after installation. To uninstall Message Queue 4.3, it is important that you run the correct `uninstaller` executable, located at

```
/var/opt/install/contents/mq/uninstaller
```

Be careful not to invoke some other uninstaller by mistake.

Uninstalling in GUI Mode

The following procedure shows how to use the Message Queue Uninstaller in GUI mode to uninstall Message Queue 4.3 from your Solaris system.

▼ To Uninstall Message Queue in GUI Mode

1 Become the root user.

You must have root user privileges to run the Message Queue Uninstaller. Enter the following command:

```
$ su
```

and provide a valid root user password when prompted to do so.

2 Set your working directory to the directory containing the Uninstaller.

From your system's command line, enter the following command:

```
# cd /var/opt/install/contents/mq
```

3 Start the Uninstaller.

Enter the following command:

```
# uninstaller
```

The Uninstaller's Ready screen (Figure 2–12) appears.

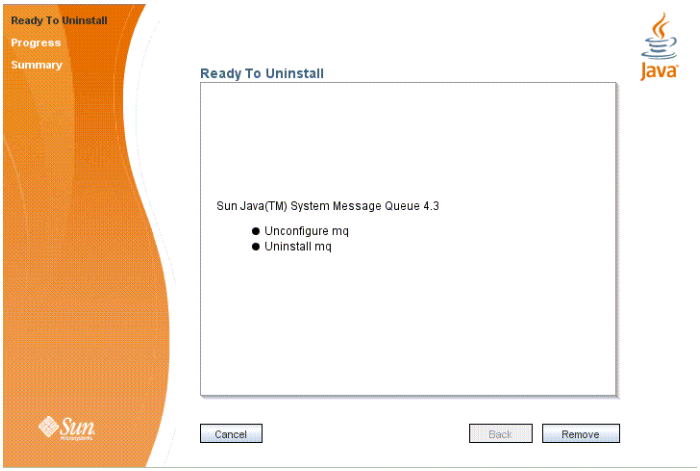

FIGURE 2–12 Uninstaller Ready Screen

4 Click the Remove button.

The Uninstaller's Progress screen (Figure 2–13) appears.

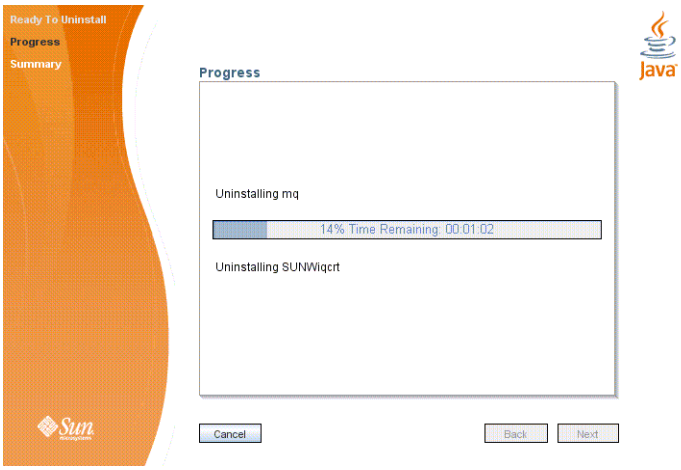

FIGURE 2–13 Uninstaller Progress Screen

When uninstallation is complete, the Uninstaller's Summary screen (Figure 2–14) appears, summarizing the steps that were performed during uninstallation. You can click the links on this screen for a detailed summary report and a log file giving more details on the uninstallation.

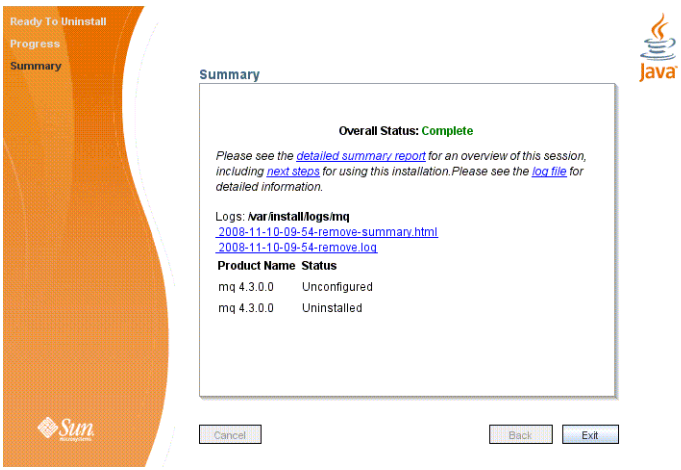

FIGURE 2–14 Uninstaller Summary Screen

5 **Click the Exit button to dismiss the Summary screen.**

Message Queue uninstallation is now complete.

Uninstalling in Text Mode

For situations in which you do not have access to a windowing system to display the Uninstaller's full graphical user interface, the Message Queue Uninstaller provides an alternate *text mode* that simulates the operation of the GUI using plain text displayed directly in your terminal window. For example, Figure 2–15 shows the text-mode counterpart of the Ready screen shown earlier in Figure 2–12. Instead of clicking the Next button with the mouse, you would use the Tab key to advance the cursor to that button, then select it by pressing Return.

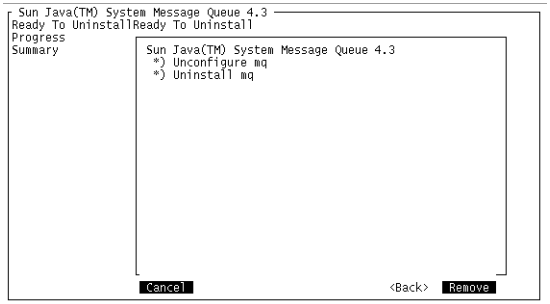

FIGURE 2–15 Uninstaller Ready Screen in Text Mode

To start the Uninstaller in text mode, use the `-t` option when invoking it from the command line:

```
# uninstaller -t
```

The rest of the uninstallation process is essentially the same as described above under "To Uninstall Message Queue in GUI Mode" on page 50, except that instead of the mouse, you must use keyboard keys such as Tab, Return, and arrow keys to select the various elements of the Uninstaller screens.

Uninstalling in Silent Mode

In *silent mode,* the Uninstaller operates from a predefined *answer file* representing your responses to the GUI screens. This allows you to script the uninstallation process in advance and then perform it in batch mode without actually displaying the GUI screens and responding to them interactively. To create an answer file, start the Uninstaller with the `-n` option:

```
# uninstaller -n answerFile
```

where *answerFile* identifies the file in which to record your responses. This causes the Uninstaller to execute a "dry run," presenting the sequence of GUI screens without actually performing the uninstallation. Your input responses are recorded in the specified answer file. You can then perform the uninstallation at a later time by starting the Uninstaller with the `-s` ("silent") option, specifying the same answer file:

```
# uninstaller -s -a answerFile
```

This performs a silent uninstallation as defined by the answer file, without visibly displaying the GUI (or text) screens.

◆ ◆ ◆ CHAPTER 3

Linux Installation

This chapter covers the following topics as they apply to a Linux installation of Message Queue 4.3:

Hardware Requirements

In order to install Message Queue 4.3, your Linux system should satisfy the minimum hardware requirements shown in Table 3–1. See "Supported Platforms and Components" on page 20 for information on software requirements.

TABLE 3–1 Minimum Hardware Requirements for Linux Installation

Component	Minimum Requirements
CPU	Intel Pentium 2 (or compatible)
RAM	256 MB (2 GB recommended for high-availability or high-volume deployments)
Disk space	Compressed installation (`.zip`) file: approximately 151 MB Temporary working directory (for extracting installation files): approximately 216 MB Installed product: approximately 22 MB (Message Queue only, not including shared components). More space may be needed if broker stores persistent messages locally.

Upgrading from Previous Versions

Because Message Queue is installed with other products (such as Sun Java™ System Application Server), you should check whether it has already been installed on your system. To do so, enter the command

```
imqbrokerd  -version
```

If Message Queue is already installed, its version number will be displayed. The Message Queue 4.3 Installer will upgrade automatically to Version 4.3 from any Version 3.6 or later. If you have a version earlier than 3.6 installed, you will need to uninstall it before running the Message Queue 4.3 Installer.

Caution – The Message Queue 4.3 Installer does not share the same product registry with other installers, such as those of the Sun Java Enterprise System (JES) and Sun Java System Application Server, which include Message Queue as a component. The Message Queue Installer also installs or upgrades shared software components that Message Queue depends on, such as the Java Software Development Kit (SDK), Netscape Portable Runtime (NSPR), Network Security Services (NSS), and JavaHelp. Using this Installer to upgrade an earlier version of Message Queue that was installed with another installer may upgrade such shared components without correctly updating their version numbers in the other installer's product registry, leaving that registry in an inconsistent state.

If you later run the other installer, the inconsistent registry entries may in turn cause that installer to inadvertently remove Message Queue 4.3. The safest and cleanest way to upgrade an earlier version of Message Queue that was installed with a different installer is as follows:

1. Use the other installer's uninstaller to remove Message Queue.
2. Use the Message Queue 4.3 Installer to install Message Queue 4.3.

Installation Procedure

You can run the Message Queue Installer in any of three modes:

- In *GUI (graphical user interface) mode,* the Installer presents a series of graphical screens with which you interact using mouse clicks and keyboard text entry.
- In *text mode,* the Installer uses plain text displayed directly in your terminal window to simulate the appearance of the GUI screens. Instead of the mouse, you use keyboard keys such as Tab, Return, and arrow keys to interact with these screens. This is convenient for situations in which you do not have access to a windowing system to display the Installer's full graphical user interface.

- In *silent mode,* the Installer operates from a predefined *answer file* representing your responses to the GUI screens. This allows you to script the installation process in advance and then perform it in batch mode without actually displaying the GUI (or text) screens and responding to them interactively.

The following sections describe each of these three modes of Installer operation.

Installing in GUI Mode

The following procedure shows how to use the Message Queue Installer in GUI mode to install the Message Queue 4.3 product on your Linux system.

▼ To Install Message Queue in GUI Mode

1 Become the root user.

You must have root user privileges to run the Message Queue Installer. Enter the command

```
$ su
```

and provide a valid root user password when prompted to do so.

2 Create a temporary directory.

From your system's command line, enter the command

```
# mkdir tempDir
```

where *tempDir* is any name you choose for your temporary directory.

3 Download the Message Queue Installer to the temporary directory.

The Installer is available for download from the Message Queue product Web site at

```
http://www.sun.com/software/products/message_queue
```

It is distributed as a compressed archive (`.zip`) file named

```
mq4_3-installer-Linux_X86.zip
```

4 Go to the temporary directory.

Enter the following command:

```
# cd tempDir
```

where *tempDir* is the temporary directory to which you downloaded the Installer in step 3.

5 Decompress the Installer archive.

Enter the following command:

```
# unzip mq4_3-installer-Linux_X86.zip
```

This creates a subdirectory named

```
mq4_3-installer
```

containing the files needed for Message Queue 4.3 installation.

6 Switch to the Installer subdirectory.

Enter the following command:

```
# cd mq4_3-installer
```

7 Start the Installer.

Enter the following command:

```
# installer
```

The Installer's Welcome screen (Figure 3–1) appears.

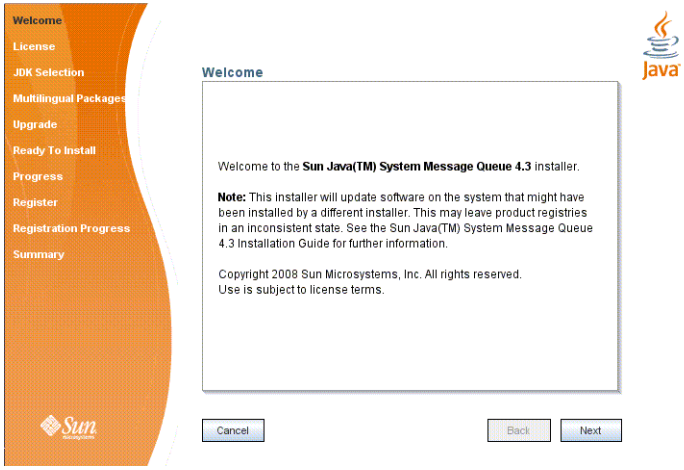

FIGURE 3–1 Installer Welcome Screen

8 Click the Next button.

The Installer's License screen (Figure 3–2) appears.

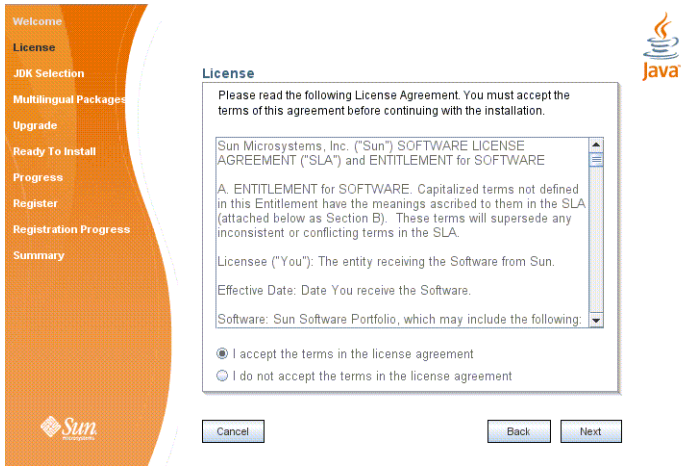

FIGURE 3–2 Installer License Screen

9 Read and accept the product license agreement.

Installation and use of the Message Queue product are subject to your acceptance of the license agreement. You must read and accept the terms of the license agreement before installing the product.

a. Read the product license agreement.

b. Make sure the radio button labeled "I accept the terms in the license agreement" is selected.

If you instead select "I do not accept the terms in the license agreement," the Next button becomes disabled. You cannot proceed with installation without accepting the license terms.

c. Click the Next button.

The Installer's JDK Selection screen (Figure 3–3) appears.

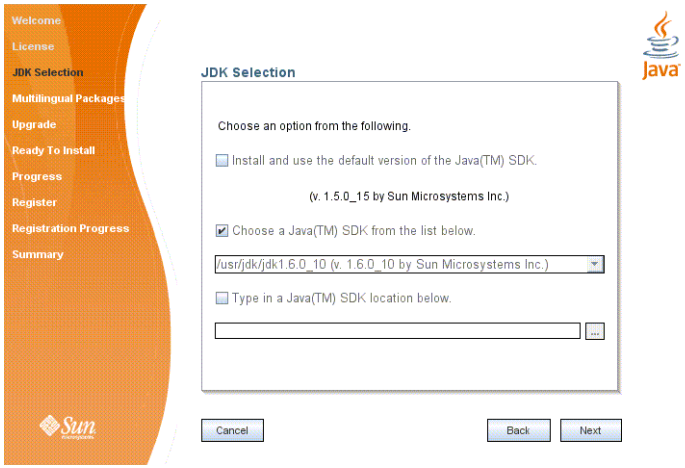

FIGURE 3–3 Installer JDK Selection Screen

10 Specify the version of the Java SDK for Message Queue to use.

a. Select a Java SDK.

You can do this in any of three ways:

- **Install the default SDK.**

  Select the option labeled "Install and use the default version of the Java SDK."

- **Choose an SDK already installed on your system.**

  The drop-down menu under the option "Choose a Java SDK from the list below" lists existing SDKs found in standard locations on your system. You can use this option to specify one of these SDKs for Message Queue to use.

- **Provide an explicit path to an existing SDK.**

  To use an SDK from a location other than the standard ones, enter its path in the text field under the option "Type in a Java SDK location below," or use the button marked with an ellipsis (…) to browse to it interactively.

b. Click the Next button.

The Installer's Multilingual Packages screen (Figure 3–4) appears.

FIGURE 3–4 Installer Multilingual Packages Screen

11 Specify whether to install multilingual packages.

By default, Message Queue is installed to operate in the English language only. The Multilingual Packages screen allows you to install it for use in another language.

a. If you will be using Message Queue in a language other than English, select the checkbox labeled "Install Message Queue multilingual packages."

If you will be using Message Queue only in English, leave this checkbox deselected.

Caution – If you choose not to install the multilingual packages and later decide that you do need them after all, there is no convenient way to install them incrementally: you will have to uninstall Message Queue and then repeat the entire installation procedure with the multilingual packages selected. Before proceeding to install without the multilingual packages, be sure you will not be needing them in the future.

b. Click the Next button.

The Installer's Upgrade screen (Figure 3–5) appears.

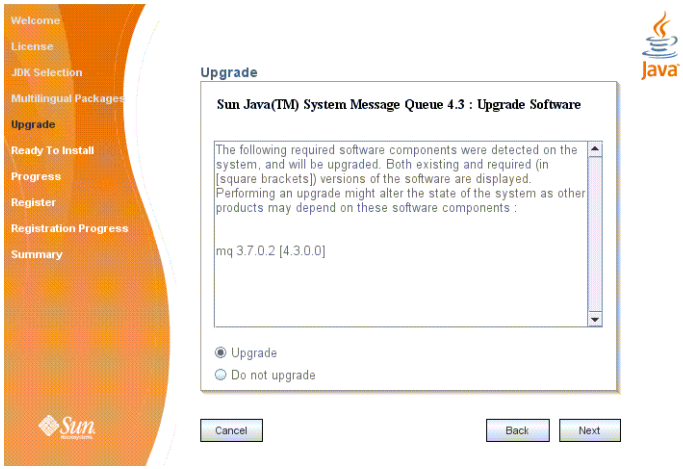

FIGURE 3–5 Installer Upgrade Screen

12 Specify whether to upgrade Message Queue and its shared components.

If an earlier version of Message Queue exists on your system, or if any of the shared components on which Message Queue depends need to be upgraded from earlier versions, the Upgrade screen displays them in a scrollable list along with their current and required versions. If no upgrades are needed, the existing components are simply listed with their version numbers and a notation that they will remain at their current versions. In this case, the "Upgrade" and "Do not upgrade" radio buttons do not appear; just click Next to proceed to the next step.

Caution – It is possible that upgrading Message Queue's shared components may break other software components on your system that depend on the earlier versions previously installed. Be sure there are no such dependencies before proceeding with the upgrade.

To proceed with the upgrade:

a. Make sure the radio button labeled "Upgrade" is selected.

If you instead select "Do not upgrade," the Next button becomes disabled; your only options at this point are Back (to return to the previous screen) or Cancel (to exit the Installer without completing installation).

b. Click the Next button.

The Installer's Ready screen (Figure 3–6) appears.

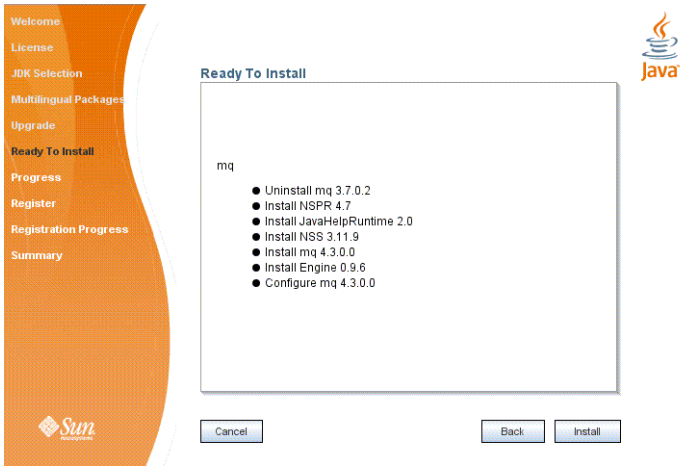

FIGURE 3–6 Installer Ready Screen

13 Click Install to begin the installation.

The Installer's Progress screen (Figure 3–7) appears, tracking the progress of the installation as it proceeds.

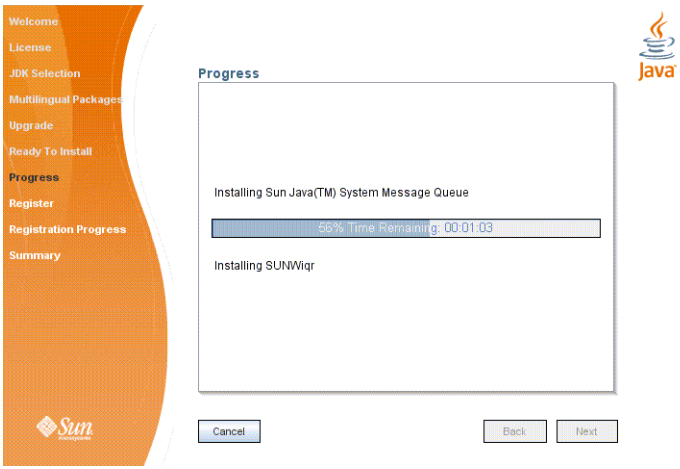

FIGURE 3–7 Installer Progress Screen

When installation is complete, the Installer's Sun Connection Registration screen (Figure 3–8) appears.

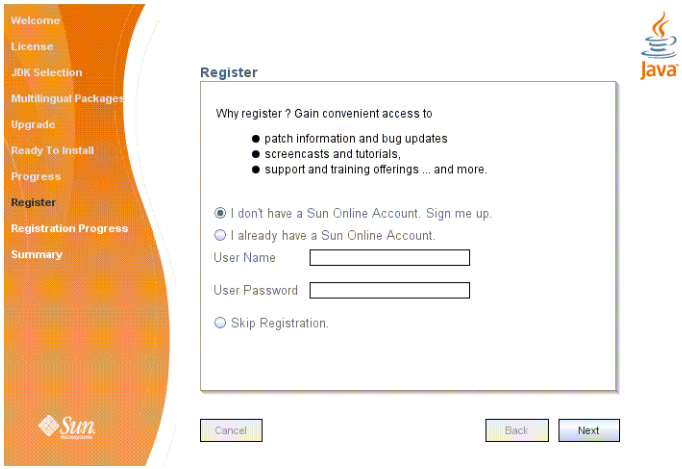

FIGURE 3–8 Sun Connection Registration Screen

14 Register Message Queue with Sun Connection.

Sun Connection is a Sun-hosted service that helps you track, organize, and maintain Sun hardware and software. When you register a Message Queue installation with Sun Connection, information such as the release version, host name, operating system, installation date, and other such basic information is securely transmitted to the Sun Connection database. The Sun Connection inventory service can help you organize your Sun hardware and software, while the update service can inform you of the latest available security fixes, recommended updates, and feature enhancements.

Registration requires that you have a Sun Online account or create one. If you do not already have an account, the installer provides the following screen (Figure 3–9) for creating a Sun Online account:

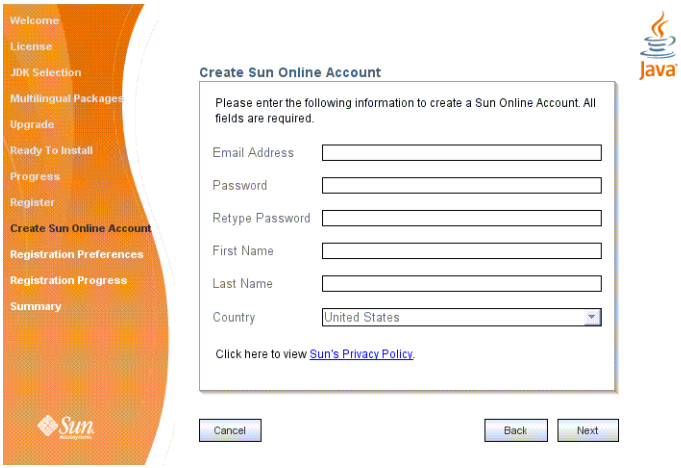

FIGURE 3–9 Create Sun Online Account Screen

Note – If you choose not to register Message Queue during installation, you can subsequently register Message Queue by running the installer in register-only mode, as follows:

```
# installer -r
```

The register-only mode requires that Message Queue 4.3 already be installed and will display only the installer screens related to registration.

When Sun Connection registration is complete, the Installer's Summary screen (Figure 3–10) appears, summarizing the steps that were performed during installation.

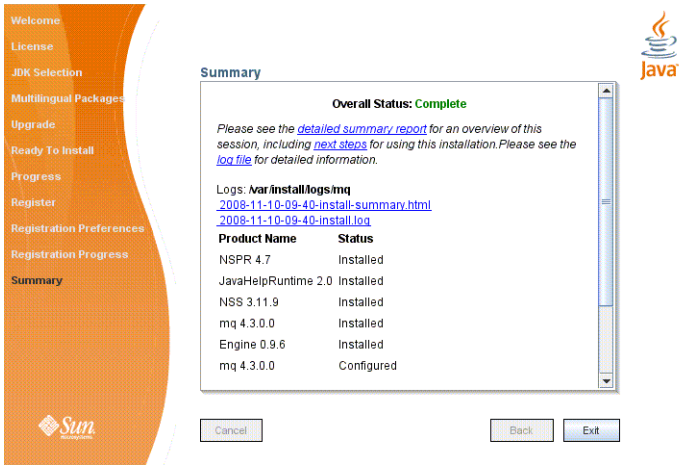

FIGURE 3–10 Installer Summary Screen

You can click the links on this screen for a detailed summary report and a log file giving more details on the installation.

15 Click the Exit button to dismiss the Summary screen.

Message Queue installation is now complete.

Tip – After installation is complete, you can check that the expected versions of Message Queue and the Java runtime have been installed by navigating to the Message Queue `/bin` directory and executing the following command:

```
# imqbrokerd -version
```

The output from this command identifies the versions of Message Queue and the Java SDK that are installed on your system.

Installing in Text Mode

For situations in which you do not have access to a windowing system to display the Installer's full graphical user interface, the Message Queue Installer provides an alternate *text mode* that simulates the operation of the GUI using plain text displayed directly in your terminal window. For example, Figure 3–11 shows the text-mode counterpart of the Welcome screen shown earlier in Figure 3–1. Instead of clicking the Next button with the mouse, you would use the Tab key to advance the cursor to that button, then select it by pressing Return.

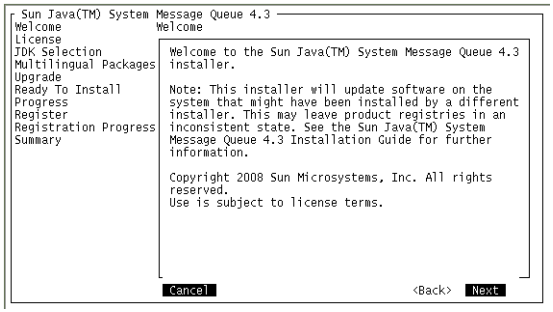

FIGURE 3–11 Installer Welcome Screen in Text Mode

To start the Installer in text mode, use the `-t` option when invoking it from the command line:

```
# installer -t
```

The rest of the installation process is essentially the same as described above under "Installing in GUI Mode" on page 57, except that instead of the mouse, you must use keyboard keys such as Tab, Return, and arrow keys to select the various elements of the Installer screens.

Installing in Silent Mode

In *silent mode,* the Installer operates from a predefined *answer file* representing your responses to the GUI screens. This allows you to script the installation process in advance and then perform it in batch mode without actually displaying the GUI screens and responding to them interactively.

To create an answer file, start the Installer with the `-n` option:

```
# installer -n answerFile
```

where *answerFile* identifies the file in which to record your responses. This causes the Installer to execute a "dry run," presenting the sequence of GUI screens without actually performing the installation. Your input responses are recorded in the specified answer file. You can then perform the installation at a later time by starting the Installer with the `-s` ("silent") option, specifying the same answer file:

```
# installer -s -a answerFile
```

This performs a silent installation as defined by the answer file, without visibly displaying the GUI (or text) screens.

Manually Configuring the Java Runtime Environment

The Message Queue Installer's JDK Selection screen is not the only way to specify a version of the Java Runtime Environment for Message Queue to use. The JRE used by the Message Queue command line utilities (`imqadmin`, `imqbrokerd`, `imqcmd`, `imqobjmgr`, `imqdbmgr`, `imqusermgr`, `imqkeytool`) is determined by the following sources, in order of precedence:

1. The `-jrehome` or `-javahome` command line option to the `imqbrokerd` command. (If both are specified, the one occurring last on the command line takes precedence).
2. The J2SE file location specified in the `jdk.env` file. (This file is deprecated, but is still supported for backward compatibility. For historical reasons, it has higher priority than anything else except option 1.)
3. The `IMQ_JAVAHOME` environment variable.
4. The environment variable `IMQ_DEFAULT_JAVAHOME` in the `imqenv.conf` file.
5. The system default locations, as specified in the documentation for your platform.

To check which version of the Java runtime Message Queue will use, enter the following command:

```
# imqbrokerd -version
```

The output from this command includes the version and pathname of the configured JRE: for example,

```
Java Runtime: 1.5.0_12 Sun Microsystems Inc. /usr/java/jdk1.5.0_12/jre
```

When you specify a JRE location through the Installer's JDK Selection screen, the Installer saves that location as the value of `IMQ_DEFAULT_JAVAHOME` in the `imqenv.conf` file (option 4 in the list above). On Linux, this file is located at

```
/etc/opt/sun/mq/imqenv.conf
```

After a successful Message Queue installation, it should include something like the following:

```
IMQ_DEFAULT_JAVAHOME=/usr/java/jdk1.5.0_12
```

You can override this setting, however, either by editing the `imqenv.conf` file or by setting one of the other options higher in the list. This can be useful, for instance, for testing or reconfiguring the broker when a newer JRE version becomes available. Understanding how the JRE is determined can also help in troubleshooting problems. For instance, if the `imqbrokerd -version` command shows that Message Queue is using an unexpected JRE, it may be that one of the higher-precedence options has been set inadvertently (such as by an old `jdk.env` file that should have been deleted).

Configuring Message Queue for Automatic Startup

To configure the Message Queue message broker to start up automatically at boot time, become the root user and edit the configuration file `/etc/opt/sun/mq/imqbrokerd.conf`. Table 3–2 shows the startup properties you can set in this file.

TABLE 3–2 Configuration Properties for Automatic Startup

Property Name	Values	Default Value	Description
`AUTOSTART`	`YES` `NO`	`NO`	Start broker automatically at boot time?
`ARGS`	String	None	Command line options and arguments for broker startup command See the section "Broker Utility" inChapter 15, "Command Line Reference," in *Sun Java System Message Queue 4.3 Administration Guide* for Broker Utility command line options.
`RESTART`	`YES` `NO`	`YES`	Restart broker automatically on abnormal exit?

To check that startup changes are correct without booting the system, you can, as the root user, explicitly run the Message Queue initialization script in debug mode with the following command:

```
# env DEBUG=1 /etc/init.d/imq start
```

Message Queue Packages (RPMs)

Table 3–3 lists the packages (RPMs) used by Message Queue on the Linux platform.

TABLE 3–3 Message Queue RPMs (Linux)

Name	Description
Message Queue Product	
`sun-mq`	Message Queue `/opt` files (see Table 3–4)
`sun-mq-ent`	Message Queue commercial product broker
`sun-mq-var`	Message Queue instance data
`sun-mq-config`	Message Queue configuration files

TABLE 3–3 Message Queue RPMs (Linux) *(Continued)*

Name	Description
`sun-mq-jmsclient`	Message Queue Java client runtime
`sun-mq-xmlclient`	Message Queue XML client runtime
`sun-mq-jaxm`	Message Queue Java API for XML Messaging (JAXM) client runtime
`sun-mq-capi`	Message Queue C client API
`sun-mq-install`	Message Queue Installer metadata
Message Queue Multilingual Packages	
`sun-mq-fr`	Message Queue for French language
`sun-mq-es`	Message Queue for Spanish language
`sun-mq-de`	Message Queue for German language
`sun-mq-zh_TW`	Message Queue for Traditional Chinese
`sun-mq-zh_CN`	Message Queue for Simplified Chinese
`sun-mq-ja`	Message Queue for Japanese language
`sun-mq-ko`	Message Queue for Korean language
J2SE™ Development Kit (JDK)	
`jdk-1_5_0_12-linux-i586`	JDK 1.5.0_12 (32–bit)
`jdk-1_5_0_12-linux-amd64`	JDK 1.5.0_12 (64–bit)
NSPR/NSS	
`sun-nspr-4.6.7-2.i386`	Netscape Portable Runtime (NSPR) libraries (32–bit)
`sun-nspr-4.6.7-2.x86_64`	Netscape Portable Runtime (NSPR) libraries (64–bit)
`sun-nss-3.11.7-2.i386`	Network Security Services (NSS) libraries (32–bit)
`sun-nss-3.11.7-2.x86_64`	Network Security Services (NSS) libraries (64–bit)
Sun Installation Framework	
`sun-install-engine-core`	Sun installation software support files
`sun-install-resources`	Sun installation software resources
JavaHelp	
`sun-javahelp-2.0-fcs`	JavaHelp runtime/development environment

Installed Directory Structure

Table 3–4 shows the installed directory structure for a full (all RPMs) installation of Message Queue 4.3 on the Linux platform.

Note – The directory structure may vary if you have installed Message Queue as part of a Sun Java System Application Server installation.

TABLE 3–4 Installed Directory Structure (Linux)

Directory	Contents
`/opt/sun/mq/bin`	Executable files for Message Queue administration tools: ■ Administration Console (`imqadmin`) ■ Broker utility (`imqbrokerd`) ■ Command utility (`imqcmd`) ■ Object Manager utility (`imqobjmgr`) ■ Database Manager utility (`imqdbmgr`) ■ User Manager utility (`imqusermgr`) ■ Key Tool utility (`imqkeytool`)
`/opt/sun/mq/share/lib`	Support files for Message Queue Java client runtime: ■ `.jar` files for building and running Java Message Service (JMS) client applications ■ `.rar` files for JMS Resource Adapter ■ `.war` files for HTTP servlet and Universal Message Service (UMS) deployment
`/opt/sun/mq/share/lib/ext`	`.jar` or `.zip` files to be added to broker's `CLASSPATH` environment variable Typically used for configuring JDBC-based persistence or Java Authentication and Authorization Service (JAAS) login modules.
`/opt/sun/mq/private/share/lib`	Support files for Message Queue tools and processes
`/opt/sun/mq/private/share/lib/props`	Broker's default configuration files
`/opt/sun/mq/private/share/lib/images`	Administration GUI image files
`/opt/sun/mq/private/share/lib/help`	Administration GUI help files
`/opt/sun/mq/javadoc`	Message Queue and JMS API documentation in JavaDoc format
`/opt/sun/mq/examples`	Example Java client applications
`/opt/sun/mq/include`	Header files to support C client applications

TABLE 3–4 Installed Directory Structure (Linux) *(Continued)*

Directory	Contents
`/var/opt/sun/mq`	Message Queue working storage
`/var/opt/sun/mq/instances`	Configuration properties, file-based persistent data stores, log files, flat-file user repositories, access control properties files for individual broker instances
`/var/opt/sun/install/contents/mq`	Message Queue Uninstaller
`/var/opt/sun/install/logs/mq`	Message Queue installation/uninstallation logs and summary file
`/etc/opt/sun/mq`	Message Queue configuration files, instance template files, sample password file, `rc` script configuration files for automatic startup

Uninstallation Procedure

Like the Installer, the Message Queue Uninstaller can be run in any of three modes of operation:

- In *GUI (graphical user interface) mode,* the Uninstaller presents a series of graphical screens with which you interact using mouse clicks and keyboard text entry.
- In *text mode,* the Uninstaller uses plain text displayed directly in your terminal window to simulate the appearance of the GUI screens. Instead of the mouse, you use keyboard keys such as Tab, Return, and arrow keys to interact with these screens. This is convenient for situations in which you do not have access to a windowing system to display the Uninstaller's full graphical user interface.
- In *silent mode,* the Uninstaller operates from a predefined *answer file* representing your responses to the GUI screens. This allows you to script the uninstallation process in advance and then perform it in batch mode without actually displaying the GUI (or text) screens and responding to them interactively.

The following sections describe each of these three modes of Uninstaller operation.

Caution – The Message Queue installation includes several scripts and executables named `uninstaller`, both in the Installer `.zip` bundle and on your system after installation. To uninstall Message Queue 4.3, it is important that you run the correct `uninstaller` executable, located at

```
/var/opt/sun/install/contents/mq/uninstaller
```

Be careful not to invoke some other uninstaller by mistake.

Uninstalling in GUI Mode

The following procedure shows how to use the Message Queue Uninstaller in GUI mode to uninstall Message Queue 4.3 from your Linux system.

▼ To Uninstall Message Queue in GUI Mode

1 **Become the root user.**

You must have root user privileges to run the Message Queue Uninstaller. Enter the following command:

```
$ su
```

and provide a valid root user password when prompted to do so.

2 **Set your working directory to the directory containing the Uninstaller.**

From your system's command line, enter the following command:

```
# cd /var/opt/sun/install/contents/mq
```

3 **Start the Uninstaller.**

Enter the following command:

```
# uninstaller
```

The Uninstaller's Ready screen (Figure 3–12) appears.

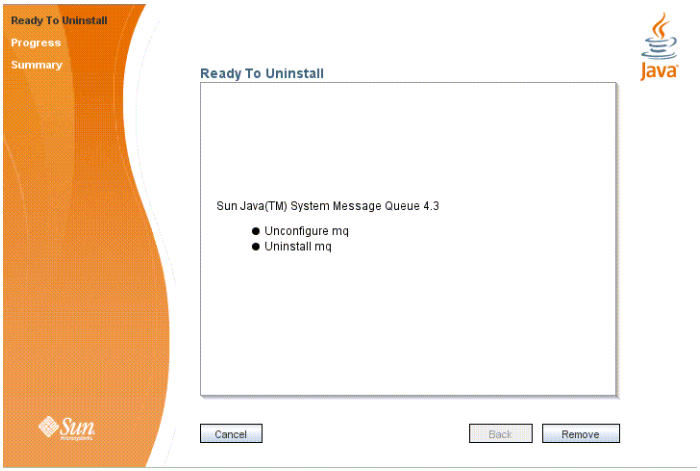

FIGURE 3–12 Uninstaller Ready Screen

4 Click the Remove button.

The Uninstaller's Progress screen (Figure 3–13) appears.

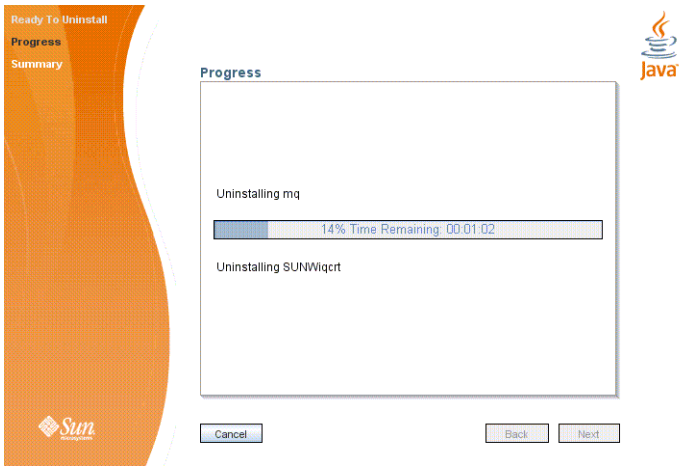

FIGURE 3–13 Uninstaller Progress Screen

When uninstallation is complete, the Uninstaller's Summary screen (Figure 3–14) appears, summarizing the steps that were performed during uninstallation. You can click the links on this screen for a detailed summary report and a log file giving more details on the uninstallation.

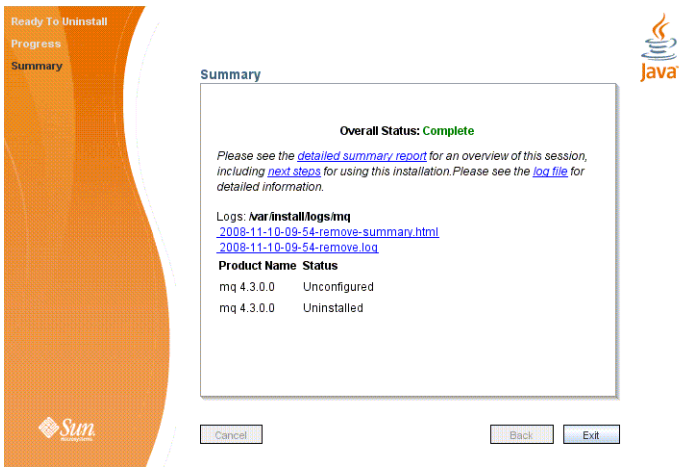

FIGURE 3–14 Uninstaller Summary Screen

5 **Click the Exit button to dismiss the Summary screen.**

Message Queue uninstallation is now complete.

Uninstalling in Text Mode

For situations in which you do not have access to a windowing system to display the Uninstaller's full graphical user interface, the Message Queue Uninstaller provides an alternate *text mode* that simulates the operation of the GUI using plain text displayed directly in your terminal window. For example, Figure 3–15 shows the text-mode counterpart of the Ready screen shown earlier in Figure 3–12. Instead of clicking the Next button with the mouse, you would use the Tab key to advance the cursor to that button, then select it by pressing Return.

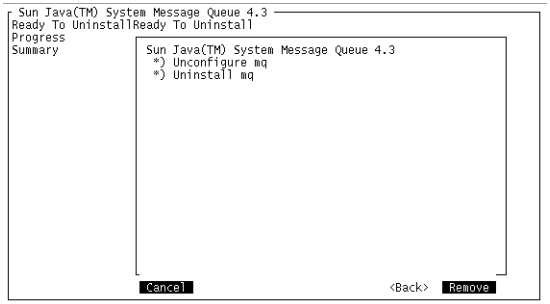

FIGURE 3–15 Uninstaller Ready Screen in Text Mode

To start the Uninstaller in text mode, use the `-t` option when invoking it from the command line:

```
# uninstaller -t
```

The rest of the uninstallation process is essentially the same as described above under "To Uninstall Message Queue in GUI Mode" on page 73, except that instead of the mouse, you must use keyboard keys such as Tab, Return, and arrow keys to select the various elements of the Uninstaller screens.

Uninstalling in Silent Mode

In *silent mode,* the Uninstaller operates from a predefined *answer file* representing your responses to the GUI screens. This allows you to script the uninstallation process in advance and then perform it in batch mode without actually displaying the GUI screens and responding to them interactively. To create an answer file, start the Uninstaller with the `-n` option:

```
# uninstaller -n answerFile
```

where *answerFile* identifies the file in which to record your responses. This causes the Uninstaller to execute a "dry run," presenting the sequence of GUI screens without actually performing the uninstallation. Your input responses are recorded in the specified answer file. You can then perform the uninstallation at a later time by starting the Uninstaller with the `-s` ("silent") option, specifying the same answer file:

```
# uninstaller -s -a answerFile
```

This performs a silent uninstallation as defined by the answer file, without visibly displaying the GUI (or text) screens.

◆ ◆ ◆ CHAPTER 4

AIX Installation

This chapter covers the following topics as they apply to an AIX installation of Message Queue 4.3:

Hardware Requirements

In order to install Message Queue 4.3, your AIX system should satisfy the minimum hardware requirements shown in Table 4–1. See "Supported Platforms and Components" on page 20 for information on software requirements.

TABLE 4–1 Minimum Hardware Requirements for AIX Installation

Component	Minimum Requirements[1]
CPU	PowerPC_POWER5
RAM	256 MB (2 GB recommended for high-availability or high-volume deployments)
Disk space	Compressed installation (`.zip`) file: approximately 23 MB Temporary working directory (for extracting installation files): approximately 29 MB Installed product: approximately 30 MB. More space may be needed if broker stores persistent messages locally.

[1] This is the hardware configuration used for testing. A lesser system might also be adequate.

Installation Procedure

You can run the Message Queue Installer in either of two modes:

- In *GUI (graphical user interface) mode,* the Installer presents a series of graphical screens with which you interact using mouse clicks and keyboard text entry.
- In *silent mode,* the Installer operates from a predefined *answer file* representing your responses to the GUI screens. This allows you to script the installation process in advance and then perform it in batch mode without actually displaying the GUI screens and responding to them interactively.

The following sections describe each of these two modes of Installer operation.

Installing in GUI Mode

The following procedure shows how to use the Message Queue Installer in GUI mode to install the Message Queue 4.3 product on your AIX system.

▼ To Install Message Queue in GUI Mode

1 Create a temporary directory.

From your system's command line, enter the command

```
$ mkdir tempDir
```

where *tempDir* is any name you choose for your temporary directory.

2 Download the Message Queue Installer to the temporary directory.

The Installer is available for download from the Message Queue product Web site at

`http://www.sun.com/software/products/message_queue`

It is distributed as a compressed archive (`.zip`) file named

```
mq4_3-installer-AIX.zip
```

3 Go to the temporary directory.

Enter the following command:

```
$ cd tempDir
```

where *tempDir* is the temporary directory to which you downloaded the Installer in step 3.

4 Decompress the Installer archive.

Enter the following command:

```
$ unzip mq4_3-installer-AIX.zip
```

This creates a subdirectory named

```
mq4_3-installer
```

containing the files needed for Message Queue 4.3 installation.

5 Switch to the Installer subdirectory.

Enter the following command:

```
$ cd mq4_3-installer
```

6 Start the Installer.

Enter the following command:

```
$ installer
```

Note – The `installer` command requires that a JDK or JRE be specified, either by using the `JAVA_HOME` environment variable or by using the `-j` option on the command line, as follows:

```
$ installer -j JDK/JRE-path
```

where *JDK/JRE-path* is the path of the specified JDK or JRE.

The Installer's Welcome screen (Figure 4–1) appears.

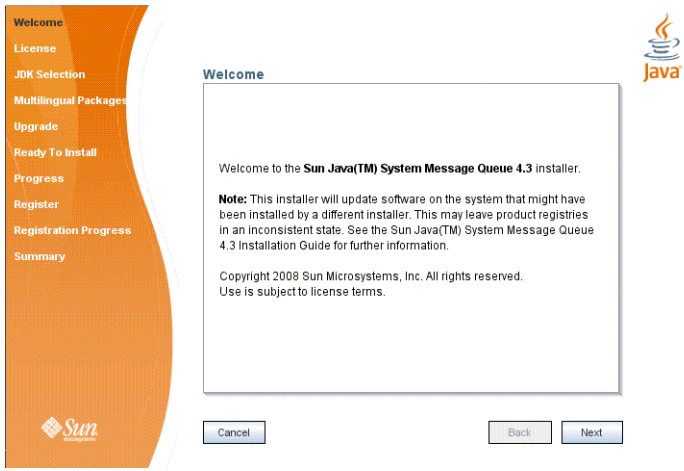

FIGURE 4–1 Installer Welcome Screen

7 Click the Next button.

The Installer's License screen (Figure 4–2) appears.

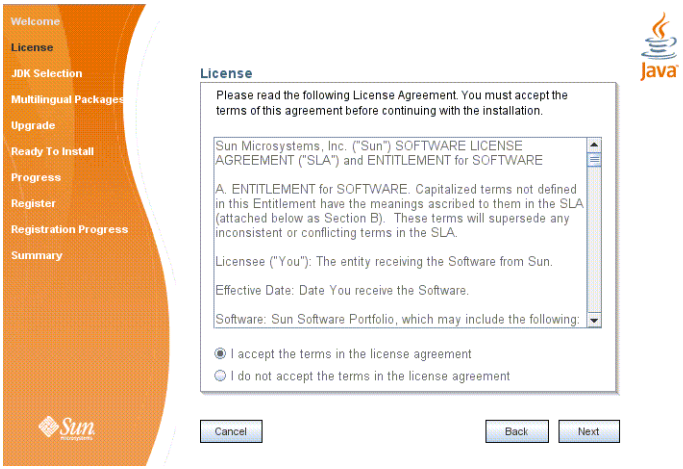

FIGURE 4–2 Installer License Screen

8 Read and accept the product license agreement.

Installation and use of the Message Queue product are subject to your acceptance of the license agreement. You must read and accept the terms of the license agreement before installing the product.

a. Read the product license agreement.

b. Make sure the radio button labeled "I accept the terms in the license agreement" is selected.

If you instead select "I do not accept the terms in the license agreement," the Next button becomes disabled. You cannot proceed with installation without accepting the license terms.

c. Click the Next button.

The Installer's Install Home screen (Figure 4–3) appears.

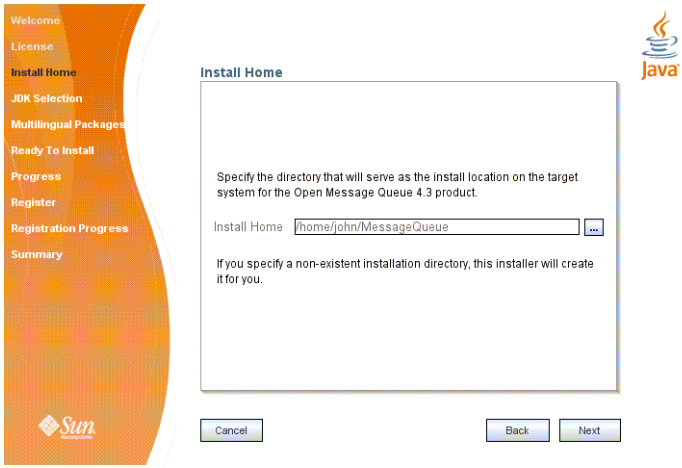

FIGURE 4–3 Installer Install Home Screen

9 Specify the directory in which to install Message Queue.

a. Provide the location of the installation home directory.

Enter the path to the installation home directory in the text field, or use the button marked with an ellipsis (…) to browse to it interactively.

Note – If you enter a path to a directory that does not exist on your system, the Installer will create the directory for you automatically.

---

b. Click the Next button.

The Installer's JDK Selection screen (Figure 4–4) appears.

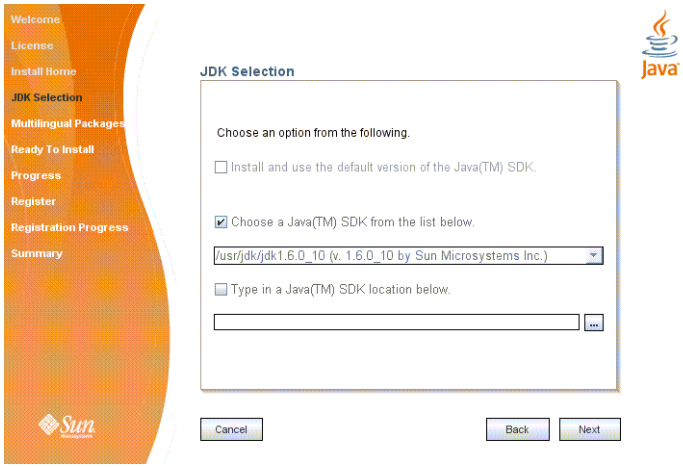

FIGURE 4–4 Installer JDK Selection Screen

10 Specify the version of the Java SDK for Message Queue to use.

a. Select a Java SDK.

You can do this in either of two ways:

- **Choose an SDK already installed on your system.**

  The drop-down menu under the option "Choose a Java™ SDK from the list below" lists existing SDKs found in standard locations on your system. You can use this option to specify one of these SDKs for Message Queue to use.

- **Provide an explicit path to an existing SDK.**

  To use an SDK from a location other than the standard ones, enter its path in the text field under the option "Type in a Java SDK location below," or use the button marked with an ellipsis (…) to browse to it interactively.

Note – The third option in the JDK Selection screen, "Install and use the default version of the Java SDK," is intended for use on other platforms; it is disabled and unavailable for AIX installation.

Tip – After installation is complete, you can check which version of the Java runtime Message Queue is using with the command

```
imqbrokerd  -version
```

---

b. Click the Next button.

The Installer's Multilingual Packages screen (Figure 4–5) appears.

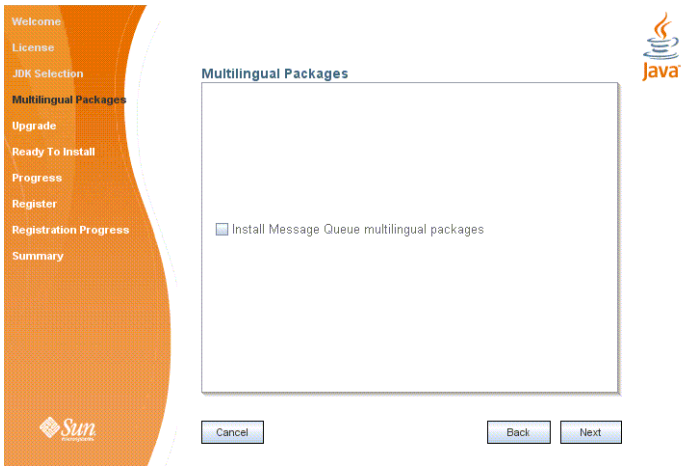

FIGURE 4–5 Installer Multilingual Packages Screen

11 Specify whether to install multilingual packages.

By default, Message Queue is installed to operate in the English language only. The Multilingual Packages screen allows you to install it for use in another language.

a. If you will be using Message Queue in a language other than English, select the checkbox labeled "Install Message Queue multilingual packages."

If you will be using Message Queue only in English, leave this checkbox deselected.

Caution – If you choose not to install the multilingual packages and later decide that you do need them after all, there is no convenient way to install them incrementally: you will have to uninstall Message Queue and then repeat the entire installation procedure with the multilingual packages selected. Before proceeding to install without the multilingual packages, be sure you will not be needing them in the future.

b. Click the Next button.

The Installer's Ready screen (Figure 4–6) appears.

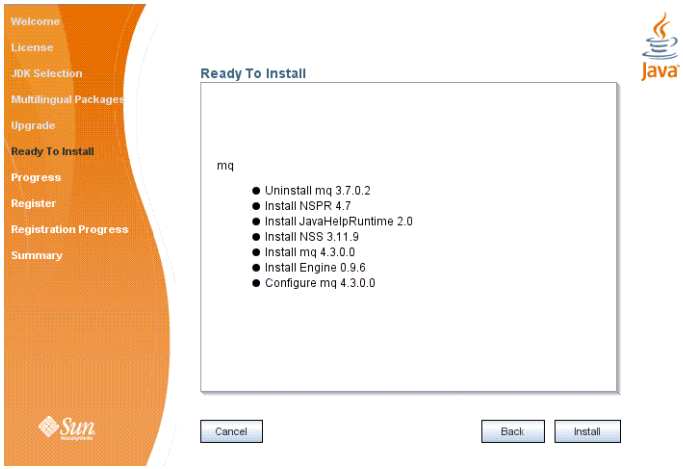

FIGURE 4–6 Installer Ready Screen

12 Click Install to begin the installation.

The Installer's Progress screen (Figure 4–7) appears, tracking the progress of the installation as it proceeds.

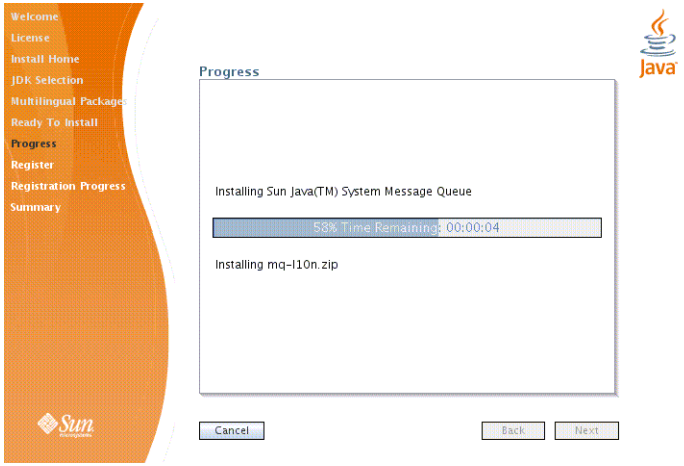

FIGURE 4–7 Installer Progress Screen

When installation is complete, the Installer's Sun Connection Registration screen (Figure 4–8) appears.

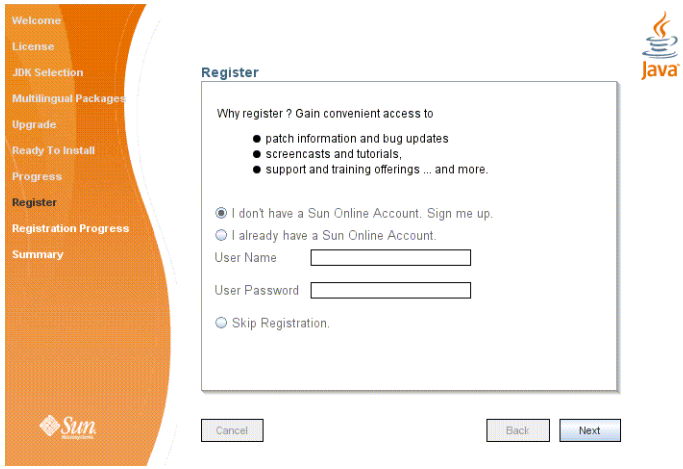

FIGURE 4–8 Sun Connection Registration Screen

13 Register Message Queue with Sun Connection.

Sun Connection is a Sun-hosted service that helps you track, organize, and maintain Sun hardware and software. When you register a Message Queue installation with Sun Connection, information such as the release version, host name, operating system, installation date, and other such basic information is securely transmitted to the Sun Connection database. The Sun Connection inventory service can help you organize your Sun hardware and software, while the update service can inform you of the latest available security fixes, recommended updates, and feature enhancements.

Registration requires that you have a Sun Online account or create one. If you do not already have an account, the installer provides the following screen (Figure 4–9) for creating a Sun Online account:

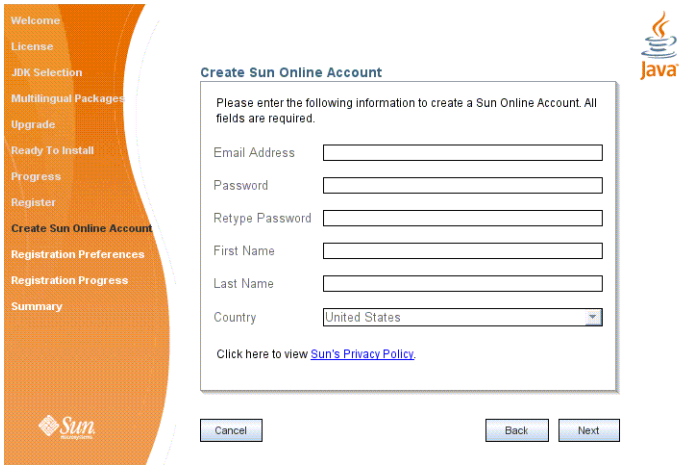

FIGURE 4–9 Create Sun Online Account Screen

Note – If you choose not to register Message Queue during installation, you can subsequently register Message Queue by running the installer in register-only mode, as follows:

```
$ installer -r
```

The register-only mode requires that Message Queue 4.3 already be installed and will display only the installer screens related to registration.

When Sun Connection registration is complete, the Installer's Summary screen (Figure 4–10) appears, summarizing the steps that were performed during installation.

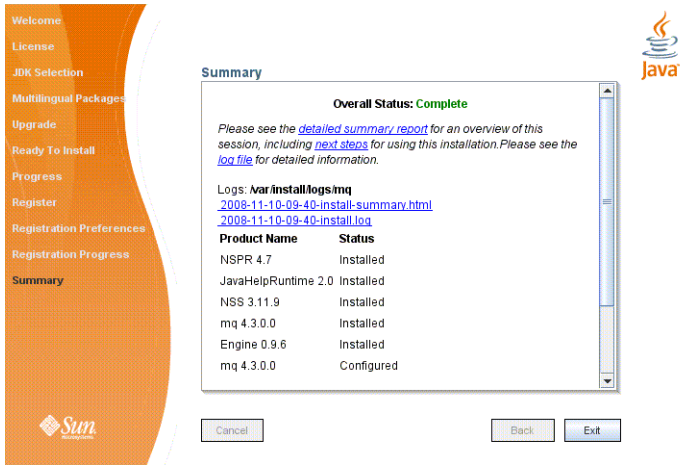

FIGURE 4–10 Installer Summary Screen

You can click the links on this screen for a detailed summary report and a log file giving more details on the installation.

14 Click the Exit button to dismiss the Summary screen.

Message Queue installation is now complete.

Tip – After installation is complete, you can check that the expected version of Message Queue has been installed by navigating to the *mqInstallHome*`/mq/bin` directory and executing the command

```
$ imqbrokerd -version
```

The output from this command identifies the versions of Message Queue and the Java SDK that are installed on your system.

Installing in Silent Mode

In *silent mode,* the Installer operates from a predefined *answer file* representing your responses to the GUI screens. This allows you to script the installation process in advance and then perform it in batch mode without actually displaying the GUI screens and responding to them interactively.

To create an answer file, start the Installer with the `-n` option:

```
$ installer -n answerFile
```

where *answerFile* identifies the file in which to record your responses. This causes the Installer to execute a "dry run," presenting the sequence of GUI screens without actually performing the installation. Your input responses are recorded in the specified answer file. You can then perform the installation at a later time by starting the Installer with the `-s` ("silent") option, specifying the same answer file:

```
$ installer -s -a answerFile
```

This performs a silent installation as defined by the answer file, without visibly displaying the GUI screens.

Manually Configuring the Java Runtime Environment

The Message Queue Installer's JDK Selection screen is not the only way to specify a version of the Java Runtime Environment for Message Queue to use. The JRE used by the Message Queue command line utilities (`imqadmin`, `imqbrokerd`, `imqcmd`, `imqobjmgr`, `imqdbmgr`, `imqusermgr`, `imqkeytool`) is determined by the following sources, in order of precedence:

1. The `-jrehome` or `-javahome` command line option to the `imqbrokerd` command. (If both are specified, the one occurring last on the command line takes precedence).
2. The J2SE file location specified in the `jdk.env` file. (This file is deprecated, but is still supported for backward compatibility. For historical reasons, it has higher priority than anything else except option 1.)
3. The `IMQ_JAVAHOME` environment variable.
4. The environment variable `IMQ_DEFAULT_JAVAHOME` in the `imqenv.conf` file.
5. The system default locations, as specified in the documentation for your platform.

To check which version of the Java runtime Message Queue will use, enter the following command:

```
$ imqbrokerd -version
```

The output from this command includes the version and pathname of the configured JRE: for example,

```
Java Runtime: 1.5.0_12 Sun Microsystems Inc. C:\Program Files\Java\jdk1.5.0\jre
```

When you specify a JRE location through the Installer's JDK Selection screen, the Installer saves that location as the value of `IMQ_DEFAULT_JAVAHOME` in the `imqenv.conf` file (option 4 in the list above). On AIX, this file is located by default at

mqInstallHome`/etc/mq/imqenv.conf`

After a successful Message Queue installation, it should include something like the following:

```
IMQ_DEFAULT_JAVAHOME=/usr/java5
```

You can override this setting, however, either by editing the `imqenv.conf` file or by setting one of the other options higher in the list. This can be useful, for instance, for testing or reconfiguring the broker when a newer JRE version becomes available. Understanding how the JRE is determined can also help in troubleshooting problems. For instance, if the `imqbrokerd -version` command shows that Message Queue is using an unexpected JRE, it may be that one of the higher-precedence options has been set inadvertently (such as by an old `jdk.env` file that should have been deleted).

Installed Directory Structure

Table 4–2 shows the installed directory structure for Message Queue 4.3 on the AIX platform. Paths shown are relative to the Message Queue installation home directory, denoted by the directory variable *mqInstallHome*. This is the directory you specify to the Message Queue Installer in step 9 of the procedure "To Install Message Queue in GUI Mode" on page 78 (by default, *home-directory*`/MessageQueue`).

TABLE 4–2 Installed Directory Structure (AIX)

Directory	Contents
mqInstallHome`/mq/bin` (`IMQ_HOME/bin`)	Executable files for Message Queue administration tools: ■ Administration Console (`imqadmin`) ■ Broker utility (`imqbrokerd`) ■ Command utility (`imqcmd`) ■ Object Manager utility (`imqobjmgr`) ■ Database Manager utility (`imqdbmgr`) ■ User Manager utility (`imqusermgr`) ■ Key Tool utility (`imqkeytool`) ■ Message Queue uninstall script (`nquninstall`) All executable files have the filename extension `.exe`. This directory also includes other executables (`imqbrokersvc`).

TABLE 4–2 Installed Directory Structure (AIX) *(Continued)*

Directory	Contents
mqInstallHome/mq/lib (IMQ_HOME/lib)	Support files for Message Queue Java client runtime: ■ .jar files for building and running Java Message Service (JMS) client applications ■ .rar files for JMS Resource Adapter ■ .war files for HTTP servlet and Universal Message Service (UMS) deployment ■ Support files for Message Queue tools and processes ■ Support libraries for C client applications **Note –** See "Component Dependencies" in *Sun Java System Message Queue 4.3 Release Notes* for the versions of Netscape Portable Runtime (NSPR) and Network Security Services (NSS) needed to support the C API.
mqInstallHome/mq/lib/props (IMQ_HOME/lib/props)	Broker's default configuration files
mqInstallHome/mq/lib/ext (IMQ_HOME/lib/ext)	.jar or .zip files to be added to broker's CLASSPATH environment variable Typically used for configuring JDBC-based persistence or Java Authentication and Authorization Service (JAAS) login modules.
mqInstallHome/mq/lib/images (IMQ_HOME/lib/images)	Administration GUI image files
mqInstallHome/mq/lib/help (IMQ_HOME/lib/help)	Administration GUI help files
mqInstallHome/mq/javadoc (IMQ_HOME/javadoc)	Message Queue and JMS API documentation in JavaDoc format
mqInstallHome/mq/examples (IMQ_HOME/examples)	Example Java client applications
mqInstallHome/mq/examples/C (IMQ_HOME/examples/C)	Example C client applications
mqInstallHome/mq/include (IMQ_HOME/include)	Header files to support C client applications
mqInstallHome/var/mq (IMQ_VARHOME)	Message Queue working storage
mqInstallHome/var/mq/instances (IMQ_VARHOME/instances)	Configuration properties, file-based persistent data stores, log files, flat-file user repositories, and access control properties files for individual broker instances

TABLE 4–2 Installed Directory Structure (AIX) *(Continued)*

Directory	Contents
mqInstallHome/etc/mq	Message Queue configuration files, instance template files, sample password file, and so forth
mqInstallHome/var/install	Message Queue installer implementation, required jar files, and installer log files
mqInstallHome/var/install/contents/mq	Message Queue uninstall script
mqInstallHome/install	Message Queue files needed by installer and uninstaller

Uninstallation Procedure

Like the Installer, the Message Queue Uninstaller can be run in any of three modes of operation:

- In *GUI (graphical user interface) mode,* the Uninstaller presents a series of graphical screens with which you interact using mouse clicks and keyboard text entry.
- In *silent mode,* the Uninstaller operates from a predefined *answer file* representing your responses to the GUI screens. This allows you to script the uninstallation process in advance and then perform it in batch mode without actually displaying the GUI (or text) screens and responding to them interactively.

The following sections describe each of these three modes of Uninstaller operation.

Caution – The Message Queue installation includes several scripts and executables named `uninstaller`, both in the Installer `.zip` bundle and on your system after installation. To uninstall Message Queue 4.3, it is important that you run the correct `uninstaller` executable, located at

mqInstallHome`/var/opt/sun/install/contents/mq/uninstaller`

where *mqInstallHome* is the installation home directory you specified when you installed Message Queue (by default, *home-dir*`/Message Queue`). Be careful not to invoke some other uninstaller by mistake.

Uninstalling in GUI Mode

The following procedure shows how to use the Message Queue Uninstaller in GUI mode to uninstall Message Queue 4.3 from your AIX system.

▼ To Uninstall Message Queue in GUI Mode

1 **Set your working directory to the directory containing the Uninstaller.**

From your system's command line, enter the command

```
$ cd mqInstallHome/var/opt/sun/install/contents/mq
```

2 **Start the Uninstaller.**

Enter the command

```
$ uninstaller
```

The Uninstaller's Ready screen (Figure 4–11) appears.

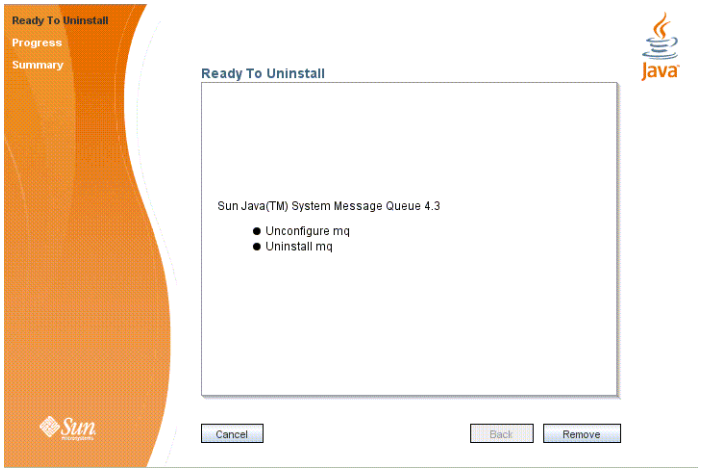

FIGURE 4–11 Uninstaller Ready Screen

3 **Click the Remove button.**

The Uninstaller's Progress screen (Figure 4–12) appears.

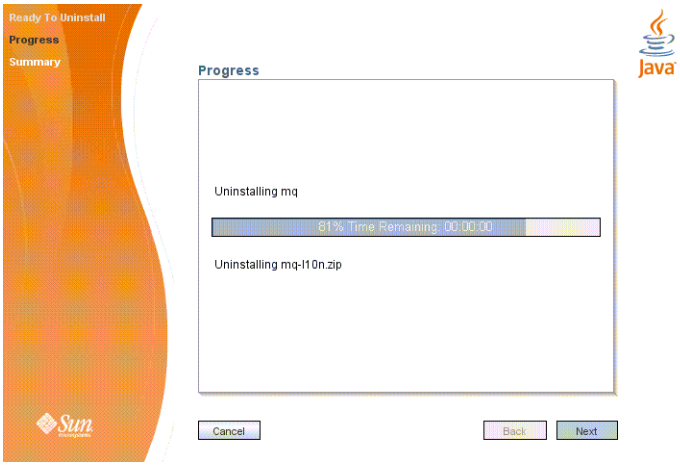

FIGURE 4–12 Uninstaller Progress Screen

When uninstallation is complete, the Uninstaller's Summary screen (Figure 4–13) appears, summarizing the steps that were performed during uninstallation. You can click the links on this screen for a detailed summary report and a log file giving more details on the uninstallation.

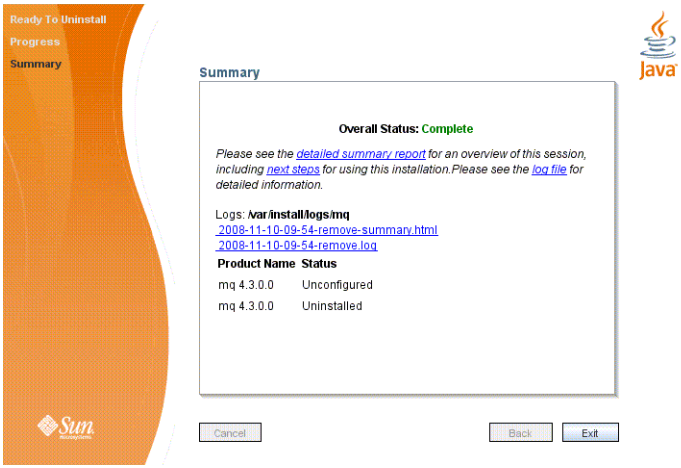

FIGURE 4–13 Uninstaller Summary Screen

4 Click the Exit button to dismiss the Summary screen.

Message Queue uninstallation is now complete.

Uninstalling in Silent Mode

In *silent mode,* the Uninstaller operates from a predefined *answer file* representing your responses to the GUI screens. This allows you to script the uninstallation process in advance and then perform it in batch mode without actually displaying the GUI screens and responding to them interactively. To create an answer file, start the Uninstaller with the `-n` option:

```
$ uninstaller -n answerFile
```

where *answerFile* identifies the file in which to record your responses. This causes the Uninstaller to execute a "dry run," presenting the sequence of GUI screens without actually performing the uninstallation. Your input responses are recorded in the specified answer file. You can then perform the uninstallation at a later time by starting the Uninstaller with the `-s` ("silent") option, specifying the same answer file:

```
$ uninstaller -s -a answerFile
```

This performs a silent uninstallation as defined by the answer file, without visibly displaying the GUI (or text) screens.

◆ ◆ ◆ CHAPTER 5

Windows Installation

This chapter covers the following topics as they apply to a Windows installation of Message Queue 4.3:

Hardware Requirements

In order to install Message Queue 4.3, your Windows system should satisfy the minimum hardware requirements shown in Table 5–1. See "Supported Platforms and Components" on page 20 for information on software requirements.

TABLE 5–1 Minimum Hardware Requirements for Windows Installation

Component	Minimum Requirements
CPU	Intel Pentium 3
RAM	256 MB (2 GB recommended for high-availability or high-volume deployments)
Disk space	Compressed installation (`.zip`) file: approximately 45 MB Temporary working directory (for extracting installation files): approximately 87 MB Installed product: approximately 26 MB. More space may be needed if broker stores persistent messages locally.

Upgrading from Previous Versions

It is not possible on the Windows platform to upgrade directly to Message Queue 4.3 from an earlier Message Queue version, but you can either uninstall the earlier version or install Message Queue 4.3 side by side with it at a different location in your file system. See "Upgrade Issues" on page 21 for details on how to preserve data from such a previous installation.

Caution – The Message Queue 4.3 Installer does not share the same product registry with other installers, such as those of the Sun Java™ Enterprise System (JES) and Sun Java System Application Server, which include Message Queue as a component. The Message Queue Installer also installs or upgrades shared software components that Message Queue depends on, such as the Java Software Development Kit (SDK), Netscape Portable Runtime (NSPR), Network Security Services (NSS), and JavaHelp. Using this Installer to upgrade an earlier version of Message Queue that was installed with another installer may upgrade such shared components without correctly updating their version numbers in the other installer's product registry, leaving that registry in an inconsistent state.

If you later run the other installer, the inconsistent registry entries may in turn cause that installer to inadvertently remove Message Queue 4.3. The safest and cleanest way to upgrade an earlier version of Message Queue that was installed with a different installer is as follows:

1. Use the other installer's uninstaller to remove Message Queue.
2. Use the Message Queue 4.3 Installer to install Message Queue 4.3.

Installation Procedure

You can run the Message Queue Installer in either of two modes:

- In *GUI (graphical user interface) mode,* the Installer presents a series of graphical screens with which you interact using mouse clicks and keyboard text entry.
- In *silent mode,* the Installer operates from a predefined *answer file* representing your responses to the GUI screens. This allows you to script the installation process in advance and then perform it in batch mode without actually displaying the GUI screens and responding to them interactively.

The following sections describe each of these two modes of Installer operation.

Installing in GUI Mode

The following procedure shows how to use the Message Queue Installer in GUI mode to install the Message Queue 4.3 product on your Windows system.

To Install Message Queue in GUI Mode

1 **Download the Message Queue Installer.**

The Installer is available for download from the Message Queue product Web site at

`http://www.sun.com/software/products/message_queue`

It is distributed as a compressed archive (`.zip`) file named

```
mq4_3-installer-WINNT.zip
```

2 **Decompress the Installer archive.**

a. **Right-click on the `mq4_3-installer-WINNT.zip` file and choose Extract All from the context menu.**

The Windows Extraction Wizard opens.

b. **Follow the steps in the Extraction Wizard.**

This creates a folder named

```
mq4_3-installer
```

containing the files needed for Message Queue 4.3 installation.

3 **Open the Installer folder.**

Double-click on the `mq4_3-installer` folder to open it in Windows Explorer.

4 **Start the Installer.**

Locate the Installer executable (a VBS script) and double-click to launch it. The Installer's Welcome screen (Figure 5–1) appears.

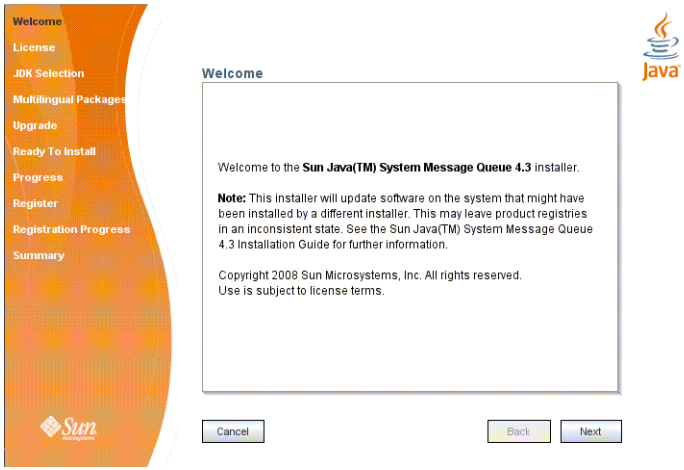

FIGURE 5–1 Installer Welcome Screen

5 Click the Next button.

The Installer's License screen (Figure 5–2) appears.

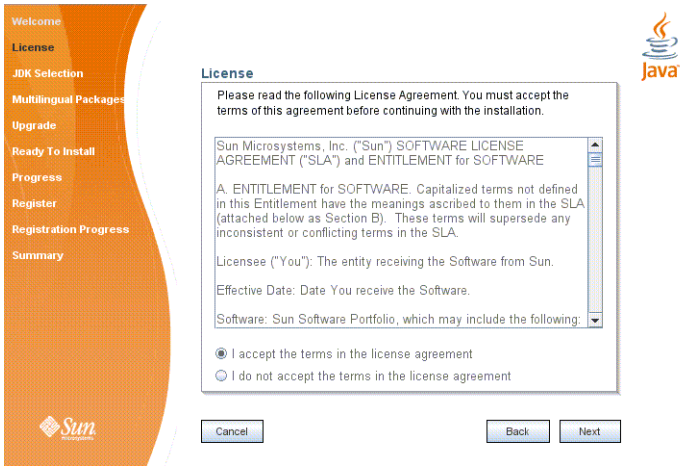

FIGURE 5–2 Installer License Screen

6 Read and accept the product license agreement.

Installation and use of the Message Queue product are subject to your acceptance of the license agreement. You must read and accept the terms of the license agreement before installing the product.

a. Read the product license agreement.

b. Make sure the radio button labeled "I accept the terms in the license agreement" is selected.

If you instead select "I do not accept the terms in the license agreement," the Next button becomes disabled. You cannot proceed with installation without accepting the license terms.

c. Click the Next button.

The Installer's Install Home screen (Figure 5–3) appears.

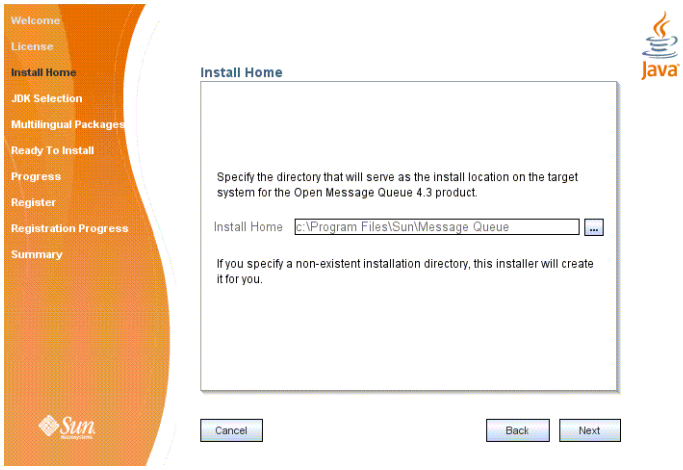

FIGURE 5–3 Installer Install Home Screen

7 Specify the home directory in which to install Message Queue.

a. Provide the location of the installation home directory.

Enter the path to the installation home directory in the text field, or use the button marked with an ellipsis (…) to browse to it interactively.

Note – If you enter a path to a directory that does not exist on your system, the Installer will create the directory for you automatically.

---

b. Click the Next button.

The Installer's JDK Selection screen (Figure 5–4) appears.

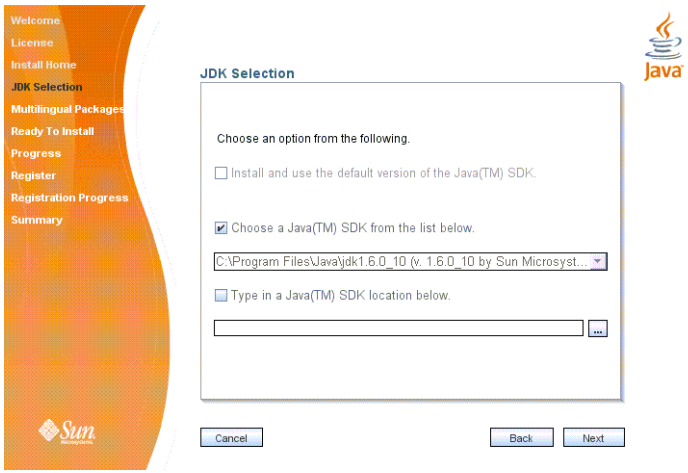

FIGURE 5–4 Installer JDK Selection Screen

8 Specify the version of the Java SDK for Message Queue to use.

a. Select a Java SDK.

You can do this in either of two ways:

- **Choose an SDK already installed on your system.**

  The drop-down menu under the option "Choose a Java SDK from the list below" lists existing SDKs found in standard locations on your system. You can use this option to specify one of these SDKs for Message Queue to use.

- **Provide an explicit path to an existing SDK.**

  To use an SDK from a location other than the standard ones, enter its path in the text field under the option "Type in a Java SDK location below," or use the button marked with an ellipsis (…) to browse to it interactively.

Note – The third option in the JDK Selection screen, "Install and use the default version of the Java SDK," is intended for use on other platforms; it is disabled and unavailable for Windows installation.

Tip – After installation is complete, you can check which version of the Java runtime Message Queue is using with the command

```
imqbrokerd  -version
```

b. Click the Next button.

The Installer's Multilingual Packages screen (Figure 5–5) appears.

FIGURE 5–5 Installer Multilingual Packages Screen

9 Specify whether to install multilingual packages.

By default, Message Queue is installed to operate in the English language only. The Multilingual Packages screen allows you to install it for use in another language.

a. If you will be using Message Queue in a language other than English, select the checkbox labeled "Install Message Queue multilingual packages."

If you will be using Message Queue only in English, leave this checkbox deselected.

Caution – If you choose not to install the multilingual packages and later decide that you do need them after all, there is no convenient way to install them incrementally: you will have to uninstall Message Queue and then repeat the entire installation procedure with the multilingual packages selected. Before proceeding to install without the multilingual packages, be sure you will not be needing them in the future.

b. Click the Next button.

The Installer's Ready screen (Figure 5–6) appears.

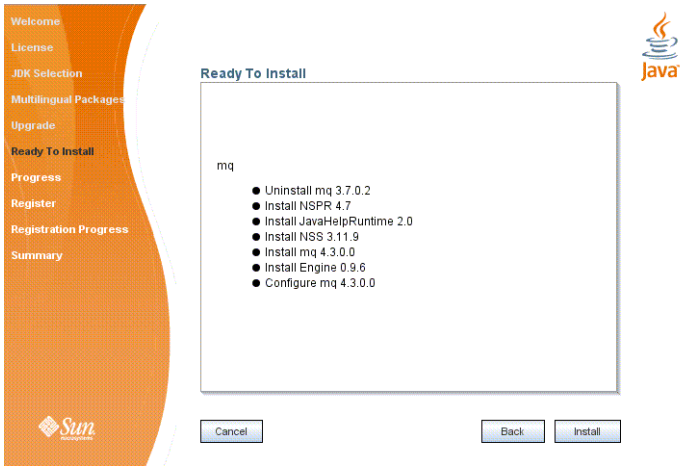

FIGURE 5–6 Installer Ready Screen

10 Click Install to begin the installation.

The Installer's Progress screen (Figure 5–7) appears, tracking the progress of the installation as it proceeds.

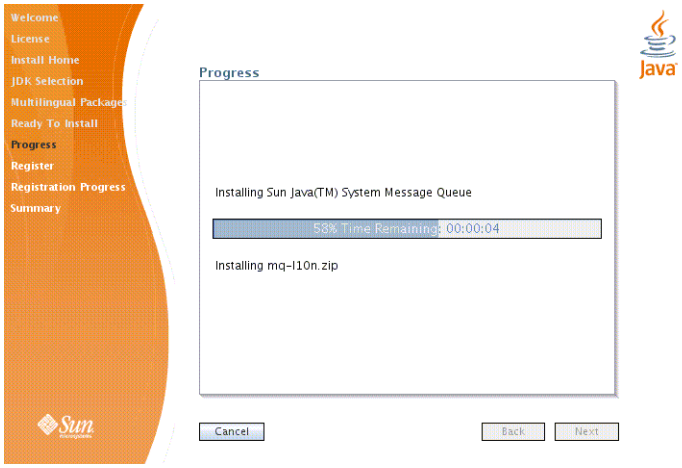

FIGURE 5–7 Installer Progress Screen

When installation is complete, the Installer's Sun Connection Registration screen (Figure 5–8) appears.

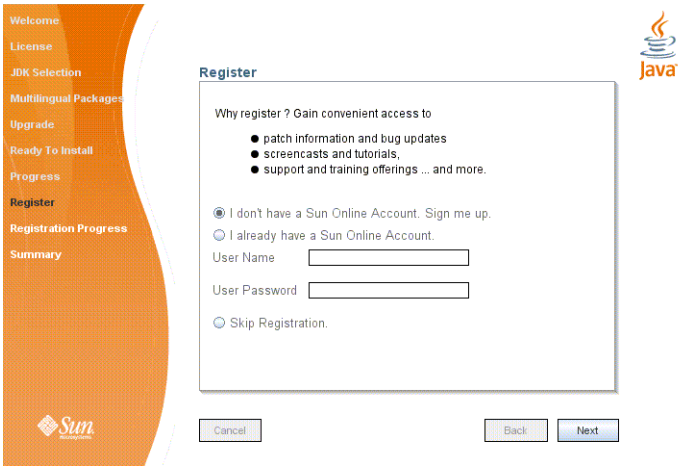

FIGURE 5–8 Sun Connection Registration Screen

11 Register Message Queue with Sun Connection.

Sun Connection is a Sun-hosted service that helps you track, organize, and maintain Sun hardware and software. When you register a Message Queue installation with Sun Connection, information such as the release version, host name, operating system, installation date, and other such basic information is securely transmitted to the Sun Connection database. The Sun Connection inventory service can help you organize your Sun hardware and software, while the update service can inform you of the latest available security fixes, recommended updates, and feature enhancements.

Registration requires that you have a Sun Online account or create one. If you do not already have an account, the installer provides the following screen (Figure 5–9) for creating a Sun Online account:

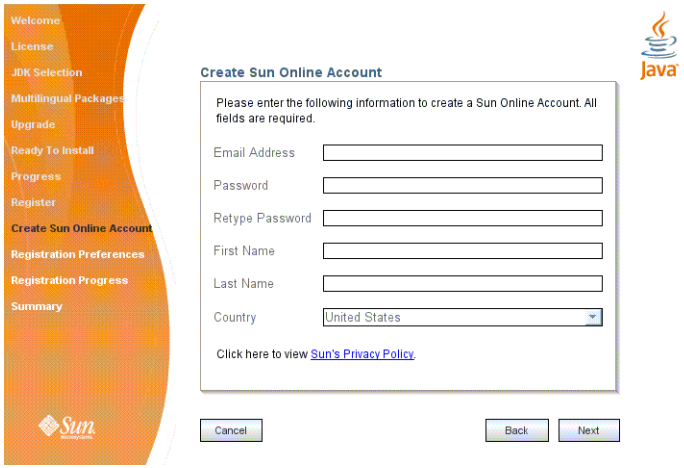

FIGURE 5–9 Create Sun Online Account Screen

Note – If you choose not to register Message Queue during installation, you can subsequently register Message Queue by running the installer in register-only mode, as follows:

```
# installer -r
```

The register-only mode requires that Message Queue 4.3 already be installed and will display only the installer screens related to registration.

When Sun Connection registration is complete, the Installer's Summary screen (Figure 5–10) appears, summarizing the steps that were performed during installation.

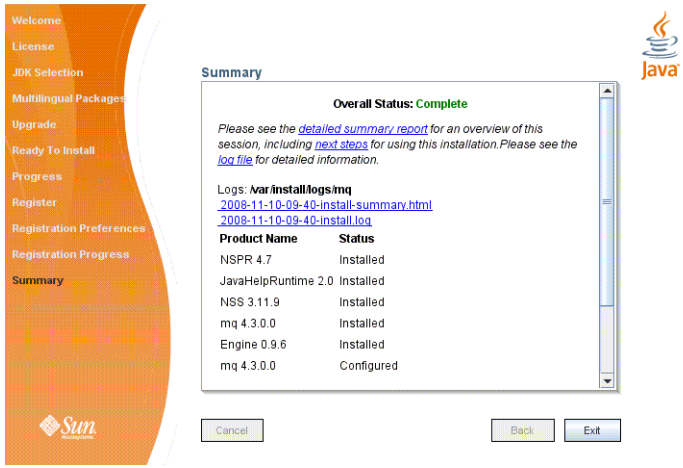

FIGURE 5–10 Installer Summary Screen

You can click the links on this screen for a detailed summary report and a log file giving more details on the installation.

12 Click the Exit button to dismiss the Summary screen.

Message Queue installation is now complete.

Tip – After installation is complete, you can check that the expected version of Message Queue has been installed by navigating to the *mqInstallHome*`\mq\bin` directory and executing the following command:

```
imqbrokerd  -version
```

The output from this command identifies the versions of Message Queue and the Java SDK that are installed on your system.

Installing in Silent Mode

In *silent mode,* the Installer operates from a predefined *answer file* representing your responses to the GUI screens. This allows you to script the installation process in advance and then perform it in batch mode without actually displaying the GUI screens and responding to them interactively.

To create an answer file, start the Installer with the `-n` option:

```
installer  -n answerFile
```

where *answerFile* identifies the file in which to record your responses. This causes the Installer to execute a "dry run," presenting the sequence of GUI screens without actually performing the installation. Your input responses are recorded in the specified answer file. You can then perform the installation at a later time by starting the Installer with the `-s` ("silent") option, specifying the same answer file:

```
installer  -s  -a answerFile
```

This performs a silent installation as defined by the answer file, without visibly displaying the GUI screens.

Manually Configuring the Java Runtime Environment

The Message Queue Installer's JDK Selection screen is not the only way to specify a version of the Java Runtime Environment for Message Queue to use. The JRE used by the Message Queue command line utilities (`imqadmin`, `imqbrokerd`, `imqcmd`, `imqobjmgr`, `imqdbmgr`, `imqusermgr`, `imqkeytool`) is determined by the following sources, in order of precedence:

1. The `-jrehome` or `-javahome` command line option to the `imqbrokerd` command. (If both are specified, the one occurring last on the command line takes precedence).
2. The J2SE file location specified in the `jdk.env` file. (This file is deprecated, but is still supported for backward compatibility. For historical reasons, it has higher priority than anything else except option 1.)
3. The `IMQ_JAVAHOME` environment variable.
4. The environment variable `IMQ_DEFAULT_JAVAHOME` in the `imqenv.conf` file.
5. The system default locations, as specified in the documentation for your platform.

To check which version of the Java runtime Message Queue will use, enter the command

```
imqbrokerd  -version
```

The output from this command includes the version and pathname of the configured JRE: for example,

```
Java Runtime: 1.5.0_12 Sun Microsystems Inc. C:\Program Files\Java\jdk1.5.0\jre
```

When you specify a JRE location through the Installer's JDK Selection screen, the Installer saves that location as the value of `IMQ_DEFAULT_JAVAHOME` in the `imqenv.conf` file (option 4 in the list above). On Windows, this file is located by default at

```
C:\Program Files\Sun\MessageQueue\etc\mq\imqenv.conf
```

After a successful Message Queue installation, it should include something like the following:

```
set IMQ_DEFAULT_JAVAHOME=C:\Program Files\Java\jdk1.5.0_12
```

You can override this setting, however, either by editing the `imqenv.conf` file or by setting one of the other options higher in the list. This can be useful, for instance, for testing or reconfiguring the broker when a newer JRE version becomes available. Understanding how the JRE is determined can also help in troubleshooting problems. For instance, if the `imqbrokerd -version` command shows that Message Queue is using an unexpected JRE, it may be that one of the higher-precedence options has been set inadvertently (such as by an old `jdk.env` file that should have been deleted).

Configuring Message Queue for Automatic Startup

To start a Message Queue message broker automatically at Windows system startup, you must define the broker as a Windows service. The broker will then start at system startup time and run in the background until system shutdown. Consequently, you will not need to use the Message Queue Broker utility (`imqbrokerd`) unless you want to start an additional broker.

To install a broker as a Windows service, use the Message Queue Service Administrator utility:

```
imqsvcadmin install
```

You can use the `imqsvcadmin` command's `-args` option to pass startup arguments to the broker. For more information, see the sections "Automatic Startup on Windows" in Chapter 3, "Starting Brokers and Clients," and "Service Administrator Utility" in Chapter 13, "Command Line Reference," of the *Message Queue Administration Guide.*

Installed Directory Structure

Table 5–2 shows the installed directory structure for Message Queue 4.3 on the Windows platform. Paths shown are relative to the Message Queue installation home directory, denoted by the directory variable *mqInstallHome*. This is the directory you specify to the Message Queue Installer in step 7 of the procedure "To Install Message Queue in GUI Mode" on page 97, above (by default, `C:\Program Files\Sun\MessageQueue`).

TABLE 5–2 Installed Directory Structure (Windows)

Directory	Contents
mqInstallHome\mq\bin (IMQ_HOME\bin)	Executable files for Message Queue administration tools: ■ Administration Console (imqadmin) ■ Broker utility (imqbrokerd) ■ Command utility (imqcmd) ■ Object Manager utility (imqobjmgr) ■ Database Manager utility (imqdbmgr) ■ User Manager utility (imqusermgr) ■ Key Tool utility (imqkeytool) ■ Message Queue uninstall script (nquninstall) All executable files have the filename extension .exe. This directory also includes other executables (imqbrokersvc).
mqInstallHome\mq\lib (IMQ_HOME\lib)	Support files for Message Queue Java client runtime: ■ .jar files for building and running Java Message Service (JMS) client applications ■ .rar files for JMS Resource Adapter ■ .war files for HTTP servlet and Universal Message Service (UMS) deployment ■ Support files for Message Queue tools and processes ■ Support libraries for C client applications **Note –** See "Component Dependencies" in *Sun Java System Message Queue 4.3 Release Notes* for the versions of Netscape Portable Runtime (NSPR) and Network Security Services (NSS) needed to support the C API.
mqInstallHome\mq\lib\props (IMQ_HOME\lib\props)	Broker's default configuration files
mqInstallHome\mq\lib\ext (IMQ_HOME\lib\ext)	.jar or .zip files to be added to broker's CLASSPATH environment variable Typically used for configuring JDBC-based persistence or Java Authentication and Authorization Service (JAAS) login modules.
mqInstallHome\mq\lib\images (IMQ_HOME\lib\images)	Administration GUI image files
mqInstallHome\mq\lib\help (IMQ_HOME\lib\help)	Administration GUI help files
mqInstallHome\mq\javadoc (IMQ_HOME\javadoc)	Message Queue and JMS API documentation in JavaDoc format

TABLE 5–2 Installed Directory Structure (Windows) *(Continued)*

Directory	Contents
mqInstallHome\mq\examples (IMQ_HOME\examples)	Example Java client applications
mqInstallHome\mq\examples\C (IMQ_HOME\examples\C)	Example C client applications
mqInstallHome\mq\include (IMQ_HOME\include)	Header files to support C client applications
mqInstallHome\var\mq (IMQ_VARHOME)	Message Queue working storage
mqInstallHome\var\mq\instances (IMQ_VARHOME\instances)	Configuration properties, file-based persistent data stores, log files, flat-file user repositories, and access control properties files for individual broker instances
mqInstallHome\etc\mq	Message Queue configuration files, instance template files, sample password file, and so forth
mqInstallHome\var\install	Message Queue installer implementation, required jar files, and installer log files
mqInstallHome\var\install\contents\mq	Message Queue uninstall script
mqInstallHome\install	Message Queue files needed by installer and uninstaller

Uninstallation Procedure

Like the Installer, the Message Queue Uninstaller can be run in either of two modes of operation:

- In *GUI (graphical user interface) mode,* the Uninstaller presents a series of graphical screens with which you interact using mouse clicks and keyboard text entry.
- In *silent mode,* the Uninstaller operates from a predefined *answer file* representing your responses to the GUI screens. This allows you to script the uninstallation process in advance and then perform it in batch mode without actually displaying the GUI screens and responding to them interactively.

The following sections describe each of these three modes of Uninstaller operation.

Caution – The Message Queue installation includes several scripts and executables named `uninstaller`, both in the Installer `.zip` bundle and on your system after installation. To uninstall Message Queue 4.3, it is important that you run the correct `uninstaller` executable, located at

mqInstallHome`\var\install\contents\mq\uninstaller`

where *mqInstallHome* is the installation home directory you specified when you installed Message Queue 4.3 (by default, `C:\Program Files\Sun\MessageQueue`). Be careful not to invoke some other uninstaller by mistake.

Uninstalling in GUI Mode

The following procedure shows how to use the Message Queue Uninstaller in GUI mode to uninstall Message Queue 4.3 from your Windows system.

▼ To Uninstall Message Queue in GUI Mode

1 Start the Windows Command Prompt utility.

Choose Command Prompt from the Programs submenu of the Windows Start menu.

2 Set your working directory to the directory containing the Uninstaller.

Enter the command

`cd` *mqInstallHome*`\var\install\contents\mq`

where *mqInstallHome* is the installation home directory you specified to the Message Queue Installer's Install Home screen in step 7 of the procedure "To Install Message Queue in GUI Mode" on page 97, above.

3 Start the Uninstaller.

Enter the command

`uninstaller`

The Uninstaller's Ready screen (Figure 5–11) appears.

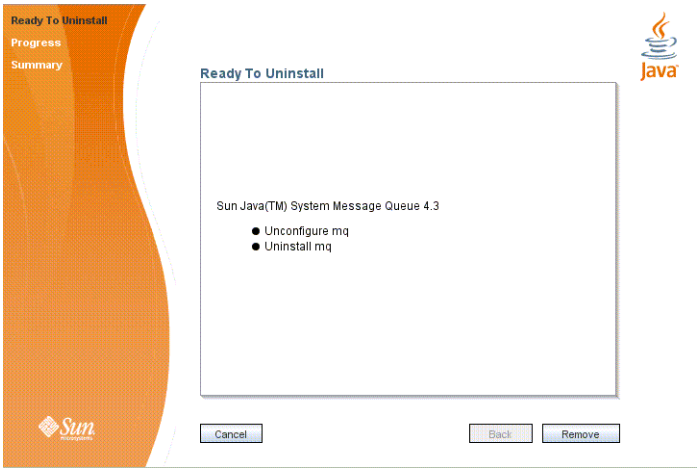

FIGURE 5–11 Uninstaller Ready Screen

4 Click the Remove button.

The Uninstaller's Progress screen (Figure 5–12) appears.

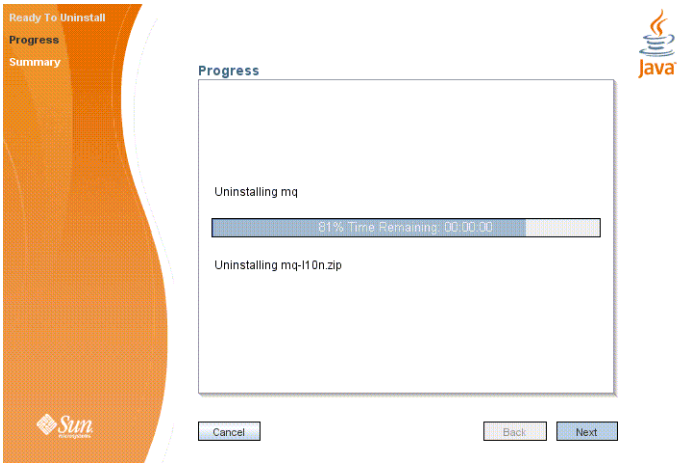

FIGURE 5–12 Uninstaller Progress Screen

When uninstallation is complete, the Uninstaller's Summary screen (Figure 5–13) appears, summarizing the steps that were performed during uninstallation. You can click the links on this screen for a detailed summary report and a log file giving more details on the uninstallation.

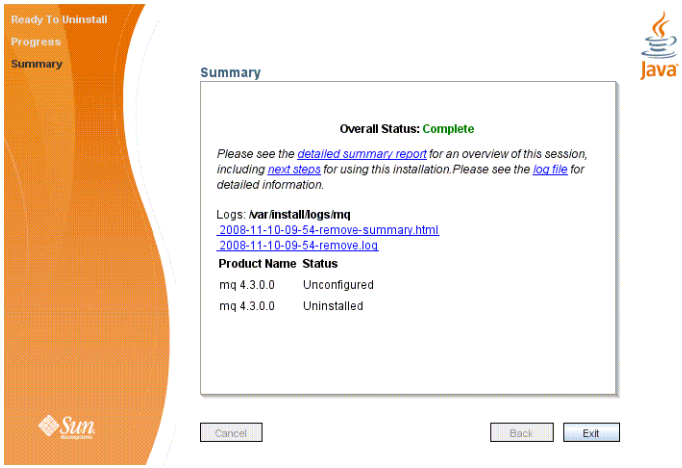

FIGURE 5–13 Uninstaller Summary Screen

5 **Click the Exit button to dismiss the Summary screen.**

Message Queue uninstallation is now complete.

Uninstalling in Silent Mode

In *silent mode,* the Uninstaller operates from a predefined *answer file* representing your responses to the GUI screens. This allows you to script the uninstallation process in advance and then perform it in batch mode without actually displaying the GUI screens and responding to them interactively. To create an answer file, start the Uninstaller with the `-n` option:

```
uninstaller  -n answerFile
```

where *answerFile* identifies the file in which to record your responses. This causes the Uninstaller to execute a "dry run," presenting the sequence of GUI screens without actually performing the uninstallation. Your input responses are recorded in the specified answer file. You can then perform the uninstallation at a later time by starting the Uninstaller with the `-s` ("silent") option, specifying the same answer file:

```
uninstaller  -s  -a answerFile
```

This performs a silent uninstallation as defined by the answer file, without visibly displaying the GUI screens.

◆ ◆ ◆ APPENDIX A

Command Line Options

Table A–1 shows the command line options that can be specified to the Message Queue 4.3 Installer and Uninstaller.

TABLE A–1 Installer and Uninstaller Options

Option	Description
`-n` *answerFile*	Dry run The Installer or Uninstaller will present its sequence of GUI screens (or text screens if the `-t` option is specified) without performing an actual installation or uninstallation. The user's actions will be recorded in the specified answer file for later use.
`-t`	Text mode The Installer or Uninstaller will simulate its GUI screens using plain text displayed directly to the terminal window. Keyboard keys (Tab, Return, arrow keys) can be used in place of the mouse to interact with interface elements.
`-s`	Silent mode The Installer or Uninstaller will perform its operations without direct user interaction, under the control of an answer file (specified with the `-a` option).
`-a` *answerFile*	Answer file In silent mode (`-s` option), the contents of the specified answer file will be used to control the operation of the Installer or Uninstaller.
`-h`	Display usage help