

## **Oracle® Fusion Middleware**

API Gateway Installation and Configuration Guide  
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# Contents

---

1. System Requirements .....	1
Overview .....	1
Operating System Requirements .....	1
Specific Requirements .....	2
Default Ports .....	2
2. Installing the API Gateway Core Server .....	3
Overview .....	3
Prerequisites .....	3
Patching API Gateway 11.1.2.2.0 Core Server .....	3
Installing API Gateway 11.1.2.2.0 Core Server .....	3
Installation Directory .....	3
Select Components .....	4
Domain Connection .....	4
Admin Node Manager Details .....	4
Local Node Manager Details .....	4
Admin Node Manager Connection Details .....	5
Node Manager Service Details .....	5
API Gateway Configuration .....	5
API Gateway Details .....	5
API Gateway Service Details .....	6
Oracle API Gateway Startup .....	6
Ready to Install .....	6
Installing .....	6
Completing the API Gateway Setup .....	6
Starting the API Gateway .....	7
Starting Policy Studio .....	7
Unattended Installation .....	7
Creating a New Domain .....	8
3. Configuring a Managed Domain .....	9
Overview .....	9
Manageddomain Script .....	9
Registering a Host in a Domain .....	10
Creating an API Gateway Instance .....	10
Connecting to an API Gateway Instance .....	11
Managing a Domain in API Gateway Manager .....	11
4. Installing API Gateway Analytics .....	13
Overview .....	13
Prerequisites .....	13
Patching API Gateway Analytics 11.1.2.2.0 .....	13
Installing API Gateway Analytics 11.1.2.2.0 .....	13
Installation Location .....	13
Select Components .....	14
API Gateway Analytics Information .....	14
Ready to Install .....	14
Installing .....	14
Completing the API Gateway Analytics Setup .....	15
Unattended Installation .....	15
Next Steps .....	15
5. Configuring the Database for API Gateway Analytics .....	16
Overview .....	16
Prerequisites .....	16
Adding your JDBC Driver Files .....	16
Creating the Reports Database .....	17

Setting up the Database Tables .....	17
Upgrading Existing Database Tables .....	17
Specifying Options to dbsetup .....	18
SQL Database Schema Scripts .....	19
Next Steps .....	20
6. Configuring API Gateway Analytics .....	21
Overview .....	21
Prerequisites .....	21
Configuring API Gateway Analytics .....	21
Launching API Gateway Analytics .....	23
Further Information .....	24
7. Installing Policy Studio .....	25
Overview .....	25
Prerequisites .....	25
Patching Policy Studio 11.1.2.2.0 .....	25
Installing Policy Studio 11.1.2.2.0 .....	25
Installation Location .....	25
Select Components .....	25
Ready to Install .....	26
Installing .....	26
Completing the Policy Studio Setup .....	26
Ensure the API Gateway is Running .....	26
Starting Policy Studio .....	26
Unattended Installation .....	27
8. Installing API Gateway Explorer .....	28
Overview .....	28
Prerequisites .....	28
Patching API Gateway Explorer 11.1.2.2.0 .....	28
Installing API Gateway Explorer 11.1.2.2.0 .....	28
Installation Location .....	28
Select Components .....	28
Ready to Install .....	29
Installing .....	29
Completing the API Gateway Explorer Setup .....	29
Ensure the API Gateway is Running .....	29
Starting API Gateway Explorer .....	29
Unattended Installation .....	29
9. Installing Configuration Studio .....	31
Overview .....	31
Prerequisites .....	31
Patching Configuration Studio 11.1.2.2.0 .....	31
Installing Configuration Studio 11.1.2.2.0 .....	31
Installation Location .....	31
Select Components .....	32
Ready to Install .....	32
Installing .....	32
Completing the Configuration Studio Setup .....	32
Starting Configuration Studio .....	32
Unattended Installation .....	32
10. Upgrading Configuration from a Previous Version .....	34
Overview .....	34
Prerequisites .....	34
Upgrading to Version 11.1.2.2.0 .....	34
Deploying the Configuration Package .....	35
Upgrading Role-Based Access Control .....	37
Upgrading a Reports Database .....	37
Upgrading API Gateway Analytics .....	37
Further Information .....	38

11. Managedomain Command Reference .....	39
Overview .....	39
Host Management .....	39
API Gateway Management .....	40
Group Management .....	41
Topology Management .....	41
Deployment .....	42
12. License Acknowledgments .....	43
Overview .....	43
Acknowledgments .....	43

# System Requirements

## Overview

This topic provides the system requirements for the Oracle API Gateway, and specific requirements for other components. For more details on API Gateway components, see the *Oracle API Gateway User Guide*.

## Operating System Requirements

This section describes the operating system requirements for the API Gateway:

Platform	Supported Versions	Hardware Prerequisites
<b>Windows</b>	<ul style="list-style-type: none"><li>Windows Server 2008 SP1+</li><li>Windows Server 2003 R2+</li><li>Windows Server 2003 SP2</li><li>Windows XP SP2+</li></ul>	<ul style="list-style-type: none"><li>Supports 32-bit and 64-bit hardware (Win32 mode when running on 64-bit hardware)</li><li>Intel Core or AMD Opteron at 2Ghz with Dual Core or faster</li><li>Minimum 2 GB free disk space, 50 GB recommended</li><li>Minimum 4 GB physical memory</li></ul>
<b>Solaris</b>	<ul style="list-style-type: none"><li>Solaris 10 Update 4+</li></ul>	<ul style="list-style-type: none"><li>Supports 32-bit Solaris running on 32-bit hardware only</li><li>Solaris compatible SPARC processor at 440 MHz, or faster</li><li>Minimum 2 GB free disk space, 50 GB recommended</li><li>Minimum 4 GB physical memory</li></ul>
<b>Linux</b>	<ul style="list-style-type: none"><li>Oracle Linux 5 (UL3+)</li><li>Red Hat Enterprise Linux 5 (UL3+)</li><li>SUSE Linux Enterprise Server 11 (all SP levels)</li></ul> <p>Oracle software may not run on systems that do not meet these requirements (see <b>Important</b> below).</p>	<ul style="list-style-type: none"><li>Supports 32-bit and 64-bit Linux running on 32-bit and 64-bit hardware respectively</li><li>Intel Core or AMD Opteron at 2Ghz with Dual Core or faster—i386 or x86_64 (32-bit or 64-bit)</li><li>Minimum 2 GB free disk space, 50 GB recommended</li><li>Minimum 4 GB physical memory</li></ul>

## Important



When new Linux kernels and distributions are released, Oracle modifies and tests its products for stability and reliability on these platforms. Oracle makes every effort to add support for new kernels and distributions in a timely manner. However, until a kernel or distribution is added to this list, its use with Oracle products is not supported. Oracle endeavors to support any generally popular Linux distribution on a release that the vendor still supports.

## Specific Requirements

This section describes requirements for specific components:

Component	Requirement
<b>Policy Studio</b>	Runs on the same platforms as the API Gateway with the following additional requirements on Linux and Solaris: <ul style="list-style-type: none"> <li>• X-Windows environment</li> <li>• GTK+ 2</li> </ul>
<b>API Gateway Manager</b>	Supports the following browsers: <ul style="list-style-type: none"> <li>• Internet Explorer 8 and 9</li> <li>• Firefox 13.0 or higher</li> <li>• Safari 5.1.7 or higher</li> </ul>
<b>API Gateway Analytics</b>	Server component has the same platform requirements as the API Gateway. Supports the following databases: <ul style="list-style-type: none"> <li>• MySQL Server 5.1</li> <li>• Microsoft SQL Server 2000, 2005, 2008</li> <li>• Oracle 10.2.0.4+, 11.1.0.7+, 11.2.0.1</li> <li>• IBM DB2 9.1</li> </ul> Browser-based client component supports the same browsers as API Gateway Manager.

## Default Ports

This section describes the default ports used by specific components.

### API Gateway

The default ports used by the API Gateway are as follows:

- Traffic Port: 8080
- Management Port: 8085

### Admin Node Manager

The default port used by the Admin Node Manager for monitoring and management is 8090.

### API Gateway Analytics

The default port used by for reporting, monitoring, and management is 8040.

### Policy Studio

The default URL address used by Policy Studio to connect to the Admin Node Manager is as follows:

`https://localhost:8090/api`

# Installing the API Gateway Core Server

## Overview

The API Gateway Core Server is the main runtime environment consisting of an API Gateway instance and a Node Manager. For more details on API Gateway components and concepts, see the *API Gateway Concepts Guide*. This topic describes how to install the API Gateway Core Server on the following platforms:

- Windows
- Linux
- Solaris



### Note

It is not necessary to install the API Gateway Core Server on the API Gateway appliance because this component is pre-installed on the appliance.

## Prerequisites

You must ensure the following:

### System Requirements

See the [System Requirements](#) to ensure that the target machine is of a suitable specification.

### Executable Permission

On Linux/UNIX, you must ensure that the installation executable has the appropriate permissions in your environment. For example, you can use the `chmod` command to update the file permissions.

## Patching API Gateway 11.1.2.2.0 Core Server

To patch your existing API Gateway 11.1.2.2.0 Core Server installation, perform the following steps:

1. Back up your existing API Gateway 11.1.2.2.0 installation.
2. Ensure that your existing API Gateway instance and Node Manager have been stopped. For more details, see the *API Gateway User Guide*.
3. Unzip API Gateway 11.1.2.2.0 SP1 Core over your existing API Gateway 11.1.2.2.0 installation directory (for example, `C:\OAG-11.1.2.2.0`).

## Installing API Gateway 11.1.2.2.0 Core Server

Use the API Gateway 11.1.2.2.0 installation executable to install a new API Gateway installation from scratch without an existing version. When you run the executable in default GUI mode, you are presented with an introductory welcome screen. Click **Next** to continue with the installation.

For details on installing on the command line, see [the section called “Unattended Installation”](#).

## Installation Directory

Enter or click **Browse** to specify the directory where you wish to install API Gateway components, for example:

Windows	C:\OAG-11.1.2.2.0
---------	-------------------

Linux/UNIX	/opt/OAG-11.1.2.2.0
------------	---------------------

Click **Next** to continue.

## Select Components

Select the components that you wish to install, or deselect those that you do not wish to install. The Core Server component is selected by default.

Click **Next** to continue.



### Note

This topic describes how to install the API Gateway Core Server component only. For details on installing other components, see the following topics:

- [Installing API Gateway Analytics](#)
- [Installing Policy Studio](#)
- [Installing API Gateway Explorer](#)
- [Installing Configuration Studio](#)

## Domain Connection

Select whether this is the first system in a new API Gateway domain. Defaults to **Yes**, which configures the system with a new Admin Node Manager.

If you select **No**, the system is configured with a local Node Manager, which connects to an existing Admin Node Manager. You are asked to enter the connection details to an existing Admin Node Manager.

Click **Next** to continue.

## Admin Node Manager Details

If you selected **Yes** in the **Domain Connection** screen, configure the following settings. Otherwise, skip to [the section called "Local Node Manager Details"](#).

### Use SSL/HTTPS Scheme for Connection:

Select whether to use SSL/HTTP to connect to the Node Manager. This setting is selected by default.

### Hostname or IP Address:

Select a host address from the **Autodetected List** (defaults to the installation hostname), or choose **Select Manually**, and enter a host address.

### Local Management Port:

Enter the local port used to manage the Node Manager. Defaults to 8090.

Click **Next** to continue.

## Local Node Manager Details

If you selected **No** in the **Domain Connection** screen, configure the following settings:

**Use SSL/HTTPS Scheme for Connection:**

Select whether to use SSL/HTTP to connect to the Node Manager. This setting is selected by default.

**Hostname or IP Address:**

Select a host address from the **Autodetected List** (for example, 127.0.0.1), or choose **Select Manually**, and enter a host address.

**Local Management Port:**

Enter the local port used to manage the Node Manager. Defaults to 8090.

Click **Next** to continue.

## Admin Node Manager Connection Details

If you selected **No** in the **Domain Connection** screen, configure the following settings to connect to an existing Admin Node Manager. Otherwise, skip to the next section.

**Connection URL:**

Enter the URL to connect to the Admin Node Manager. Defaults to the following:

`https://[admin-node-hostname-or-IP]:8090`

**Modify Default Values?:**

Select whether to modify the default Admin Node Manager username/password (admin/changeme). When this is selected, enter a new username/password. This setting is unselected by default.

Click **Next** to continue.

## Node Manager Service Details

Configure the following settings:

**Add a Service for the Node Manager:**

Select whether to add a service for the Node Manager. Defaults to **No**.

**Run Service as non default user:**

Select whether to run the Node Manager service as a non-default user. This setting is not selected by default. When you select this setting, you can enter a non-default user in the **Username** field. The default user is admin.

Click **Next** to continue.

## API Gateway Configuration

Select whether to configure a new API Gateway instance. Defaults to **Yes**. When **Yes** is selected, you are asked to enter connection details for the new API Gateway instance in the next step.

Click **Next** to continue.

## API Gateway Details

If you selected to configure a new API Gateway instance in the previous step, configure the following settings. Otherwise, skip to [the section called "Ready to Install"](#).

**API Gateway Name:**

Enter a name for the API Gateway instance. Defaults to `Gateway1`.

**API Gateway Group:**

Enter a group name for the API Gateway instance. Defaults to **Group1**.

**Use SSL/HTTPS Scheme for Connection:**

Select whether to use SSL/HTTP to connect to the API Gateway instance. This setting is selected by default.

**Local Management Port:**

Enter the local port that the Node Manager uses to manage the API Gateway instance. Defaults to 8085.

**External Traffic Port:**

Enter the port that the API Gateway uses for message traffic from external clients. Defaults to 8080.

Click **Next** to continue.

## API Gateway Service Details

If you selected to configure a new API Gateway instance, you can configure the following settings:

**Add a Service (/etc/init.d script) for the API Gateway Instance:**

Select whether to add a service for the API Gateway instance. Defaults to **No**.

**Run Service as non default user:**

Select whether to run the Node Manager service as a non-default user. This setting is not selected by default. When you select this setting, you can enter a non-default user in the **Username** field. The default user is **admin**.

Click **Next** to continue.

## Oracle API Gateway Startup

Select whether to start the Admin Node Manager and the new API Gateway instance after installation. Defaults to **Yes** (recommended).



### Note

If you select **No**, you must start the Admin Node Manager and the new API Gateway instance manually after installation.

Click **Next** to continue.

## Ready to Install

The installer is ready to start installing the selected components and settings on your system.

Click **Next** to continue.

## Installing

A progress screen is displayed showing the progress of the installation of files. Please wait for the installation to complete.

Click **Next** to continue.

## Completing the API Gateway Setup

After the installer has finished, you can connect to the Admin Node Manager using the connection URL. You can also select whether to connect to Policy Studio if this was installed.

Click **Finish** to complete the installation. You can access the API Gateway Manager tools in your browser. The default

URL is displayed in the dialog (`https://hostname:8090/`).

Click **OK** to finish. Policy Studio also launches if this was selected.

## Starting the API Gateway

If you did not select to start the API Gateway after installation, you can start the API Gateway as follows:

1. Open a command prompt in the following directory:

Windows	<code>INSTALL_DIR\apigateway\Win32\bin</code>
Linux/UNIX	<code>INSTALL_DIR/apigateway posix/bin</code>

2. Run the `startinstance` command, for example:

```
startinstance -n "Server1" -g "Group1"
```



### Note

On UNIX/Linux, you must ensure that the `startinstance` has execute permissions.

3. To manage and monitor the API Gateway, you must ensure that the Admin Node Manager is running. Use the `nodeManager` command to start the Admin Node Manager from the same directory.



### Important

You can encrypt all sensitive API Gateway configuration data with an encryption passphrase. For example, you can specify this passphrase in your API Gateway configuration file, or on the command line when the API Gateway is starting up. For more details, see the *Oracle API Gateway User Guide*.

## Starting Policy Studio

If you did not select to launch Policy Studio automatically after installation, see [the section called “Starting Policy Studio”](#).

## Unattended Installation

You can run the API Gateway installer in unattended mode on the command line. The following command shows an example of installing the API Gateway component only, without the QuickStart tutorial:

### Windows

```
OAG-11.1.2.2.0-windows-installer.exe --mode unattended
--enable-components nodemanager
--disable-components analytics,policystudio,apitester,configurationstudio
```

### Linux

```
./OAG-11.1.2.2.0-linux-installer.run --mode unattended
--enable-components nodemanager
--disable-components analytics,policystudio,apitester,configurationstudio
```

The specified components are installed in the background.

**Further Information**

For a description of all available command options and default settings, enter the `--help` option. This outputs the help text in a separate console.

## Creating a New Domain

If you wish to create a new managed domain and API Gateway instance, you can do this using the `manageddomain` script. For more details, see [Configuring a Managed Domain](#).

# Configuring a Managed Domain

## Overview

This topic describes how to use the `manageddomain` script to configure a managed API Gateway domain. It shows how to register a host in a new domain, and create a new API Gateway instance. These are the minimum steps required to configure a domain.

You can also use the topology view in the web-based API Gateway Manager tool to manage a newly created domain. For example, you can perform tasks such as creating and deleting groups and API Gateway instances.

### Important



To use the API Gateway, you must have a domain configured in your API Gateway installation. If you did not already configure a domain when installing the API Gateway, you must configure a domain using `manageddomain`.

A single API Gateway installation supports a single API Gateway domain only. If you wish to run API Gateways in different domains on the same host, you need separate installations for each domain. For an introduction to the API Gateway domain and group runtime architecture, see the *Oracle API Gateway User Guide*.

## Manageddomain Script

When configuring a domain, the `manageddomain` script enables you to perform tasks such as the following:

- Host management (registering and deleting hosts, or changing Admin Node Manager credentials)
- API Gateway management (creating and deleting API Gateway instances, or adding Windows and Linux/Solaris services)
- Group management (editing or deleting API Gateway groups)
- Topology management (viewing topologies)
- Deployment (deploying to a group, listing deployments, creating or downloading deployment archives, and editing group passphrases)

For example, you can use the `manageddomain` script to register a host in a domain and create a new API Gateway instance. These are the minimum tasks required to create a new domain, which are documented in this topic.

### Further Information

For details on selecting specific options, enter the `manageddomain` command in the following directory, and follow the instructions at the command prompt:

Windows	INSTALL_DIR\apigateway\Win32\bin
UNIX/Linux	INSTALL_DIR/apigateway posix/bin

### Note



To register an API Gateway instance as a service on Windows or Linux/UNIX, you must run the `manageddomain` command as Administrator on Windows or root on Linux/UNIX.

For more details on `managedomain` options, see [Manageddomain Command Reference](#).

## Registering a Host in a Domain

To register a host in a managed domain, perform the following steps:

1. Change to the following directory in your API Gateway installation:

Windows	INSTALL_DIR\apigateway\Win32\bin
UNIX/Linux	INSTALL_DIR/apigateway posix/bin

2. Enter the following command:

```
managedomain
```

3. Enter **1** to register your host, and follow the instructions when prompted. For example, if this is the first host in the domain, enter **y** to configure an Admin Node Manager on the host. Alternatively, to add the host to an existing domain, enter **n** to configure a local Node Manager that connects to the Admin Node Manager in the existing domain.
4. Enter **q** to quit when finished.
5. Enter the following command to start the Admin Node Manager or local Node Manager on the registered host:

```
nodeManager
```



### Important

Before registering multiple hosts in a domain, you must first ensure that a licensed API Gateway is installed on each host machine. Then to register each host, you must select option **1** on each host machine.

You must ensure the Admin Node Manager is running in the domain to enable monitoring and management of API Gateway instances.

## Creating an API Gateway Instance

To create an API Gateway instance, perform the following steps:

1. Open a new command window.
2. Change to the following directory in your API Gateway installation:

Windows	INSTALL_DIR\apigateway\Win32\bin
UNIX/Linux	INSTALL_DIR/apigateway posix/bin

3. Enter the following command:

```
managedomain
```

4. Enter **5** to create a new API Gateway instance, and follow the instructions when prompted. You can repeat to create multiple API Gateway instances on local or remote hosts.
5. Enter **q** to quit when finished.

6. Use the `startinstance` command to start the API Gateway, for example:

```
startinstance -n "my_server" -g "my_group"
```



### Note

You can add an API Gateway instance on any registered host in the domain, not just the local host. However, if you are creating Windows or UNIX services for the API Gateway, you must run `managedomain` on same host.

You must run `startinstance` on the host on which you intend to start the instance. On UNIX/Linux, you must ensure that the `startinstance` file has execute permissions. Running `startinstance` without any arguments lists all API Gateway instances available on the host.

## Connecting to an API Gateway Instance

You can test the connection to the new API Gateway instance by connecting to the Health Check service. For example, enter the following default URL in your browser:

```
http://HOST:8080/healthcheck
```

This should display a simple `<status>ok</status>` message.

You can view the newly created API Gateway instance on the API Gateway Manager dashboard. For example, the default URL is as follows:

```
https://HOST:8090
```

The port numbers used to connect depend on those entered when configuring the domain using `managedomain`, and are available from the localhost only.

Alternatively, you can also connect to the new API Gateway instance in Policy Studio. For more details, see [Installing Policy Studio](#).

## Managing a Domain in API Gateway Manager

You can also use the topology view in the web-based API Gateway Manager tool to manage an existing domain. For example, you can perform tasks such as creating or deleting groups and API Gateway instances.



### Note

When using API Gateway Manager to manage an existing domain, you must ensure that the host was first registered in the domain (for example, using `managedomain`). If you create an API Gateway instance, you must start it on the command line using `startinstance`.

### Managing Groups

To use the API Gateway Manager to create an API Gateway group, perform the following steps:

1. Click the **Menu** button in the topology view on the **Dashboard** tab.
2. Select **Create New Group**.
3. Enter a group name (for example, `Engineering`).
4. Click **OK**.

To delete a group, perform the following steps:

1. Ensure that the API Gateway instances in the group have been stopped.
2. Hover over the group in the topology view, and click the edit button on the right.
3. Select **Delete Group**.
4. Click **OK**.

### **Managing API Gateway Instances**

To use the API Gateway Manager to create an API Gateway instances, perform the following steps:

1. Hover over the API Gateway instance in the topology view, and click the edit button on the right.
2. Select **Create New Group**.
3. Configure the following fields:
  - **Name**: API Gateway instance name (for example, `Server2`).
  - **Management Port**: Local management port (for example, `8086`).
  - **Services Port**: External traffic port (for example, `8081`).
  - **Host**: Host address (for example, `127.0.0.1`).
4. Click **OK**.

To delete an API Gateway instance, perform the following steps:

1. Ensure that the API Gateway instance has been stopped.
2. Hover over the API Gateway instance in the topology view, and click the edit button on the right.
3. Select **Delete Server**.
4. Click **OK**.

# Installing API Gateway Analytics

## Overview

API Gateway Analytics is a server runtime and web-based console for analyzing and reporting on API use over extended periods of time. For more details on API Gateway components and concepts, see the *API Gateway Concepts Guide*. This topic describes how to install API Gateway Analytics on the following platforms:

- Windows
- Linux
- Solaris

## Prerequisites

You must ensure the following:

### System Requirements

See the [System Requirements](#) to ensure that the target machine is of a suitable specification.

### Executable Permission

On Linux/UNIX, you must ensure that the installation executable has the appropriate permissions in your environment. For example, you can use the `chmod` command to update the file permissions.

### PDF Report Generation

If you wish to enable the automatic generation of PDF reports, you must download the `wkhtmltopdf` tool, and install it into your API Gateway Analytics installation when installed. For more details, see [the section called “Next Steps”](#).

## Patching API Gateway Analytics 11.1.2.2.0

To patch your existing API Gateway Analytics 11.1.2.2.0 installation, perform the following steps:

1. Back up your existing API Gateway 11.1.2.2.0 installation.
2. Ensure that your existing API Gateway Analytics instance and Node Manager have been stopped. For more details, see the *API Gateway User Guide*.
3. Unzip API Gateway 11.1.2.2.0 SP1 Analytics over your existing API Gateway 7.2.0 installation directory (for example, `C:\OAG-11.1.2.2.0`).



### Note

You must also patch your existing 7.2.0 Core Server. For more details, see [the section called “Patching API Gateway 11.1.2.2.0 Core Server”](#).

## Installing API Gateway Analytics 11.1.2.2.0

Use the API Gateway 11.1.2.2.0 installation executable to install a new API Gateway Analytics installation from scratch without an existing version. When you run the executable in default GUI mode, you are presented with an introductory welcome screen. Click **Next** to continue with the installation.

For details on installing on the command line, see [the section called “Unattended Installation”](#).

## Installation Location

Enter or click **Browse** to specify the directory where you wish to install API Gateway components, for example:

Windows	C:\OAG-11.1.2.2.0
Linux/UNIX	/opt/OAG-11.1.2.2.0

Click **Next** to continue.

## Select Components

Ensure that the API Gateway Analytics component is selected in the list, and click **Next** to continue.



### Note

This topic describes how to install the API Gateway Analytics component only. For details on installing other components, see the following topics:

- [Installing the API Gateway Core Server](#)
- [Installing Policy Studio](#)
- [Installing API Gateway Explorer](#)
- [Installing Configuration Studio](#)

## API Gateway Analytics Information



### Important

Before starting API Gateway Analytics, you must perform the following steps:

1. Create a new database instance. For more details, see [Configuring the Database for API Gateway Analytics](#). Alternatively, if you already have an existing database, skip to the next step.
2. Setup your database tables using the `dbsetup` script. For more details, see [Configuring the Database for API Gateway Analytics](#).
3. Configure your API Gateway Analytics settings using the `configureserver` script. For more details, see [Configuring API Gateway Analytics](#).

API Gateway Analytics is about to be installed.

## Ready to Install

The installer is ready to start installing the selected components and settings on your system.

Click **Next** to continue.

## Installing

A screen is displayed showing the progress of the installation of files. Please wait for the installation to complete.

Click **Next** to continue.

## Completing the API Gateway Analytics Setup

After the installer has finished, click **Finish** to complete the installation.

### Unattended Installation

You can run the API Gateway installer in unattended mode on the command line. The following command shows an example of installing the API Gateway Analytics component only:

#### Windows

```
OAG-11.1.2.2.0-windows-installer.exe --mode unattended
  --enable-components analytics
  --disable-components nodemanager,policystudio,apitester,,configurationstudio
```

#### Linux

```
./OAG-11.1.2.2.0-linux-installer.run --mode unattended
  --enable-components analytics
  --disable-components nodemanager,policystudio,apitester,configurationstudio
```

The specified components are installed in the background.

#### Further Information

For a description of all available command options and default settings, enter the `--help` option. This outputs the help text in a separate console.

## Next Steps

When you have installed API Gateway Analytics, the next step is [Configuring the Database for API Gateway Analytics](#).

#### PDF Report Generation

If you wish to enable the automatic generation of PDF reports, perform the following steps:

1. Download the wkhtmltopdf tool from the following location:  
<http://code.google.com/p/wkhtmltopdf>
2. Install wkhtmltopdf into the following directory in your API Gateway Analytics installation:

<b>Windows</b>	IN- STALL_DIR\oaganalytics\Win32\lib\wkhtmltopdf
<b>UNIX/Linux</b>	IN- STALL_DIR/oaganalytics/platform/bin/wkhtmltopdf

# Configuring the Database for API Gateway Analytics

## Overview

The API Gateway stores and maintains the monitoring and transaction data read by Oracle API Gateway Analytics in a JDBC-compliant database. This topic describes how to create and configure the reports database for use with API Gateway Analytics. It describes the prerequisites and shows an example of creating a reports database. It also shows how to setup the database tables or upgrade them from a previous version.

## Prerequisites

The prerequisites for setting up the database are as follows:

### JDBC Database Installation

You must have a JDBC-compliant database installed to store the API Gateway monitoring and transaction data. API Gateway Analytics provides setup scripts for the following databases:

- MySQL
- Microsoft SQL Server
- Oracle
- IBM DB2

For details on how to install your chosen JDBC database, see your database product documentation.

### API Gateway Analytics Installation

You must have Oracle API Gateway Analytics installed. For details on how to install API Gateway Analytics, see the topic on [Installing API Gateway Analytics](#).

## Adding your JDBC Driver Files

You must add the JDBC driver files for your chosen database to your API Gateway, API Gateway Analytics, and Policy Studio installations.

### API Gateway

To add the third-party JDBC Driver files for your database to the API Gateway, perform the following steps:

1. Add the binary files for your database driver as follows:
  - Add .jar files to the *install-dir*/apigateway/ext/lib directory.
  - Add .dll files to the *install-dir*\apigateway\Win32\lib directory.
  - Add .so files to the *install-dir*/apigateway/platform/lib directory.
2. Restart the API Gateway.

### API Gateway Analytics

To add the third-party JDBC Driver files for your database to the API Gateway, perform the following steps:

1. Add the binary files for your database driver as follows:
  - Add .jar files to the *install-dir*/oaganalytics/ext/lib directory.
  - Add .dll files to the *install-dir*\oaganalytics\Win32\lib directory.
  - Add .so files to the *install-dir*/oaganalytics/platform/lib directory.
2. Restart API Gateway Analytics.

### Policy Studio

To add third-party binaries to Policy Studio, you must perform the following steps:

1. Select **Windows -> Preferences -> Runtime Dependencies** in the Policy Studio main menu.
2. Click **Add** to select a JAR file to add to the list of dependencies.
3. Click **Apply** when finished. A copy of the JAR file is added to the `plugins` directory in your Policy Studio installation.
4. Click **OK**.
5. Restart Policy Studio using the `policystudio -clean` command.

## Creating the Reports Database

API Gateway Analytics reads message metrics from a database and displays this information in a visual format to administrators. This is the same database in which the API Gateway stores its audit trail and message metrics data. You first need to create this database using the database product of your choice (MySQL, Microsoft SQL Server, Oracle, or IBM DB2). For details on how to do this, see the product documentation for your chosen database. In this topic, the example database is named `reports`, but you can use whatever name you wish.

The following example shows creating a MySQL database:

```
mysql> CREATE DATABASE reports;
Query OK, 1 row affected (0.00 sec)
```

## Setting up the Database Tables

When you have created the reports database, the next step is to set up the database tables. You can do this by running the `dbsetup` command from the following API Gateway Analytics directory:

Windows	INSTALL_DIR\oaganalytics\Win32\bin
Linux/UNIX	INSTALL_DIR/oaganalytics posix/bin

The following example command shows setting up new database tables:

```
> dbsetup.bat
New database
Schema successfully upgraded to: 001-topology
```

## Upgrading Existing Database Tables

The `dbsetup` utility also enables you to upgrade an existing reports database from an initial API Gateway version 11.1.1.6.x schema to version 11.1.2.x schema.



### Important

You must upgrade version 11.1.1.6.x database schemas to 11.1.2.x for the API Gateway to function correctly. Pre-11.1.1.6.x database schema upgrades are not supported. If your existing API Gateway installation is version 11.1.2.x, you do not need to upgrade the database tables.

The `dbsetup` utility always checks the existing version, and modifies only if an update is required. For example, to start

an interactive upgrade, run this script as follows:

```
> dbsetup.bat
Connecting to configuration at: federated:file:///INSTALL_DIR/oaganalytics/conf/fed/
configs.xml

Using Configured Database:
DB Name: Default Database Connection
DB URL: jdbc:mysql://127.0.0.1:3306/reports
DB User: root
Current schema version: 000-initial
Latest schema version: 001-topology
Continue with upgrade (Y, N) [N]: y
Schema successfully upgraded to: 001-topology
```

dbsetup uses SQL upgrade scripts for all supported databases located in the following directory:

`INSTALL_DIR/system/conf/sql/upgrade`

The subdirectories are named for the upgrade applied, and the order in which they must be executed. The following upgrades are currently available:

Upgrade Name	Description
000-initial	11.1.6.x version of the schema.
001-topology	11.1.2.x version of the schema.

## Specifying Options to dbsetup



### Note

When you specify command-line arguments to dbsetup, the script does not run interactively, and the setup is fully automatic.

You can specify the following options to the dbsetup command:

Option	Description
<code>-h, --help</code>	Displays help message and exits.
<code>-p PASSPHRASE, --passphrase=PASSPHRASE</code>	Specifies the configuration passphrase (blank for zero length).
<code>--dbname=DBNAME</code>	Specifies the database name (mutually exclusive with <code>--dburl</code> , <code>--dbuser</code> , and <code>--dbpass</code> ).
<code>--dburl=DBURL</code>	Specifies the database URL.
<code>--dbuser=DBUSER</code>	Specifies the database user.
<code>--dbpass=DBPASS</code>	Specifies the database passphrase.
<code>--reinstall</code>	Forces a reinstall of the database, dropping all data.
<code>--stop=STOP</code>	Stops the database upgrade after the named upgrade.

The following are some examples of using dbsetup command options:

#### Connecting to a Named Database

You can use the --dbname option to connect to a named database connection configured under the **External Connections** node in the Policy Studio tree. For example:

```
> dbsetup.bat --dbname=Oracle
Current schema version: 001-initial
Latest schema version: 001-topology
Schema successfully upgraded to: 001-topology
```

#### Connecting to a Database URL

You can use the --dburl option to manually connect to a database instance directly using a URL. For example:

```
> dbsetup.bat --dburl=jdbc:mysql://localhost/reports --dbuser=root --dbpass=admin
Current schema version: 001-initial
Latest schema version: 001-topology
Schema successfully upgraded to: 001-topology
```

#### Installing a Database

You can also use the --dburl option to setup a newly created database instance where none already exists. For example:

```
> dbsetup.bat --dburl=jdbc:mysql://localhost/reports --dbuser=root --dbpass=admin
New database
Schema successfully upgraded to: 001-topology
```

#### Reinstalling a Database

You can use the --reinstall option to wipe and reinstall a database. For example:

```
> dbsetup.bat --dburl=jdbc:mysql://localhost/reports --dbuser=root --dbpass=admin
--reinstall
Re-installing database...
Schema successfully upgraded to: 001-topology
```

## SQL Database Schema Scripts

As an alternative to using the dbsetup command, API Gateway Analytics also provides separate SQL schema scripts to set up the database tables for each of the supported databases. However, these scripts set up the new tables only, and do not perform any upgrades of existing tables. These scripts are provided in the `INSTALL_DIR/system/conf/sql` folder in the following directories:

- /mysql
- /mssql
- /oracle
- /db2

You can run the SQL commands in the `db_schema.sql` file in the appropriate directory for your database. The following example shows creating the tables in a MySQL database:

```
mysql> \. C:\oracle\oaganalytics\system\conf\sql\mysql\db_schema.sql
Query OK, 0 rows affected, 1 warning (0.00 sec)
Query OK, 0 rows affected, 1 warning (0.00 sec)
...
```

## Next Steps

When you have set up your database, you must ensure that the API Gateway is configured correctly for API Gateway Analytics before launching API Gateway Analytics. For more details, see [Configuring API Gateway Analytics](#).

# Configuring API Gateway Analytics

## Overview

This topic describes the steps involved in setting up API Gateway Analytics. For example, this includes configuring the API Gateway Analytics port, database connection, and user credentials. The recommended way to configure API Gateway Analytics is to use the `configureserver` script to guide you through all the required steps. You can also use Policy Studio to configure the API Gateway Analytics configuration file.

## Prerequisites

The prerequisites for configuring API Gateway Analytics are as follows:

### API Gateway Analytics Installation

For details on how to install API Gateway Analytics, see [Installing API Gateway Analytics](#).

### API Gateway Installation

Because API Gateway Analytics reports on transactions processed by the API Gateway in real time, you must ensure that the API Gateway is also installed. For more details, see [Installing the API Gateway Core Server](#).

## Important



To view API Gateway metrics in API Gateway Analytics, you must also configure the API Gateway to record metrics in the database for API Gateway Analytics to read. For more details, see the [Oracle API Gateway User Guide](#).

### JDBC Database and Driver Files

The API Gateway stores and maintains the monitoring and transaction data read by API Gateway Analytics in a JDBC-compliant database. You must ensure that the appropriate JDBC database and driver files are installed. For more details, see [Configuring the Database for API Gateway Analytics](#).

## Configuring API Gateway Analytics

By default, API Gateway Analytics is configured to read message metrics from a MySQL database stored on the local machine. Typically, you may wish to use an alternative database, change the user credentials on the default database connection, or use a different listening port. This section explains how to configure API Gateway Analytics using the `configureserver` command.

### Configuring API Gateway Analytics on the Command Line

Perform the following steps to run `configureserver` in interactive mode:

1. Change to the following directory:

Windows	INSTALL_DIR\oaganalytics\Win32\bin
Linux/UNIX	INSTALL_DIR/oaganalytics posix/bin

2. Run the `configureserver` command.
3. Enter the port on which the API Gateway Analytics server will listen. Defaults to 8040. If you have another process already using this port on the machine on which API Gateway Analytics is installed, configure API Gateway Analytics to listen on different port.
4. Enter the database connection URL. Defaults to `dbc:mysql://127.0.0.1:3306/reports`.

The following table lists examples of connection URLs for the supported databases, where `reports` is the name of the database and `DB_HOST` is the IP address or host name of the machine on which the database is running:

Database	Example Connection URL
Oracle	<code>jdbc:oracle:thin:@DB_HOST:1521:reports</code>
Microsoft SQL Server	<code>jd-bc:sqlserver://DB_HOST:1433;DatabaseName=reports;integratedSecurity=false;</code>
MySQL	<code>jdbc:mysql://DB_HOST:3306/reports</code>
IBM DB2	<code>jdbc:db2://DB_HOST:50000/reports</code>

5. Enter the database user name. Defaults to `root`.
6. Enter the database password.
7. Enter whether API Gateway Analytics generates PDF-based reports. Defaults to `N`, which means that PDF reports are not generated. When set to `Y`, API Gateway Analytics generates PDF reports that include the same metrics displayed in the API Gateway Analytics screen (for example, number of client requests, requests per service, and so on). For more details on generated PDF reports, see the *Oracle API Gateway User Guide*.
8. Enter the user name to connect to the API Gateway Analytics process that generates PDF reports. Defaults to an admin user.



### Note

This is not the operating system user. This is the user that connects to the API Gateway Analytics web server process, which generates the PDF reports. You can add new users under the **Users and Groups** node in Policy Studio.

9. Enter the password to connect to the API Gateway Analytics process that generates PDF reports.
10. Enter the directory to which generated PDF reports are output (for example, `c:\reports`).
11. Enter whether to send generated PDF reports to email recipients. You will require an SMTP account with which to send the reports. Defaults to `N`.

The following command shows some example output in interactive mode:

```
C:\Oracle\oaganalytics\Win32\bin>configureserver.bat
Connecting to configuration at : federated:file:///C:\Oracle\oaganalytics/conf/fed/
configs.xml

Listening port [8040]:
Configuring Database: Default Database Connection
Database URL [jdbc:mysql://127.0.0.1:3306/reports]:
Database user name [root]:
Database password []: *****
Enable report generation (Y, N) [N]: y
Report generation process connects as user name [admin]:
Report generation process connects using password []: *****
Report output directory []: c:\reports
Email reports (Y, N) [N]: y
Default email recipient []: joe@example.com
Email from []: apigateway@oracle.com
Choose SMTP connection type:
 0) None
 1) SSL
 2) TLS/SSL
```

```

Choice [0]:
SMTP host []: localhost
SMTP port [25]:
SMTP user name []: jbloggs
SMTP password []: *****
Delete report file after emailing (Y, N) [Y]:
Press enter to exit...

```

### Configuring API Gateway Analytics using Command-Line Options

You can also run the `configureserver` command with various options (`--port`, `--dburl`, `--emailfrom`, `--mailto`, `--smtphost`, and so on). For example, the following command configures the database connection without emailing reports:

```

configureserver --dburl=jdbc:mysql://127.0.0.1:3306/631v2 --dbuser=root
--dbpass=changeme --no-email

```

The following command specifies to email reports and the associated SMTP settings:

```

configureserver --dburl=jdbc:mysql://127.0.0.1:3306/reports --dbuser=root
--dbpass=changeme --email --mailto=joe@example.com --emailfrom=apigateway@oracle.com
--smtptype=NONE --smtphost=192.168.0.174 --smtpport=25 --smtpuser=jbloggs
--smtppass=changeme --generate --gpass=changeme --gtemp=c:\reports

```

For descriptions of all available options, enter the `configureserver --help` command.

### Configuring API Gateway Analytics in Policy Studio

The recommended way to configure API Gateway Analytics is using the `configureserver` command, which guides you through the required settings. However, you can also use the Policy Studio to configure specific settings in your API Gateway Analytics configuration file. For example, to configure the `reports` database, perform the following steps:

1. In your Policy Studio installation directory, run the `policystudio` command.
2. On the Policy Studio **Home** tab, click **Open File**, and browse to your API Gateway Analytics configuration file, for example:

```
INSTALL_DIR/oaganalytics/conf/fed/configs.xml
```

3. Click the **External Connections** button on the left of Policy Studio, and expand the **Default Database** tree node.
4. Right-click the **Default Database Connection** tree node, and select **Edit**.
5. The **Database Connection** dialog enables you to configure the database connection details. By default, the connection is configured to read metrics data from the `reports` database. Edit the details for the **Default Database Connection** on this dialog. For example, you should enter a non-default database user name and password. If you wish to connect to a database other than the default local database, right-click **Database Connections** in the tree, and select **Add a Database Connection**. For more details, see the *Oracle API Gateway User Guide*.



### Note

You can verify that your database connection is configured correctly by clicking the **Test Connection** button on the **Configure Database Connection** dialog.

## Launching API Gateway Analytics

To launch API Gateway Analytics, perform the following steps:

1. Start the API Gateway Analytics server using the `oaganalytics` script in the `/bin` directory of your API Gateway Analytics installation.

2. Using the default port, connect to the API Gateway Analytics interface in a browser at the following URL:

```
http://HOST:8040/
```

where HOST points to the IP address or hostname of the machine on which API Gateway Analytics is installed.

3. Log in using the default admin user with password changeme. You can edit this user under the **Users and Groups** node in the Policy Studio tree view.



### Note

API Gateway Analytics produces reports based on metrics stored by the API Gateway when processing messages. To produce a graph showing the number of connections made by the API Gateway to a service, you must first configure a policy that routes messages to that service. When this policy is configured, send messages through the policy so they are routed to the target service.

If you change to another database that has a different set of remote hosts/clients configured, you must restart the API Gateway and API Gateway Analytics.

## Further Information

For more details on topics such as using Policy Studio to configure policies, scheduled reports, viewing monitoring data in API Gateway Analytics, or purging the reports database, see "API Gateway Analytics" in the *Oracle API Gateway User Guide*.

# Installing Policy Studio

## Overview

Policy Studio is a graphical IDE that enables developers to virtualize APIs and develop policies to enforce security, compliance, and operational requirements. For more details on API Gateway components and concepts, see the *API Gateway Concepts Guide*. This topic describes how to install Policy Studio on the following platforms:

- Windows
- Linux
- Solaris

## Prerequisites

You must ensure the following:

### System Requirements

See the [System Requirements](#) to ensure that the target machine is of a suitable specification.

### Executable Permission

On Linux/UNIX, you must ensure that the installation executable has the appropriate permissions in your environment. For example, you can use the `chmod` command to update the file permissions.

## Patching Policy Studio 11.1.2.2.0

To patch your existing Policy Studio installation, perform the following steps:

1. Back up your existing API Gateway 11.1.2.2.0 installation.
2. Delete your existing Policy Studio installation directory (for example, `INSTALL_DIR\policystudio`).
3. Use the API Gateway 11.1.2.2.0 installation executable to install Policy Studio into the same directory.

## Installing Policy Studio 11.1.2.2.0

Use the API Gateway 11.1.2.2.0 installation executable to install a new Policy Studio installation. When you run the executable in default GUI mode, you are presented with an introductory welcome screen. Click **Next** to continue with the installation.

For details on installing on the command line, see [the section called “Unattended Installation”](#).

## Installation Location

Enter or click **Browse** to specify the directory where you wish to install API Gateway components. For example, the default is as follows:

Windows	C:\OAG-11.1.2.2.0
Linux/UNIX	/opt/OAG-11.1.2.2.0

Click **Next** to continue.

## Select Components

Ensure that the Policy Studio component is selected in the list, and click **Next** to continue.



## Note

This topic describes how to install the Policy Studio component only. For details on installing other components, see the following topics:

- [Installing the API Gateway Core Server](#)
- [Installing API Gateway Analytics](#)
- [Installing API Gateway Explorer](#)
- [Installing Configuration Studio](#)

## Ready to Install

The installer is ready to start installing the selected components and settings on your system.

Click **Next** to continue.

## Installing

A progress screen is displayed showing the progress of the installation. Please wait for the installation to complete.

Click **Next** to continue.

## Completing the Policy Studio Setup

After the installer has finished, you can select whether launch Policy Studio. This setting is selected by default.

Click **Finish** to complete the installation.

## Ensure the API Gateway is Running

Before starting Policy Studio, you should ensure that the Admin Node Manager and the API Gateway instance that you wish to manage are running. For more details, see the topic on [Installing the API Gateway Core Server](#).

## Starting Policy Studio

If you did not select to launch Policy Studio after installation, perform the following steps:

1. Open a command prompt.
2. Change to your Policy Studio installation directory (for example, `INSTALL_DIR\policystudio`).
3. Start `policystudio`.

### Making a Server Connection

When Policy Studio starts up, click a link to a server session to display the **Open Connection** dialog. You can use this dialog to specify **Connection Details** (for example, host, port, user name, and password), or to specify **Saved Sessions**.

If you wish to connect to the server using a non-default URL, click **Advanced**, and enter the **URL**. The default URL for the Admin Node Manager is:

```
https://localhost:8090/api
```

For more details on the settings in the **Open Connection** dialog, see the *Oracle API Gateway User Guide*.

## Unattended Installation

You can run the API Gateway installer in unattended mode on the command line. The following command shows an example of installing the Policy Studio component only:

### Windows

```
OAG-11.1.2.2.0-windows-installer.exe --mode unattended
  --enable-components policymystudio
  --disable-components analytics,nodemanager,apitester,configurationstudio
```

### Linux

```
./OAG-11.1.2.2.0-linux-installer.run --mode unattended
  --enable-components policymystudio
  --disable-components analytics,nodemanager,apitester,configurationstudio
```

The specified components are installed in the background.

### Further Information

For a description of all available command options and default settings, enter the `--help` option. This outputs the help text in a separate console.

# Installing API Gateway Explorer

## Overview

API Gateway Explorer is a graphical tool that enables you to test API functionality, performance, and security. For more details on API Gateway components and concepts, see the *API Gateway Concepts Guide*. This topic describes how to install API Gateway Explorer on the following platforms:

- Windows
- Linux
- Solaris

## Prerequisites

You must ensure the following:

### System Requirements

See the [System Requirements](#) to ensure that the target machine is of a suitable specification.

### Executable Permission

On Linux/UNIX, you must ensure that the installation executable has the appropriate permissions in your environment. For example, you can use the `chmod` command to update the file permissions.

## Patching API Gateway Explorer 11.1.2.2.0

To patch your existing API Gateway Explorer installation, perform the following steps:

1. Back up your existing API Gateway 11.1.2.2.0 installation.
2. Delete your existing API Gateway Explorer installation directory (for example, `INSTALLED_DIR\apigatewayexplorer`).
3. Use the API Gateway 11.1.2.2.0 installation executable to install API Gateway Explorer into the same directory.

## Installing API Gateway Explorer 11.1.2.2.0

Use the API Gateway 11.1.2.2.0 installation executable to install a new installation. When you run the executable in default GUI mode, you are presented with an introductory welcome screen. Click **Next** to continue with the installation.

For details on installing on the command line, see [the section called “Unattended Installation”](#).

## Installation Location

Enter or click **Browse** to specify the directory where you wish to install API Gateway components, for example:

Windows	<code>C:\OAG-11.1.2.2.0</code>
Linux/UNIX	<code>/opt/OAG-11.1.2.2.0</code>

Click **Next** to continue.

## Select Components

Ensure that the API Gateway Explorer component is selected in the list, and click **Next** to continue.



## Note

This topic describes how to install the API Gateway Explorer component only. For details on installing other components, see the following topics:

- [Installing the API Gateway Core Server](#)
- [Installing Policy Studio](#)
- [Installing API Gateway Analytics](#)
- [Installing Configuration Studio](#)

## Ready to Install

The installer is ready to start installing the selected components and settings on your system.

Click **Next** to continue.

## Installing

A progress screen is displayed showing the progress of the installation. Please wait for the installation to complete.

Click **Next** to continue.

## Completing the API Gateway Explorer Setup

When the installer has finished installing the selected components, click **Finish** to complete the installation.

## Ensure the API Gateway is Running

Before starting API Gateway Explorer, you should ensure that the Admin Node Manager and the API Gateway instance that you wish to test are running. For more details, see the topic on [Installing the API Gateway Core Server](#).

For more details on API Gateway Explorer, see the *API Gateway Explorer, User Guide*.

## Starting API Gateway Explorer

To launch API Gateway Explorer after installation, perform the following steps:

1. Open a command prompt.
2. Change to your API Gateway Explorer installation directory (for example, `INSTALL_DIR\apigatewayexplorer`).
3. Start `apigatewayexplorer`.

## Unattended Installation

You can run the API Gateway installer in unattended mode on the command line. The following command shows an example of installing the API Gateway Explorer component only:

### Windows

```
OAG-11.1.2.2.0-windows-installer.exe --mode unattended
  --enable-components apigatewayexplorer
  --disable-components analytics,nodemanager,policystudio,configurationstudio,apimgmt
```

## Linux

```
./OAG-11.1.2.2.0-linux-installer.run --mode unattended  
--enable-components apigatewayexplorer  
--disable-components analytics,nodemanager,policystudio,configurationstudio,apimgmt
```

The specified components are installed in the background.

### Further Information

For a description of all available command options and default settings, enter the `--help` option. This outputs the help text in a separate console.

# Installing Configuration Studio

## Overview

Configuration Studio is a graphical tool that enables administrators to configure environment-specific properties to deploy APIs and policies in non-development environments. For more details, see the *API Gateway Deployment and Promotion Guide*. This topic describes how to install Configuration Studio on the following platforms:

- Windows
- Linux
- Solaris

## Prerequisites

You must ensure the following:

### System Requirements

See the [System Requirements](#) to ensure that the target machine is of a suitable specification.

### Executable Permission

On Linux/UNIX, you must ensure that the installation executable has the appropriate permissions in your environment. For example, you can use the `chmod` command to update the file permissions.

## Patching Configuration Studio 11.1.2.2.0

To patch your existing Configuration Studio installation, perform the following steps:

1. Back up your existing API Gateway 11.1.2.2.0 installation.
2. Delete your existing Configuration Studio installation directory (for example, `INSTALLED_DIR\configurationstudio`).
3. Use the API Gateway 11.1.2.2.0 installation executable to install Configuration Studio into the same directory.

## Installing Configuration Studio 11.1.2.2.0

Use the API Gateway 11.1.2.2.0 installation executable to install a new Configuration Studio installation. When you run the executable in default GUI mode, you are presented with an introductory welcome screen. Click **Next** to continue with the installation.

For details on installing on the command line, see [the section called “Unattended Installation”](#).

## Installation Location

Enter or click **Browse** to specify the directory where you wish to install API Gateway components, for example:

Windows	<code>C:\OAG-11.1.2.2.0</code>
Linux/UNIX	<code>/opt/OAG-11.1.2.2.0</code>

Click **Next** to continue.

## Select Components

Ensure that the Configuration Studio component is selected in the list, and click **Next** to continue.

This topic describes how to install the Configuration Studio component only. For details on installing other components, see the following topics:

- [Installing the API Gateway Core Server](#)
- [Installing Policy Studio](#)
- [Installing API Gateway Analytics](#)
- [Installing API Gateway Explorer](#)

## Ready to Install

The installer is ready to start installing the selected components and settings on your system.

Click **Next** to continue.

## Installing

A progress screen is displayed showing the progress of the installation. Please wait for the installation to complete.

Click **Next** to continue.

## Completing the Configuration Studio Setup

When the installer has finished installing the selected components, click **Finish** to complete the installation.

## Starting Configuration Studio

To launch Configuration Studio after installation, perform the following steps:

1. Open a command prompt.
2. Change to your Configuration Studio installation directory (for example, `INSTALL_DIR\configurationstudio`).
3. Start `configurationstudio`.

For more details on Configuration Studio, see the *API Gateway Deployment and Promotion Guide*.

## Unattended Installation

You can run the API Gateway installer in unattended mode on the command line. The following command shows an example of installing the Configuration Studio component only:

### Windows

```
OAG-11.1.2.2.0-windows-installer.exe --mode unattended
  --enable-components apigatewayexplorer
  --disable-components analytics,nodemanager,policystudio,configurationstudio,apimgmt
```

### Linux

```
./OAG-11.1.2.2.0-linux-installer.run --mode unattended
  --enable-components apigatewayexplorer
  --disable-components analytics,nodemanager,policystudio,configurationstudio,apimgmt
```

The specified components are installed in the background.

**Further Information**

For a description of all available command options and default settings, enter the `--help` option. This outputs the help text in a separate console.

# Upgrading Configuration from a Previous Version

## Overview

This topic describes how to upgrade your existing configuration data (policies, filters, certificates, and so on) from a previous version to API Gateway version 11.1.2.2.0. This enables you to migrate the policies that you configured in a previous version to API Gateway version 11.1.2.2.0.

API Gateway 11.1.2.2.0 provides a script to upgrade existing configuration from previous versions, and which is the recommended approach. This script generates configuration packages (.fed, .pol, and .env files), which you can deploy using Policy Studio, the `managedomain` script, or the API Gateway Manager web console. This topic shows examples of deploying a .fed file. For more details on configuration packages, see the *Deployment and Promotion Guide*.



### Note

For details on patching an existing API Gateway version 11.1.2.2.0 installation, see [Installing the API Gateway Core Server](#).

### Upgrade Steps

The main steps required for upgrading are as follows:

1. Install Oracle API Gateway 11.1.2.2.0 (see [Installing the API Gateway Core Server](#)).
2. Create a managed domain for your deployment topology (see [Configuring a Managed Domain](#)).
3. Upgrade your existing configuration using the API Gateway upgrade script.
4. Upgrade Role-Based Access Control (if upgrading from version 11.1.1.6.x).
5. Upgrade your reports database (if API Gateway Analytics is installed).



### Important

This topic assumes that you have already performed steps 1-2, and describes how to perform steps 3-5. The upgrade mechanism does not recreate your existing deployment topology. You must create your deployment topology using the `managedomain` command (see [Configuring a Managed Domain](#)).

For details on product components and concepts, see the *Oracle API Gateway Concepts Guide*.

## Prerequisites

You must have already installed API Gateway 11.1.2.2.0, and configured a managed domain.



### Note

These steps describe how to upgrade the configuration data from a previous version to 11.1.2.2.0. The supplied upgrade scripts do *not* upgrade the version of the Oracle server software installed on the machine.

You must ensure that API Gateway 11.1.2.2.0 is installed into a different directory from the existing (pre-11.1.2.2.0) version.

## Upgrading to Version 11.1.2.2.0

Complete the following steps to upgrade to API Gateway version 11.1.2.2.0 using the upgrade script:

1. Stop your pre-version 11.1.2.2.0 server.
2. Make a backup copy of the following existing directory that needs to be upgraded:

```
INSTALL_DIR/apigateway/conf
```

3. Create a directory to store the output configuration packages (for example, C:\upgraded).
4. Open a command prompt at the following directory in your 11.1.2.2.0 installation:

#### Windows

```
INSTALL_DIR\apigateway\Win32\bin
```

#### UNIX/Linux

```
INSTALL_DIR/apigateway posix/bin
```

5. Run the `upgradeconfig` command. For example:

#### Windows

```
upgradeconfig -d C:\vordelgateway -o C:\upgraded
```

#### UNIX/Linux

```
./upgradeconfig -d /opt/vordelgateway -o /opt/upgraded
```

When the script has finished running, the configuration packages (.fed, .pol, and .env files) are generated in the specified destination (for example, C:\upgraded).

6. Deploy the .fed file. For details, see [the section called “Deploying the Configuration Package”](#).
7. Upgrade your RBAC configuration. For details, see [the section called “Upgrading Role-Based Access Control”](#).
8. If you wish upgrade the database used for API Gateway Analytics, see [the section called “Upgrading a Reports Database”](#).

#### Further Information

By default, the `upgradeconfig` script outputs an upgrade log file with a trace level of `INFO` to the directory from which it runs. You can specify a different trace level and directory using the `--tracelevel` and `--tracedir` options. For full details on all command options, enter `upgradeconfig --help` at the command prompt.

## Deploying the Configuration Package

You can deploy the generated configuration package (.fed, .pol, or .env file) using Policy Studio, the Web-based API Gateway Manager tools, or the `managedomain` script. This section shows an example of deploying a .fed file (equivalent to the combined contents of .pol and .env files).

#### Deploying with Policy Studio

To deploy an upgraded .fed file using Policy Studio, perform the following steps:

1. Ensure that the Admin Node Manager and API Gateway instances that you wish to deploy to are running.
2. Start Policy Studio, and click **Connect To Server**, or click an existing server session.
3. In the **Topology** view, click the **Deploy** button in the toolbar.
4. In the **Select the servers(s) you wish to deploy to** section, select a server group from the list, and select the server instance(s) in the box below.
5. In the **Select the configuration you wish to deploy** section, select **I wish to deploy an existing archive**.
6. In the **Location of archive** field, click **Browse**, and select the generated .fed file.
7. Click **Deploy** to upload the archive to the Admin Node Manager, and deploy it to the currently active selected serv-

er(s).

- When the archive has deployed, click **Finish**.

### Deploying with API Gateway Manager

API Gateway Manager is a centralized Web-based dashboard that enables administrators to control and manage API Gateway and groups in a domain. You can access the API Gateway Manager tools at <https://localhost:8090>. To deploy an upgraded .fed file using API Gateway Manager, perform the following steps:

- On the **Dashboard** tab, in the **Topology** section, select the group to which you wish to deploy the configuration.
- Click the icon to the right of the group name, and select **Deploy Configuration**.
- Select **I wish to deploy an existing archive**, and browse to select the .fed that you generated.
- Click **Next**.
- Select the server instances in the group that you want to deploy to and click **Deploy**.
- Click **Finish**, and test your configuration.

### Deploying with the manageddomain Script

You can also deploy a generated .fed file using the `manageddomain` script in the following directory:

#### Windows

```
INSTALL_DIR\apigateway\Win32\bin\manageddomain
```

#### UNIX/Linux

```
INSTALL_DIR/apigateway posix/bin/manageddomain
```

When you run `manageddomain`, you can select a set of options. Option 18 is for deploying from a .fed file. Enter 18, and follow the instructions in the output (user input in bold):

```
Select option: 18
Select a group:
  1) Group1
  2) Enter group name
Enter selection from 1-2 [2]: 1
Select one of the following options for deployment:
  1) Enter name of directory containing federated store config files
  2) Enter name of deployment archive file
  3) Enter tagname
Enter selection [1]: 1
Enter name of directory containing configuration files
[/Oracle-11.1.2.0/apigateway/skel/system/conf/templates]: /path/to/fed/file/
Enter name: Upgraded Config
Enter description: the upgraded configuration
Enter version: v1.5
Enter version comment: Upgraded of v1
Do you wish to deploy to all API Gateways in the group ? [y]: y
Loading configuration '7b2f0a3b-89cd-4bdb-8b66-732992400d47' to hosts running group...
Loaded configuration '7b2f0a3b-89cd-4bdb-8b66-732992400d47' to hosts running group.
Deploying to API Gateway 'APIServer1'...
Deployed to API Gateway 'APIServer1' successfully.
Deploying to API Gateway 'APIServer2'...
Deployed to API Gateway 'APIServer2' successfully.
Hit enter to continue...
```

#### Further Information

For examples of deploying .pol and .env files, see the *Deployment and Promotion Guide*.

## Upgrading Role-Based Access Control

In API Gateway version 11.1.2.0.0, the Role-Based Access Control (RBAC) support changed to use a JSON-based implementation with new API Gateway user roles. If you are upgrading from version 11.1.1.6.x, you must reconfigure your RBAC settings.

The API Gateway provides the following sample script to migrate your existing users:

```
INSTALL_DIR/samples/migrate/pdMigrate.py
```

This script extracts the existing users from the following file:

```
INSTALL_DIR/apigateway/conf/pdEntities.xml
```

and places them into the following file:

```
INSTALL_DIR/apigateway/conf/adminUsers.json
```

For example, you can run this script as follows:

### Windows

```
INSTALL_DIR\Win32\bin\jython ...\\samples\\scripts\\migrate\\pdMigrate.py
C:\\from\\oraclegateway; C:\\to\\apigateway
```

### Linux/UNIX

```
INSTALL_DIR/posix/bin/jython ...\\samples\\scripts\\migrate\\pdMigrate.py
from/oraclegateway; to/apigateway
```

For more details on RBAC, see the chapter on "Configuring Role-Based Access Control" in the *Oracle API Gateway User Guide*.

## Upgrading a Reports Database

If you have an existing installation of API Gateway Analytics version 11.1.1.6.x, and wish to upgrade your existing reports database to version 11.1.2.0.x, you can upgrade your database tables using the dbsetup script. For more details, see [Configuring the Database for API Gateway Analytics](#).



### Important

Only upgrades of version 11.1.1.6.x databases are supported. Upgrades of earlier versions are not supported. Upgrades of version 11.1.2.0.x are not required.

## Upgrading API Gateway Analytics

If you have made changes to the configuration of an existing installation of API Gateway Analytics, and you do not wish to reconfigure these changes, you can also use the `upgradeconfig` script to upgrade API Gateway Analytics. You can do this by running `upgradeconfig` from the following location:

### Windows

```
INSTALL_DIR\oaganalytics\Win32\bin
```

### UNIX/Linux

```
INSTALL_DIR/oaganalytics posix/bin
```

For more details on running this script, see [the section called “Upgrading to Version 11.1.2.2.0”](#).



### Note

This step is normally not required unless you have made significant changes to the configuration of an existing installation of API Gateway Analytics (for example, for Role-Based Access Control).

## Further Information

If you encounter any problems with upgrading from a previous version, contact the Oracle Support team with your queries.

# Managedomain Command Reference

## Overview

The managedomain script enables you to perform tasks such as the following:

- Host management (registering and deleting hosts, or changing Admin Node Manager credentials)
- API Gateway management (creating and deleting API Gateway instances, or adding Windows and Linux/Solaris services)
- Group management (editing or deleting API Gateway groups)
- Topology management (viewing topologies)
- Deployment (deploying to a group, listing deployments, creating or downloading deployment archives, and editing group passphrases)

To run this command, enter `managedomain` in the following directory, and follow the instructions at the command prompt:

<b>Windows</b>	<code>INSTALL_DIR\apigateway\Win32\bin</code>
<b>UNIX/Linux</b>	<code>INSTALL_DIR/apigateway posix/bin</code>

## Host Management

The `managedomain` command options for host management are as follows:

Option	Description	Why Use this Option
1	Register host	<p>Add a new host that runs an API Gateway to a domain topology. You must ensure that the host is registered in order to create and run API Gateways. For example, you can specify the following:</p> <ul style="list-style-type: none"><li>• If host is an Admin Node Manager</li><li>• Use SSL</li><li>• Hostname</li><li>• Node Manager name</li><li>• Node Manager port</li><li>• Node Manager passphrase</li><li>• Windows/UNIX service for Node Manager</li><li>• Trust store details</li></ul> <p>If the host you are registering is not the Admin Node Manager, you must specify the Admin Node Manager host details. The Admin Node Manager must also be running.</p>
2	Edit a host	<p>Edit the details for a host registered in a domain topology. Used occasionally. You can update the following:</p> <ul style="list-style-type: none"><li>• Hostname</li><li>• Node Manager name</li><li>• Node Manager port</li></ul>

Option	Description	Why Use this Option
		<ul style="list-style-type: none"> <li>• Node Manager passphrase</li> <li>• Windows/UNIX service for Node Manager</li> <li>• Use SSL</li> </ul> <p>When you get a license for an evaluation mode API Gateway, you must use this option to change the host from 127.0.0.1 to a network reachable address or hostname. You must also restart the Node Manager to pick up any changes.</p>
3	Delete a host	Delete a registered host from a domain topology. Used occasionally. You must first stop and delete all API Gateways running on the host. This option is only for use on a remote non-Admin Node Manager node that is being removed from the topology. You must also stop the remote Node Manager process. This option will not work on the Admin Node Manager host, or if run locally on the host to be removed.
4	Change credentials for Admin Node Manager, currently connecting as: user admin with truststore None	By default, you connect to the Node Manager using managedomain with the credentials admin/changeme. You can override these at startup by passing the --username --password command line parameters, or reset while running managedomain with this option. This username/password refers to an admin user configured in Policy Studio.

## API Gateway Management

The managedomain command options for API Gateway management are as follows:

Option	Description	Why Use this Option
5	Create API Gateway instance	Create a new API Gateway instance. You can also do this in Policy Studio and API Gateway Manager. You can create API Gateway instances locally or on any host configured in the topology.
6	Edit an API Gateway (rename, change management port)	Rename the API Gateway instance, enable/disable SSL, or change the management port. This functionality is not available in Policy Studio and API Gateway Manager.
7	Delete API Gateway instance	Delete an API Gateway instance from the topology, and optionally delete the files on disk. You can also do this in Policy Studio and API Gateway Manager. You must ensure that the API Gateway instance has stopped.
8	Add a tag to an API Gateway	Add a name-value tag to the API Gateway. The Topology view on the API Gateway Manager Dashboard displays tags and enables you to filter for API Gateway instances by tag.
9	Delete a tag from an API Gateway	Delete a name-value tag from the API Gateway. The tag will no longer be displayed in the API Gateway Manager Dashboard.

Option	Description	Why Use this Option
10	Add a Windows/UNIX service for existing local API Gateway Group Management	Must be run by a user with permission to create a service on the host operating system (root on Linux, or Administrator on Windows). When run on Linux, adds an init.d script.

## Group Management

The managedomain command options for group management are as follows:

Option	Description	Why Use this Option
11	Edit group (rename it)	Rename an API Gateway group. This functionality is not available in Policy Studio and API Gateway Manager.
12	Delete a group	Delete all API Gateways in the group and the group itself. You must ensure that all API Gateways in the group have been stopped first.

## Topology Management

The managedomain command options for topology management are as follows:

Option	Description	Why Use this Option
13	Print topology	Output the contents of the deployed domain topology. This includes the following: <ul style="list-style-type: none"> <li>Topology version</li> <li>Hosts</li> <li>Admin Node Manager</li> <li>Groups</li> <li>API Gateway instances (tags)</li> </ul>
14	Check topologies are in sync	For advanced users. Check that all Node Managers are running the same topology version. Useful only in multi-host environment. Topologies should be in sync if everything is running correctly.
15	Check the Admin Node Manager topology against another topology	For advanced users. Compare the two topologies and highlights differences. There should be no differences if everything is running correctly.
16	Sync all topologies	For advanced users. Forces a sync of all topologies.
17	Reset the local topology	For advanced users. Delete the contents of the apigateway/groups directory. This means that you would need to re-register the host and recreate a local API Gateway instance. Alternatively, you can manually delete the contents of this directory to prevent issues if the host has been registered with other node managers.

## Deployment

The `managedomain` command options for deployment are as follows:

Option	Description	Why Use this Option
18	Deploy to a group	Deploy a configuration (.fed file) to API Gateways. This functionality is also available in Policy Studio and API Gateway Manager.
19	List deployment information	List the deployment information for all API Gateways in a topology. This functionality is also available in Policy Studio and API Gateway Manager.
20	Create deployment archive	Create a deployment archive from a directory that contains a federated API Gateway configuration.
21	Download deployment archive	Download the .fed file deployed to an API Gateway. This functionality is also available in Policy Studio.
22	Update deployment archive properties	Update the manifest properties relating to the deployed configuration only. This functionality is also available in Policy Studio. Enables you to update the properties without performing a new deployment.
23	Change group configuration passphrase	The default passphrase for the API Gateway configuration is “”. Use this option to set a more secure password. This functionality is also available in Policy Studio.

# License Acknowledgments

## Overview

Oracle API Gateway uses several third-party toolkits to perform specific types of processing. In accordance with the Licensing Agreements for these toolkits, the relevant acknowledgments are listed below.

## Acknowledgments

### **Apache Software Foundation:**

This product includes software developed by the [Apache Software Foundation](http://www.apache.org/) [<http://www.apache.org/>].

### **OpenSSL Project:**

This product includes software developed by the [OpenSSL Project](http://www.openssl.org/) [<http://www.openssl.org/>] for use in the OpenSSL Toolkit.

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This product includes software developed by James Cooper.

### **iconmonstr:**

This product includes graphic icons developed by [iconmonstr](http://iconmonstr.com/) [<http://iconmonstr.com/>].