

HP Operations Orchestration

For the Windows ®, Solaris ®, and Linux operating systems

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Installation and Upgrade Guide

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Welcome to the OO Installation and Upgrade Guide

Notes:

- If you are installing OO version 9.00, use the version of the Installation Guide at the <http://h20230.www2.hp.com/selfsolve/manuals>. See below ([To check for recent updates](#)) for information on using the site.

Minor releases are designated by version numbers that are versioned in the decimal places. Thus the minor releases that are based on 9.00 are 9.01, 9.02, 9.03, 9.04, and 9.05. If you are upgrading from 9.00 to one of the minor releases, see the *Release Notes* for the minor release. Release Notes include, among other information, the procedures for upgrading to the minor release.

- To download the installation program for the Live Network Connector (the "LnC installer"), go to <https://hpln.hp.com/node/4/otherfiles>.

The HP Live Network connector User Guide is located at https://hpln.hp.com/system/files/hpln_lnc_users_guide.pdf. The Guide contains information on how to configure OO in its "Configuring OO Stream" section.

In OO: How to Find Help, PDFs, and Tutorials

The HP Operations Orchestration Software (HP OO) documentation set is made up of:

- Help for Central

Central Help provides information to the following:

- Finding and running flows
- For HP OO administrators, configuring the functioning of HP OO
- Generating and viewing the information available from the outcomes of flow runs

The Central Help system is also available as a PDF document in the HP OO home directory, in \Central\docs.

- Help for Studio

Studio Help instructs flow authors at varying levels of programming ability.

The Studio Help system is also available as a PDF document in the HP OO home directory, in \Studio\docs directory.

- Animated tutorials for Central and Studio

HP OO tutorials can each be completed in less than half an hour and provide basic instruction on the following:

- In Central, finding, running, and viewing information from flows
- In Studio, modifying flows

The tutorials are available in the Central and Studio subdirectories of the HP OO home directory.

- Self-documentation for HP OO operations, flows, and Accelerator Packs

Self-documentation is available in the descriptions of the operations and steps that are included in the flows.

Roadmap to this Guide

This guide begins with an overview of the installation and upgrade processes and material on planning, which may be applicable to any installation or upgrade. Following the overview and planning section, three considerations will steer you to the information you need:

- Are you performing a fresh installation or upgrade?

Are you performing a fresh installation of HP Operations Orchestration (OO)? That is, are you installing Central in the following cases:

- OO Central hasn't been installed on the system before.
- You removed an existing version of Central and do not wish to preserve the flows you've created or the run histories of the earlier version.

Or are you upgrading OO from an earlier version of OO?

Sections containing procedures are divided according to which you are performing.

- Do you need short or long versions of the directions?

- The short versions of each procedure in this guide limit themselves to describing the actions you take.
- The full versions explain each step in detail, including the choices that you make in dialog boxes in the Windows version of an installation program or, in the Linux version of an installation program, the meaning of parameter values that you can or must set.

If you have performed a number of installations or upgrades before and prefer a minimum of guidance, you might want to try the short versions. The short versions also refer you to the sections that explain crucial information, such as database and database user configuration or Linux installation-configuration parameter values.

- Is high availability part of your OO establishment?

Will you create a high-availability cluster of the Cluster servers and/or perform load-balancing?

Note on clustering and load balancing: You can create a high-availability cluster for your Central server or load balance requests from the Central Web application or Studios to Central. You do so after installing Central, Studio, and any standalone RAS installations. For information on creating failover clusters and enabling load-balancing of Central Web application requests and Studio requests, see *Operations Orchestration High Availability Guide*, which is available from HP on the Internet, as described in the "Documentation Updates" and "Support" sections in [Welcome to the OO Deployment and Installation Guide](#).

Planning considerations for the entire OO establishment are in their own section, [Planning the installation](#).

Installing and Upgrading: the Overall Process

1. If you are new to Operations Orchestration, for a very brief, high-level overview of what OO Central and Studio are, see [OO components](#).
2. For any installation or upgrade, read or review the section [Planning the installation](#), which includes various planning considerations, such as:
 - Server distribution and configuration.
 - Best-practice recommendations, such as creating discrete development, staging, and production environments, with appropriate .

Even if you are upgrading, reviewing the section may remind you of some points of planning that are worth considering.
3. Make sure your database and OO Central servers, Studio machines, and RAS hosts meet the hardware and software requirements described in *OO System Requirements* and the requirements of the non-OO software that you install.
4. Specify properties for your database and database user as described in [Configuring the database and database user](#).
5. To create a third-party, high-availability cluster for your database servers, see the documentation for the third-party clustering software of your choice.
6. If you are upgrading:
 - a. Review the section [Upgrading, an overview](#).
 - b. Complete the tasks given in the section [Preparing to upgrade](#).
7. Complete the appropriate section for installing or upgrading each needed component, according to whether you want the long, explanatory version or the short version that focuses simply on the steps you must carry out.
 - To install or upgrade Central, one of the following:
 - Full version of installing Central on a Windows operating system
 - Upgrading Central on a Windows operating system
 - Short version of installing Central on a Linux operating system
 - Short version of upgrading Central on a Linux operating system
 - Full version of installing Central on a Linux operating system
 - Full version of upgrading Central on a Linux operating system
 - To install or upgrade Studio:
 - Short version of installing Studio
 - Short version of upgrading Studio
 - Full version of installing Studio
 - Full version of upgrading Studio
8. Test your installation.

9. To install or upgrade RAS on its own server:
See [Installing RAS on standalone servers](#), which contains:
 - [Installing standalone RAS on Windows](#)
 - [Upgrading standalone RAS on Windows](#)
 - [Installing standalone RAS on Linux or Solaris](#)
 - [Upgrading standalone RAS on Linux or Solaris](#)
10. For information on providing high-availability clustering for the Central database, Central servers, and standalone RAS installations and load balancing of Studio, RAS, and Web requests for Central, see *Operations Orchestration High Availability Guide* (which is available from HP on the Internet, as described in the "Documentation Updates" and "Support" sections in [Welcome to the OO Deployment and Installation Guide](#)).
11. If you install on a Windows system, it is recommended that you configure an environment variable that specifies the JRE path.
12. To enable flow authors to point an operation toward a standalone RAS when creating the operation within Studio, see [Accessing a standalone RAS from Studio](#).
13. For information on providing flow authors, users, administrators, and members of other clients of OO with the user accounts, capabilities, and permissions they need to do their jobs, and on other ongoing administrative tasks and on configuring HP OO for extended functionality, see online Help for Central and for Studio and the *HP OO Administration Guide*.
14. To provide Central users and Studio authors with the information and credentials they need to get started, see [Making HP OO available to users](#).
15. To uninstall OO programs, see [Uninstalling OO programs](#).

OO Components

Operations Orchestration (HP OO) is a system for creating automated procedures (called Ops flows or flows) and making them available to IT personnel. Ops flows are made up of operations that each perform a specific action to maintain, diagnose, and/or repair a system.

Operations Orchestration is made up of:

- The Central Web application, which provides the business-logic tier between the OO Repository database and both the Central Web client and Studio.
- The Central Web client, which is the browser-based tool that IT personnel use to execute Ops flows.
- The Remote Action Service (RAS), a service that enables you to run operations outside Central and the domain in which Central resides. With RAS, you can run operations on any system, anywhere.
- OO Studio, a standalone application in which you create new Ops flows.

Upgrading Overview

The two aspects of upgrading, which are particularly important to note, are upgrading the repository and upgrading the database.

- When you upgrade OO Central to 9.00, the shared Central repository is upgraded.
 - In upgrades in which the shared Central repository is upgraded, how the repository is upgraded depends on where it is located.
 - If the repository of the version from which you are upgrading resides in the Central home directory (by default, C:\Program Files\Hewlett-Packard\Operations Orchestration), the old repository is upgraded and then backed up within the same directory.
 - If the repository is located elsewhere (say, C:\myrepo\), then the upgrade upgrades the repository at that location, without creating a backup of the upgraded repository. You must create a backup of the repository yourself.
 - Upgrading the repository may take a significant amount of time; it continues after the Central installation program appears to have completed the upgrade of Central. You cannot start Central until the upgrade of the repository has completed. However, you can monitor the progress of the repository upgrade in the Central_wrapper.log file. For more information on viewing Central_wrapper.log, see the relevant procedure for installing or upgrading OO Central.
- Because the database is upgraded as well and is where flow-run states are stored, the upgrade process discards any flow runs that were stopped, paused, handed off, or orphaned when the upgrade is begun. It is recommended that you complete or delete these runs before you start upgrading Central.

Upgrade Path

If you are upgrading from a version of Operations Orchestration (HP OO) earlier than version 2.2, you must upgrade one release at a time. The upgrade path is:

- 1.0
Upgrade to 1.1.
- 1.1
Upgrade to 2.0.
- 2.0
Upgrade to 2.1.
- 2.1
Upgrade to 2.2.
- 2.2
Upgrade to either 7.0 or 7.10.
- 7.0

Upgrade to either 7.10, 7.20, or 7.50.

- 7.10

Upgrade to either 7.20, 7.50, or 7.51.

- 7.20

Upgrade to either 7.50, 7.51, 7.60, or 9.00.

- 7.50

Upgrade to either 7.51, 7.60, or 9.00.

- 7.51

Upgrade to 7.60 or 9.00.

- 7.60

Upgrade to 9.00.

Preparing to Upgrade

The following pre-upgrade tasks apply to installations of Central, RAS (JRAS or NRAS), and the Load Balancer on both Windows and Linux systems, except where noted.

HP OO system configurations that are carried over from version 9.00 are those that were specified on the **Administration\System Configuration** tab of Central. These include the following:

- Active Directory (AD), Lightweight Directory Access Protocol (LDAP), or Kerberos authentication enablement and settings
- HP OO users, groups, and capabilities
- How Scheduler functions
- A few general settings for Central

Other system configurations you must reapply manually. Preserving the settings and configuration files for those configurations is covered in the following procedure.

Note: In the following procedure, references to your current version or installation of HP OO refers only to 7.20, 7.50, 7.51, or 7.60. If you are upgrading from an earlier version, see [Upgrade Path](#) for the upgrade path to follow.

To prepare for upgrading

1. Make sure that:
 - The machines on which you upgrade HP OO meet the requirements for version 9.00, as described in *OO System Requirements*.
 - You have applied all hot fixes for your current version.
2. If you are upgrading from a version that includes the workspace feature—that is, in which you can check Library objects (flows, operations, and Configuration folder items) in and out—then in each installation of Studio, check in all the objects that are checked out.

3. Make backups of:

- The Central shared repository.
- The following files, which contain system configurations:
 - applicationContext.xml
 - jaasLogin.conf
 - wrapper.conf
 - Central.properties
- The folders containing any custom IActions that you wrote or generated from a WSDL.

Note: After upgrading, you will have to:

- Open the OO home directory and copy these folders and their contents to \RAS\Java\Default\repository\lib.
- Recompile any custom .NET-based IActions, using Microsoft Visual Studio 2005 SP1 and the HP OO 9.00 SDK dynamic-link libraries.

- The folders containing any dynamic-link libraries (.dll files) or Java archives (.jar files) that are the basis for custom IActions.

Note: After upgrading, you will have to open the OO home directory and copy these folders and their contents to \RAS\Java\Default\repository\lib.

- The pas.conf file (if you use the HP OO Load Balancer).

The pas.conf file specifies which Central server cluster nodes and RAS installations the load balancer distributes requests to.

4. If you use a krb5.conf file for Kerberos authentication, make a copy of it.
5. In Studio, export the public repository and any local repositories for a Studio installation each to a new repository, storing each export in a safe place.

Important: When you export, be sure to export only flows and operations that have been created in your organization. Be sure not to export any of the default content in the Library.

You will import these repositories later. When you do, these two measures will make the importing of these repositories into the 9.00 system much easier.

6. If Studio is installed on the same machine as the copy of Central that you are upgrading, uninstall Studio (using Add/Remove Programs in Control Panel).
7. On each of the staging and production Central servers, back up the Central database and store the backup in a secure location.

Dashboard charts, schedules, users, groups, and system-configuration settings are stored in the Central database, so the database backup includes those components of OO.

Note: If the production Central server is clustered, back up the database in accordance with best practices for your clustering solution.

8. If you are upgrading on a Linux system, unset the ICONCLUDE_HOME variable using the command

```
unset ICONCLUDE_HOME
```

9. If you are upgrading on a Windows system, close all windows to the HP OO home directory and any of its subdirectories.

The upgrade application cannot write into these directories if they are open.

10. If you are upgrading a cluster, then on each node of the cluster, stop the Clustering Service (RSGridServer).
11. If you have installed the OO Load Balancer and/or Clustering Service, stop the relevant services (on Windows) or daemons (on Linux).

For information on stopping the services and/or daemons, see *Operations Orchestration High Availability Guide* (which is available from HP on the Internet, as described in the "Documentation Updates" and "Support" sections in [Welcome to the OO Deployment and Installation Guide](#)).

Short Version of Upgrading Central on a Windows System

Note: If Central's database server is an Oracle RAC, incorporate the *Guide to Installing HP OO with Oracle Real Application Clusters* (InstallingHPOO_RACGuide.pdf) into the following procedure.

1. Make sure that the machine on which you are installing Central meets the hardware and software requirements listed in *OO System Requirements*.
2. Create and configure a database or database schema.
For more information, see [Configuring the database and database user](#).
3. Create a database user with the necessary permissions for the database or schema.
4. Complete the tasks in [Preparing to upgrade](#).
5. Before starting the installation, make sure that you are connected to the database that you're using for Central.
6. Navigate to and double-click one of the following:
 - If you are installing on a 32-bit server, CentralInstaller-9.00.exe.
 - If you are installing on a 64-bit server, CentralInstaller64-9.00.exe.

7. Click **Yes** in the prompt that appears, to agree to upgrading to 9.00.
8. On the **Welcome** page of the Central Setup Wizard, click **Next**.
9. On the **License Agreement** page, read the agreement, select **I accept the agreement**, and then click **Next**.

If you have a version of the product can install in multiple languages, then the **Language Selection** page appears. If the **Language Selection** page does not appear, skip the following step.

10. On the **Language Selection** page, from the drop-down list, select either **English** or **Japanese**, and then click **Next**.

Note: Central is automatically installed in the Central subfolder of the OO home directory, and the next page in the installation wizard is the **Network Settings** page.

11. On the **Network Settings** page, either accept the default values or, in the text boxes, type the port numbers that you want to use for network connections.
12. Record the HTTPS port number, for reference during the Studio installation.

Note: The HTTP port makes it possible for client users to type their customary HTTP protocol in their browser address box and be redirected to the secure connection. If you

have users who will specify the HTTP protocol and port when opening Central, you can provide them with this number.

13. Either accept the default broadcast IP address or type a different one, and then click **Next**.
14. On the **Ready to Install** page, click **Install**.
15. When the installation completes, click **Finish**.

Note: If you are installing a version in which the repository is upgraded, that continues in the background after the Central installation is complete. Be aware that the repository upgrade may require a significant amount of time, and that you cannot start Central until after it has finished. See the following step.

16. To follow the repository upgrade's progress, monitor the Central_wrapper.log file, using a tool that displays Central_wrapper.log as it runs.

When you see both of the following strings, which occur in the following order but in separate entries, the repository upgrade is complete:

```
Commit successful
```

```
.  
. .  
. .
```

```
done upgrading the repository to 9.00n
```

where *n* is a string of numbers

OR

To discover whether the repository upgrade has completed, try to connect to Central (such as by accessing it with a web browser). You will not be able to connect to Central until the repository upgrade is complete.

17. If you plan to run flows on a RAS installed on a Windows machine:
 - a. Recompile any custom .NET-based IActions, using Microsoft Visual Studio 2005 SP1 and the HP OO 9.00 SDK dynamic-link libraries.
 - b. Copy any custom IActions, including any that you recompiled, to the location of the 9.00 RAS installation.
18. Open the upgraded Central.properties file in a text editor and copy into it any custom properties from your backup of the previous Central.properties file.
19. Restart the Central service.
20. Install Studio.

You must install Studio before you import the public repository that you exported earlier in the procedure.

For the Studio installation procedure, see [Installing Studio](#).

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Short Version of Upgrading Central on a Windows System

For creating or upgrading load-balancing for Central servers and/or standalone RAS installations, see *Operations Orchestration High Availability Guide* (which is available from HP on the Internet, as described in [Documentation Updates](#) and [Support](#) in the front matter of this document).

Installing or Upgrading Central on a Windows System

Installing HP OO for importing, creating, and running basic flows involves installing Central, Studio, and perhaps a standalone Remote Action Service (RAS; a "standalone" RAS is a RAS installed on a server that is separate from the Central server). The following sections describe these tasks in detail and provide background information.

Note: If Central's database server is an Oracle RAC, incorporate the Guide to Installing HP OO with RAC (InstallingHPOO_RACGuide.pdf) into your planning, configurations, and procedures.

- **Planning the installation**

This section discusses considerations regarding server distribution and HP OO extensibility.

Note: To run the Windows Accelerator Pack flows against a remote machine, you must install the Remote Action Service (RAS) on a Windows machine in the same domain as the remote machine.

- Information on configuring the database and database user that Central will use.
- Carry out the procedure in the one of the following sections that is appropriate to your needs and environment:
 - Full version of installing Central on a Windows system
 - Short version of installing Central on a Windows system
 - Short version of installing Central on a Linux system
 - Short version of upgrading Central on a Linux system
- Carry out the procedure for installing Studio in the appropriate one of the following sections:
 - Short version of installing Studio
 - Short version of upgrading Studio
 - Full version of installing Studio
 - Full version of upgrading Studio
- Making OO available to users

This section describes what you need to provide to Central users and Studio authors for them to get started.
- Installing RAS on standalone servers

This section covers standalone installations of RAS on Windows, Linux, and Solaris systems. It also describes how to create a reference to the RAS installation from Studio.

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Installing or Upgrading Central on a Windows System

- If you are creating a Central database cluster, see *Operations Orchestration High Availability Guide 7.50* (which is available from HP on the Internet, as described in the "Documentation Updates" and "Support" sections in [Welcome to the OO Deployment and Installation Guide](#)).
- For information on ongoing administrative tasks and on configuring HP OO for extended functionality, see the *OO Administration Guide*.

Planning the Installation

Planning issues include the following:

- Central server and Studio distribution

Creating a staging version of the Central server is strongly recommended. Authors should test flows on the staging Central server. Then, when the flows are ready for use in a production environment, publish the flows from the staging Central repository to the production environment's Central repository. For more information on distribution of OO components, see [Server and Studio Distribution](#).

Tip: You can put your development/staging of Central on a virtual machine. To access such an installation of Central, you identify the server by the virtual machine's bridge IP address, which you can obtain by running the ip configuration command on the virtual machine.

- Ports for crossing firewalls
- Compatibility of RAS installations with network environment

Any RAS that is installed on an AD domain should run using an AD domain account, in order to run .NET-based operations.

- Extensibility
- Clustering for scalability and high availability:
- Whether to cluster Central servers for load-balancing and/or failover support

Best Practice: It is strongly recommended that you create a Central server (load-balancing) cluster and a cluster for the Central database.

For more information on the following points, see *Operations Orchestration High Availability Guide* (which is available from HP on the Internet, as described in the sections "Documentation updates" and "Support," in [Welcome to the OO Deployment and Installation Guide](#)).

- If you create a load-balancing cluster for Central servers, whether you will use HP OO Load-Balancer or a third-party load-balancer.
 - If you create a failover/run recovery cluster of Central servers, whether your Central servers can use IP multicasting (the alternative to which is TCP ping).
 - Whether to cluster Central database servers
 - Whether to cluster computers on which RAS is installed
- Language version

HP OO supports any language that your database and operating systems support. International language support means that with proper configuration, you can enter and obtain data in the language of your choice. To do so, all the items in the following list must be configured for the same language and character set:

- HP OO Central: The operating system of the server on which it is installed.
- The database that Central uses.
For information on how to configure your database to take advantage of this for MySQL, Oracle, or SQL Server databases, see [Configuring the database and database user](#).
- HP OO Studio: The operating system of the machine on which it is installed.
- Remote Action Service: If installed standalone, the operating system of machine on which it is installed.
- Data sources on any machine that a flow exchanges data with. Data sources might be operating systems, databases, files, among other sources.

Note: Make sure that you allocate free space for the installation. This depends on the local repository size as the local installation folders are backed up before you upgrade.

It is recommended that you check the size of the installed products and make sure there is at least the same free space available on the disk.

Useful Information

The following information is useful for planning your installation and for various other uses, such as installing or configuring HP OO components and creating URLs that launch flows.

OO Central on a Linux System with a Standalone RAS on a Windows System

Central runs operations outside of Central using a single RAS that is enabled for both Java and .NET. If your OO Central installation runs on a Linux system and you use operations that interact with .NET, your deployment must include a standalone RAS installed on a Windows system and the necessary RAS reference specified in Studio to point to that RAS. You can implement this in one of two ways:

- To use a RAS to run both operations that interact with .NET and those that interact with Java:
 - a. After upgrading OO, install a standalone RAS on a machine whose operating system is Windows.
 - b. In Studio, update the RAS_Operator_Path RAS reference to point to the new standalone RAS.

All operations that run outside Central will run through the RAS on the Windows system, whether they are Java or .NET.

- To use a RAS to run only operations that interact with .NET:
 - a. After upgrading OO, install a standalone RAS on a machine whose operating system is Windows.
 - b. Create a new RAS reference in Studio that points to the new standalone RAS.
 - c. Create a system property, name it "overrideNRAS", and set its property to whatever you named the NRAS entry (i.e. NRAS_Operator_Path).

Operations that have override RAS settings have the `{overrideNRAS}` flow variable reference. Because a system property is always present during flow execution, any NRAS operation will use the RAS specified in the `overrideNRAS` system property.

Ports of Importance to OO Components

By default, HP OO components use the following ports for communication:

- Central: 8443
- RAS: 9004
- SMTP server: 25

Crossing Firewalls

When you install RAS on the other side of a firewall from Central, you must specify a port in the firewall through which Central can communicate with the remote RAS. For a standalone RAS, this is 9004.

Also, in order to use operations that send email, your firewall must allow outbound communication over the default port used by your email server. For an SMTP server, this is port 25.

Server and Studio Distribution

When deciding on the environments that you want to create and how you distribute OO components across servers within those environments, consider the following:

- Whether flow authors should be able to edit a flow while users are running the flow in its existing version.

Making this possible requires installing Central on a staging server as well as on a production server.

- Whether you need to install RAS on a standalone server.

For information on whether you need a standalone RAS, see [OO Central on a Linux system with a standalone RAS on a Windows system](#).

You cannot install a standalone RAS on the Central Web server; the Central installation program includes installation of RAS.

- The following best practices:
 - Particularly when you have multiple authors, be sure to create a staging HP OO environment, from which an HP OO administrator then publishes to the production HP OO environment.
 - On your production (“real world”) installation of Central, only the account with the ADMINISTRATOR capability should be able to direct-connect to the production installation of Central. (For information on allowing only the administrator to direct-connect to Central, see the *HP OO Administrator’s Guide*.)

To facilitate authors’ teamwork in creating flows on the development/testing installation of Central, you can either give all your authors the ADMINISTRATOR capability on the

development/testing installation of Central or enable users other than the administrator to direct-connect to the development/testing Central.

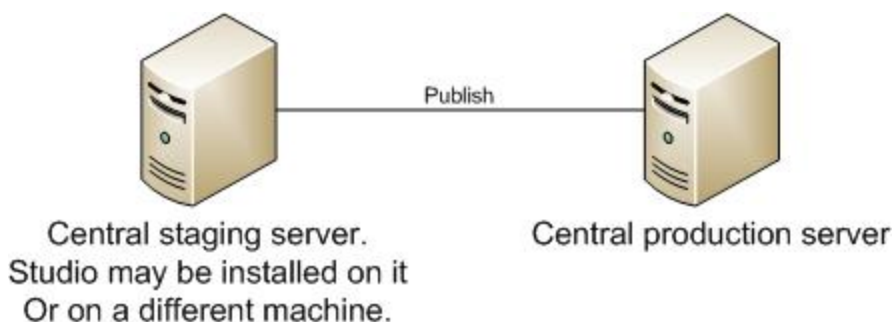
- **For system design:** It is strongly recommended, no matter how large or small your authoring team, that in addition to a Central server in your production (“real world”) environment, you also install a Central server in your testing environment for developing and testing flows.

For some scenarios and the server and client distribution that would support them, see the following sections:

- One author one staging Central server, one production Central server
- Multiple authors

One Author One Staging Central Server, One Production Central Server

This scenario is the minimum recommended best practice. Even if the Ops flows author and the Central user are a single person, there should be a staging server for testing and a production server that the repository is published to after testing on the staging server.

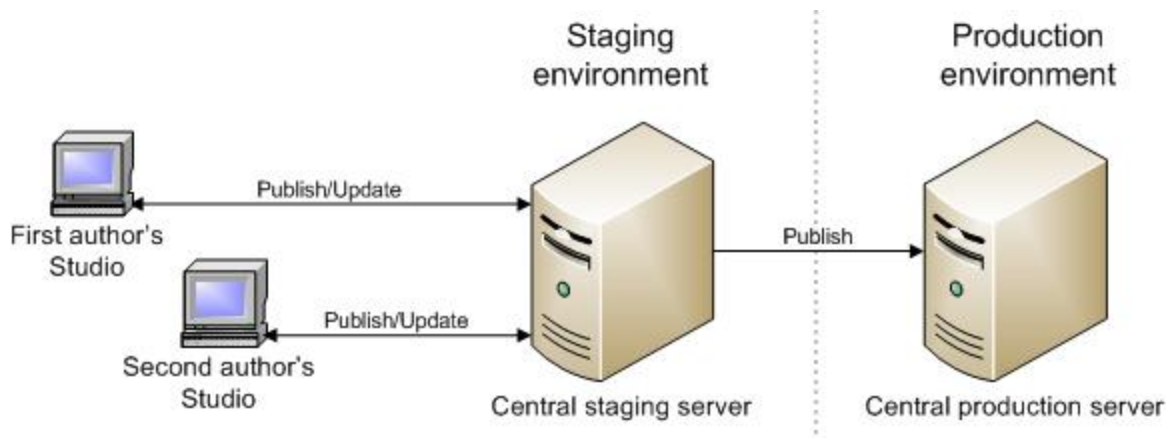


Minimum recommended configuration

The Central staging server and the Central production server each have Central installed. Studio can be installed on either server. Whether Studio is installed on the Central production or staging server, the author publishes to the repository that the staging server’s installation of Central uses.

Multiple Authors

Multiple authors can exchange work by publishing and updating from the Central staging server. When either author publishes to the staging server, his or her work is copied there. When either author updates from the staging server, his or her local repository is updated with any work that the other author has published to the staging server.



Server/client distribution for multiple authors

Extensibility

When you install OO Central, an OO Remote Action Service (RAS) is installed on the OO Central Web server. However, if you also install a standalone RAS (a RAS that is installed on a different machine from the Central server), you can also run flows containing operations that carry out actions in the following settings:

- On machines that are on the other side of a firewall or in a different domain from the Central Web server.
- Accessing applications whose application programming interface (API) cannot be accessed from a computer that is remote to the application's server. In this case, you will install the RAS on the application's server.

For information on installing a standalone RAS, see [Installing RAS on standalone servers](#).

Creating a Security Certificate

By default, Central is configured to communicate using the HTTPS protocol. When Central communicates using HTTPS, Web browsers show security violation errors or messages unless you create a valid security certificate for delivering the Central Web pages. If you see such a browser warning, it is because OO includes, by default, an unsigned certificate that serves as a placeholder for a valid customer-obtained certificate. If you choose not to create a security certificate, you can safely ignore the warning.

Installing Central and Studio provides everything you need to create and run flows. The Central installation includes automatic installation of the Remote Action Service (RAS), which enables you to run flows that operate remotely from HP OO or interact with other programs.

Configuring the Database and Database User

You must create and configure a database and database user before installing Central because Central does not create the database, but the schema for the database.

Important: The schema and user must always be dedicated to HP OO. Do not adapt the schema to support any other applications. If you do, you can lose data in the other applications when you install HP OO.

The Central database size and collation depend on your business needs.

As you install or configure your database management system and create a database and database login and user, make sure that among your tasks you complete the tasks in one of the following sections, depending on which database management system you use.

Oracle Enterprise: Schema and Schema User Configuration

Note: The required configurations for Oracle databases apply to all supported versions of Oracle.

Multiple language support

To enter data in Central and obtain data from the schema in a language other than English

- Configure the database server with UTF-8.

Privileges for the database user

When creating a user for the schema, grant CONNECT and RESOURCE privileges to the user. The Central installer makes all the necessary changes to the schema that Central will use.

MySQL: Database and Database User Configuration

Multiple Language Support

To enter data in Central and obtain data from the database in a language other than English

- Configure the database server with UTF-8.

Privileges for the Database User

When you create a database and a user for the database, grant all privileges for that database to the database user.

SQL Server: Database and Database User Configuration

Multiple Language Support

To enter data in Central and obtain data from the database in a language for which SQL Server supports localization, configure the database with the appropriate language collation.

Following are the required collations in SQL Server for the listed languages:

SQL Server version	Language	Required collation
SQL Server 2005, 2008, 2008 SP3, or 2008 R2		
	Japanese	Japanese_Unicode_CS_AS
	German	German_PhoneBook_CS_AS & Latin1_General_CS_AS
	Korean	Korean_90_CS_AS
SQL Server 2000 SP3a and above		
	Japanese	Japanese_Unicode_CS_AS
	German	German_PhoneBook_CS_AS & Latin1_General_CS_AS
	Korean	Korean_Wansung_Unicode_CS_AS

For example, to enter Japanese characters in Central and receive data in Japanese from the database, configure the database with an appropriate Japanese collation.

Database Information that the Person who Installs Central Needs

If another person installs Central, you must provide him or her with the following information about the database and the database server:

- Database name
- Server location and name or IP address
- Port number
- Database user name and password

SQL Server 2000, SP 3a or Later

- When you create the login for the new database user, among the new login's properties:
 - Specify either kind of authentication.
 - Select the database that you have created as the default database for this login.

Note: If this is not acceptable for your organization, the database administrator can modify the .ddl file appropriately. The .ddl file is located in the HP OO home directory, in the \Central\db subdirectory.

- When creating the database user:
 - For the default schema, specify "dbo".
 - For role membership, select the db_owner database role.

SQL Server 2005, SQL Server 2008, SQL Server 2008 SP3, or SQL Server 2008 R2

1. When configuring SQL Server, enable TCP/IP as a network protocol.
2. Enable TCP/IP as a network protocol for SQL Server.
 - a. Within the SQL Server Configuration Manager program, expand SQL Server Network Configuration.
 - b. Select Protocols for MSSQLSERVER, right-click TCP/IP, and in the context menu that appears, click Enable.
3. When creating the database login:
 - Specify either kind of authentication.
 - Select the database that you have created as the default database for this login.

Note: If this is not acceptable for your organization, the database administrator can modify the .ddl file appropriately. The .ddl file is located in the HP OO home directory, in the \Central\db subdirectory.

- In Server Roles, select all the roles.
4. When creating the database user:
 - For the default schema, specify "dbo".
 - For role membership, select the db_owner database role.

Next, you install the Central Web application and Studio.

Installing or Upgrading Central

During the installation, the following occurs:

- Checks connectivity with the database, using the database connection information that has been provided.
- Configures the database schema that has been created.
- Installs the Central server files.
- Installs RAS on the Central server.

Note: By default, Central is configured to communicate with standalone installations of RAS over port 9004 (which the standalone RAS installation configures on the remote machines for communication with Central).

At any point during the installation, click **Cancel** to stop the installation.

Note: Make sure that you allocate free space for the installation. This depends on the local repository size as the local installation folders are backed up before you upgrade.

It is recommended that you check the size of the installed products and make sure there is at least the same free space available on the disk.

Before you upgrade or downgrade your version, make sure that you backup your local and remote repositories. They are not backed up automatically.

Full Version of Installing Central on a Windows Operating System

To install Central on a Windows operating system

1. Before starting the installation, make sure that you are connected to the database that you're using for Central.
2. Navigate to and double-click one of the following:
 - If you are installing on a 32-bit server, CentralInstaller-9.00.exe.
 - If you are installing on a 64-bit server, CentralInstaller64-9.00.exe.
3. On the initial page of the Central Setup Wizard, click **Next**.

4. On the **License Agreement** page, read the agreement, select **I accept the agreement**, and then click **Next**.

If you have a version of the product that can be installed with one of several languages, then the **Language Selection** page appears. If the **Language Selection** page does not appear, skip the following step.

5. On the **Language Selection** page, from the drop-down list, select either **English** or **Japanese**,

and then click **Next**.

The **Select Destination Location** page appears, unless you are reinstalling Central or have already installed Studio on this machine, in which case Central is automatically installed in the Central subfolder of the OO home directory.

If you are reinstalling Central or have already installed Studio on this machine, skip the following step and resume this procedure where the **Network Settings** page appears (the step following the next).

6. On the **Select Destination Location** page, click **Next** to accept the default installation path.

OR

Click **Browse**, specify a different location where you want Central installed, and then click **Next**.

the **Network Settings** page appears, on which you configure the ports and IP address that Central uses.

(For 64-bit installations, the appearance of this and the other installation wizard pages may be slightly different, but the fields are the same.)

Setup - HP Operations Orchestration Central

Network Settings

Please provide the following information and then press Next

Please provide the HTTP and HTTPS ports to be used by HP Operations Orchestration Central. All sensitive data will use HTTPS protocol (encrypted network traffic).

Central HTTP Port Number (usually 80 or 8080):
8080

Central HTTPS Port Number (usually 443 or 8443):
8443

Broadcast address (e.g. 192.168.1.255):
192.168.1.255

< Back Next > Cancel

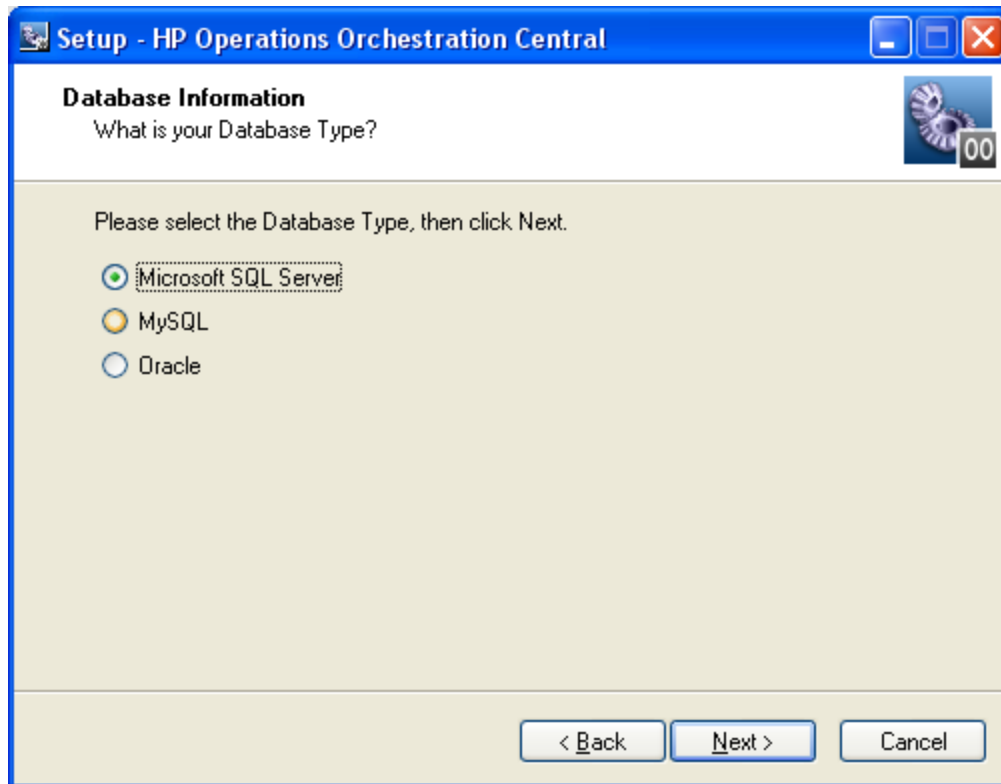
Network Settings page

Communications between the Central Web application, Studio, and the Central Web client are over secure connections, using the HTTPS protocol. The HTTP port makes it possible for client users to type their customary HTTP protocol in their browser address box and be redirected to the secure connection.

The broadcast address is the address that RASs will use to broadcast their availability to Studio and Central. (For more on RASs and checking their availability, see the *HP OO Concepts Guide* and Help for Studio.)

7. Either accept the default values or, in the text boxes, type the port numbers that you want to use for network connections.
8. Record the HTTPS port number, for reference during the Studio installation and, if you have users who will use the HTTP protocol in the address they use for opening Central, the HTTP port number.
9. Either accept the default broadcast IP address or type a different one, and then click **Next**.

The first **Database Information** page appears.



Choosing a database management system

10. Select the type of database that Central will access, and then click **Next**.

The second **Database Information** page appears.

Setup - HP Operations Orchestration Central

Database Information

HP Operations Orchestration Central needs configuration information about the Database. Please ask the system administrator if you do not know these

DB Host or IP Address:

DB Port Number:

DB Name:

DB User Name:

DB Password:

Confirm DB Password:

Create or recreate (if it exists) the database schema?

< Back Next > Cancel

Setting database connection information

Warning: If you choose to create a new database with the name of an existing database, all the data in the previously installed database is overwritten.

- Fill in the information as your configuration dictates.

Use the following formats. In these formats, angle brackets (<>) contain strings that you replace with your particulars, and square brackets ([]) indicate optional material.

- #### DB Name

`<db_name>[;instance=<instance_name>]`

The instance name is necessary only if the database is an instance.

- #### DB User Name

`[<domain_name>]<db_user_name>`

The domain name is necessary only if the database authentication is Windows, using a domain account.

You can get this information from your database administrator.

- #### DB Password and Confirm DB Password

The database name (**DB Name**) and password are the name and password that the Central Web application uses to access the database.

- To create a new database, select the **Create (or recreate, if it exists) the database schema**

checkbox, and then click **Next**.

The installation program tests the database connection using the information that you provided. The **Test Database Connection progress** page appears and shows progress of the database connection test.

If the database connection fails, the dbConnect.log appears, providing more information on the cause of the failure of the database-connection failure.

13. If the database connection test fails, return to the **Database Information** page and correct the information.

After the database connection test succeeds, if you have chosen to create or recreate the database, the **Create HP Operations Orchestration Administrator Account** page appears. The administrator account, which you will use to log in to Central, is always named "admin."

OR

If you are reinstalling Central and have not chosen to create or recreate the database, then this page does not appear. (Once you have created the OO Administrator account and its password, you cannot change the password.) Instead, the installation program goes directly to the **Ready to Install** page. In this case, skip the following step.

14. In the **Password** and **Confirm Password** text boxes, create a password for the OO Administrator account, and then click **Next**.

The **Ready to Install** page appears, displaying the information that you specified in the rest of the setup.

15. To proceed, click **Install**.

The installation program begins installing, tracking its progress on the Installing page.

16. When the installation completes, click **Finish**.

Next you Install Studio. For the Studio installation procedure, see [Installing Studio](#).

Note: If Studio is on the same machine as Central, make sure that the subdirectory to which Studio is installed is under the same directory as that under which Central is installed. By default the Studio installation program tries to install in C:\Program Files\Hewlett-Packard\Operations Orchestration.

Short Version of Installing Central on a Windows System

Note: If Central's database server is an Oracle RAC, incorporate the Guide to Installing HP OO with Oracle Real Application Clusters (InstallingHPOO_RACGuide.pdf) into the following procedure.

1. Make sure that the machine on which you are installing Central meets the hardware and software requirements listed in *OO System Requirements*.
2. Create and configure a database or database schema.

For more information, see [Configuring the database and database user](#).

3. Create a database user with the necessary permissions for the database or schema.
4. Before starting the installation, make sure that you are connected to the database that you're using for Central.
5. Navigate to and double-click one of the following:
 - If you are installing on a 32-bit server, CentralInstaller-9.00.exe.
 - If you are installing on a 64-bit server, CentralInstaller64-9.00.exe.
6. On the **Welcome** page of the Central Setup Wizard, click **Next**.
7. On the **License Agreement** page, read the agreement, select **I accept the agreement**, and then click **Next**.

If you have a version of the product can install in multiple languages, then the **Language Selection** page appears. If the **Language Selection** page does not appear, skip the following step.

8. On the **Language Selection** page, from the drop-down list, select either **English** or **Japanese**, and then click **Next**.

Note: If you are reinstalling Central on this machine, Central is automatically installed in the Central subfolder of the OO home directory, and the next page in the installation wizard is the **Network Settings** page. In this case, skip to the next step (which describes what to do on the **Network Settings** page).

9. On the **Select Destination Location** page, click **Next** to accept the default installation path.

OR

Click **Browse**, specify a different location where you want the Central Web application installed, and then click **Next**.

10. On the **Network Settings** page, either accept the default values or, in the text boxes, type the port numbers that you want to use for network connections.
11. Record the HTTPS port number, for reference during the Studio installation.

Note: The HTTP port makes it possible for client users to type their customary HTTP protocol in their browser address box and be redirected to the secure connection. If you have users who will specify the HTTP protocol and port when opening Central, you can provide them with this number.

12. Either accept the default broadcast IP address or type a different one, and then click **Next**.
13. On the first **Database Information** page, select the type of database that Central will access, and then click **Next**.
14. On the second **Database Information** page, fill in:
 - **DB Host or IP Address**
 - **DB Port Number**

- **DB Name**
 - **DB User Name**
 - **Password**
15. To create a new database, select the **Create (or recreate, if it exists) the database schema** check box, and then click **Next**.
 16. On the **Administrator Account** page, create a password for the OO Administrator account, and then click **Next**.
 17. On the **Ready to Install** page, click **Install**.
 18. When the installation completes, click **Finish**.

Next you will install Studio.

For the Studio installation procedure, see [Installing Studio](#).

For creating or upgrading load-balancing for Central servers and/or standalone RAS installations, see *Operations Orchestration High Availability Guide*, which is available from HP on the Internet, as described in [Documentation Updates](#) and [Support](#).

Upgrading Central on a Windows operating system

Important: The upgrade of the repository continues in the background after the Central installation is complete. Be aware that the repository upgrade may require a significant amount of time, and that you cannot start Central until after it has finished.

To upgrade Central on a Windows operating system

1. Complete the tasks in [Preparing to upgrade](#).
2. Before starting the installation, make sure that you are connected to the database that you're using for Central.
3. Navigate to and double-click one of the following:
 - If you are installing on a 32-bit server, CentralInstaller-9.00.exe.
 - If you are installing on a 64-bit server, CentralInstaller64-9.00.exe.
4. In the prompt that appears, to agree to upgrading to 9.02.0001, click **Yes**.
5. On the initial page of the Central Setup Wizard, click **Next**.
6. On the **License Agreement** page, read the agreement, select **I accept the agreement**, and then click **Next**.

If you have a version of the product can install in multiple languages, then the **Language Selection** page appears. If the **Language Selection** page does not appear, skip the following step.
7. On the **Language Selection** page, from the drop-down list, select either **English** or **Japanese**,

and then click **Next**.

The **Network Settings** page appears, on which you configure the ports and IP address that Central uses.

(For 64-bit installations, the appearance of this and the other installation wizard pages may be slightly different, but the fields are the same.)

Setup - HP Operations Orchestration Central

Network Settings

Please provide the following information and then press Next

Please provide the HTTP and HTTPS ports to be used by HP Operations Orchestration Central. All sensitive data will use HTTPS protocol (encrypted network traffic).

Central HTTP Port Number (usually 80 or 8080):
8080

Central HTTPS Port Number (usually 443 or 8443):
8443

Broadcast address (e.g. 192.168.1.255):
192.168.1.255

< Back Next > Cancel

Network Settings page

Communications between the Central Web application, Studio, and the Central Web client are over secure connections, using the HTTPS protocol. The HTTP port makes it possible for client users to type their customary HTTP protocol in their browser address box and be redirected to the secure connection.

The broadcast address is the address that RASs will use to broadcast their availability to Studio and Central. (For more on RASs and checking their availability, see the *HP OO Concepts Guide* and Web Help for Studio.)

8. Either accept the default values or, in the text boxes, type the port numbers that you want to use for network connections.
9. Record the HTTPS port number, for reference during the Studio installation and, if you have users who will use the HTTP protocol in the address they use for opening Central, the HTTP port number.

The **Ready to Install** page appears, displaying the information that you specified in the rest of the setup.

10. To proceed, click **Install**.

The installation program begins upgrading, tracking its progress on the Installing page.

11. When the upgrade completes, click **Finish**.

Important: If you are installing a version in which the repository is upgraded, that continues in the background after the Central installation is complete. Be aware that the repository upgrade may not be complete for quite some time. For information on monitoring progress of the repository upgrade, see the following step.

12. To follow the repository upgrade's progress, monitor the Central_wrapper.log file, using a tool that displays Central_wrapper.log as it runs.

When you see both of the following strings, which occur in the following order but in separate entries, the repository upgrade is complete:

```
Commit successful
```

```
.
```

```
.
```

```
.
```

```
done upgrading the repository to 7.51n
```

where *n* is a string of numbers

OR

You can discover whether the repository upgrade has completed by attempting to start Central. You will not be able to start Central until the repository upgrade is complete.

13. Recompile any custom .NET-based IActions, using Microsoft Visual Studio 2005 SP1 and the HP OO 7.51 SDK dynamic-link libraries.
14. After the upgrade is complete, copy the backups you made of the folders that contain any custom IActions and those that contain the .dll or .jar files from which the custom IActions were derived to the following location in the RAS installation: \RAS\Java\Default\repository\lib.
15. Open the upgraded Central.properties file in a text editor and copy into it any custom properties from your backup of the previous Central.properties file.
16. Restart the Central service.

Next, you will install Studio. For the Studio installation procedure, see either [Installing or upgrading Studio](#). Keep in mind the following when you install Studio:

- You must install Studio before you import the public repository that you exported as part of preparing to upgrade (see [Preparing to upgrade](#)).
- If Studio is on the same machine as Central, make sure that the subdirectory to which Studio is installed is under the same directory as that under which Central is installed. By default the Studio installation program tries to install in C:\Program Files\Hewlett-Packard\Operations Orchestration.

Short version of installing Central on a Linux system

- If Central's database server is an Oracle RAC, incorporate the Guide to Installing HP OO with RAC (InstallingHPOO_RACGuide.pdf) into the following procedure.
- If you have a version of the product can install in multiple languages, there is a setting, OO_LANGUAGE=, with which you specify an English- or Japanese-language installation.

To install Central on a Linux system (short version)

1. From the installation files, unzip the appropriate one of the following .zip files:

- Central-9.00-linux.zip for 32-bit systems
- Central-9.00-linux64.zip for 64-bit systems

In the directory where the zip file resides, unzipping the file by default creates a subdirectory named Central-9.00, which will be the home directory for OO Central (\$ICONCLUDE_HOME).

To unzip to a different location, add -d and an existing directory name to the unzip command.

2. Open the new Central home directory.

3. Edit the install.config file, changing the values for the parameters as appropriate to your environment.

For guidance on setting values for the parameters, see [Full version of installing Central on Linux](#).

4. In the new Central home directory, run the script ./configure.sh.

5. When prompted for the password for the database user for Central, type, and then (when prompted) retype the database user password.

6. When prompted to create a password for the iconclude user (the user specified in install.config in ICONCLUDE_USER="<iconclude_user_name>", as described above in this procedure), type, and then (when prompted) retype a password for the user.

7. Source the file .iconcluderc using the command:

```
source ./iconcluderc
```

8. Verify that the environment variable \$ICONCLUDE_HOME is properly set.

9. Start the Central service:

```
$> $ICONCLUDE_HOME/bin/Central.sh start
```

10. Start the RAS service (optional):

```
$> $ICONCLUDE_HOME/bin/JRAS.sh start
```

The options for Central.sh can also be used with this command.

11. If you wish to increase the capacity of the system:

- a. Increase the fd limit for the user under which Central runs, by adding the following two lines to the user's file `/etc/security/limits.conf`:

```
myuser soft nofile 65536
```

```
myuser hard nofile 65536
```

- b. Log in as "myuser" and check the value by issuing the `ulimit -n` command.

For instance, if the user is named "user1", add these two lines to the file `/etc/security/limits.conf`:

```
user1 soft nofile 65536
```

```
user1 hard nofile 65536
```

Then log into the box as user1 and check the value by issuing the "`ulimit -n`" command.

Short version of upgrading Central on a Linux system

Note:

- If Central's database server is an Oracle RAC, incorporate the Guide to Installing HP OO with RAC (InstallingHPOO_RACGuide.pdf) into the following procedure.
- When upgrading, after the Central installation is complete, the upgrade of the repository continues in the background. Be aware that the repository upgrade may require a significant amount of time, and that you cannot connect to Central until after it has finished.
- If you have a version of the product can install in multiple languages, there is a setting, `OO_LANGUAGE=`, with which you specify an English- or Japanese-language installation.

To upgrade Central on a Linux system (short version)

1. Complete the tasks in [Preparing to upgrade](#).
2. From the installation files, unzip the appropriate one of the following .zip files:
 - Central-9.00-linux.zip for 32-bit systems
 - Central-9.00-linux64.zip for 64-bit systems

In the directory where the zip file resides, unzipping the file by default creates a subdirectory named Central-9.00, which will be the home directory for OO Central (`$ICONCLUDE_HOME`).

To unzip to a different location, add `-d` and an existing directory name to the unzip command.

3. Open the new Central home directory.
4. Edit the `install.config` file, changing the values for the parameters as appropriate to your environment.

For guidance on setting values for the parameters, see [The full version of installing or upgrading Central on Linux](#).

5. Stop the Central, RAS, and Scheduler services, using the following commands:


```
$> $ICONCLUDE_HOME/bin/Central.sh stop
```

```
$> $ICONCLUDE_HOME/bin/JRAS.sh stop
```

```
$> $ICONCLUDE_HOME/bin/Scheduler.sh stop
```

6. In the new Central home directory, run the script `./configure.sh`.
7. When prompted for the password for the database user for Central, type, and then (when prompted) retype the database user password.
8. When prompted to create a password for the iconclude user (the user specified in `install.config` in `ICONCLUDE_USER=<iconclude_user_name>`, as described above in this procedure), type, and then (when prompted) retype a password for the user.
9. Source the file `.iconcluderc` using the command:

```
source ./iconcluderc
```

10. Verify that the environment variable `$ICONCLUDE_HOME` is properly set.
11. If you plan to run flows on a RAS installed on a Windows machine:
 - a. Recompile any custom .NET-based IActions, using Microsoft Visual Studio 2005 SP1 and the HP OO 9.00 SDK dynamic-link libraries.
 - b. Copy any custom IActions, including any that you recompiled, to the location of the 9.00 RAS installation.

12. Open the upgraded `Central.properties` file in a text editor and copy into it any custom properties from your backup of the previous `Central.properties` file.
13. Start the Central service:

```
$> $ICONCLUDE_HOME/bin/Central.sh start
```

14. Start the RAS service (optional):

```
$> $ICONCLUDE_HOME/bin/JRAS.sh start
```

The options for `Central.sh` can also be used with this command.

If you are installing a version in which the repository is upgraded, that continues in the background after the Central installation is complete. Be aware that the repository upgrade may not be complete for quite some time. For information on monitoring progress of the repository upgrade, see the following step.

15. To follow the repository upgrade's progress, monitor the `Central_wrapper.log` file, using the following command, which displays the `Central_wrapper.log` file as it is written during the repository upgrade.

```
tail -f Central_wrapper.log
```

When you see both of the following strings, which occur in the following order but in separate entries, the repository upgrade is complete:

```
Commit successful
```

```
.
```

.

.

done upgrading the repository to 9.00n

where n is a string of numbers.

OR

You can discover whether the repository upgrade has completed by attempting to connect to Central. You will not be able to connect to Central until the repository upgrade is complete.

16. After the upgrade is complete, copy the backups you made of the folders that contain any custom IActions and those that contain the .dll or .jar files from which the custom IActions were derived to the following location in the RAS installation: /RAS/Java/Default/repository/lib.
17. If you wish to increase the capacity of the system:

- a. Increase the fd limit for the user under which Central runs, by adding the following two lines to the user's file /etc/security/limits.conf:

```
myuser soft nofile 65536
```

```
myuser hard nofile 65536
```

- b. Log in as "myuser" and check the value by issuing the `ulimit -n` command.

For instance, if the user were named "user1", the two lines that you would add to the file /etc/security/limits.conf would be:

```
user1 soft nofile 65536
```

```
user1 hard nofile 65536
```

Then you would log into the box as user1 and check the value by issuing the `ulimit -n` command.

Full Version of Installing Central on a Linux Operating System

On Central servers that have a Linux operating system, you can have as many installations of the OO Central Web application as you wish on the same host; these installations can be of the same version or different versions. When installing multiple copies of Central on one host, edit the install.config file for each installation to make sure that there are no port conflicts and no database conflicts among the installations of Central.

Important: If Central's database server is an Oracle RAC, incorporate the Guide to Installing HP OO with RAC (InstallingHPOO_RACGuide.pdf) into the following planning, configurations, and procedures.

There are two versions of the installation package for each database management system, one for the 64-bit version of Linux and one for the 32-bit version:

- On a 64-bit version of Linux, it is recommended that you use the 64-bit version (Central-9.00-linux64-<database system>.zip).
- On a 32-bit version of Linux, be sure to use the 32-bit version (Central-9.00-linux-<database system>.zip).

If you have a version of the product can install in multiple languages, there is a setting, `OO_LANGUAGE=`, with which you specify an English- or Japanese-language installation.

This package includes Java Runtime Environment (JRE), version 1.6.

To install Central on a Linux operating system (full version)

1. From the installation files, unzip the appropriate one of the following .zip files:

- Central-9.00-linux.zip for 32-bit systems
- Central-9.00-linux64.zip for 64-bit systems

In the directory where the zip file resides, unzipping the file by default creates a subdirectory named Central-9.00, which will be the home directory for OO Central (`$ICONCLUDE_HOME`).

To unzip to a different location, add `-d` and an existing directory name to the unzip command.

2. Open the new Central home directory.
3. Edit the `install.config` file, changing the values for the following parameters as appropriate to your environment.

Note: If you have a version of the product that can install in multiple languages, note the new setting, `OO_LANGUAGE=`, for specifying which language to install in.

- `HTTP_PORT` and `HTTPS_PORT`

These are the ports that the OO components use for communication. `HTTPS_PORT` is the port used for SSL (Secure Sockets Layer) communication.

By default, the value for `HTTP_PORT` is 8080 and the value for `HTTPS_PORT` is 8443.

- `MAX_HEAP_SIZE`

The amount of memory (RAM), in megabytes, that the Java process has available for running Central. The default value is 768.

- `MAX_PERM_SIZE`

The amount of memory (RAM), in megabytes, that the Java process has available for running Central. The default value is 64.

- Following are the database settings:

- `RECREATE_DB_SCHEMA`

Set this value to “true”.

- `DB_HOST`

The name or IP address of the machine on which the Central database runs.

- `DB_TYPE`

The database management system of the Central database, either mysql, oracle, or sqlserver.

- DB_PORT

The port that the database uses for communication. The comment in install.config provides the default port used by each of the database types.

Important: Do not provide a value if you are using Oracle RAC. For more information, see the Important note below.

- DB_NAME

The name of the database that Central uses.

- DB_USER

The name of the database user account under which Central accesses the database.

- DB_CONN_POOL_SIZE

The number of database connections that are available.

Important: If the database used is an Oracle RAC configuration, the settings for DB_HOST and DB_PORT are not used. This is because a cluster usually involves two or more hosts with possibly different ports. Thus, the settings for ORACLE_RAC_NODES and ORACLE_RAC_ONS_CONFIG must be uncommented and populated accordingly. If by mistake both DB_HOST/DB_PORT and ORACLE_RAC_NODES/ORACLE_RAC_ONS_CONFIG are populated, the RAC settings will take precedence, whereas the other settings will be ignored. See the Guide to Installing HP OO with RAC (InstallingHPOO_RACGuide.pdf) for more information.

- ICONCLUDE_USER

The linux user account under which the Central services run. If you do not specify a user account, the user is the account under which you are installing Central. You might specify a different account if, for instance, the account that you specify as the ICONCLUDE_USER has different privileges from the account that is installing Central.

- JRAS_HOST

The machine on which the Remote Action Service (RAS) service runs. If RAS is installed on the same machine as Central, you can leave the value blank.

- JRAS_PORT

The port that RAS uses to communicate.

- JRAS_MAX_HEAP_SIZE

The amount of RAM, in megabytes, that the Java process has available for running RAS.

- CENTRAL_BROADCAST

The IP address for Central to which RAS sends messages to let Central know that RAS is still running.

- `STUDIO_BROADCAST`

The IP address for Studio to which RAS and Central each sends messages to let Studio know that they are still running.

- `JAVA_HOME`

The home for the Java Runtime Environment (JRE) that Central uses. By default (which is used if you leave the value empty), the JRE home is `$ICONCLUDE_HOME/jre1.6`.

- `SCHEDULER_ACCOUNT`

An internal OO account (that is, a user account created within OO) that is used to run flows that are run automatically. By default, this is the “admin” account, which is automatically created in the course of installing Central. This value cannot be blank. If you specify a different account from “admin,” then after installing Central, you must be sure to create the account that you specify, and provide the account with the capabilities and permissions necessary for running flows automatically.

- `SCHEDULER_PORT`

The port that the Scheduler feature in Central uses to communicate.

- `SCHEDULER_MAX_HEAP_SIZE`

The amount of RAM, in megabytes, that the Java process has available for running the Scheduler feature in Central.

- The following parameters specify which upgrade the installation program will perform and where the existing version of Central is located:

- Make sure that the value for `UPGRADE_PREVIOUS_VERSION` is “false”.
- Leave `PREVIOUS_ICONCLUDE_HOME=""` empty between the quotation marks.
- `COPY_PREVIOUS_REPO_TO_FOLDER`

Leave the value empty.

- `OO_LANGUAGE="English"`

The language version of Central that is installed. Do not change this setting unless you have a version of the product that can install to multiple languages and you wish to install in a different language from English.

There are two possible values: “English” and “Japanese”. If you do not have a version of OO that can be installed in multiple languages, then leave the value as “English”.

4. Run the script `./configure.sh`.

This script applies the configuration parameters to the appropriate files and either creates, recreates, or modifies the database schema (depending on whether you are performing a new installation or upgrading). It also produces `.iconcluderc`, a hidden file, in the current directory.

5. When prompted for the password for the database user for Central, type, and then (when prompted) retype the database user password.

6. When prompted to create a password for the iconclude user (the user specified in `install.config` in `ICONCLUDE_USER="<iconclude_user_name>"`, as described above in this

procedure), type, and then (when prompted) retype, a password for the user.

The `configure.sh` script writes the following log files:

- `./configure.log`
- `./recreate-db.log`

7. Source the file `.iconcluderc`, and then verify that the environment variable `$ICONCLUDE_HOME` is properly set.
8. Use the following command to confirm that the Central service is started:

```
$> $ICONCLUDE_HOME/bin/Central.sh start
```

Note: the options for all the startup scripts are:

- `console`
Runs the program in console mode (non-daemon, has controlling tty).
- `start`
Starts as daemon.
- `stop`
Stops program.
- `restart`
Stops, then starts as daemon.
- `status`
Shows status and PID.
- `dump`
Sends a SIGQUIT to the java process, forcing it to do a thread dump.

9. Use the following command to confirm that the RAS service is started (optional):

```
$> $ICONCLUDE_HOME/bin/JRAS.sh start
```

The options for `Central.sh` can also be used with this command.

10. If you wish to increase the capacity of the system:
 - a. Increase the fd limit for the user under which Central runs, by adding the following two lines to the user's file `/etc/security/limits.conf`:

```
myuser soft nofile 65536
myuser hard nofile 65536
```
 - b. Log in as "myuser" and check the value by issuing the `ulimit -n` command.

For instance, if the user is named "user1", you would add these two lines to the file `/etc/security/limits.conf`:

```
user1 soft nofile 65536
```

```
user1 hard nofile 65536
```

Then you would log into the box as user1 and check the value by issuing the `ulimit -n` command.

The following are useful log files to monitor:

- `$ICONCLUDE_HOME/Central/logs/Central_wrapper.log`
- `$ICONCLUDE_HOME/RAS/Java/Default/webapp/logs/wrapper.log`

Other useful locations are:

- `$ICONCLUDE_HOME/bin` has symbolic links to startup files for Central and RAS.
- `$ICONCLUDE_HOME/conf` has symbolic links to wrapper.conf files for Central and RAS.

Next, you install Studio. For the Studio installation procedure, see [Installing or upgrading Studio](#).

Full Version of Upgrading Central on a Linux Operating System

On Central servers that have a Linux operating system, you can have as many installations of the OO Central Web application as you wish on the same host; these installations can be of the same version or different versions. When upgrading multiple copies of Central on one host, edit the `install.config` file for each installation to make sure that there are no port conflicts and no database conflicts among the installations of Central.

Important: If Central's database server is an Oracle RAC, incorporate the [Guide to Installing HP OO with RAC \(InstallingHPOO_RACGuide.pdf\)](#) into the following planning, configurations, and procedures.

There are two versions of the installation package for each database management system, one for the 64-bit version of Linux and one for the 32-bit version:

- On a 64-bit version of Linux, it is recommended that you use the 64-bit version (`Central-9.00-linux64-<database system>.zip`).
- On a 32-bit version of Linux, be sure to use the 32-bit version (`Central-9.00-linux-<database system>.zip`).

If you have a version of the product can install in multiple languages, there is a setting, `OO_LANGUAGE=`, with which you specify an English- or Japanese-language installation.

This package includes Java Runtime Environment (JRE), version 1.6.

To upgrade Central on a Linux operating system

1. Complete the tasks in [Preparing to upgrade](#).
2. From the installation files, unzip the appropriate one of the following .zip files:
 - `Central-9.02.0001-linux.zip` for 32-bit systems
 - `Central-9.02.0001-linux64.zip` for 64-bit systems

In the directory where the zip file resides, unzipping the file by default creates a subdirectory named Central-9.00, which will be the home directory for OO Central (\$ICONCLUDE_HOME).

To unzip to a different location, add `-d` and an existing directory name to the unzip command.

3. Open the new Central home directory.
4. Edit the `install.config` file, changing the values for the following parameters as appropriate to your environment.

Note: If you have a version of the product that can install in multiple languages, note the new setting, `OO_LANGUAGE=`, for specifying which language to install in.

- `HTTP_PORT` and `HTTPS_PORT`

These are the ports that the OO components use for communication. `HTTPS_PORT` is the port used for SSL (Secure Sockets Layer) communication.

By default, the value for `HTTP_PORT` is 8080 and the value for `HTTPS_PORT` is 8443.

- `MAX_HEAP_SIZE`

The amount of memory (RAM), in megabytes, that the Java process has available for running Central. The default value is 768.

- `MAX_PERM_SIZE`

The amount of memory (RAM), in megabytes, that the Java process has available for running Central. The default value is 64.

- Following are the database settings:

Important: If the database used is an Oracle RAC configuration, the settings for `DB_HOST` and `DB_PORT` are not used. This is because a cluster usually involves two or more hosts with possibly different ports. Thus, the settings for `ORACLE_RAC_NODES` and `ORACLE_RAC_ONS_CONFIG` must be uncommented and populated accordingly. If by mistake both `DB_HOST/DB_PORT` and `ORACLE_RAC_NODES/ORACLE_RAC_ONS_CONFIG` are populated, the RAC settings will take precedence, whereas the other settings will be ignored. See the Guide to Installing HP OO with RAC ([InstallingHPOO_RACGuide.pdf](#)) for more information.

- `RECREATE_DB_SCHEMA`

Because you are upgrading, leave this value as `false`.

- `DB_HOST`

The name or IP address of the machine on which the Central database runs.

- `DB_TYPE`

The database management system of the Central database, either `mysql`, `oracle`, or `sqlserver`.

- `DB_PORT`

The port that the database uses for communication. The comment in `install.config` provides the default port used by each of the database types.

Important: Do not provide a value if you are using Oracle RAC. For more information, see the Important note below.

- `DB_NAME`
The name of the database that Central uses.
- `DB_USER`
The name of the database user account under which Central accesses the database.
- `DB_CONN_POOL_SIZE`
The number of database connections that are available.
- `ICONCLUDE_USER`
The linux user account under which the Central services run. If you do not specify a user account, the user is the account under which you are installing Central. You might specify a different account if, for instance, the account that you specify as the `ICONCLUDE_USER` has different privileges from the account that is installing Central.
- `JRAS_HOST`
The machine on which the Remote Action Service (RAS) service runs. If RAS is installed on the same machine as Central, you can leave the value blank.
- `JRAS_PORT`
The port that RAS uses to communicate.
- `JRAS_MAX_HEAP_SIZE`
The amount of RAM, in megabytes, that the Java process has available for running RAS.
- `CENTRAL_BROADCAST`
The IP address for Central to which RAS sends messages to let Central know that RAS is still running.
- `STUDIO_BROADCAST`
The IP address for Studio to which RAS and Central each sends messages to let Studio know that they are still running.
- `JAVA_HOME`
The home for the Java Runtime Environment (JRE) that Central uses. By default (which is used if you leave the value empty), the JRE home is `$ICONCLUDE_HOME/jre1.6`.
- `SCHEDULER_ACCOUNT`
An internal OO account (that is, a user account created within OO) that is used to run flows that are run automatically. By default, this is the “admin” account, which is automatically created in the course of installing Central. This value cannot be blank. If you specify a different account from “admin,” then after installing Central, you must be sure to create the account that you specify, and provide the account with the capabilities and permissions necessary for running flows automatically.
- `SCHEDULER_MAX_HEAP_SIZE`
The amount of RAM, in megabytes, that the Java process has available for running the Scheduler feature in Central.
- The following parameters specify which upgrade the installation program will perform and where the existing version of Central is located:

- Change the value for `UPGRADE_PREVIOUS_VERSION` to "true".
- Change `PREVIOUS_ICONCLUDE_HOME=""` to include, between the quotation marks, the location of the previous installation from which you are upgrading.

Best practice is to specify the absolute path rather than the relative path. For example, if the installation from you are upgrading were in the `/iconclude_home/htudor/Central-9.00` directory, you would provide the value:

`/iconclude_home/htudor/Central-9.00`

- `COPY_PREVIOUS_REPO_TO_FOLDER`
Folder location where you want the installation program to create a copy of the folder containing the repository.
- `OO_LANGUAGE="English"`
The language version of Central that is installed.

Do not change this setting unless you have a version of the product that can install to multiple languages and you wish to install in a different language from English.

There are two possible values: "English" and "Japanese". If you do not have a version of OO that can be installed in multiple languages, then leave the value as "English".

5. Stop the Central, RAS, and Scheduler services, using the following commands:

```
$> $ICONCLUDE_HOME/bin/Central.sh stop
$> $ICONCLUDE_HOME/bin/JRAS.sh stop
$> $ICONCLUDE_HOME/bin/Scheduler.sh stop
```

6. Run the script `./configure.sh`.

This script applies the configuration parameters to the appropriate files and either creates, recreates, or modifies the database schema (depending on whether you are performing a new installation or upgrading). It also produces `.iconcluderc`, a hidden file, in the current directory.

In doing so, the `configure.sh` script does the following:

- Copies the following settings from the version you are upgrading to the 9.00 `install.config` file:
 - `HTTP_PORT`
 - `HTTPS_PORT`
 - `DB_HOST`
 - `DB_PORT`
 - `DB_NAME`
 - `DB_USER`
 - `CONFIGURE_JRAS`
 - `JRAS_HOST`
 - `JRAS_PORT`
 - `JRAS_MAX_HEAP_SIZE`

- CENTRAL_BROADCAST
 - STUDIO_BROADCAST
 - SCHEDULER_ENABLED
 - SCHEDULER_HOST
 - SCHEDULER_PORT
 - SCHEDULER_PROTO
- Writes the ./configure.log log file.
7. Source the file .iconcluderc, and then verify that the environment variable \$ICONCLUDE_HOME is properly set.
 8. You can follow the repository upgrade's progress by monitoring the Central_wrapper.log file, using the following command, which displays the Central_wrapper.log file as it is written during the repository upgrade.

```
tail -f Central_wrapper.log
```

When you see both of the following strings, which occur in the following order but in separate entries, the repository upgrade is complete:

```
Commit successful
```

```
.  
.
.
```

```
done upgrading the repository to 9.00n
```

where n is a string of numbers.

OR

You can discover whether the repository upgrade has completed by attempting to connect to Central. You will not be able to connect to Central until the repository upgrade is complete.

9. If you plan to run flows on a RAS installed on a Windows machine:
 - a. Recompile any custom .NET-based IActions, using Microsoft Visual Studio 2005 SP1 and the HP OO 9.00 SDK dynamic-link libraries.
 - b. Copy any custom IActions, including any that you recompiled, to the location of the 9.00 RAS installation.
10. Open the upgraded Central.properties file in a text editor and copy into it any custom properties from your backup of the previous Central.properties file.
11. Use the following command to confirm that the Central service is started:

```
$> $ICONCLUDE_HOME/bin/Central.sh start
```

The options for all the startup scripts are:

- console
Runs the program in console mode (non-daemon, has controlling tty).

- `start`
Starts as daemon.
- `stop`
Stops program.
- `restart`
Stops, then starts as daemon.
- `status`
Shows status and PID.
- `dump`
Sends a SIGQUIT to the java process, forcing it to do a thread dump.

12. Use the following command to confirm that the RAS service is started (optional):

```
$> $ICONCLUDE_HOME/bin/JRAS.sh start
```

The options for `Central.sh` can also be used with this command.

Important: The upgrade of the repository continues in the background after the Central installation is complete. Be aware that the repository upgrade may not be complete for quite some time. For information on monitoring progress of the repository upgrade, see the following step.

13. After the upgrade is complete, copy the backups you made of the folders that contain any custom IActions and those that contain the `.dll` or `.jar` files from which the custom IActions were derived to the following location in the RAS installation: `/RAS/Java/Default/repository/lib`.

14. If you wish to increase the capacity of the system:

- a. Increase the fd limit for the user under which Central runs, by adding the following two lines to the user's file `/etc/security/limits.conf`:

```
myuser soft nofile 65536
```

```
myuser hard nofile 65536
```

- b. Log in as "myuser" and check the value by issuing the `ulimit -n` command.

For instance, if the user were named "user1", you would add these two lines to the file `/etc/security/limits.conf`:

```
user1 soft nofile 65536
```

```
user1 hard nofile 65536
```

You would then log into the box as `user1` and check the value by issuing the `ulimit -n` command.

The following are useful log files to monitor:

- `$ICONCLUDE_HOME/Central/logs/Central_wrapper.log`
- `$ICONCLUDE_HOME/RAS/Java/Default/webapp/logs/wrapper.log`

Other useful locations are:

- \$ICONCLUDE_HOME/bin has symbolic links to startup files for Central and RAS.
- \$ICONCLUDE_HOME/conf has symbolic links to wrapper.conf files for Central and RAS.

To upgrade a standalone RAS installation, perform a normal standalone RAS installation. For the standalone RAS installation, see [Installing RAS on standalone servers](#).

Your current-version AD or Kerberos settings have migrated into 9.00.

Next, you install Studio. For the Studio installation procedure, see [Installing or upgrading Studio](#).

Installing or Upgrading Studio

Caution: After you have installed Studio, in general, you should start and log in to a given instance of Studio as a single user, on a single computer. Make sure you understand the following:

- Do not start multiple instances of Studio on the same computer, using multiple remote desktop programs from other computers, whether you log in as the same user or as different users. Doing so can result in data corruption and/or loss, or can cause unexpected behavior in Studio, including crashes.
- Do not connect to the public repository for the same installation of Central when logged in to two different instances of Studio as the same user. If you do, the user's workspace in the repository can become corrupted. This can also occur when Central is clustered.

For the procedures for installing or upgrading Studio, see the appropriate one of the following sections:

- [Short version of installing Studio.](#)
- [Full version of installing Studio.](#)
- [Short version of upgrading Studio.](#)
- [Full version of upgrading Studio.](#)

Note: Make sure that you allocate free space for the installation. This depends on the local repository size as the local installation folders are backed up before you upgrade.

It is recommended that you check the size of the installed products and make sure there is at least the same free space available on the disk.

Before you upgrade or downgrade your version, make sure that you backup your local and remote repositories. They are not backed up automatically.

Short Version of Installing Studio

To install Studio (short version of installation)

1. Make sure that users who will author flows in Studio have full control permission for the OO home directory, recursively.

Without such permission, a user cannot start Studio.

By default, the OO home directory is `..\Program Files\Hewlett-Packard\Operations Orchestration\`.

2. To start the Studio Setup Wizard, navigate to and double-click the appropriate one of the following files:
 - `StudiInstaller-9.00.exe` for a 32-bit system
 - `StudiInstaller64-9.00.exe` for a 64-bit system

3. On the **Welcome** page, click **Next**.
4. On the **License Agreement** page, read the agreement, select I accept the agreement, and then click **Next**.

The **Select Destination Location** page appears, unless you have already installed Central on this machine. If you have already installed Central on this machine, Studio is automatically installed in the Studio subfolder of the OO home directory. If this is the case, skip the following step.

5. On the **Select Destination Location** page, type the location where you want the Studio files installed.

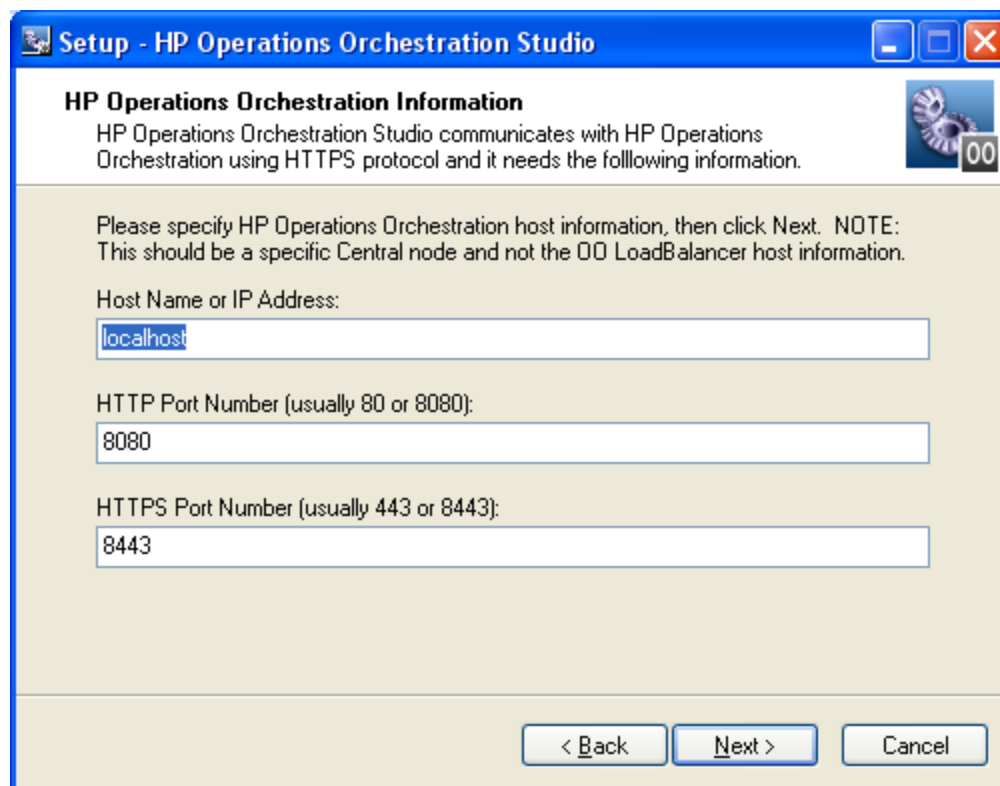
OR

Click **Browse**, navigate to the location where you want Studio installed, and then click **Next**.

If you have a version of the product that can install in multiple languages, then the **Language Selection** page appears. If the **Language Selection** page does not appear, skip the following step.

6. On the **Language Selection** page, from the drop-down list, select either **English** or **Japanese**, and then click **Next**.

The **HP Operations Orchestration Information** page appears.



The screenshot shows a Windows-style window titled "Setup - HP Operations Orchestration Studio". The main content area is titled "HP Operations Orchestration Information" and contains the following text: "HP Operations Orchestration Studio communicates with HP Operations Orchestration using HTTPS protocol and it needs the following information." Below this, a note states: "Please specify HP Operations Orchestration host information, then click Next. NOTE: This should be a specific Central node and not the OO LoadBalancer host information." There are three input fields: "Host Name or IP Address:" with the value "localhost", "HTTP Port Number (usually 80 or 8080):" with the value "8080", and "HTTPS Port Number (usually 443 or 8443):" with the value "8443". At the bottom of the window are three buttons: "< Back", "Next >", and "Cancel".

7. On the **HP Operations Orchestration Information** page, to specify the server on which the Web application is installed, type the server name in the text box beside **Host Name or IP Address**.

OR

If you are installing the Studio on the same machine on which the Web application is installed, leave localhost in the text box.

8. Make sure the HTTPS and HTTP port numbers match the HTTPS and HTTP port numbers, respectively, that the administrator specified when installing Central, and then click **Next**.

The **Select Additional Tasks** page appears.

9. To create a desktop icon for Studio, select the **Create a desktop icon** checkbox, and then click **Next**.
10. On the **Ready to Install** page, click **Install**.

After a few minutes, the **Completing the...Setup** page appears.

11. On the **Completing the...Setup** page, click **Finish**.
12. To test the installation, start Studio, logging in with the username (admin) and password that were created in the Central installation.

If you did not install Central or if the Central administrator or installer created a user account for you, get the username and password from him or her.

Short Version of Upgrading Studio

References in the following procedure to your current version or installation of Studio refer only to Studio 7.20, 7.50, 7.51, or 7.60. If you are upgrading from an earlier version of PAS or Repair System, see [Upgrade Path](#) for the upgrade path to follow.

Important: The installation requires a port number for communications using the HTTPS protocol. This port number was specified during installation of the Central Web application. Before starting installation of Studio, obtain this port number from the person who installed Central.

If your old installation of Studio is the 32-bit version, the 64-bit version of Studio 9.02 will be installed in the same location as the version from which you are upgrading. This does not cause any problems. Although you may have the impression that you installed the 32-bit version, the 64-bit version was in fact installed and will operate normally as a 64-bit version of Studio.

To upgrade Studio (short version of upgrade)

1. Make sure that users who will author flows in Studio have full control permission for the OO home directory, recursively.

Without such permission, a user cannot start Studio.

By default, the OO home directory is `..\Program Files\Hewlett-Packard\Operations Orchestration\`.

2. If you have not already exported the public repository and any local repositories, storing each export in a safe place, then do so now.

You will import the repositories later.

3. If you have not already uninstalled your current Studio, do so now.

4. Whether the Studio that you are installing is on its own machine or is on the Central server, in the OO home directory, delete the contents of the Studio subdirectory.
5. To start the Studio Setup Wizard, navigate to and double-click the appropriate one of the following files:
 - StudiInstaller-9.00.exe for a 32-bit system
 - StudiInstaller64-9.00.exe for a 64-bit system
6. On the **Welcome** page, click **Next**.
7. On the **License Agreement** page, read the agreement, select I accept the agreement, and then click **Next**.

If you have a version of the product can install in multiple languages, then the **Language Selection** page appears. If the **Language Selection** page does not appear, skip the following step.

8. On the **Language Selection** page, from the drop-down list, select either **English** or **Japanese**, and then click **Next**.

The **HP Operations Orchestration Information** page appears.

Setup - HP Operations Orchestration Studio

HP Operations Orchestration Information

HP Operations Orchestration Studio communicates with HP Operations Orchestration using HTTPS protocol and it needs the following information.

Please specify HP Operations Orchestration host information, then click Next. NOTE: This should be a specific Central node and not the OO LoadBalancer host information.

Host Name or IP Address:

HTTP Port Number (usually 80 or 8080):

HTTPS Port Number (usually 443 or 8443):

< Back Next > Cancel

9. On the **HP Operations Orchestration Information** page, to specify the server on which the Web application is installed, type the server name in the text box beside **Host Name or IP Address**.

OR

If you are installing the Studio on the same machine on which the Web application is installed, leave the value **localhost** in the text box.

10. Make sure that the HTTPS and HTTP port numbers match those that the administrator specified when installing Central, and then click **Next**.

The **Select Additional Tasks** page appears.

11. To create a desktop icon for Studio, select the **Create a desktop icon** checkbox, and then click **Next**.

12. On the **Ready to Install** page, click **Install**.

After a few minutes, the **Completing the...Setup** page appears.

13. On the **Completing the...Setup** page, click **Finish**.

14. To test the installation, start Studio, logging in with the username (admin) and password that were created in the Central installation.

If you did not install Central or if the Central administrator or installer created a user account for you, get the username and password from him or her.

Full Version of Installing Studio

To install Studio, you must be logged in with an account that is either a Power User or a local Administrator.

Important: The installation requires a port number for communications using the HTTPS protocol. This port number was specified during installation of the Central Web application. Before starting installation of Studio, obtain this port number from the person who installed Central.

To install Studio (full version)

1. Make sure that users who will author flows in Studio have full control permission for the OO home directory, recursively.

Without such permission, a user cannot start Studio.

By default, the OO home directory is `..\Program Files\Hewlett-Packard\Operations Orchestration\`.

2. To start the Studio Setup Wizard, navigate to and double-click the appropriate one of the following files:

- `StudioInstaller-9.00.exe` for a 32-bit system
- `StudioInstaller64-9.00.exe` for a 64-bit system

3. On the **Welcome** page, click **Next**.

4. On the **License Agreement** page, accept the terms of the license agreement, and then click **Next**.

The **Select Destination Location** page appears, unless you have already installed Central or have previously installed Studio on this machine. If either case is true, the **Select Destination**

Location page does not appear. Rather, Studio is automatically installed in the Studio subfolder of the OO home directory. If this is the case, skip the following step.

5. On the **Select Destination Location** page, type the location where you want the Studio files installed.

OR

Click **Browse**, navigate to the location where you want Studio installed, and then click **Next**.

Important: If you install Studio on a Windows Vista operating system, do not select C:\Program Files as the location. If you do, an error will prevent the installation from going further, and you will be prompted to change the installation location.

If you have a version of the product can install in multiple languages, then the **Language Selection** page appears. If the **Language Selection** page does not appear, skip the following step.

6. On the **Language Selection** page, from the drop-down list, select either **English** or **Japanese**, and then click **Next**.

The **HP Operations Orchestration Information** page appears.

Setup - HP Operations Orchestration Studio

HP Operations Orchestration Information

HP Operations Orchestration Studio communicates with HP Operations Orchestration using HTTPS protocol and it needs the following information.

Please specify HP Operations Orchestration host information, then click Next. NOTE: This should be a specific Central node and not the OO LoadBalancer host information.

Host Name or IP Address:

HTTP Port Number (usually 80 or 8080):

HTTPS Port Number (usually 443 or 8443):

< Back Next > Cancel

7. To specify the server on which the Web application is installed, type the server name in the text box beside **Host Name or IP Address**.

OR

If you are installing the Studio on the same machine on which the Web application is installed, leave the value **localhost** in the text box.

8. Make sure that the HTTPS and HTTP port numbers match those that the administrator specified when installing Central, and then click **Next**.

The **Select Additional Tasks** page appears.

9. To create a desktop icon for Studio, select the **Create a desktop icon** checkbox, and then click **Next**.

The **Ready to Install** page appears, displaying the location where Central will be installed and other information on the choices you have made.

10. To proceed, click **Install**.

OR

Click **Back** until you reach the installation wizard page on which you want to make changes, make your changes, and then return to this point in the installation.

The Setup Wizard tracks progress on the Installing page.

11. After the installation completes, on the **Completing the...Setup** page, click **Finish**.
12. To test the installation, start Studio, logging in with the username (admin) and password that were created in the Central installation.

If you did not install Central or if the Central administrator or installer created a user account for you, get the username and password from him or her.

Full Version of Upgrading Studio

To upgrade Studio, you must be logged in with an account that is either a Power User or a local Administrator.

Important: The installation requires a port number for communications using the HTTPS protocol. This port number was specified during installation of the Central Web application. Before starting installation of Studio, obtain this port number from the person who installed Central.

References in the following procedure to your current version or installation of Studio refer only to Studio 7.20, 7.50, 7.51, or 7.60. If you are upgrading from an earlier version of PAS or Repair System, see [Upgrade Path](#) for the upgrade path to follow.

If your old installation of Studio is the 32-bit version, the 64-bit version of Studio 9.00 will be installed in the same location as the version from which you are upgrading. This does not cause any problems. Although you may have the impression that you installed the 32-bit version, the 64-bit version was in fact installed and will operate normally as a 64-bit version of Studio.

To upgrade Studio (full version of upgrade)

1. Make sure that users who will author flows in Studio have full control permission for the OO home directory, recursively.

Without such permission, a user cannot start Studio.

By default, the OO home directory is ..\Program Files\Hewlett-Packard\Operations Orchestration\.

2. If you have not already exported the public repository and any local repositories, storing each export in a safe place, then do so now.

You will import the repositories later.

3. If you have not already uninstalled your current Studio, do so now.
4. Whether the Studio that you are installing is on its own machine or is on the Central server, in the OO home directory, delete the contents of the Studio subdirectory.
5. To start the Studio Setup Wizard, navigate to and double-click the appropriate one of the following files:
 - StudioInstaller-9.00.exe for a 32-bit system
 - StudioInstaller64-9.00.exe for a 64-bit system

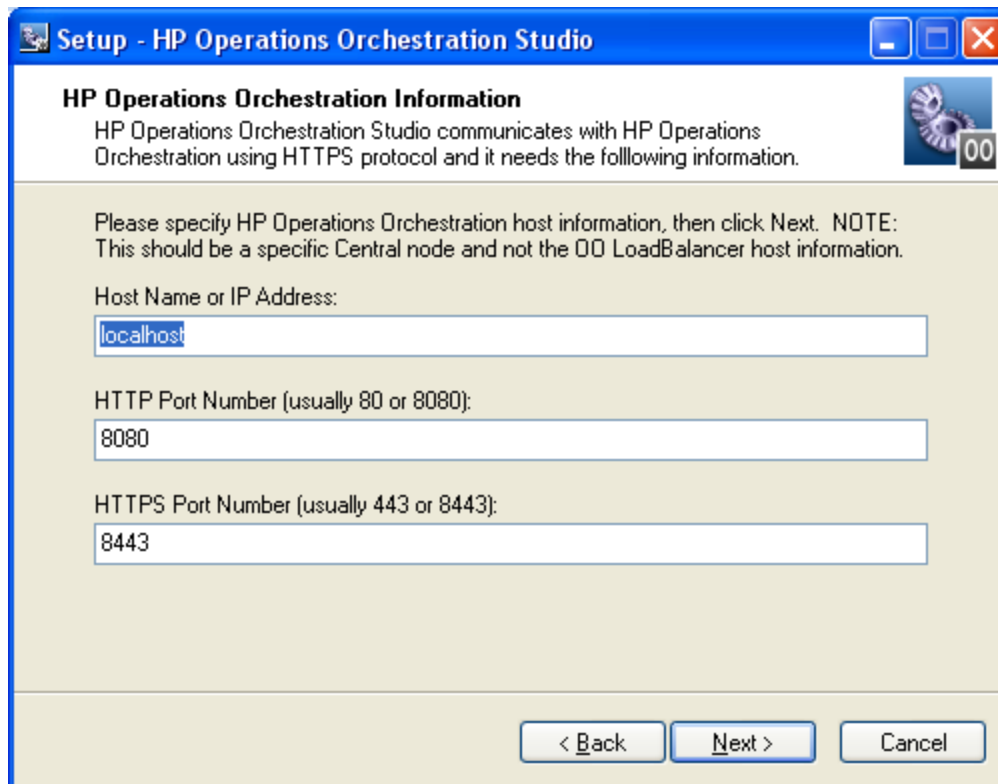
6. On the **Welcome** page, click **Next**.

7. On the **License Agreement** page, accept the terms of the license agreement, and then click **Next**.

If you have a version of the product can install in multiple languages, then the **Language Selection** page appears. If the **Language Selection** page does not appear, skip the following step.

8. On the **Language Selection** page, from the drop-down list, select either English or Japanese, and then click **Next**.

The **HP Operations Orchestration Information** page appears.



9. To specify the server on which the Web application is installed, type the server name in the text box beside **Host Name or IP Address**.

OR

If you are installing the Studio on the same machine on which the OO Central Web application is installed, leave localhost in the text box.

10. Make sure the HTTPS port number matches the one that the administrator specified when installing Central, and then click **Next**.

The **Select Additional Tasks** page appears.

11. To create a desktop icon for Studio, select the **Create a desktop icon** checkbox, and then click **Next**.

The **Ready to Install** page appears, displaying the location where Central will be installed and other information on the choices you have made.

12. To proceed, click **Install**.

OR

If you need to make changes to the values you specified on previous wizard pages, click **Back** until you reach the installation wizard page on which you want to make changes, make your changes, and then return to this point in the installation.

The Setup Wizard tracks progress on the **Installing** page.

13. After the installation completes, on the **Completing the...Setup** page, click **Finish**.
14. To test the installation, start Studio, logging in with the username (admin) and password that

were created in the Central installation.

If you did not install Central or if the Central administrator or installer created a user account for you, get the username and password from him or her.

Silent Installation of Central and Studio

A silent installation is one that is started from the command line and completes without any input from the person who started it. A normal (non-silent) installation requires the user to provide input through a wizard or dialog boxes. A silent installation gets its input from an XML input file that the administrator creates.

You can install and update HP Operations Orchestration silently from a command line. To learn how to create an XML input file, see "[Creating an XML Input File for OO Silent Installation](#)" on page 67.

Important: You must run the Central silent installer before you run the Studio silent installer.

When you run the installer, the result data for the installation is stored in an XML output file that the user can parse and view. You specify the name of the XML output file in the XML input file.

Installing Central Silently

You can start a normal installation of Central from a command line, using parameters to execute the installation in a silent way.

Note: You must meet the requirements specified in *System Requirements* and the required configurations of the database and database user, as described in "[Configuring the Database and Database User](#)" on page 26.

To install Central silently

- From a command line, type the following:

```
CentralInstaller-9.00.exe /VERYSILENT /SUPPRESSMSGBOXES  
/XMLINPUT=<XML_input_file> /aaccountpwd=<password> /dbpwd=<password>  
/LOG=<txt_log_file> /DIR=<installdir>
```

For more information on command parameters, see "[Central Silent Installer and Uninstaller Parameters](#)" on next page.

Uninstalling Central Silently

To uninstall Central silently

- From a command line, type the following:

```
unins000.exe /VERYSILENT /SUPPRESSMSGBOXES /LOG=<txt_log_file>
```

The **unins000.exe** file is located in the OO home directory, in the **Central\uninst** folder.

For more information on command parameters, see "[Central Silent Installer and Uninstaller Parameters](#)" on next page.

Central Silent Installer and Uninstaller Parameters

Following are the Central Installer and Uninstaller command parameters:

Parameter	Description
/VERYSILENT	Specifies that this is a silent installation. This is a required parameter.
/SUPPRESSMSGBOXES	Specifies that user input message boxes are not displayed during the installation.
/XMLINPUT=<XML_input_file>	<XML_input_file> is the name of the XML input file. This is a required parameter.
/aaccountpwd=<password>	Specifies the password of the OO administrator installing OO. You input the password from the command line instead of from the input XML file for security reasons, because the password should not persist on the target computer. This is a required parameter.
/dbpwd=<password>	Specifies the password for the OO database. You input the password from the command line instead of from the input XML file for security reasons, because the password should not persist on the target computer. This is a required parameter.
/LOG=<txt_log_file>	Specifies the name of the installation log file, which contains more information about the installation process.
/DIR=<installdir>	Specifies the path to install OO Central in if you do not want to install it in the default OO installation path C:\Program Files\Hewlett-Packard\Operations Orchestration\ .

Note: The /LOG=<txt_log_file>, /DIR=<installdir>, and /SUPPRESSMSGBOXES parameters are optional.

Installing Studio Silently

You can start a normal installation of Studio from a command line, using parameters to execute the installation in a silent way.

Note: You must meet the requirements specified in *System Requirements* (Sysreqs.pdf) and the required configurations of the database and database user, as described in "Configuring the Database and Database User" on page 26.

To install Studio silently

- From a command line, type the following:

```
StudioInstaller-9.00.exe /VERYSILENT /SUPPRESSMSGBOXES  
/XMLINPUT=<XML_input_file> /DIR=<installdir> /TASKS=desktopicon  
/LOG=<txt_log_file>>
```

For more information on command parameters, see "Studio Silent Installer and Uninstaller Parameters" below.

Uninstalling Studio Silently

To uninstall Studio silently

- From a command line, type the following:

```
unins000.exe /VERYSILENT /SUPPRESSMSGBOXES /LOG=<txt_log_file>
```

The **unins000.exe** file is located in the OO home directory, in the **Studio\uninst** folder.

For more information on command parameters, see "Studio Silent Installer and Uninstaller Parameters" below.

Studio Silent Installer and Uninstaller Parameters

Following are the Studio Installer and Uninstaller command parameters:

Parameter	Description
/VERYSILENT	Specifies that this is a silent installation. This is a required parameter.
/SUPPRESSMSGBOXES	Specifies that user input message boxes are not displayed during the installation.
/XMLINPUT=<XML_input_file>	<XML_input_file> is the name of the XML input file. This is a required parameter.
/DIR=<installdir>	Specifies the path to install OO Central in if you do not want to install it in the default OO installation path C:\Program Files\Hewlett-Packard\Operations Orchestration\ .
/TASKS=desktopicon	Creates a desktop shortcut for Studio.

Note: The `/DIR=<installdir, /TASKS=desktopicon, and /SUPPRESSMSGBOXES` parameters are optional.

Creating an XML Input File for OO Silent Installation

Communication between the server and the silent installers is done using XML files for input and output (result data). These files can have any name, but must use the `.xml` file name extension.

The XML input files use specific parameters. These are described in "Parameters for the XML Input File" on next page.

Silent installer XML input file parameter	OO Central and Studio Setup Wizard equivalent
<code><language value="language"/></code>	Language Selection on the Language Selection page
<code><CentralHTTPPortNumber value="value"/></code>	Central HTTP Port Number box on the Network Settings page
<code><CentralHTTPSPortNumber value="value"/></code>	Central HTTPS Port Number box on the Network Settings page
<code><BroadcastAddress value="value"/></code>	Broadcast address box on the Network Settings page

Silent installer XML input file parameter	OO Central Setup Wizard equivalent
<code><DatabaseType value = "value" /></code>	Database Type buttons on the Database Information page
<code><DatabaseHost value="value"/></code>	DB Host or IP Address on the Database Information page
<code><DatabasePort value="value"/></code>	DB Port Number on the Database Information page
<code><DatabaseName value="value"/></code>	DB Name on the Database Information page
<code><DatabaseUser value="value"/></code>	DB User Name on the Database Information page
<code><CreateOrRecreateSchema value="value"/></code>	Create or recreate (if it exists) the database schema? check box on the Database Information page

Parameters for the XML Input File

Parameter	Description
<XMLOutput value="filename"/>	Specifies the name of the XML output file. The file name must have an .xml file name extension.
<language value="language"/>	Specifies the OO language version. The valid values are English and Japanese .
<Fail_upgrade_if_different_lang value="value"/>	This input pertains only to OO Central upgrades that are not supported by the silent installer. Specify the value as false .
<CentralHostName value="value"/>	Specifies the Central host name or IP Address. If you don't want to change this, enter the default localhost .
<CentralHTTPPortNumber value="value"/>	Specifies the Central HTTP port number. If you don't want to change this, enter the default 8080 .
<CentralHTTPSPortNumber value="value"/>	Specifies the Central HTTPS port number. If you don't want to change this, enter the default 8443 .
<BroadcastAddress value="value"/>	Specifies the IP address for Central to which RAS sends messages to let Central know that RAS is still running. For example, 192.168.1.255 .
<DatabaseType value = "value"/>	Specifies the database type. The valid values are sqlserver , mysql , and oracle .
<DatabaseHost value="value"/>	Specifies the database server name. If you don't want to change this, enter the default localhost .
<DatabasePort value="value"/>	Specifies the database port number. The default ports are 1433 for SQLServer, 3306 for MySQL, and 1521 for Oracle.
<DatabaseName value="value"/>	Specifies the database name. For example, pas .
<DatabaseUser value="value"/>	Specifies the name of the database user.
<DatabaseUserDomain	Specifies the user's domain.

Parameter	Description
value="value">	
<CreateOrRecreateSchema value="value"/>	Specifies whether to create or recreate the OO database schema or to leave the database schema from the previously installed version of OO. The valid values are true and false .

Example of an OO Central XML Input File

```
<?xml version="1.0" encoding="UTF-8"?>
<HPOOInstallInput>

  <Action value="install"/>
  <Lang id="en"/>
  <XMLOutput value="CentralOutputFile.xml"/>

  <InstallationLang>
    <Language value="English"/>
    <Fail_upgrade_if_different_lang value="false"/>
  </InstallationLang>

  <NetworkSettings>
    <CentralHostName value="localhost"/>
    <CentralHTTPPortNumber value="8080"/>
    <CentralHTTPSPortNumber value="8443"/>
    <BroadcastAddress value="192.168.1.255"/>
  </NetworkSettings>

  <DatabaseInformations>
    <DatabaseType value="sqlserver"/>
    <DatabaseHost value="localhost"/>
    <DatabasePort value="1433"/>
    <DatabaseName value="pas"/>
    <DatabaseUser value="pas"/>
    <DatabaseUserDomain value=""/>
  </DatabaseInformations>
</HPOOInstallInput>
```

```
<CreateOrRecreateSchema value="true"/>  
</DatabaseInformations>
```

Example of an OO Studio XML Input File

```
<?xml version="1.0" encoding="UTF-8"?>  
<HPOOStudioInstallInput>  
  
  <Action value="install"/>  
  <Lang id="en"/>  
  <XMLOutput value="StudioOutputFile.xml"/>  
  <InstallationLang>  
    <Language value="English"/>  
  </InstallationLang>  
  
  <NetworkSettings>  
    <CentralHostName value="localhost"/>  
    <CentralHTTPPortNumber value="8080"/>  
    <CentralHTTPSPortNumber value="8443"/>  
    <BroadcastAddress value="192.168.1.255"/>  
  </NetworkSettings>  
</HPOOStudioInstallInput>
```

XML Output File Format

The XML output file name is specified in the `XMLOutput` parameter in the XML input file.

The output file contains XML elements that contain information about the result of the installation, such as error code, status, and informational message.

XML Elements for Output Files

The XML output file contains the following elements:

Parameter	Description
<code><ErrorCode>value</ErrorCode></code>	Specifies the error code generated by the installation. The valid values are 0 and 1 .

Parameter	Description
<code><Status>value</Status></code>	Specifies the status of the installation. The valid values are success and failure .
<code><ErrorMessage>message</ErrorMessage></code>	Specifies the message generated by the installation. Examples of possible messages are Installation completed and Installation failed. Error loading the xml input file .

Examples of OO XML Output Files

```
<?xml version="1.0" encoding="UTF-8"?>
<HPOOInstallOutput>
  <ErrorCode>0</ErrorCode>
  <Status>success</Status>
  <ErrorMessage>Installation completed.</ErrorMessage>
</HPOOInstallOutput>
```

```
<?xml version="1.0" encoding="UTF-8"?>
<HPOOInstallOutput>
  <ErrorCode>1</ErrorCode>
  <Status>error</Status>
  <ErrorMessage> Installation failed. Error loading the xml input
file</ErrorMessage>
</HPOOInstallOutput>
```

Further Installation Testing

Testing the installation involves the following high-level steps. For information on performing the necessary tasks in Studio and Central, see [Help for Studio](#) and [Help for Central](#).

1. After logging in to Studio, in the Library pane, open the Library folder and open some operations or flows in a folder such as Accelerator Packs or Utility Operations.
2. In your Web browser, access and log in to Central.
3. In Central, click the Flow Library tab, and, to preview a flow in the Library, open a folder in, say, Accelerator Packs, and click the flow name.

Note: Unless you can provide the information that a flow needs, you will not be able to run the flow to successful completion. For the reassurance of running a flow to success, you might try running a Health Check flow on the Central server (the server on which Central is installed). Health Check flows are in Accelerator Packs\Operating Systems, in the folder appropriate to the Central server's operating system. The Health Check flows are named <operating_system> Health Check. For the host input, type localhost.

Making OO Available to Users

For HP OO users to log in to Central or start Studio on their desktop:

- The Central Web server must be started.
- Central users need the URL and login information for the Central Web site.
- Studio users (authors) need the login information and, if Studio is not already installed on their machine, the installation files.

Before you provide users with the URL and login information for accessing the Central Web site or the installation file for Studio, make sure that client machines meet hardware and software requirements for Central or Studio, as described in the *OO System Requirements* document, and requirements for any required software.

To deploy Central and Studio to users

1. To start the Web server that contains the Central Web application, make sure that the RSCentral Windows service is started.
2. Send each Central user the following:

- The URL for the Central Web site.

This URL has the format:

```
http://<servername>:<portnumber>/PAS/
```

OR

```
https://<servername>:<portnumber>/PAS/
```

where `<servername>` is the name of the server on which the application is configured and `<portnumber>` is the port number that you specified when creating the application. By default, this port number is 8080 for HTTP or 8443 for HTTPS.

- The administrator login credentials (user name and password) that you created when installing the Central Web application.

Each user must log in with these credentials until you add his or her HP OO user account or map the user's external user account to an internal HP OO group.

3. Send each Studio user (flow author) the following:

- If you have not installed the author's copy of Studio, StudioInstaller-9.00.exe
- The administrator login credentials (user name and password) that you created when installing the Central Web application

Each user must log in with these credentials until you add or map his or her user account to the OO ADMINISTRATOR or AUTHOR group.

Best Practice: Mapping multiple users to the ADMINISTRATOR role should only take place on the development/testing/staging installation of Central. It is very important that in the production environment, there be only one Central user with ADMINISTRATOR capabilities.

Installing RAS on Standalone Servers

You can install a Remote Action Service (RAS) on a computer that is remote from the Central server. The RAS is enabled for running operations that need either the Java Runtime Environment (version 1.6) or the .NET framework.

Note: By default, the standalone RAS installation configures it to communicate over port 9004, which is also configured on the Central server for communicating with RAS.

Because RAS is installed as part of the Central install, this installation can only be done on machines on which Central has not been installed. This installation includes the installation of any HP OO content included in this release.

Installing Standalone RAS on Windows

Note: When installed on Windows, RAS is enabled for both Java-based and .NET-based operations.

To install the RAS server on a Windows operating system

1. Make sure that the server where you are going to install RAS:
 - Meets the system requirements for installing RAS. For the system requirements, see *HP OO System Requirements*.
 - Does not have RAS or Central installed.
2. On the OO installation CD, in the RAS folder, copy the appropriate one of the two following RAS installation executable files to the machine on which you're going to install RAS.
 - RASInstaller-9.00.exe for installing on 32-bit systems
 - RASInstaller64-9.00.exe for installing on 64-bit systems
3. To start the installation .exe, double-click the file.
4. On the OO RAS Setup Wizard's **Welcome** page, click **Next**.
5. On the **License Agreement** page, read the agreement, click **I accept the agreement**, and then click **Next**.

The **Network Settings** page appears. On the page, the **Broadcast address** box shows a default IP address for OO to use to communicate with other machines.

6. In the **Broadcast Address** box, accept the default IP address, and then click **Next**.

OR

Type a different IP address, and then click **Next**.

If you are installing on a machine on which folders remain from a previous RAS installation, the Setup program informs you that it will install RAS using that folder structure, and that you will not be prompted for a destination location.

If there are not folders left over from an earlier installation, the **Select Destination Location** page appears.

7. To accept the default path for RAS, click **Next**(and skip the next step).

OR

To choose a new folder, click **Browse**, navigate to and select the folder, click **OK**.to return to this page, and then click **Next**(and skip the next step).

The **Select Start Menu Folder** page prompts you to create or select the folder to hold the RAS program's shortcuts.

8. To accept the default folder, click **Next**.

OR

To choose a new folder, click **Browse**, navigate to and select the folder, click **OK**to return to this page, and then click **Next**.

The **Ready to Install** page appears, displaying the location where RAS will be installed and other information on the choices you have made.

9. To proceed, click **Install**.

The installation program tracks progress on the installation progress page.

10. When the installation completes, click **Finish**.

Upgrading Standalone RAS on Windows

Notes:

- When installed on Windows, RAS is enabled for both Java-based and .NET-based operations.
- Upgrading RAS to 9.00 involves uninstalling your previous version of RAS and reinstalling using the 9.00 RAS installation program.

To upgrade the RAS server on a Windows operating system

1. Make sure that the server where you are going to upgrade RAS:
 - Meets the system requirements for installing (upgrading) RAS. For the system requirements, see *HP OO System Requirements*.
 - Does not have Central or RAS installed.
2. If either Central or a RAS is installed on the server, uninstall it.
3. On the OO installation CD, in the RAS folder, copy the appropriate one of the two following RAS installation executable files to the machine on which you're going to install RAS.

- RASInstaller-9.00.exe for installing (upgrading) on 32-bit systems
- RASInstaller64-9.00.exe for installing (upgrading) on 64-bit systems

4. To start the installation .exe, double-click the file.
5. On the OO RAS Setup Wizard's Welcome page, click **Next**.
6. On the **License Agreement** page, read the agreement, click **I accept the agreement**, and then click **Next**.

The **Network Settings** page appears. On the page, the Broadcast address box shows a default IP address for OO to use to communicate with other machines.

7. In the **Broadcast Address** box, accept the default IP address, and then click **Next**.

OR

Type a different IP address, and then click **Next**.

If you are installing on a machine on which folders remain from a previous RAS installation, the Setup program informs you that it will install RAS using that folder structure, and that you will not be prompted for a destination location.

If there are not folders left over from an earlier installation, the **Select Destination Location** page appears.

If folders remain from an earlier installation, skip the next step.

8. To accept the default path for RAS, click **Next**(and skip the next step).

OR

To choose a new folder, click **Browse**, navigate to and select the folder, click **OK**to return to this page, and then click **Next** (and skip the next step).

9. If folders remain from an earlier installation, then when you are informed that the Setup program will install RAS using the existing directory, click **Next**.

The **Select Start Menu Folder** page prompts you to create or select the folder to hold the RAS program's shortcuts.

10. To accept the default folder, click **Next**.

OR

To choose a new folder, click **Browse**, navigate to and select the folder, click **OK**to return to this page, and then click **Next**.

The **Ready to Install** page appears, displaying the location where RAS will be installed and other information on the choices you have made.

11. To proceed, click **Install**.

The installation program tracks progress on the installation progress page.

12. When the installation completes, click **Finish**.

13. After the upgrade is complete, copy the backups you made of the folders that contain any custom IActions and those that contain the .dll or .jar files from which the custom IActions were derived to the following location in the RAS installation: \RAS\Java\Default\repository\lib.

Installing Standalone RAS on Linux or Solaris

With the exceptions noted in the following procedure, installing or upgrading RAS standalone is the same on a Linux system or a Solaris system.

Note: When installed on Linux or Solaris, RAS is enabled only for Java-based operations.

In the following procedure, `$ICONCLUDE_JRAS_HOME` refers to the home directory of the RAS installation on this machine. Note that in the `install.config` file, in the comment for the `JAVA_HOME` parameter, this directory is referred to as `$ICONCLUDE_HOME`.

To install a standalone RAS on a Linux or Solaris operating system

1. Make sure that the server where you are going to install RAS:
 - Meets the system requirements for installing RAS. For the system requirements, see *HP OO System Requirements*.
 - Does not have either RAS (JRAS or NRAS) or Central installed.

Note: RAS is installed as part of Central. A standalone RAS must be installed on a different machine from the Central server (the machine on which Central is installed).

2. On the OO CD, in the RAS folder, locate the appropriate one of the following RAS installation zip files:
 - `RAS-9.00-linux.zip` for installing on 32-bit Linux systems
 - `RAS-9.00-linux64.zip` for installing on 64-bit Linux systems
 - `RAS-9.00-solaris-32.zip` for installing on 32-bit Solaris systems
3. Copy the file to the directory within which you want the installation to create the RAS home directory.
4. Unzip the file.

In the directory where the zip file resides, unzipping the file by default creates a subdirectory named `RAS-9.00`, which will be the RAS home directory (`$ICONCLUDE_JRAS_HOME`).

To unzip to a different location, add `-d` and an existing directory name to the unzip command.

5. Open the new RAS home directory.

Note: This package includes Java Runtime Environment (JRE), version 1.6.

6. Edit the `install.config` file and change the parameter values to fit your environment. The parameter values are described in the following tables, one for Linux systems and one for Solaris systems.

- For a Linux system, the install.config contains the following parameters.

Parameter	Description
ICONCLUDE_USER	The user account under which RAS runs. If you leave this blank, RAS runs under the ICONCLUDE user used by Central.
JRAS_PORT	The port that RAS uses to communicate.
STUDIO_BROADCAST	The IP address of Studio to which RAS sends signals so that Studio knows that this RAS installation is still running.
JAVA_HOME	The home directory for Java. If you do not specify a location, the default home directory for Java is the jre1.6 subdirectory of the home directory for this RAS installation—that is, \$ICONCLUDE_JRAS_HOME/jre1.6 (which is referred to in the comment for this parameter as \$ICONCLUDE_HOME/jre1.6).
MAX_HEAP_SIZE	The amount of memory that the Java process makes available for RAS.

- For a Solaris system, the install.config contains the following parameters.

Parameter	Description
ICONCLUDE_USER	The user account under which RAS runs. If you leave this blank, RAS runs under the ICONCLUDE user used by Central.
JRAS_PORT	The port that RAS uses to communicate.
JAVA_HOME	The home directory for Java. Important: This is the parameter that specifies the location of the Java Runtime Environment 1.6.
MAX_HEAP_SIZE	The amount of memory that the Java process makes available for RAS.

7. Run the script ./configure.sh.

This script:

- Applies the configuration parameters to the appropriate files.
- Creates a hidden file called .iconcluderc in the current directory.
- Writes the ./configure.log file.
- Starts the JRAS service.

8. Source the file .iconcluderc, using the following command:

```
source .iconcluderc
```

9. Open .iconcluderc to verify that the environment variable \$ICONCLUDE_JRAS_HOME is properly set.

Note that .iconcluderc is a hidden file.

10. Start the service, using the following command:

```
$> $ICONCLUDE_JRAS_HOME/bin/JRAS.sh start
```

Or, if you are in the \$ICONCLUDE_JRAS_HOME directory,

```
$> ./bin/JRAS.sh start
```

Note: Note: The options for all the startup scripts are:

- `console`
Runs the program in console mode (non-daemon, has controlling tty).
- `start`
Starts as daemon.
- `stop`
Stops program, then starts as daemon.
- `restart`
Stops, then starts as daemon.
- `Run` (Solaris RAS service only)
Runs the program in console mode.
- `status`
Shows status and PID.
- `check` (Solaris RAS service only)
Prints all of the configuration parameters.
- `supervise` (Solaris RAS service only)
Runs the program in console mode with additional debugging information.
- `dump`
Sends a SIGQUIT to the java process, forcing it to do a thread dump.

11. If you wish to increase the capacity of the system:

- a. Increase the fd limit for the user under which JRAS runs, by adding the following two lines to the user's file `/etc/security/limits.conf`:

```
myuser soft nofile 65536
```

```
myuser hard nofile 65536
```

- b. Log in as the account that runs the JRAS service (see, in the table above under "For a Solaris system...", the `ICONCLUDE_USER` parameter) and check the value by issuing the `ulimit -n` command.

The following are useful log files to monitor:

- `$ICONCLUDE_JRAS_HOME/RAS/Java/Default/webapp/logs/wrapper.log`
- `$ICONCLUDE_JRAS_HOME/RAS/Java/Default/webapp/logs/iConcludeJRAS.log`

Another useful location is `$ICONCLUDE_JRAS_HOME/conf`, which has a symbolic link to the `wrapper.conf` file.

Upgrading Standalone RAS on Linux or Solaris

With the exceptions noted in the following procedure, upgrading RAS standalone is the same on a Linux system or a Solaris system.

Note: When installed on Linux or Solaris, RAS is enabled only for Java-based operations.

In the following procedure, `$ICONCLUDE_JRAS_HOME` refers to the home directory of the RAS installation on this machine. Note that in the `install.config` file, in the comment for the `JAVA_HOME` parameter, this directory is referred to as `$ICONCLUDE_HOME`.

To upgrade a standalone RAS on a Linux or Solaris operating system

1. Make sure that the server on which you are going to upgrade RAS:
 - Meets the system requirements for installing RAS. For the system requirements, see *HP OO System Requirements*.
 - Does not have Central installed.

Note: RAS is installed as part of Central. A standalone RAS must be installed on a different machine from the Central server (the machine on which Central is installed).

2. If RAS is already installed, stop the RAS service, using the following command:

```
$> $ICONCLUDE_JRAS_HOME/bin/JRAS.sh stop
```
3. On the OO CD, in the RAS folder, locate the appropriate one of the following RAS installation zip files:
 - `RAS-9.00-linux.zip` for installing (upgrading) on 32-bit Linux systems
 - `RAS-9.00-linux64.zip` for installing (upgrading) on 64-bit Linux systems
 - `RAS-9.00-solaris-32.zip` for installing (upgrading) on 32-bit Solaris systems
4. Copy the file to the directory within which you want the installation to create the RAS home directory.
5. Unzip the file.

In the directory where the zip file resides, unzipping the file by default creates a subdirectory named `RAS-9.00`, which will be the RAS home directory (`$ICONCLUDE_JRAS_HOME`).

To unzip to a different location, add `-d` and an existing directory name to the unzip command.
6. Open the new RAS home directory.

Note: This package includes Java Runtime Environment (JRE), version 1.6.

7. Edit the `install.config` file and change the parameter values to fit your environment. The parameters are described in the following tables, one for Linux systems and one for Solaris systems.

- For a Linux system, the `install.config` contains the following parameters.

Parameter	Description
ICONCLUDE_USER	The user account under which RAS runs. If you leave this blank, RAS runs under the ICONCLUDE user used by Central.
JRAS_PORT	The port that RAS uses to communicate.
STUDIO_BROADCAST	The IP address of Studio to which RAS sends signals so that Studio knows that this RAS installation is still running.
JAVA_HOME	The home directory for Java. If you do not specify a location, the default home directory for Java is the <code>jre1.6</code> subdirectory of the home directory for this RAS installation—that is, <code>\$ICONCLUDE_JRAS_HOME/jre1.6</code> (which is referred to in the comment for this parameter as <code>\$ICONCLUDE_HOME/jre1.6</code>).
MAX_HEAP_SIZE	The amount of memory that the Java process makes available for RAS.

- For a Solaris system, the `install.config` contains the following parameters.

Parameter	Description
ICONCLUDE_USER	The user account under which RAS runs. If you leave this blank, RAS runs under the ICONCLUDE user used by Central.
JRAS_PORT	The port that RAS uses to communicate.
JAVA_HOME	The home directory for Java. Important: This is the parameter that specifies the location of the Java Runtime Environment 1.6.
MAX_HEAP_SIZE	The amount of memory that the Java process makes available for RAS.

8. Run the script `./configure.sh` in this directory.

This script:

- Applies the configuration parameters to the appropriate files.
- Creates a hidden file called `.iconcluderc` in the current directory.
- Writes the `./configure.log` file.
- Starts the JRAS service.

9. Source the file `.iconcluderc`, using the following command:

```
source .iconcluderc
```

10. Open `.iconcluderc` to verify that the environment variable `$ICONCLUDE_JRAS_HOME` is properly set.

Note that `.iconcluderc` is a hidden file.

11. Start the service, using the following command:

```
$> $ICONCLUDE_JRAS_HOME/bin/JRAS.sh start
```

Or, if you are in the `$ICONCLUDE_JRAS_HOME` directory,

```
$> ./bin/JRAS.sh start
```

Note: The options for all the startup scripts are:

- `console`
Runs the program in console mode (non-daemon, has controlling tty).
- `start`
Starts as daemon.
- `stop`
Stops program.
- `restart`
Stops, then starts as daemon.
- `Run` (Solaris RAS service only)
Runs the program in console mode.
- `status`
Show status and PID.
- `check` (Solaris RAS service only)
Prints all of the configuration parameters.
- `supervise` (Solaris RAS service only)
Runs the program in console mode with additional debugging information.
- `dump`
Sends a SIGQUIT to the java process, forcing it to do a thread dump.

12. If you wish to increase the capacity of the system:
 - a. Increase the fd limit for the user under which JRAS runs, by adding the following two lines to the user's file `/etc/security/limits.conf`:

```
myuser soft nofile 65536
```

```
myuser hard nofile 65536
```

- b. Log in as the account that runs the JRAS service (see, in the preceding table under "For a Solaris system", the `ICONCLUDE_USER` parameter) and check the value by issuing the `ulimit -n` command.

13. After the upgrade is complete, copy the backups you made of the folders that contain any custom IActions and those that contain the `.dll` or `.jar` files from which the custom IActions were derived to the following location in the RAS installation: `/RAS/Java/Default/repository/lib`.

The following are useful log files to monitor:

- `$ICONCLUDE_JRAS_HOME/RAS/Java/Default/webapp/logs/wrapper.log`
- `$ICONCLUDE_JRAS_HOME/RAS/Java/Default/webapp/logs/iConcludeJRAS.log`

Another useful location is `$ICONCLUDE_JRAS_HOME/conf`, which has a symbolic link to the `wrapper.conf` file.

Accessing a Standalone RAS from Studio

To obtain access to the RAS interface within Studio

- Open Studio and configure a RAS reference.

For information on configuring a RAS reference, see the Studio Help system.

RAS Silent Installation

A silent installation is one that is started from the command line and completes without any input from the person who started it. A normal (non-silent) installation requires the user to provide input through a wizard or dialog boxes. A silent installation gets its input from an XML input file that the administrator creates.

You can install and update the HP Operations Orchestration RAS silently from a command line. To learn how to create an XML input file, see "[Creating XML Files for RAS Silent Installation](#)" on next page.

When you run the installer, the result data for the installation is stored in an XML output file that the user can parse and view. You specify the name of the XML output file in the XML input file.

Installing RAS Silently

You can start a normal installation of the OO RAS from a command line, using parameters to execute the installation in a silent way.

Note: You must meet the requirements specified in *OO System Requirements* and the required configurations of the database and database user, as described in "[Configuring the Database and Database User](#)" on page 26.

Note: Silent RAS installation also supports RAS 64 bit.

To install OO 9.00 RAS silently

- From a command line, type the following:

```
RASInstaller-9.00.exe /VERYSILENT /SUPPRESSMSGBOXES /XMLINPUT=<XML_input_file> /LOG=<txt_log_file>
```

or, for RAS 64 bit:

```
RASInstaller64-9.00.exe /VERYSILENT /SUPPRESSMSGBOXES /XMLINPUT=<XML_input_file> /LOG=<txt_log_file>
```

For more information on command parameters, see "[RAS Silent Installer and Uninstaller Parameters](#)" on next page.

Uninstalling RAS Silently

To uninstall OO 9.05 RAS silently

- From a command line, type the following:

```
unins000.exe /VERYSILENT /SUPPRESSMSGBOXES /LOG=<txt_log_file>
```

The **unins000.exe** file is located in the OO home directory, in the `\RAS\Java\Default\uninst\` folder.

For more information on command parameters, see "RAS Silent Installer and Uninstaller Parameters" below.

RAS Silent Installer and Uninstaller Parameters

Following are the RAS Installer and Uninstaller command parameters:

Parameter	Description
/VERYSILENT	Specifies that this is a silent installation. This is a required parameter.
/SUPPRESSMSGBOXES	Specifies that user input message boxes are not displayed during the installation. This is a required parameter.
/XMLINPUT=<XML_input_file>	<XML_input_file> is the name of the XML input file. This is a required parameter.
/LOG=<txt_log_file>	Specifies the name of the installation log file, which contains more information about the installation process.
/DIR=<installdir>	Specifies the path to install OO Central in if you do not want to install it in the default OO installation path C:\Program Files\Hewlett-Packard\Operations Orchestration\ .

Note: The /LOG=<txt_log_file> and /DIR=<installdir> parameters are optional.

Creating XML Files for RAS Silent Installation

Communication between the server and the silent installer is done using XML files for input and output (result data). These files can have any name, but must use the .xml file name extension.

The XML input files use specific parameters, described below.

XML Input File Format

The XML input file must contain the following parameters exactly as shown:

- <Action value="install"/>
- <Lang id="en"/>

The XML input file must also contain the following customizable parameters:

- `<XMLOutput value="value"/>`

This parameter specifies the name of the XML output file. It can be any file name as long it has a valid location. For example:

```
<XMLOutput value="c:/RASInstallOutput.txt"/>
```

- `<BroadcastAddress value="value"/>`

This parameter specifies the IP address for Central to which RAS sends messages to let Central know that RAS is still running.

For example:192.168.1.255

Example of an OO RAS XML Input File

```
<?xml version="1.0" encoding="UTF-8"?>
<HPOORASInstallInput>

  <Action value="install"/>
  <Lang id="en"/>
  <XMLOutput value="InstallationOutput.xml"/>

  <NetworkSettings>
  <BroadcastAddress value="192.168.1.255"/>

</NetworkSettings></HPOORASInstallInput>
```

XML Output File Format

The XML output file name is specified in the XMLOutput parameter in the XML input file.

The output file contains XML elements which contain information about the result of the installation—error code, status, and informational message. You must parse the XML elements in the output file to view it.

XML Elements for Output Files

The XML output file contains the following elements:

Parameter	Description
<code><ErrorCode>value</ErrorCode></code>	Specifies the error code generated by the installation. The valid values are 0 and 1.
<code><Status>value</Status></code>	Specifies the status of the installation. The valid values are success and failure.
<code><ErrorMessage>message</ErrorMessage></code>	Specifies the message generated by the installation. Possible messages are Installation completed and Installation failed. Error loading the xml input file.

Examples of OO XML Output Files

Example 1

```
<?xml version="1.0" encoding="UTF-8"?>  
<HPOOInstallOutput><ErrorCode>0</ErrorCode>  
<Status>success</Status>  
<ErrorMessage>Installation completed.</ErrorMessage>  
</HPOOInstallOutput>
```

Example 2

```
<?xml version="1.0" encoding="UTF-8"?>  
<HPOOInstallOutput>  
<ErrorCode>1</ErrorCode>  
<Status>error</Status>  
<ErrorMessage> Installation failed. Error loading the xml input  
file</ErrorMessage>  
</HPOOInstallOutput>
```

Chapter 19

Uninstalling HP OO in Windows

Before uninstalling HP OO, make sure you back up your installation and repository. For information on backing up HP Central and Studio, see the HP OO Administrator's Guide.

When you remove HP OO Central, the RAS is also uninstalled. If you have a standalone RAS, you must uninstall it.

Note: During the uninstall, the RSCentral and RSJRAS services are shutdown. However, if the system is overloaded the services might not shutdown, and this results in files and folders remaining on the system after the uninstall completes. If this occurs, you can manually delete these files and folders. It is recommended that you manually stop the OO Windows RSCentral and RSJRAS services before uninstalling Central and RAS.

To uninstall Studio in Windows

1. Exit **Studio**.
2. In the Windows **Control Panel**, double-click **Add/Remove Programs**.
3. Select **HP Operations Orchestration Studio <version_number>**, and then click **Remove**.
4. When you are prompted to confirm whether you want to remove **Studio** and its components, click **Yes**.

The **Uninstall Status** appears.

When **Studio** is removed, the following message appears:

```
If you have relevant directories open, the message box might tell
you that some components could not be removed. This is not
significant.
```

5. Click **OK**.

To uninstall Central in Windows

1. Exit **Central**.
2. In the Windows **Control Panel**, double-click **Add/Remove Programs**.
3. Select **HP Operations Orchestration Central <version_number>**, and then click **Remove**.
4. When prompted, click **Yes** to Central all the components.

The **Uninstall Status** appears.

5. A message appears when Central is successfully removed.

To uninstall a standalone RAS in Windows

1. In the Windows **Control Panel**, double-click **Add/Remove Programs**.
2. Select **HP Operations Orchestration RAS <version_number>**, and then click **Remove**.

3. When prompted, click **Yes** to Central all the components.
The **Uninstall Status** appears.
4. A message appears when Central is successfully removed.

Uninstalling Central in Linux or Solaris

To uninstall the Linux version of OO for a Linux or Solaris system:

Note: You can uninstall OO for JRAS, LoadBalancer, or Central, or the entire version.

- Locate and delete the OO program folder. Once the folder is deleted OO is uninstalled.

Sample Scenario

There is a wide range of possible configurations and distributions for the installations of Central, Studio, and RAS, and the clustering of services. Despite the broad variability, however, any scenario will be a variation on the general path of work around which this guide is organized.

Let's take as a sample scenario the following one, which contains the elements that make up many other scenarios.

In our scenario, let's say that MyCompany has three environments:

- Development environment, in which two authors create operations and flows
- Test environment, in which the quality-assurance staff test the flows, then, when they have tested out successfully, promotes them to the production environment
- Production environment, in which the Central users employ the flows in the real world

Because the testers environment should test in real-world conditions, the test environment should reproduce the production environment as exactly as possible. In our scenario, however, MyCompany improved the capacity of the production environment by adding a fourth Central server, and giving each Central server and each database server its own dedicated machine.

Development Environment

The development environment comprises the following:

- Two database servers, clustered with third-party clustering software
- Three Central servers, clustered with HP OO Clustering Service:
 - One of the Central servers is on a dedicated server.
 - One of the Central servers is on one of the database servers.
 - One of the Central servers is on one of the computers on which Studio is installed.
- In addition to the Studio that is co-located with a Central server, a workstation on which Studio is installed by itself.
- HP OO Load Balancer
- One or more standalone RAS (if possible, on the other side of a domain boundary from the Central servers)

Test/staging environment

The test/staging environment comprises the following. Note that in the test/staging environment, there are no Studio installations required.

- Two database servers, clustered with third-party clustering software
- Three Central servers, clustered with HP OO Clustering Service:

- One of the Central servers is on a dedicated server.
- Two of the Central servers are each on a database server.
- HP OO Load Balancer
- One or more standalone RAS (possibly on the other side of a domain boundary from the Central servers)

Production Environment

The production environment comprises the following:

- Two database servers, clustered with third-party clustering software
- Four Central servers, clustered with HP OO Clustering Service, none installed on any of the database servers
- HP OO Load Balancer
- One or more standalone RAS (possibly on the other side of a domain boundary from the Central servers)

Your method for creating these three environments in your OO establishment will pretty much follow the order of work described in [Installing and upgrading: overall process](#), for each server or workstation. Whether you choose to carry out each of the following steps per environment or across all the environments depends on considerations of which you are the best judge.

To set this environment up

1. After reviewing this Guide's section [Planning the installation](#) and making any adjustments suggested for your business needs, you will make sure that all your machines meet their hardware and software requirements.
2. After installing the database management system and creating the database on each database server, you will form the cluster using the third-party clustering software of your choice.
3. You will install the following components on the appropriate machines:
 - a. OO Central

In the development environment, on the machine that has both Central and Studio installed, install Central first.

- b. Studio
 - c. Standalone RAS
- The procedures that describe how to install or upgrade Central take into account the variations in which machines share which OO components as are described in this sample scenario.
4. Using the OO Clustering Service software, create an OO Central cluster. create a failover and run recovery in cluster for Central, as described in *Operations Orchestration High Availability Guide*, which is available from HP on the Internet, as described in "Documentation updates" and "Support," in [Welcome to the OO Deployment and Installation Guide](#).
 5. Install and configure the HP OO Load Balancer, specifying which Central nodes and standalone RAS installations will be load-balanced. For more information, see *Operations*

Orchestration High Availability Guide , which is available from HP on the Internet, as described in "Documentation updates" and "Support," in [Welcome to the OO Deployment and Installation Guide](#)).

6. Enable flow authors to point an operation toward a standalone RAS from within Studio.
7. Provide authors and users with OO user accounts and sufficient capabilities to do their jobs. For information on this and other ongoing administrative tasks and on configuring HP OO for extended functionality, see the OO Central online Help and the *HP OO Administration Guide*.
8. Provide authors and users with the information they need to get started using OO.

Troubleshooting

Users get “There is a problem with this website’s security certificate” error when they access the URL for the OO Central web application.

This occurs because OO includes, by default, an unsigned certificate that serves as a placeholder for a valid customer-obtained certificate. You can create your own security certificate or, if you choose not to create one, you can safely ignore the warning.

