

HP Operations Orchestration

For the Windows and Linux

Software Version: 10.02

Installation Guide

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Introduction

This document describes how to install and configure HP Operations Orchestration version 10.00 using the Installation and Configuration wizard. This document also includes details for upgrading to a later version and also includes instructions for silent installations.

Prerequisites and Installation Notes

- Before installing Central, Studio, or RAS, check with your system administrator that you have administrator permission on the system where you are installing HP OO. In addition, make sure that the database has the appropriate permissions set. See the *Release Notes* for details on exceptions and special cases.
- The upgrade procedure does not modify the HP OO 9.x database and file system. HP OO version 10.00 or later requires a new schema during installation.
- In a clustered environment, you need to synchronize the computer's clock times. The clocks must be synchronized to the second with each other.
- Before installing or upgrading the software, make sure to back up your system. Consult with your system administrator.
- **LWSSO:** If you choose to upgrade the LWSSO settings from HP OO 9.x, these LWSSO settings will be migrated, but LWSSO will be disabled in HP OO 10.00 (even if it was previously enabled in HP OO 9.x).
- See the *Concepts Guide* for a detailed overview of deploying a RAS behind a firewall.
- If your HP OO system is localized, use the MS SQL database collation according to your required language:
 - English: SQL_Latin1_General_CP1_CS_AS
 - Japanese: Japanese_Unicode_CS_AS
 - Simplified Chinese: Chinese_Simplified_Stroke_Order_100_CS_AS
 - German: SQL_Latin1_General_CP1_CS_AS
 - French: French_100_CS_AS
 - Spanish: SQL_Latin1_General_CP1_CS_AS

If you already have a database installed, HP OO creates the tables using the database-specific collation. It is important to note that using other collations can cause characters to appear in gibberish in the user interface for localized installations. In addition, other collations are not officially supported in MS SQL for localized installations.

- On Linux, you need to set the Linux configuration to support special characters, in the following way:

```
set.LANG=en_US.UTF-8
set.LC_ALL=en_US.UTF-8
set.LANGUAGE=en_US.UTF-8
```

SQL Scripts

If you don't have permission to install via remote, you can use SQL scripts from the ISO image to manually create the tables and schema that are required for a remote installation.

The SQL scripts are located at `\docs\sql` on the ISO image. They include:

- `mssql.sql`
- `mysql.sql`
- `oracle.sql`
- `postgres.sql`

Database-specific Adaptations

This section describes several key database-specific adaptations and requirements. For detailed instructions, see the *Database Guide*.

- **MySQL:** If you are working with a MySQL database, you need to configure the `my.ini` or `my.cnf` file with the following:

```
transaction-isolation = READ-COMMITTED
default-storage-engine = INNODB
character-set-server = utf8
max_allowed_packet = 250M
innodb_log_file_size = 256M
max_connections = 1000
```

- **Postgres:** If you are working with a Postgres database, you need to configure the `postgresql.conf` file with the following:

```
default_transaction_isolation = READ-COMMITTED
autovacuum = on
track_counts = on
max_connections = 1000
```

- **Oracle:**

In certain cases when you are using an Oracle database, the schema is not created automatically. In this case, you need to manually create the schema as follows:

```
CREATE USER OO
    IDENTIFIED BY ???????
    DEFAULT TABLESPACE <default tablespace for OO>
    TEMPORARY TABLESPACE <temporary tablespace for OO>
    QUOTA UNLIMITED ON <default tablespace for OO>
    ACCOUNT UNLOCK;

GRANT CONNECT TO OO;

GRANT CREATE VIEW, CREATE SEQUENCE, CREATE TABLE, CREATE PROCEDURE TO OO;
```


Software Requirements

Software Requirements for Central, RAS, and Database

Component	Requirement
Supported operating systems	<ul style="list-style-type: none"> • Microsoft Windows 2008 Server 64 bit • Microsoft Windows 2008 R2 Server 64 bit • Microsoft Windows 2012 Server 64 bit • RedHat Enterprise Linux 5.x 64 bit • RedHat Enterprise Linux 6.x 64 bit • Ubuntu 12.04.x LTS
Supported databases	<ul style="list-style-type: none"> • Oracle 11g R2 • Oracle MySQL 5.5.x • Oracle MySQL 5.6.x • PostgreSQL 9.1.x • PostgreSQL 9.2.x • Microsoft SQL Server 2008 R2 • Microsoft SQL Server 2012
Supported browsers	<ul style="list-style-type: none"> • Microsoft Internet Explorer 9.x, 10.x (latest) • Mozilla FireFox (latest) • Google Chrome (latest)

Microsoft .NET Framework 4.5 or later, full installation. This is also required for RAS installations.

Software Requirements for Studio

Component	Requirement
Supported operating systems	<ul style="list-style-type: none">• Microsoft Windows 2008 Server 64 bit• Microsoft Windows 2008 R2 Server 64 bit• MS Windows 2012 Server 64 bit• Microsoft Windows 7 64 bit• Microsoft Windows 7 32 bit

Deprecated: Support for Studio on Microsoft Windows 7 32 bit is deprecated and may not be supported in future versions.

Microsoft .NET Framework 4.5 or later, full installation.

This is also required for debugging flows with .NET operations. If you don't have .NET 4.5 , any flows or operations with .NET will marked as invalid in Studio.

Note: On Windows 7, Windows 2008 Server, and Windows 2008 Server R2, you may have problems running SVN with Studio, if you are missing the correct version of the MS Visual C++ DLLs.

You need to download and install the Microsoft Visual C++ 2008 SP1 redistributable package according to your operating system. For example, <http://www.microsoft.com/en-us/download/details.aspx?id=5582>.

Hardware Requirements

The hardware requirements described here are the minimal supported configuration.

Many customers may require more powerful hardware, depending on their load and usage of the system. In some cases, scaling out (adding nodes) is preferable to scaling up (stronger hardware).

Hardware Requirements for HP OO Central and Database Servers

The minimum hard-drive space requirements differ depending on whether you install Central and the database on the same machine.

These requirements are for on-premise installations where the key components (central servers, RAS) are installed at the customer's site.

Component	Requirement per server (minimum)
CPU	3 Gigahertz (GHz) for single-processor systems or 2 GHz for multi-processor systems Database server: <ul style="list-style-type: none">• According to the database vendor's recommendations and requirements, but no less than 2 CPU cores Central server: <ul style="list-style-type: none">• Minimum: 1 CPU core• Recommended: 4 CPU cores
Memory (RAM)	Database server: <ul style="list-style-type: none">• As specified by the vendor, but no less than 4 Gigabyte (GB) Central server: <ul style="list-style-type: none">• Minimum: 2 GB• Recommended: 4 GB

Hard-drive space	<p>Database server:</p> <ul style="list-style-type: none"> • 1 GB for HP OO installation and base content pack deployment • Minimum of 2 GB for HP OO operations (minimum of 3 GB table space) <p>Central server:</p> <ul style="list-style-type: none"> • 2 GB
------------------	--

For off-premise installations, where the key components are installed on a cloud-based virtualized machine, the hardware requirements are:

- Central/RAS: extra small machine
- Database: According to the database vendor's recommendations and requirements, but no less than a small machine.

Hardware Requirements for RAS Installations

Component	Requirement (minimum)
CPU	<p>2 GHz for single- or multi-processor systems</p> <p>Minimum: 1 CPU core</p> <p>Recommended: 4 CPU cores</p>
Memory (RAM)	1 GB
Hard-drive space	2 GB (this includes room for the flows and operations that are included in the installation)

Hardware Requirements for the Central Client

Web client machines for Central must meet the minimum hardware requirements for their web browser.

Hardware Requirements for HP OO Studio Installed on its Own Machine

Machines on which you install Studio must meet the minimum hardware requirements for their web browser or the following, whichever is higher.

Component	Requirement (minimum)
-----------	-----------------------

CPU	2 Gigahertz (GHz) for single- or multi-processor systems 1 CPU core
Memory (RAM)	2 GB (this is the amount of memory that the Studio process requires)
Hard-drive space	4 GB (this includes room for the flows and operations that are included in the installation)

Virtual Systems

Installation of the HP OO components on guest systems hosted by the following hypervisors is supported, as long as the guest systems meet the requirements described in this *System Requirements* document:

- VMware ESX Server, version 3.x or later
- Microsoft Hyper-V (for all supported Windows versions)

Cloud Deployments

HP Operations Orchestration can be installed on cloud computer units. On HP Cloud Services, the server components (Central, RAS) require a small machine, and the database should follow the database vendor's recommendations and requirements, but no less than a small machine.

Installing HP Operations Orchestration

This section describes how to install HP Operations Orchestration version 10.00. See the [System Requirements](#) section to verify that your system meets the minimum system requirements.

To install HP Operations Orchestration version 10.00 using the Installation and Configuration Wizard:

1. Download the installation file for your relevant operating system and architecture from the HP SSO Portal or insert the HP Operations Orchestration DVD and launch the installer file.

Windows 64 bit	installer-win64.exe
Linux	installer-linux64.bin
Windows 32 bit (Studio only)	installer-win32.exe

Note:

- Make sure that the installation folder to which you download the installation file does not contain any spaces or special characters in the folder name.
- Make sure that the installation path does not include the plus (+) or semicolon (;) characters. Valid characters for the installation path include English letters, digits, spaces, hyphens (-) and underscores (_).

■ Windows:

- To launch the installer from the HP Operations Orchestration DVD, insert the DVD and copy the installation file to a local drive on your computer.

■ Linux:

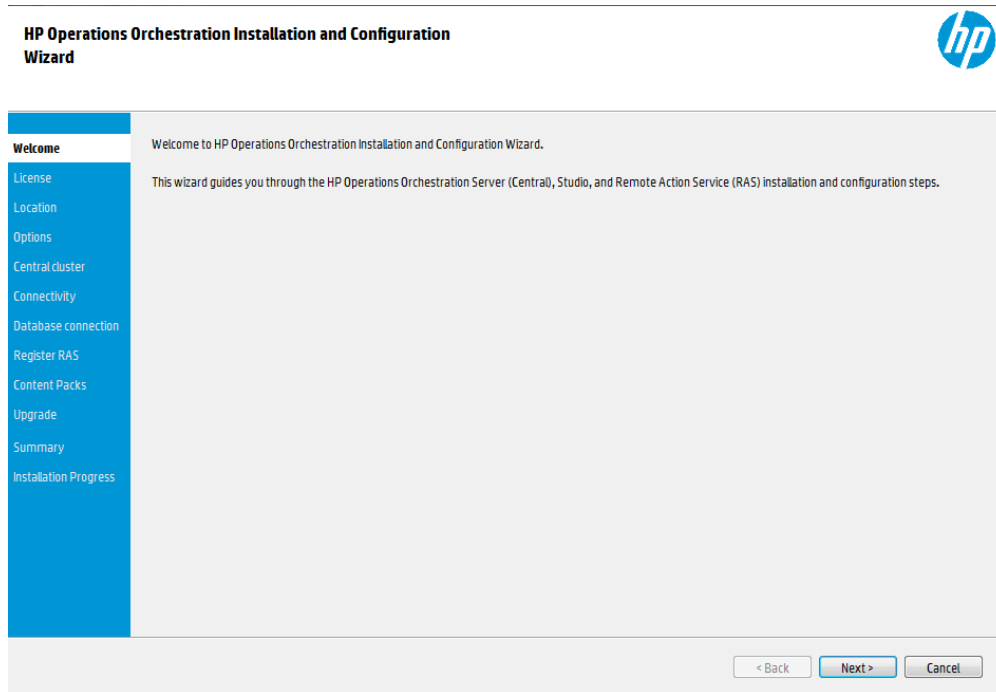
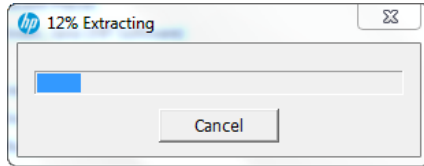
- To launch the installer from Linux, copy the installer file and run the following command:

```
export DISPLAY=<enter computer ip address>
bash installer-linux64.bin
```

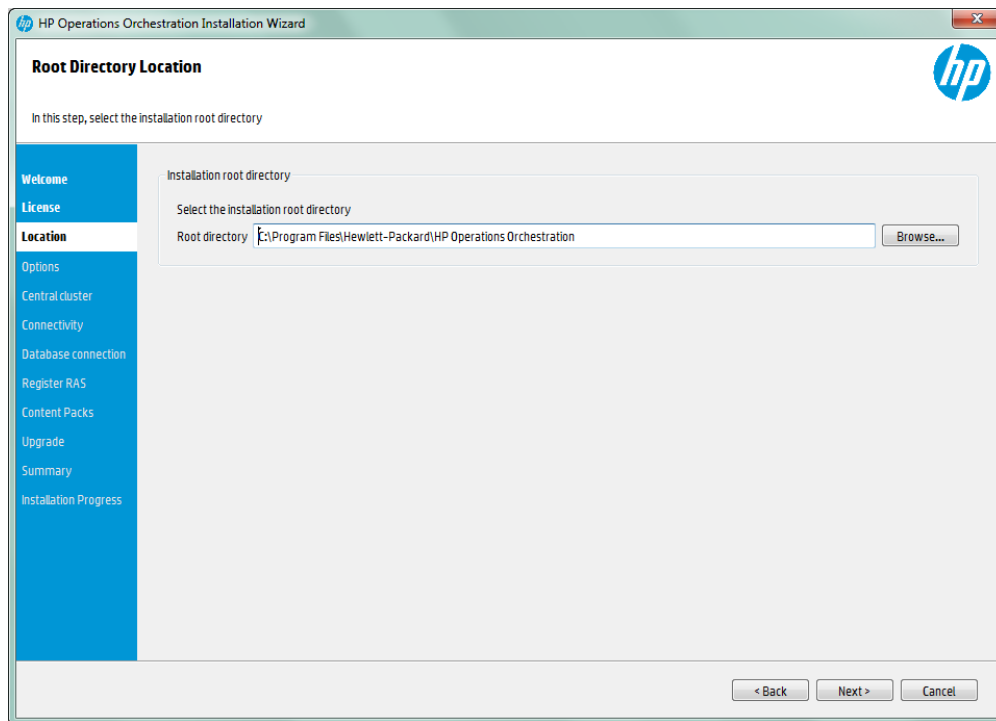
2. To start the wizard, double-click on the installer. The installation package is extracted, and the **HP Operations Orchestration Installation and Configuration Wizard** automatically appears.

Note: If you are running the Windows 32 bit installer, you will only be able to install Studio

and all the options will be disabled.



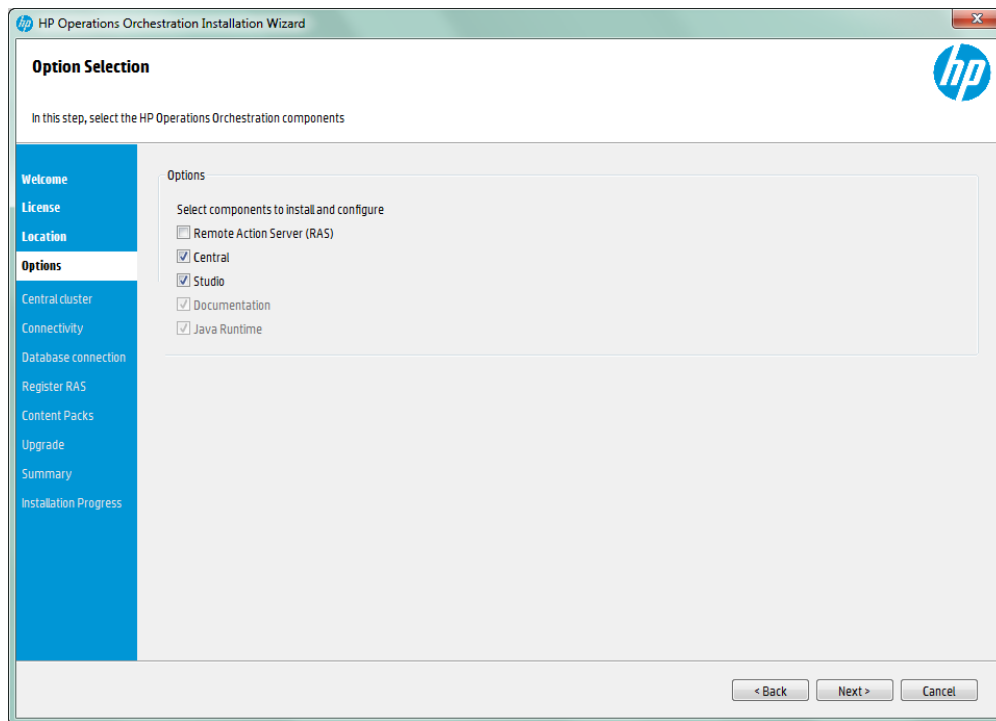
3. Click **Next**.
4. In the **License** step, select **I Agree**, and then click **Next**.
5. In the **Location** step, select the location for the installation root directory, and then click **Next**. If the directory does not exist, the directory will be created automatically. You are prompted to confirm the creation of the new location.



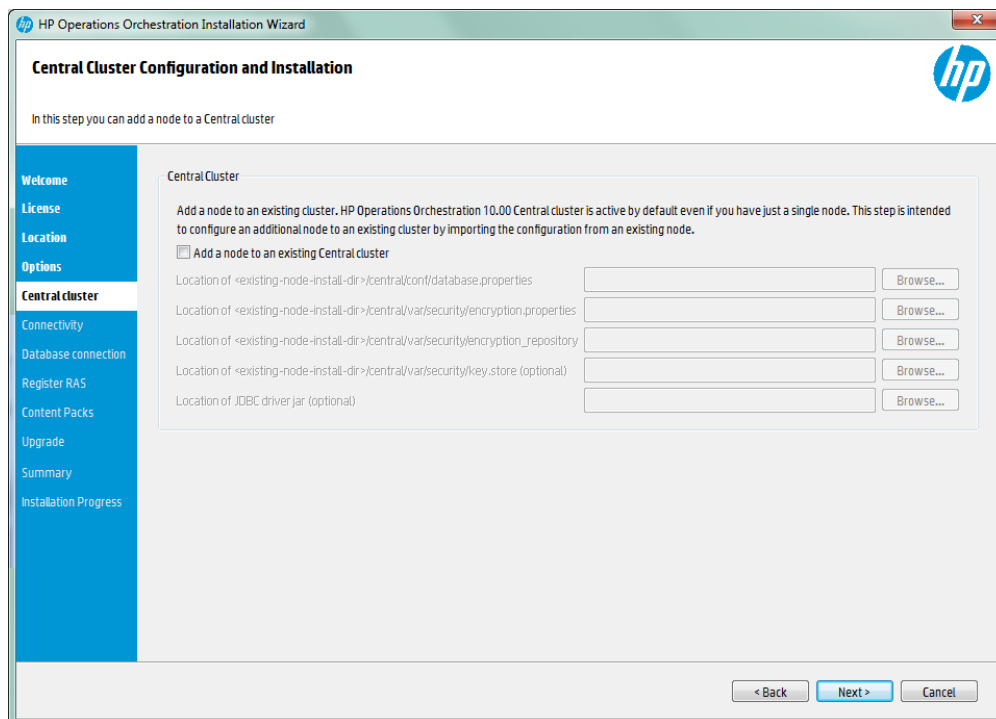
Note: The default for Windows is C:\Program Files\Hewlett-Packard\HP Operations Orchestration and for Linux /opt/hp/oo. If you install Studio on a path with special characters (for example, French, Japanese, or Chinese characters), this results in an error.

6. In the **Options** step, select the HP Operations Orchestration software that you would like to install and configure, and then click **Next**.

Note: You can install Central without setting up a RAS server. If you install a RAS Server, it is recommended that you install this on a separate server to Central. Refer to the *Concepts Guide* for more information.



7. In the **Central Cluster** step, you can add a node to an existing Central cluster. In HP OO 10.00, the Central cluster is active by default even if you have a single node.



8. In the **Connectivity** step, configure the ports for the Central Server as required. The default values appear next to each port.

In the **Connectivity** step, you can import an SSL certificate. The default is a self-signed certificate that is valid for 10 years, or you can import another secure SSL certificate. If you select **Provide a secure SSL Certificate**, you need to import the root or chained file, and the certificate.

Note: Do not use a network path for the location of the root certificate.

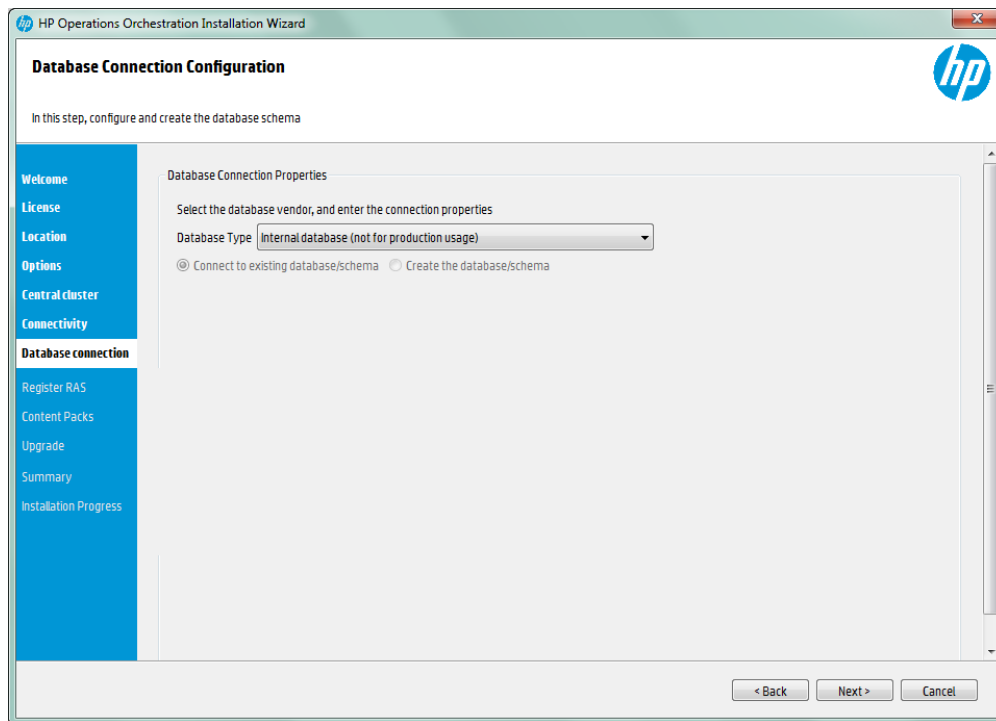
9. Click **Test ports availability**. If the ports are available, a **Success** check mark appears. If you encounter an error, adjust the ports accordingly. Then, click **Next** to continue.

The screenshot shows the 'Central Server Connectivity' window of the HP Operations: Orchestration Installation Wizard. The window title is 'HP Operations: Orchestration Installation Wizard'. The main heading is 'Central Server Connectivity'. Below the heading, it says 'In this step, configure the Central Server ports and SSL'. On the left, there is a blue sidebar with a list of steps: Welcome, License, Location, Options, Central cluster, **Connectivity** (highlighted), Database connection, Register RAS, Content Packs, Upgrade, Summary, and Installation Progress. The main content area is titled 'Connectivity' and contains the following fields and options:

- Configure the Central Server port numbers and SSL properties**
 - HTTP: 8080
 - HTTPS: 8443
- ☐ Provide a secure SSL Certificate (when not provided a self-signed certificate is used)
 - Secure keystore: [Text Field] [Browse...]
 - The secure keystore should be in PKCS12 format and include both certificate and private key. Usually this is a file with a .pfx or .p12 extension. Consult your Certificate Authority for more details.
 - Keystore password: [Text Field]

At the bottom of the main content area, there is a 'Test ports availability' button with a green checkmark and the word 'Success' next to it. At the bottom right of the window, there are three buttons: '< Back', 'Next >', and 'Cancel'.

10. In the **Database Connection** step, configure and create the database schema.



- a. The first step is to select the database vendor, and then enter the connection properties. You can select from the following database types:

Note: Special characters, except the underscore (_), cannot be used for the database name or SID field. In addition, you can enter up to 30 characters for the database name or SID.

Note: For all the database vendors, if you select to create a new database, the database is case-sensitive as follows:

- **utf8_bin collation** for MySQL

Use the MSSQL Database Collations according to your required language:

- English: SQL_Latin1_General_CP1_CS_AS
- Japanese: Japanese_Unicode_CS_AS
- Simplified Chinese: Chinese_Simplified_Stroke_Order_100_CS_AS
- German: SQL_Latin1_General_CP1_CS_AS

- French: French_100_CS_AS
- Spanish: SQL_Latin1_General_CP1_CS_AS

However, if you already have a database installed, OO creates the tables using the database specific collation. It is important to note that, using other collations can cause characters to appear in gibberish in the user interface for localized installations. In addition, other collations are not officially supported in MSSQL for localized installations.

- **Oracle:** To connect to an Oracle database, enter a regular user role for the **Oracle** user name. Do not connect using the SYS, SYSMGR or SYSOPER users.
- **Microsoft SQL Server:** This uses the user name and password fields, and does not create them during installation.
- **Oracle MySQL**
- **PostgreSQL:** For **PostgreSQL**, the user name `Admin` must have a database setup with the same name.

Note: The PostgreSQL database name is case-sensitive.

- **Internal database :** This uses an H2 local database. This should not be used for production.
- **Other database** (use to enable advanced features in supported databases). If you select Other database, you can only use a database type that is supported for use with HP OO. See the System Requirements for more information.

Note: Other database also supports any valid JDBC URL.

- b. Select the database type and then select one of the following:
 - **Connect to existing database/schema:** Connect to an existing schema, user, or database created by the user. The installer does verify that the schema, user or database contain existing information.
 - **Create the database/schema:** Enables you to create a new database or schema. Enter the required information.
- c. Click **Test Connection**. If you are unable to connect to the database, you will not be able to proceed to the next steps in the wizard.

Note: This only verifies the connection between OO and the selected database, and does not verify the conditions required by the database.

The following table includes the options that you need to set with the following databases:

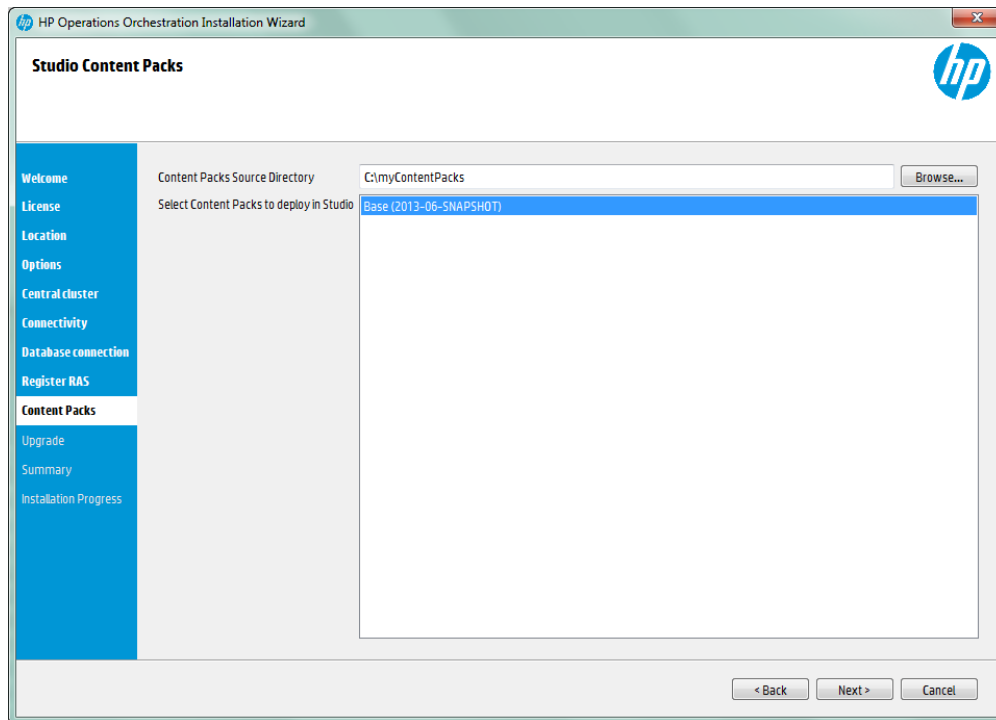
Note: When the database/schema is created using the wizard these features are configured.

Type	Additional Options	Additional Information
MySQL	max_allowed_packet	Controls the maximum packet length to send or receive from Central. Effectively, it determines the maximum size of the deployed content pack. Note: When installing OO 10.00 with a MySQL database, make sure that before the installation, the max_allowed_packet variable has a value of minimum 250M.
	global transaction isolation	READ-COMMITTED (prevents deadlocks).
	Unicode	Used for globalization (multi-language support), supporting-English characters.
		Provide the location for the <code>connector-j</code> jar file.
SQLServer (any)	ALLOW_SNAPSHOT_ISOLATION	Prevents deadlocks.
	READ_COMMITTED_SNAPSHOT	Prevents deadlocks.
	collation	Used for globalization. Specifies the characters set.
	Unicode in the JDBC URL	Used for globalization.

11. In the **Content Packs** step, you can import an existing content pack. Browse to the location where the content pack is located, and then click **OK**.

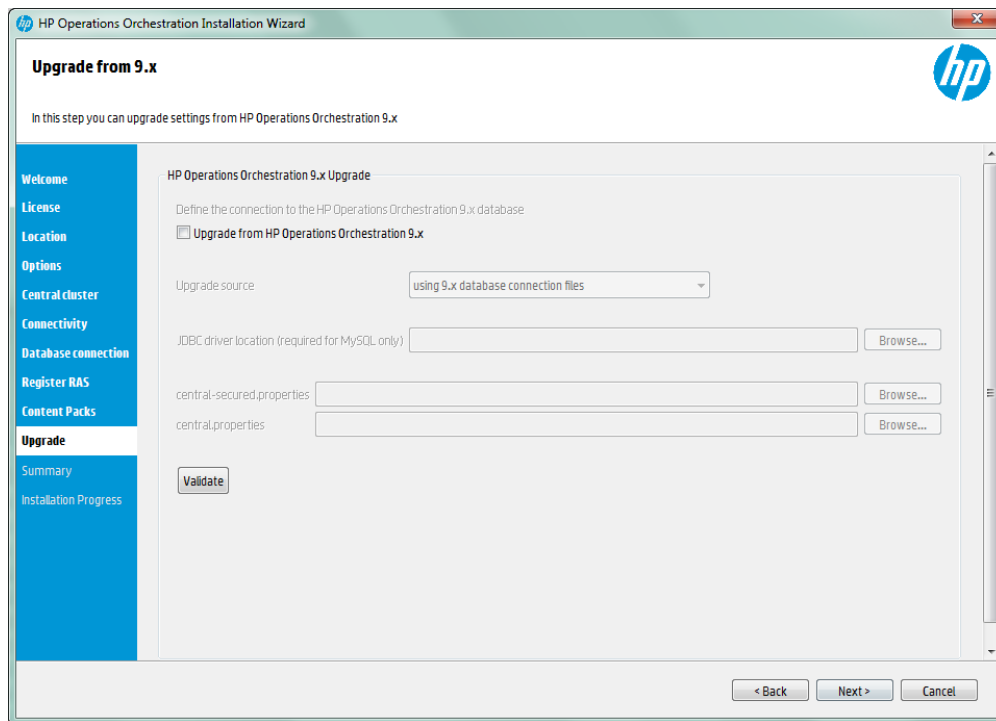
Note: The installation folder and DVD include the released content packs.

The available content packs located in the selected folder appear in the list. Select the content pack that you want to import, and then click **Next**.

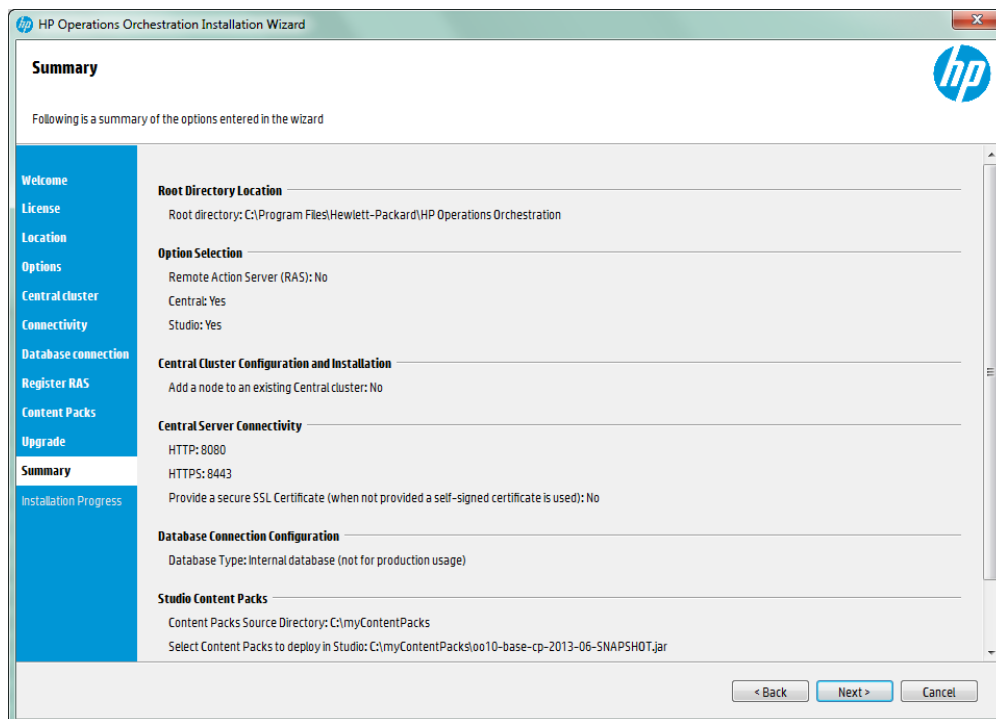


Note: You can download additional and updated content packs on HPLN.

12. In the **Upgrade** step, you can upgrade settings from HP OO version 9.x. This option is not selected by default. If you select this option, click **Validate** to verify your 9.x version.

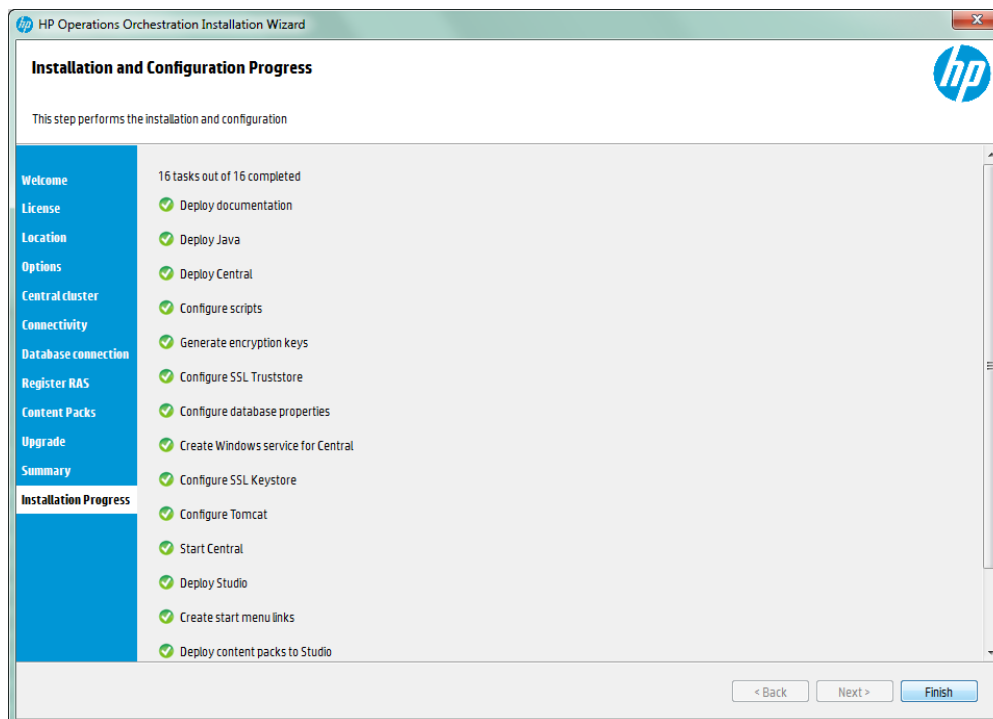


13. The **Summary** section displays the installation and configuration settings that you selected and entered in the wizard. Check the settings are correct, if you want to correct one of the items, click **Back**.



14. Click **Next**. The installation begins, and displays a check mark next to each successfully installed item.

Note: If there is a problem with one of the installation or configuration items, the installation attempts to continue with the rest of the items regardless of that error. Check the `installer.log` file, located in `C:\HP\oo` (or selected installation folder), to check for errors.



15. HP Operations Orchestration is successfully installed. Click **Finish** to close the Installation and Configuration wizard.

Starting HP Operations Orchestration

- Central:
 - Windows: After installing Central, the Windows service is started automatically. Open a browser window, and enter the URL to the Central server set in the Installation and Configuration wizard.
 - Linux: . In order to run the Central user interface, you need an X server.

To start or stop Central:

```
<Install-dir>/central/bin/linux64/central start
```

```
<Install-dir>/central/bin/linux64/central stop
```

- Studio:
 - Windows: From the **Start** menu, select **All Programs > HP Operations Orchestration > Studio**.
- RAS
 - Windows: After installing RAS, the Windows service is started automatically.
 - Linux:

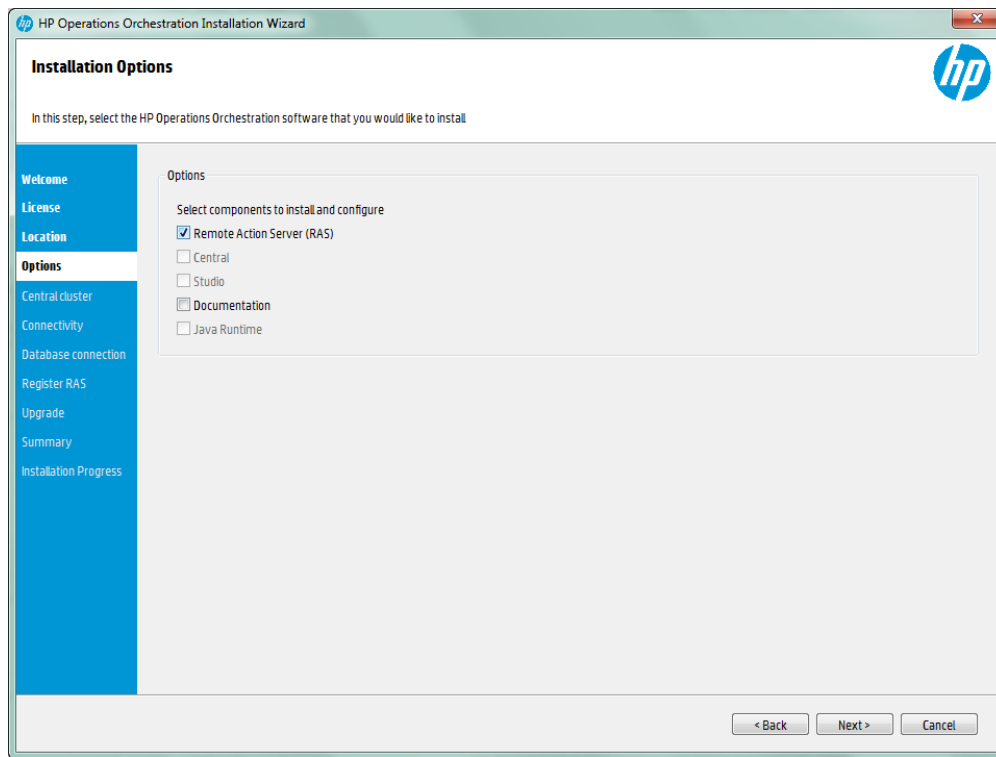
To start or stop the RAS service:

```
<Install-dir>/ras/bin/linux64/ras start
```

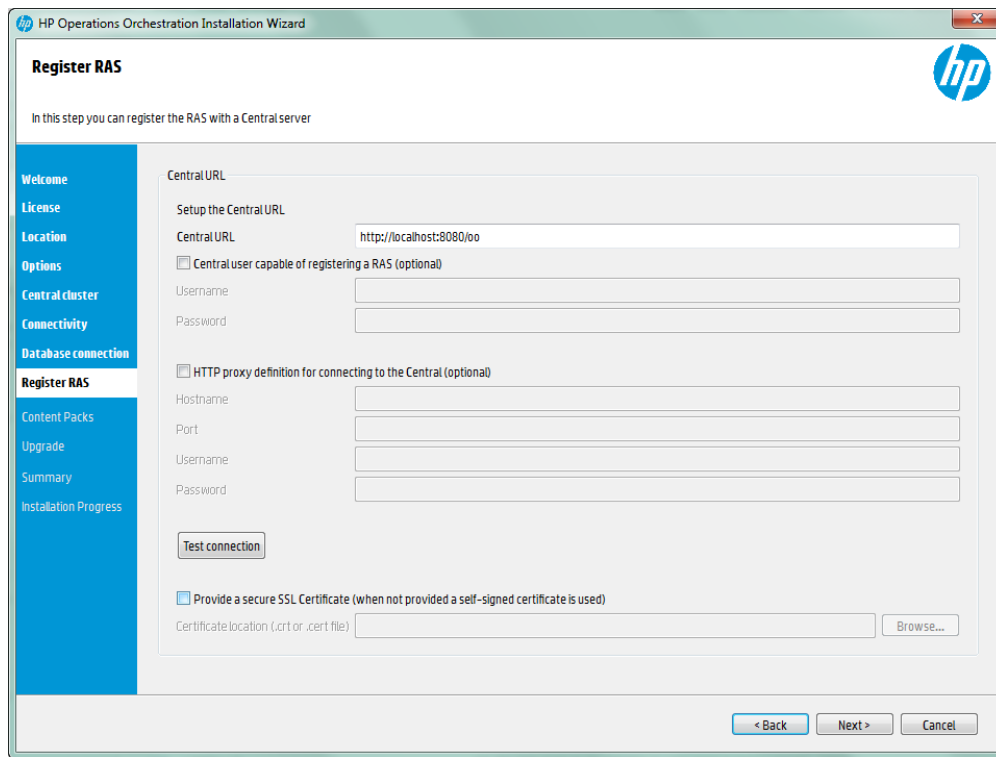
```
<Install-dir>/ras/bin/linux64/ras stop
```

Installing a RAS Server

1. Run the Installation Wizard as described in the Installing [HP Operations Orchestration section](#).
2. In the **Installation Options** step, select **Remote Access Server (RAS)**, and then click **Next**.

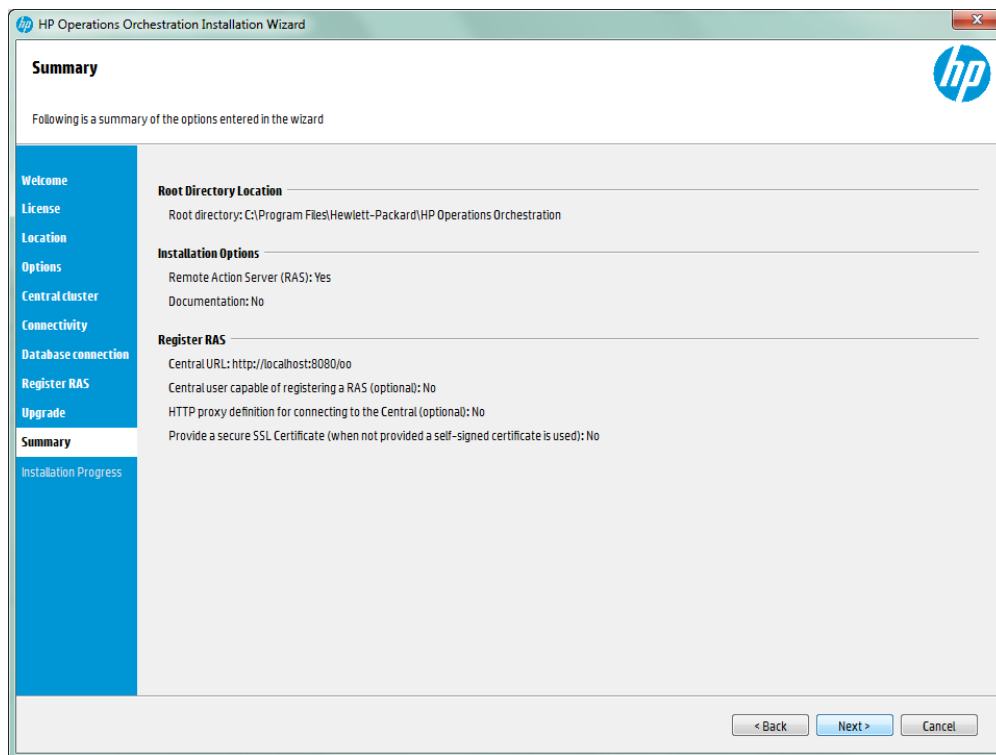


3. In the **Register RAS** step, enter the properties and location of Central, and then click **Test Connection**. If required, select the SSL certificate.



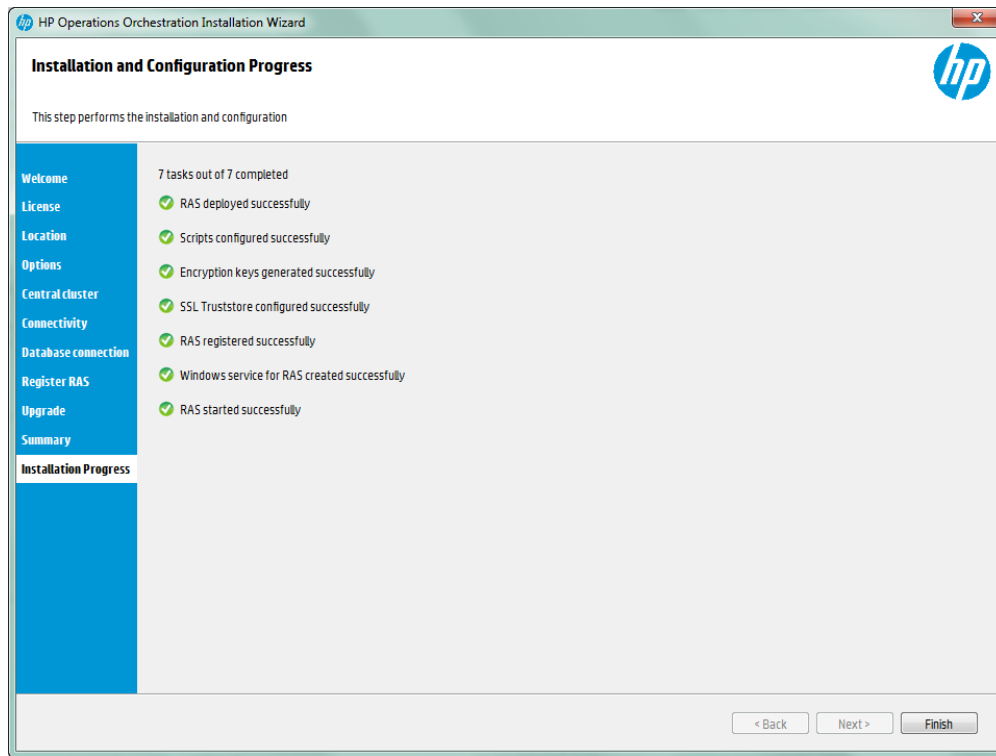
The screenshot shows the 'Register RAS' step of the HP Operations: Orchestration Installation Wizard. The left sidebar contains a list of steps: Welcome, License, Location, Options, Central cluster, Connectivity, Database connection, Register RAS (highlighted), Content Packs, Upgrade, Summary, and Installation Progress. The main area is titled 'Register RAS' and includes the instruction: 'In this step you can register the RAS with a Central server'. The 'Central URL' section has a text box with 'http://localhost:8080/oo'. Below it, there are checkboxes for 'Central user capable of registering a RAS (optional)' and 'HTTP proxy definition for connecting to the Central (optional)'. Each checkbox has associated text boxes for 'Username' and 'Password'. At the bottom, there is a checkbox for 'Provide a secure SSL Certificate (when not provided a self-signed certificate is used)' and a 'Browse...' button for the 'Certificate location (.crt or .cer file)'. Navigation buttons at the bottom right are '< Back', 'Next >', and 'Cancel'.

4. Click **Next**. A summary of the installation is displayed. Click **Next**.



The screenshot shows the 'Summary' step of the HP Operations: Orchestration Installation Wizard. The left sidebar is the same as the previous screen, with 'Summary' highlighted. The main area is titled 'Summary' and includes the instruction: 'Following is a summary of the options entered in the wizard'. The summary is organized into three sections: 'Root Directory Location' showing 'Root directory: C:\Program Files\Hewlett-Packard\HP Operations Orchestration', 'Installation Options' showing 'Remote Action Server (RAS): Yes' and 'Documentation: No', and 'Register RAS' showing 'Central URL: http://localhost:8080/oo', 'Central user capable of registering a RAS (optional): No', 'HTTP proxy definition for connecting to the Central (optional): No', and 'Provide a secure SSL Certificate (when not provided a self-signed certificate is used): No'. Navigation buttons at the bottom right are '< Back', 'Next >', and 'Cancel'.

5. Click **Finish** to complete the installation.



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 receives its input from a text input file.

You can install and configure HP Operations Orchestration silently from a command line.

To install HP Operations Orchestration silently:

1. Edit the **silent.properties** text file with the required installation and configuration settings.
2. From a command line, type the following:

```
installer-win64.exe -s c:\\temp\\my-silent.properties
```

Note: The `-s` property accepts either a full or relative path depending on the operating system:

- Windows: Relative to the location of the `.exe` file.

For example: `dirA`, is the current directory, and `dirB`, is located under `dirA` and contains the installer and the **silent.properties** file. Open a Command window in `dirA` and enter the following:

```
dirB\\installer.exe -s silent.properties
```

Important: Make sure you add two backslashes `\\` and not one backslash `\`. The installation folder where you download the installation file to must not contain any spaces in the name.

- Linux: Relative to the location of the directory where the installer is launched.

To disable the extracting installation files progress bar, add to the command line `-gm2`.

Note: `gm2` is not supported with Linux.

Silent Installer Parameters

General Properties

Parameter	Description	Default Value
<code>root.dir</code>	Root directory of installation target, for example: <code>c:/Program Files/Hewlett-Packard/Operations Orchestration (Windows)</code> or <code>/usr/local/hp/oo (Linux)</code>	
<code>install.ras</code>	Whether or not to install RAS	false
<code>install.central</code>	Whether or not to install the Central	true
<code>install.studio</code>	Whether or not to install the Studio	false
<code>install.docs</code>	Whether or not to install the documentation	true
<code>install.java</code>	Install Java Runtime. This is required. You should only set to false if it has already been installed in the target directory.	true

Properties Relevant to Any Kind of Central Installation

Parameter	Description	Default Value
<code>http.port</code>	HTTP port number	8080
<code>https.port</code>	HTTPS port number	8443

Properties Relevant to the First Installed Central in a Cluster, or to a Standalone Central

Parameter	Description	Default Value
<code>db.url</code>	<p>The database JDBC URL (when used the <code>db.host</code>, <code>db.port</code> and <code>db.name</code> are ignored)</p> <p>Examples:</p> <ul style="list-style-type: none"> MySQL: <code>jdbc:mysql://<db.host>:<db.port></code> Oracle: <code>jdbc:oracle:thin:@<db.host>:<db.port>:<db.sid></code> PostgreSQL: <code>jdbc:postgresql://<db.host>:<db.port></code> MS Sql: <code>jdbc:jtds:sqlserver://<db.host>:<db.port></code> 	
<code>db.type</code>	Select one of the following database types: oracle, postgresql, mysql, mssql, h2 and other	h2
<code>db.create-schema</code>	Whether or not to create the database schema during installation	false
<code>db.host</code>	Database host name, for example: myhost	
<code>db.port</code>	Database port, for example: 1521	
<code>db.name</code>	Database name/SID (depending on the type of database), for example: ORCL	
<code>db.username</code>	Database user name, for example: joe	
<code>db.password</code>	Database password, for example: pass	
<code>db.driver</code>	Resolved automatically from <code>db.type</code> , but can be overridden. If <code>db.type</code> is "other", this property is required.	
<code>db.admin.username</code>	Admin user of the database. Used to create a schema/database/user, for example: adminjoe	
<code>db.admin.password</code>	Database admin user password - used to create a schema/database/user, for example: adminpass	

Parameter	Description	Default Value
<code>db.tablespace</code>	Default tablespace name for the created user (Oracle only), for example: <code>USERS</code> .	
<code>db.driver.location</code>	Database JDBC driver location, required when using <code>db.type=mysql</code> . Also available when using <code>db.type=other</code> . For example: <code>c:/tmp/mydriver.jar</code>	
<code>upgrade.required</code>	Whether or not an upgrade from HP OO 9.x should be performed. Available options: <code>true</code> or <code>false</code>	<code>false</code>
<code>upgrade.source</code>	determines the upgrade source from where to perform the upgrade. The following options are available: <ul style="list-style-type: none"> <code>files</code>: The user provides files from the 9.x installation regardless if it is installed on the same computer as 10.00. <code>directory</code>: The user provides the 9.x installation directory. This can be on the same computer or shared (SMB, NFS) and mounted on the 10.00 computer. <code>database</code>: The user only needs to provide the 9.x database properties. 	
<code>upgrade.central-secure.properties.location</code>	Location of <code>central-secure.properties</code> , for example, <code>c:/temp/central-secure.properties</code> (Windows) / <code>opt/tmp/central-secure.properties</code> (Linux).	
<code>upgrade.central.properties.location</code>	Location of the <code>central.properties</code> file, for example, <code>c:/temp/central.properties</code>	
<code>upgrade.9x.home.location</code>	9.x installation home directory, valid when <code>upgrade.source=directory</code> , for example: <code>c:/Program Files/Hewlett-Packard/Operations Orchestration</code>	
<code>upgrade.db.type</code>	9.x database type, valid when <code>upgrade.source=database</code> , select one of the following: <code>oracle</code> , <code>mssql</code> , or <code>mysql</code>	
<code>upgrade.db.host</code>	9.x database host name, valid when <code>upgrade.source=database</code> , for example: <code>ninexdb</code>	

Parameter	Description	Default Value
<code>upgrade.db.port</code>	9.x database port number, valid when <code>upgrade.source=database</code> , for example: 1521	
<code>upgrade.db.name</code>	9.x database name/SID, valid when <code>upgrade.source=database</code> , for example: ORCL	
<code>upgrade.db.username</code>	9.x database user name, valid when <code>upgrade.source=database</code> , for example: joe	
<code>upgrade.db.password</code>	9.x database password, valid when <code>upgrade.source=database</code> , for example: pass	
<code>upgrade.db.driver.location</code>	The location of JDBC driver Required if HP OO 9.x is running over a MySQL database; otherwise, not needed	

Properties Relevant to a Central Node in a Cluster, But Not to the First Installed Central

Parameter	Description	Default Value
<code>central.cluster</code>	Determines if this is a cluster installation	false
<code>central.cluster.database.properties</code>	Absolute path of the database.properties on the local machine taken from an existing node, for example: c:/tmp/database.properties	
<code>central.cluster.encryption.properties</code>	Absolute path of the encryption.properties on the local machine taken from an existing node, for example: c:/tmp/encryption.properties	
<code>central.cluster.encryption_repository</code>	Absolute path of the encryption_repository on the local machine taken from an existing node, for example: c:/tmp/encryption_repository	
<code>central.cluster.key.store</code>	absolute path of the keystore on the local machine taken from an existing node, for example: c:/tmp/key.store	
<code>central.cluster.keystore.p12</code>	Absolute path of the keystore.p12 on the local machine taken from an existing node. This is optional.	

Properties Relevant to a Standalone Central Only (No Cluster)

Parameter	Description	Default Value
<code>ssl.certificate.type</code>	User-provided or self-signed	
<code>ssl.user-provided-root-certificate.location</code>	Location of the root certificate (.cer format) Import the certificate. For example c:/tmp/my.cer or c:\\tmp\\my.cer in windows and /tmp/my.cer on linux.	
<code>ssl.user-keystore.location</code>	Location of user provided keystore with the server certificate (PKCS12 format)	
<code>ssl.user-keystore.password</code>	Password for the user provided keystore with service certificate	

RAS Properties

Parameter	Description	Default Value
<code>central.url</code>	Central server URL, for example: Enter either http://<server-url> or <ip address>:<HTTP_ PORT>/oo	
<code>central.proxy</code>	Whether or not access to Central requires an HTTP proxy Available values: no, manual	no
<code>central.proxy-hostname</code>	The HTTP proxy host name for connecting to Central, for example: myhost	
<code>central.proxy-port</code>	The HTTP proxy port for connecting to Central, for example: 880	
<code>central.proxy-username</code>	The HTTP proxy user name for connecting to Central, for example: joe	
<code>central.proxy-password</code>	The HTTP proxy password for connecting to Central, for example: pass	
<code>central.secured</code>	Whether or not the Central is password protected	true
<code>central.username</code>	Central user name, for example: joe	
<code>central.password</code>	Central password, for example: pass	

Studio Properties

Parameter	Description	Default Value
<code>studio.content.packs</code>	A comma-separated list of absolute paths to content packs to deploy in Studio	

Sample `silent.properties` Files

When you create the **silent.properties** file, the hash sign # is a comment. Everything in the file is optional except for the `root.dir` (root directory). To set a property you must delete the hash sign #.

Note: Properties that appear in the **silent.properties** file as uncommented are used unless some other property overrides them (for example, if `db.url` is set, `db.host` will not be used).

In order *not* to use a certain property, you must comment out the line of that property, instead of making the value of that property empty.

In the following example, the `db.username` property is not used:

```
#db.username=admin
```

In the following case, `db.username` is used with a blank value:

```
db.username=
```

If you comment out a property that has a default value, it will be set to that value.

Sample 1: First Central in a Cluster or Standalone Central

```
#### Root directory of the installation:
root.dir=C:/Program Files/Hewlett-Packard/HP Operations Orchestration
```

```
#### What to install:
install.java=true
install.central=true
install.ras=false
install.studio=false
```

```
#### Central server ports:
http.port=8080
https.port=8443
```

```
#####
####
#### Central database properties
####
```

```
# Valid values for db.type: oracle, postgresql, mysql, mssql, h2 and other.
# Default value: h2
```

```

db.type=postgresql

# db.driver is optional - only if you want to override the default driver. The
# default driver is determined by the db.type when possible (for db.type=other
# no driver will be resolved by default).
#db.driver=

# For db.type=mysql, this MUST be set to the path of a MySQL JDBC driver (a JAR
# file). It is also available for db.type=other.
#db.driver.location=C:/tmp/mysql-connector-java-5.1.21.jar

db.host=74.125.225.240
db.port=5432
db.name=oo

# db.url is optional - set this value if you want advanced features supported by
# the driver. If you set this property then the db.host, db.port and db.name
# properties are ignored.
#db.url=

db.username=ooouser
db.password=oopass

# To create the database schema you must provide the admin user credentials -
# this is a database user capable of creating a schema/database, usually this is
# a DBA user or a system user.
db.create-schema=true
db.admin.username=postgres
db.admin.password=password

# db.tablespace and db.temp.tablespace are only used when creating a schema
# (user) in an Oracle database.
#db.tablespace=
#db.temp.tablespace=

#####
####
#### Upgrade from HP OO 9
####

#upgrade.required=false
#upgrade.source=files
#upgrade.central-secure.properties.location=C:/tmp/central-secured.properties
#upgrade.central.properties.location=C:/tmp/Central.properties

# If HP OO 9 is running over MySQL, both of these must be defined (regardless of
# upgrade.source).
#upgrade.db.type=mysql
#upgrade.db.driver.location=C:/tmp/mysql-connector-java-5.1.21.jar

```

Sample 2: Central Node in a Cluster (Not the First Installed Central)

```
#### Root directory of the installation:
root.dir=C:/Program Files/Hewlett-Packard/HP Operations Orchestration

#### What to install:
install.java=true
install.central=true
install.ras=false
install.studio=false

#### Central server ports:
http.port=8080
https.port=8443

#####
####
#### Central cluster node properties
####

central.cluster=true
central.cluster.database.properties=C:/tmp/database.properties
central.cluster.encryption.properties=C:/tmp/encryption.properties
central.cluster.encryption_repository=C:/tmp/encryption_repository
central.cluster.key.store=C:/tmp/key.store

# When using a MySQL database (in either HP 00 10 or in an upgraded HP 00 9), it
# would normally be required to set this property. However, when installing a
# cluster node, this property is ignored due to an issue in the 10.00 installer.
# Therefore, you must manually copy the file to <installation>/central/lib and
# <installation>/central/tomcat/lib after the installation, then start the node.
#db.driver.location=C:/Users/admin/Desktop/mysql-connector-java-5.1.21.jar
```

Sample 3: RAS

```
#### Root directory of the installation:
root.dir=C:/Program Files/Hewlett-Packard/HP Operations Orchestration

#### What to install:
install.java=true
install.central=false
install.ras=true
install.studio=false

#####
####
#### RAS properties - connection to Central
####

# If using a cluster, this should be the load balancer's URL.
central.url=https://74.125.225.240:8443/oo
```

```
central.secured=true
central.username=ooouser
central.password=oopass

#### Valid values for central.proxy: no, manual
#central.proxy=no
#central.proxy-hostname=
#central.proxy-port=
#central.proxy-username=
#central.proxy-password=
```

Sample 4: Studio

```
#### Root directory of the installation:
root.dir=C:/Program Files/Hewlett-Packard/HP Operations Orchestration
```

```
#### What to install:
install.java=true
install.central=false
install.ras=false
install.studio=true
```

```
#####
####
#### Studio properties
####
```

```
# Optional - use this if you want to auto-import CPs on first Studio startup.
#studio.content.packs=C:/tmp/oo10-base-cp-1.0.142.jar,C:/tmp/my-cp-1.0.0.jar
```

Important Notes About Silent Installation

- **Oracle:** To connect to an Oracle database, enter a regular user with dba role for the Oracle db user name. Do not connect using SYS or SYSTEM users.
- **Microsoft SQL Server:** This uses the user name and password fields, and does not create them during installation.
- **PostgreSQL:** For **PostgreSQL**, the user name Admin must have a database set up with the same name.

Note: The PostgreSQL database name is case-sensitive.

- **Internal database:** This uses an H2 local database. This should not be used for production.
- **Other database:** Use to enable advanced features in supported databases. If you select **Other**

database, you can only use a database type that is supported for use with HP OO. See the *System Requirements* for more information.

- Special characters, except the underscore (_), cannot be used for the database name or SID field. In addition, you can enter up to 30 characters for the database name or SID.
- When you are upgrading from a remote 9.x Central that has localhost as the database in the **Central.properties** file using a silent installation, installation and upgrade do not complete successfully. This problem does not exist for wizard installations.
- Be careful not to put trailing spaces in your property values (especially when pasting).

Installing a Load Balancer

HP OO, it is possible to install any load balancing solution that you choose. This is a third party product, which is not part of HP OO.

For information about how to install your specific load balancer, see the documentation provided by your vendor.

For information about how to configure the load balancer, see "Configuring High Availability" in the *HP OO Configuration and Hardening Guide*.

Upgrading to Later Versions of HP OO 10.x

After you have installed HP OO 10.00, you can upgrade to HP OO 10.01 or later. For more detailed information on upgrading your version, see the HP OO 10.x Upgrade Guide.

Upgrading to HP OO 10.x

Upgrading to HP OO 10.x (10.01 and later) is done using a command line script.

The relevant scripts are contained in a zip file. The scripts are:

- **apply-upgrade(.bat)** – for upgrading to the new 10.x version
- **rollback(.bat)** – for rolling back to the previously installed 10.x version
- **generate-sql(.bat)** – if your company does not allow HP OO to change the database schema, this is used in addition to **apply-upgrade(.bat)** or **rollback(.bat)**

Note: There are two versions of each script file: with a **.bat** suffix for Windows and with no suffix for Linux.

You can upgrade from 10.00 to any version of 10.x. It is not necessary to upgrade to the interim versions.

You can also use the process to upgrade from one version of 10.x to another—for example, from 10.01 to 10.02.

Prerequisites

- The apply-upgrade script backs up the entire installation, so make sure that there is adequate disk space for this.

Note: You may wish to archive this backup, to save space. See [Tips For Freeing Up Disk Space](#).

- It is recommended to make sure that the old version of Central has started successfully at least once. Otherwise, you may not be able to roll back the upgrade, should you decide to do so.
- It is highly recommended to back up the HP OO database before applying the upgrade.
- When upgrading from an earlier version of 10.x, you must cancel or finish all paused or running flows and disable existing schedules before applying the upgrade. If there are flows running or paused when you perform the upgrade, it will not be possible to resume them.

Note: The upgrade process replaces most files, but preserves logs, security data and user

settings defined in the following locations:

Central:

- Anything under **<installation>/central/conf**
- **<installation>/central/tomcat/conf/server.xml**
- **<installation>/central/tomcat/conf/web.xml**

RAS:

- Anything under **<installation>/ras/conf**

Studio:

- Any file with a **.properties** extension under **<installation>/studio/conf**

Upgrading

To upgrade HP OO 10.x to a later 10.x version, you need to expand the zip file and run the **apply-upgrade(.bat)** script.

1. Expand the zip file in the root folder of the installation. This creates an **upgrade** folder containing a **<new-version>** folder (for example, **10.02**).

Important! Make sure you extract the zip file directly into the main installation folder, and not into a sub-folder. The **apply-upgrade(.bat)** script will only work if the **upgrade** folder is directly under the main installation folder.

2. For Linux, use the following command inside the **<new-version>** folder, to change file permissions:

```
chmod 755 bin/* java/*/bin/*
```

3. In the **bin** sub-folder, open a command line and run the **apply-upgrade(.bat)** script.

(Optional) If required, use the following command line options:

-f, --force	Force-start the upgrade. This command upgrades the installation, without prompting.
-h, --help	Display help on the available parameters.
-n, --norestart	Do not restart Central/RAS after the upgrade.

4. Type **y** to apply the upgrade.

An upgrade.log file, describing the progress of the upgrade, is created under **<installation>/upgrade/<new-version>**.

Upgrading Central When it Uses User-Supplied JDBC Drivers

During the installation of HP OO 10.00, it is possible to provide the installer with JDBC drivers (JAR files used to connect to the database) on two occasions:

- When configuring the database connection for HP OO, and using a database of the type MySQL (or selecting **Other database**, which enables advanced database configuration).
- When setting up an upgrade from HP OO 9.x, which itself runs with MySQL.

The installer stores user-supplied drivers in two directories:

- **<installation>/central/lib**
- **<installation>/central/tomcat/lib**

When you run the **apply-upgrade** script, it attempts to locate these files in order to exclude them from deletion. Specifically, it looks for files whose names match either ***mysql*.jar** or ***.userjdbc.jar**, and lists the search results.

If you supplied any drivers during installation, you must make sure that they are listed. Note that each driver must show up twice—once for each of the two directories mentioned above.

If any driver is missing, complete the following steps:

1. Cancel the upgrade.
2. Stop Central.
3. Locate the driver file in **<installation>/central/lib**, and change its file name extension from **.jar** to **.userjdbc.jar**.

Note: If your HP OO version 9.x uses MySQL, but your HP OO version 10.x does not, the MySQL driver will be missing from the installation. In this case, you must supply the file. You need this driver in order to import the data from the HP OO 9.x database.

Copy the missing file to **<installation>/central/lib** and make sure its name either contains **mysql** or has the extension **.userjdbc.jar**.

4. Repeat the previous step for **<installation>/central/tomcat/lib**.
5. Run **apply-upgrade** again, and make sure you see the driver file listed under both directories.

If you accidentally let **apply-upgrade** delete your driver, you can manually place the driver in the two directories, this time with a **.userjdbc.jar** extension, and then re-run **apply-upgrade**.

Note: If you are upgrading a cluster, the instructions above apply to all Central nodes.

Upgrading When Your Company Does Not Allow Changing the Database Schema

If your company does not allow the HP OO application to change the database schema, the upgrade procedure is different. You will need to use the **generate-sql(.bat)** script, which is also included in the upgrade zip file.

The **generate-sql(.bat)** script is used to generate the **upgrade.sql** file in the unzipped upgrade folder. This file contains the SQL for applying all of the upgrade's database changes.

1. Expand the zip file in the root folder of the installation. This creates an **upgrade** folder containing a **<new-version>** folder (for example, **10.02**).

Important! Make sure you extract the zip file directly into the main installation folder, and not into a sub-folder. The **apply-upgrade(.bat)** script will only work if the **upgrade** folder is directly under the main installation folder.

2. For Linux, use the following command inside the **<new-version>** folder, to change file permissions:

```
chmod 755 bin/* java/*/bin/*
```

3. In the **bin** sub-folder, open a command line and run the **generate-sql(.bat)** script.

The command line options for **generate-sql(.bat)** are:

-h, --help	Display help on the available parameters.
-r, --rollback	Generate the SQL for rollback. Use only after the database has been upgraded.

The **upgrade.sql** file is created in the **<installation>/upgrade/<new-version>** folder.

4. Stop Central/RAS.
5. Apply the database changes by running **upgrade.sql** against the database with the required credentials.
6. Open a command line and run the **apply-upgrade(.bat)** script.

Upgrading a Cluster

1. In a cluster setup, stop all Central/RAS instances manually.

Caution: This step is crucial. It will make the process "clean", and prevent damage that can occur due to the yet-to-be-upgraded nodes running against the upgraded database.

Note: For Central and RAS, the upgrade process shuts down the server automatically. However, on a cluster, the upgrade stops the node being upgraded, but does not shut down the entire cluster.

2. Apply the upgrade to all the Central/RAS instances.

Caution: Once you have upgraded one Central node to the new 10.x version, you must upgrade all additional nodes to the same version. Restarting a non-upgraded node may cause permanent issues in the cluster (to the database schema changes).

Adding a New Node to an Upgraded Cluster

This section relates to a situation where you have a Central cluster that has been upgraded from version A to B, and later from version B to C, and you now want to add a new node to your cluster. However, only version A has an installer.

For example, you originally installed HP OO 10.00, then upgraded to 10.01, and then to 10.02.

You need to do the following:

1. Install version A. (In the example, install 10.00).
2. Upgrade directly to version C. (In the example, upgrade directly to 10.02).

Note: While it is possible to upgrade to version B and only then to C, doing so will break the rollback functionality. Specifically, you will not be able to correctly roll back the database schema if you do this.

Tips For Freeing Up Disk Space

Once the upgrade is complete:

- You can delete the java and packages directories under <installation>/upgrade/<new-version>, but note that this will make the included scripts non-functional. You can always restore the scripts by re-extracting the upgrade zip.

- You can move the backup directory (created at **<installation>/upgrade/<new-version>/backup**) elsewhere for archival. However, if you later wish to roll back the upgrade, you must move the backup directory back to the original location.

Rolling Back an Upgrade

You can roll back an upgrade using the rollback script. This restores the installation to the state it was before the upgrade, but without losing database data.

The rollback restores the installation to the previous version, including patches. For example, if you have upgraded from HP OO 10.01 to 10.02, the rollback will restore version 10.01. If you upgraded from HP OO 10.00 to 10.02, the rollback will restore version 10.00.

The rollback process can only remove the latest patch that you installed. This means that if you installed 10.00 and then upgraded to 10.01, and then to 10.02, you will only be able to roll back to 10.01.

Caution: It is not possible to roll back twice. You can only roll back the last upgrade that you successfully applied. Attempting to run the rollback twice will make the system unusable.

Important! When rolling back to an earlier version of 10.x, you must cancel or finish all paused or running flows and disable existing schedules before applying the rollback. If there are flows running or paused when you perform the rollback, it will not be possible to resume them.

A component (Central, RAS, Studio) will only be rolled back if:

- The component is backed up under **<installation>/upgrade/<new-version>/backup/<component>**.
- The installed version is identical to the upgrade script's **<new-version>**.

If Central is being rolled back, the script rolls back the database schema changes and preserves data that was added after the upgrade. However, in some cases, data may still be lost due to the schema changes.

Note that any changes that were made in the file system since the upgrade will be lost, including changes to configuration files and log files.

Note: The rollback might be faulty if the old (pre-upgrade) version of Central was never started prior to the upgrade.

1. Open a command line.
2. Run the **rollback(.bat)** script, which is included in the upgrade zip file.

(Optional) If required, use the following command line options:

-f, --force	Force-start the rollback. This command rolls back the installation, without prompting.
-h, --help	Display help on the available parameters.
-n, --norestart	Do not restart Central/RAS after the rollback.
-o, --filesonly	Do not roll back the database schema. You only need to use this option if you have manually restored a backup of the database, which you created before the upgrade. For more information, see "Restoring a Database Backup Created Before the Upgrade" on the next page.

The rollback script uses the same **upgrade.log** file as the upgrade script.

Rolling Back When Your Company Does Not Allow Changing the Database Schema

If your company does not allow the HP OO application to change the database schema, the rollback procedure is different. You will need to use the **generate-sql(.bat)** script with the **-r** option, which generates a **rollback.sql** file in the unzipped upgrade folder.

1. Open a command line and run the **generate-sql(.bat)** script with the **-r** option.

The command line options for **generate-sql(.bat)** are:

-h, --help	Display help on the available parameters.
-r, --rollback	Generate the SQL for rollback. Use only after the database has been upgraded.

For example:

```
generate-sql -r
```

The **rollback.sql** file is created in the unzipped **<installation>/upgrade/<new-version>** folder.

2. Stop Central/RAS.
3. Apply the database changes by running **rollback.sql** against the database with the required credentials.
4. Roll back HP OO 10.x using **rollback(.bat)**.

Central/RAS restarts automatically after the rollback.

Rolling Back a Cluster

In a cluster setup, it is recommended to stop all Central/RAS instances manually before rolling back.

Important! If you have added new cluster nodes since the most recent upgrade (of the existing nodes), rolling back the new nodes may cause problems. You should re-install such nodes instead of rolling them back. Only roll back the older nodes. If unsure, consider rolling back the oldest Central only, and then re-installing the rest.

Restoring a Database Backup Created Before the Upgrade

If the database schema rollback fails, and you have created a backup of the database prior to the upgrade, you can restore the backup as follows. This restores the files only and does not roll back the database schema.

1. Stop Central/RAS.
2. Manually restore the database backup.
3. Open a command line and run the **rollback(.bat)** script with the -o option.

For example:

```
rollback -o
```

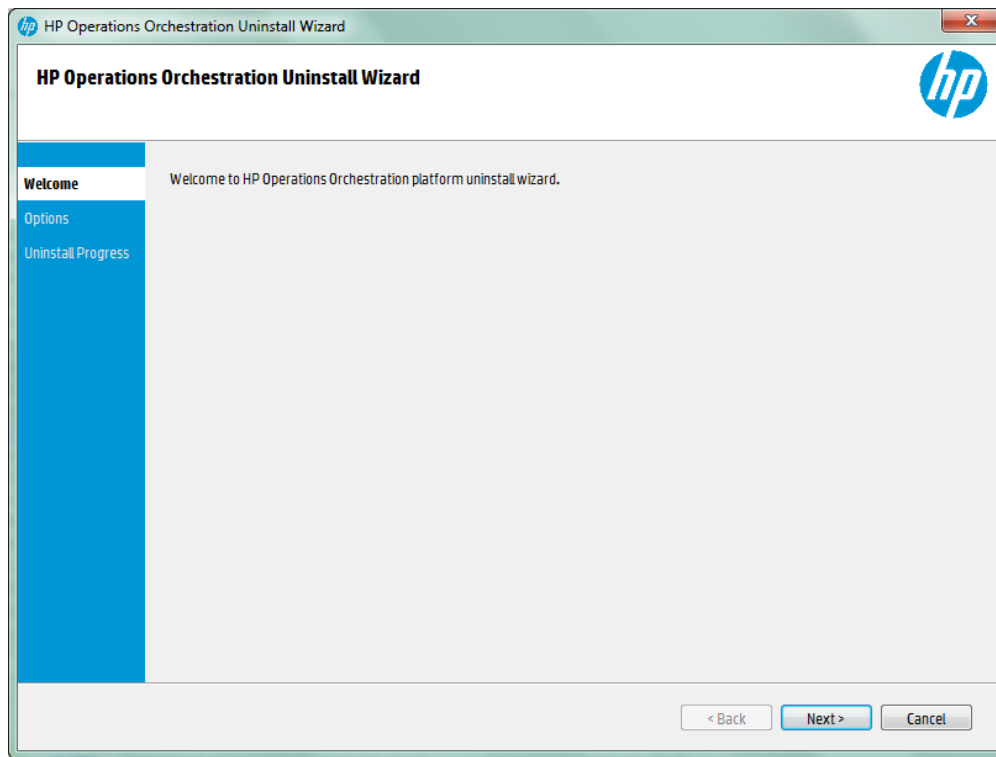
Central/RAS restarts automatically after the rollback.

Uninstalling HP Operations Orchestration

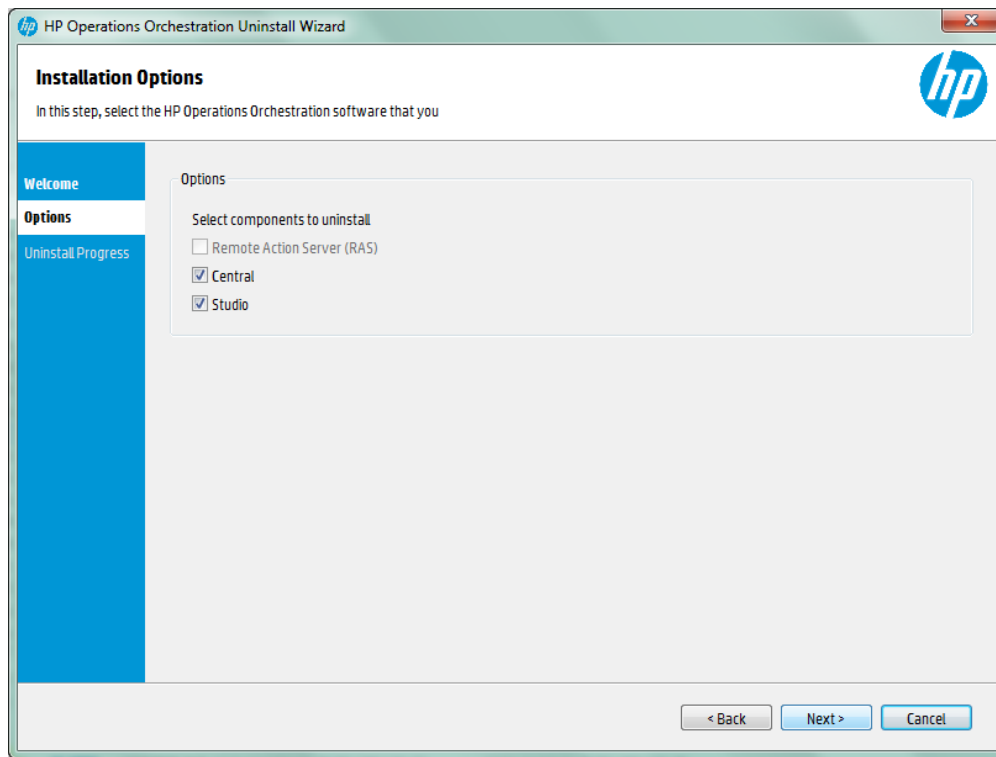
Before uninstalling HP OO, make sure you back up your version of HP OO.

Windows

1. In the HP OO installation directory, for example, C:\Program Files\Hewlett-Packard\HP Operations Orchestration, double-click on **uninstall.exe**, and then click **Next**.



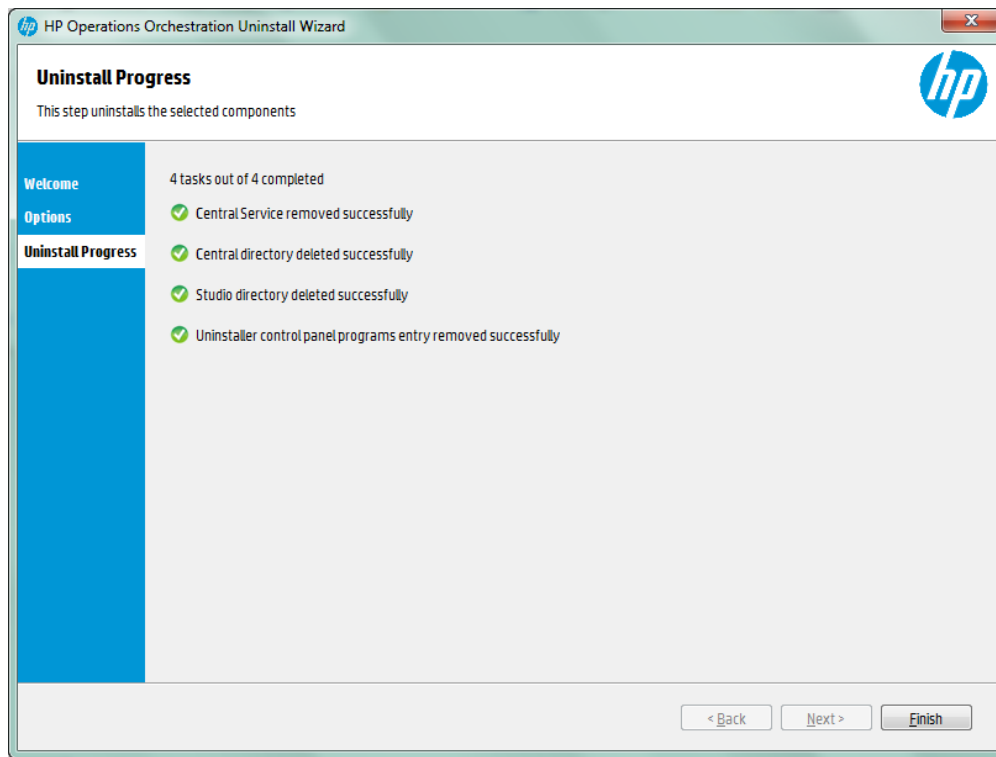
2. Select the HP OO options that you want to uninstall, and then click **Next**. you are prompted if you are sure you want to continue, click **Yes**.



3. During the uninstall process, the following items are deleted and removed:

- Remove Central Service
- Delete Central directory
- Delete Studio directory
- Remove uninstaller control panel programs entry

Note: The database and database user are not removed or dropped.



4. Click **Finish**, the HP Operations Orchestration selected options are removed from your computer.

Linux

To uninstall HP Operations Orchestration in Linux, enter the following:

```
export DISPLAY=1.2.3.4:0.0
./uninstall
```

After the uninstall completes successfully, you can delete the installation directory.

Appendix

Changing the Database Settings

1. Stop the Central cluster, or single node.
2. (Optional) generate an encrypted password using the following command:

```
<install-dir>/central/bin/encrypt-password --password <plain-text-pass>
```

3. For each node edit the following and change the user name and password. If the password is in plain text just type it in the right field, if it's encrypted make sure you also copy the {ENCRYPTED} prefix:

```
<install-dir>/central/conf/database.properties and
```

4. Restart the Central cluster.

Using JRE From OpenJDK 7

If you want to use the JRE from the OpenJDK 7 project, instead of the standard JRE that was provided in your HP OO installation, you can do so using the following procedure.

Note: The OpenJDK you use must be for Java SE 7.

The upgrade to HP OO 10.02 replaces the installed JRE. Therefore, the procedure must be done after upgrading to 10.02.

1. Stop Central/RAS and close Studio.
2. Back up and delete the **java** directory under the main HO OO installation directory.
3. Locate the **jre** directory in your OpenJDK package. Copy it to the HP OO installation directory and rename it to **java**.
4. Restart Central/RAS.

