

# HP Codar

Software Version: 1.50  
Windows® and Linux operating systems

## Installation and Configuration Guide

Document Release Date: June 2015  
Software Release Date: June 2015



## Legal Notices

### Warranty

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

The information contained herein is subject to change without notice.

### Restricted Rights Legend

Confidential computer software. Valid license from HP required for possession, use or copying. Consistent with FAR 12.211 and 12.212, Commercial Computer Software, Computer Software Documentation, and Technical Data for Commercial Items are licensed to the U.S. Government under vendor's standard commercial license.

### Copyright Notice

© Copyright 2014 - 2015 Hewlett-Packard Development Company, L.P.

### Trademark Notices

Adobe™ is a trademark of Adobe Systems Incorporated.

Microsoft® and Windows® are U.S. registered trademarks of Microsoft Corporation.

The OpenStack® Word Mark and the Square O Design, together or apart, are trademarks or registered trademarks marks of OpenStack Foundation, in the United States and other countries and are used with the OpenStack Foundation's permission.

Oracle and Java are registered trademarks of Oracle and/or its affiliates.

RED HAT READY™ Logo and RED HAT CERTIFIED PARTNER™ Logo are trademarks of Red Hat, Inc.

This product includes an interface of the 'zlib' general purpose compression library, which is Copyright © 1995-2002 Jean-loup Gailly and Mark Adler.

## Documentation Updates

The title page of this document contains the following identifying information:

- Software Version number, which indicates the software version.
- Document Release Date, which changes each time the document is updated.
- Software Release Date, which indicates the release date of this version of the software.

To check for recent updates or to verify that you are using the most recent edition of a document, go to: <http://h20230.www2.hp.com/selfsolve/manuals>

This site requires that you register for an HP Passport and sign in. To register for an HP Passport ID, go to: <http://h20229.www2.hp.com/passport-registration.html>

Or click the **New users - please register** link on the HP Passport login page.

You will also receive updated or new editions if you subscribe to the appropriate product support service. Contact your HP sales representative for details.

## Support

Visit the HP Software Support Online web site at: <http://www.hp.com/go/hpsupport>

This web site provides contact information and details about the products, services, and support that HP Software offers.

HP Software online support provides customer self-solve capabilities. It provides a fast and efficient way to access interactive technical support tools needed to manage your business. As a valued support customer, you can benefit by using the support web site to:

- Search for knowledge documents of interest
- Submit and track support cases and enhancement requests
- Download software patches
- Manage support contracts
- Look up HP support contacts
- Review information about available services
- Enter into discussions with other software customers
- Research and register for software training

Most of the support areas require that you register as an HP Passport user and sign in. Many also require a support contract. To register for an HP Passport ID, go to:

<http://h20229.www2.hp.com/passport-registration.html>

To find more information about access levels, go to:

[http://h20230.www2.hp.com/new\\_access\\_levels.jsp](http://h20230.www2.hp.com/new_access_levels.jsp)

**HP Software Solutions Now** accesses the HPSW Solution and Integration Portal Web site. This site enables you to explore HP Product Solutions to meet your business needs, includes a full list of Integrations between HP Products, as well as a listing of ITIL Processes. The URL for this Web site is <http://h20230.www2.hp.com/sc/solutions/index.jsp>

# Contents

- Overview ..... 9
  - System requirements ..... 9
  - Installation steps ..... 9
- Install and initially configure database ..... 10
  - Oracle Database ..... 10
    - Install Oracle Database ..... 10
    - Download Oracle JDBC drivers ..... 10
    - Configure Oracle Database ..... 10
      - Create Oracle database instances for HP Codar ..... 11
      - Configure Oracle database user and schema for embedded HP Operations  
Orchestration ..... 12
      - Configure Oracle database user and role for Identity Management component ..... 12
      - Configure Oracle database user and role for HP Codar ..... 13
      - Configure Oracle reporting database role and read-only user for HP Codar (required for  
reporting) ..... 14
      - Configure Oracle for localization (required for localization) ..... 15
      - Create Oracle tablespace for HP Codar (recommended) ..... 15
  - Microsoft SQL server ..... 16
    - Install Microsoft SQL Server ..... 16
    - Configure Microsoft SQL Server ..... 16
      - Enable TCP/IP on Microsoft SQL server ..... 16
      - Configure Microsoft SQL server database user for HP Codar ..... 17
      - Configure Microsoft SQL reporting database role and read-only user for HP Codar  
(required for reporting) ..... 17
      - Configure Microsoft SQL server database user for embedded HP Operations  
Orchestration ..... 18
      - Configure Microsoft SQL server database user for Identity Management component ... 19
      - Create Microsoft SQL Server filegroup with embedded HP Operations Orchestration .. 20
  - PostgreSQL ..... 20
    - Install PostgreSQL ..... 20
    - Configure PostgreSQL users and database ..... 20
- Install external HP Operations Orchestration ..... 25
  - Configure internal user ..... 25

Export HP Operations Orchestration root certificate .....	26
<b>Install HP Codar .....</b>	<b>27</b>
Install HP Codar on Windows .....	27
Install HP Codar on Linux .....	36
Configure group and user .....	36
Install HP Codar .....	36
Post-installation database configuration .....	45
Configure Oracle tablespace .....	45
Configure Microsoft SQL Server filegroup .....	45
<b>Configure HP Operations Orchestration .....</b>	<b>47</b>
Configure embedded HP Operations Orchestration .....	47
Add JRE to the system path .....	48
Configure internal users .....	48
Deploy content packs required by HP Codar .....	49
Verify deployed content packs .....	50
Deploy HP Operations Orchestration and component tool content packs .....	51
Set up system accounts for the HP Codar content pack .....	52
Set up system properties for the HP Codar content pack .....	53
Configure HP Single Sign-On .....	53
Configure external HP Operations Orchestration .....	53
Add JRE to system path .....	54
Install HP Codar content packs .....	55
Configure internal users .....	55
Deploy content packs required by HP Codar .....	56
Verify the deployed content packs .....	56
Deploy the HP Operations Orchestration and component tool content packs .....	57
Set up system accounts for HP Codar content pack .....	58
Set up system properties for HP Codar content pack .....	59
Configure HP Single Sign-On .....	59
Configure HP Single Sign-On between HP Codar and HP Operations Orchestration .....	60
Enable HP Single Sign-On .....	60
Configure LDAP Users for Single Sign-On .....	61
<b>Post-installation .....</b>	<b>62</b>
Install VMware vCenter .....	62
Configure VMware vCenter .....	63

- Install HP SiteScope ..... 64
  - Configure HP SiteScope ..... 65
  - Enable HP Codar to configure HP SiteScope monitors ..... 65
  - Manually import additional HP Codar templates ..... 65
  - Configure HP Codar credential profiles ..... 66
  - Configure HP SiteScope administrator credentials ..... 66
- Install HP Server Automation ..... 66
  - Configure HP Server Automation ..... 67
    - Create HP Codar service account ..... 67
    - Create HP Codar administrators group and assign permissions ..... 68
    - Validate Codar service account ..... 69
    - Validate HP Server Automation client ..... 69
  - Prepare VMware template ..... 70
    - Template preparation overview ..... 71
    - Detailed process ..... 71
    - Provision an operating system on a virtual machine ..... 72
    - Sanitize agent configuration on a template machine ..... 72
    - Basic customization ..... 74
    - Install prepared template ..... 74
- Configure resource providers ..... 74
- Apply HP Codar licenses ..... 75
  - OSI capacity ..... 76
- Jenkins ..... 76
  - Install Collabnet Subversion Edge ..... 76
  - Install Tortoise ..... 76
  - Install Jenkins ..... 76
  - Install the JDK ..... 77
  - Install the Maven plug-in ..... 77
  - Configure Jenkins to use with HP Codar ..... 77
  - Install HP Codar Jenkins plug-in ..... 77
    - Enable the HP Codar Jenkins plug-in ..... 78
  - Configure Pet Clinic sample application project ..... 78
    - Configure plug-in for Pet Clinic sample application ..... 79
    - Sample Pet Clinic extended properties file ..... 81
  - Create custom design ..... 82
- Import and configure sample designs ..... 82
  - Import sample designs ..... 82
  - Configure sample designs ..... 83

Send Documentation Feedback .....84





# Overview

This guide provides information for installing the HP Codar application. Successful implementation of the application requires knowledge of the integrated products, as well as the HP Codar solution. Information in this guide augments information provided in the integrated products documentation but is not intended to replace that documentation. Primary product documentation contains the most up-to-date information. Cross-references are provided to those documents where appropriate.

## System requirements

You should review the *HP Codar System and Software Support Matrix* for version requirements.

You can get this document from the HP Software Support web site at <http://h20230.www2.hp.com/selfsolve/manuals/>. You must sign in or register for an HP Passport.

## Installation steps

The main installation steps depend on whether you are installing the embedded or external HP Operations Orchestration to integrate with HP Codar. If you choose to integrate HP Codar with embedded HP Operations Orchestration, embedded HP Operations Orchestration is installed automatically with HP Codar.

Following are the main installation steps:

1. ["Install and initially configure database" on page 10](#): Oracle, Microsoft SQL, or PostgreSQL.
2. ["Install external HP Operations Orchestration" on page 25](#) (only if you chose to integrate with external HP Operations Orchestration).
3. ["Install HP Codar" on page 27](#).
  - a. ["Install HP Codar on Windows" on page 27](#) or ["Install HP Codar on Linux" on page 36](#)
  - b. ["Post-installation database configuration" on page 45](#)
4. ["Configure HP Operations Orchestration" on page 47](#).
5. ["Post-installation" on page 62](#)

# Install and initially configure database

You can install and configure one of the following databases:

- Oracle JRE, see ["Oracle Database" below](#)
- Microsoft SQL server, see ["Microsoft SQL server" on page 16](#)
- PostgreSQL, see ["PostgreSQL" on page 20](#)

## Oracle Database

You must complete the following installation and configuration steps if you wish to use the Oracle Database with HP Codar.

- ["Install Oracle Database" below](#)
- ["Download Oracle JDBC drivers" below](#)
- ["Configure Oracle Database" below](#)

## Install Oracle Database

See the *HP Codar System and Software Support Matrix*, for a list of supported database versions.

Install the database according to the manufacturer's documentation. Database installation is typically done in partnership with a database administrator.

## Download Oracle JDBC drivers

For a list of supported JDBC driver versions, see the *HP Codar System and Software Support Matrix*.

Download a supported version of the JDBC .jar file(s) and save them on the system on which HP Codar will be installed. Record the location where you save the files, because this information must be provided when you install HP Codar.

## Configure Oracle Database

These tasks must be completed before HP Codar is installed.

**Note:** These tasks are used with both embedded and external HP Operations Orchestration,

except where indicated.

- ["Create Oracle database instances for HP Codar" below](#)
- ["Configure Oracle database user and schema for embedded HP Operations Orchestration" on the next page](#)
- ["Configure Oracle database user and role for Identity Management component" on the next page](#)
- ["Configure Oracle database user and role for HP Codar" on page 13](#)
- ["Configure Oracle reporting database role and read-only user for HP Codar \(required for reporting\)" on page 14](#)
- ["Configure Oracle for localization \(required for localization\)" on page 15](#)
- ["Create Oracle tablespace for HP Codar \(recommended\)" on page 15](#)

## Create Oracle database instances for HP Codar

Separate database instances are required for HP Codar and the components it uses. You must create a separate database instance for:

- Embedded HP Operations Orchestration - only if you use embedded HP Operations Orchestration
- Identity Management component - if you use either embedded or external HP Operations Orchestration
- HP Codar - if you use either embedded or external HP Operations Orchestration

Work with the database administrator to create a database that is used by the embedded HP Operations Orchestration, HP Codar (if it has not already been created), and the Identity Management component. See the *HP Operations Orchestration Database Guide* for more information about database requirements for HP Operations Orchestration.

You must provide the System ID (SID) of these databases when prompted for the database information during the installation of HP Codar. For example, when prompted for the HP Codar database information, provide the SID of the HP Codar database. When prompted for the Identity Management component database information, provide the SID of the Identity Management component database. When prompted for the embedded HP Operations Orchestration database information, provide the SID of the embedded HP Operations Orchestration database.

**Note:** For an Oracle database, SID is no longer used for the database connectivity. Instead of SID, it should be `SERVICE_NAME`. You can run the following query to find the `SERVICE_NAME` on the Oracle 12c/11g systems:

```
select global_name from global_name;
```

## Configure Oracle database user and schema for embedded HP Operations Orchestration

A database user for embedded HP Operations Orchestration is required when installing HP Codar. Work with the database administrator to do the following (or see the manufacturer's documentation for more information):

**Caution:** On Windows, the database name and user name cannot contain more than one dollar sign symbol (\$). For example, c\$adb is a valid name but c\$\$adb and c\$ad\$b are not valid names.

1. Create a schema for the embedded HP Operations Orchestration by creating a database user (for example, codaroodbuser).
2. Grant the following privileges to the user:
  - CONNECT
  - CREATE VIEW
  - CREATE SEQUENCE
  - CREATE TABLE
  - CREATE PROCEDURE

For example, run the following commands to create the codaroodbuser user:

```
Create user codaroodbuser identified by codaroodbuser default tablespace system
temporary tablespace temp quota unlimited on system account unlock;
Grant CONNECT to codaroodbuser;
Grant CREATE VIEW, CREATE SEQUENCE, CREATE TABLE, CREATE PROCEDURE to
codaroodbuser;
Commit;
```

You must provide this database user name and password when prompted for the HP Operations Orchestration database information during the installation of HP Codar.

## Configure Oracle database user and role for Identity Management component

A database user is needed when installing Identity Management component for HP Codar. Work with the database administrator to do the following (or see the manufacturer's documentation for more information).

**Caution:** On Windows, the database name and user name cannot contain more than one dollar sign symbol (\$). For example, c\$adb is a valid name but c\$\$adb and c\$ad\$b are not valid names.

To configure an Oracle database role and user for Identity Management component, complete the following steps:

1. Create a schema for the Identity Management component by creating a database user (for example, `codaridmdbuser`).
2. Create a role for this HP Codar database user (for example, `codaridmbrole`) and grant the following privileges to the role:
  - CREATE SESSION
  - CREATE TABLE
  - CREATE VIEW
  - CREATE SEQUENCE
  - CREATE ANY SYNONYM
3. Grant the role to the HP Codar database user.
4. Alter the HP Codar database user by setting this role as the user's default role.

For example, run the following commands to create `codaridmbrole` and `codaridmdbuser`:

```
Create user codaridmdbuser identified by codaridmdbuser;  
Create role codaridmbrole;  
Grant CREATE SESSION, CREATE TABLE, CREATE VIEW, CREATE SEQUENCE, CREATE ANY  
SYNONYM to codaridmdbuser;  
Grant codaridmbrole to codaridmdbuser;  
Alter user codaridmdbuser default role codaridmbrole;
```

You must provide this user's user name and password when prompted for the Identity Management component database information during the installation of HP Codar.

## Configure Oracle database user and role for HP Codar

A database user is needed when installing HP Codar. Work with the database administrator to configure the database role and user (or see the manufacturer's documentation for more information).

**Caution:** On Windows, the database name and user name cannot contain more than one dollar sign symbol (\$). For example, `c$adb` is a valid name but `c$$adb` and `c$ad$b` are not valid names.

To configure an Oracle database user and role for HP Codar, complete the following steps:

1. Create a schema for HP Codar by creating a database user (for example, `codaridmbuser`).
2. Create a role for this HP Codar database user (for example, `codaridmbrole`) and grant the following privileges to the role:

- CREATE SESSION
  - CREATE TABLE
  - CREATE VIEW
  - CREATE SEQUENCE
  - CREATE ANY SYNONYM
3. Grant the role to the HP Codar database user.
  4. Alter the HP Codar database user by setting this role as the user's default role.

For example, run the following commands to create `codardbrole` and `codardbuser`:

```
Create user codardbuser identified by codardbuser;  
Create role codardbrole;  
Grant CREATE SESSION, CREATE TABLE, CREATE VIEW, CREATE SEQUENCE, CREATE ANY  
SYNONYM to codardbuser;  
Grant codardbrole to codardbuser;  
Alter user codardbuser default role codardbrole;
```

You must provide this user name and password when prompted for the HP Codar database user during the installation of HP Codar.

## Configure Oracle reporting database role and read-only user for HP Codar (required for reporting)

If you are using both the HP Cloud Service Automation and HP Codar licenses, you can use the HP Cloud Service Automation reporting capabilities. If you want to use the reporting capabilities, you must add an Oracle reporting database role and read-only user when installing HP Codar. For details about the HP Cloud Service Automation reporting capabilities, see the *HP Cloud Service Automation Reporting and Auditing Whitepaper*.

**Note:** You must be using both the HP Cloud Service Automation and HP Codar licenses to use the reporting capabilities.

Work with the database administrator to create a role and read-only user to do the following (or see the manufacturer's documentation for more information).

**Caution:** On Windows, the user name cannot contain more than one dollar sign symbol (\$). For example, `c$adb` is a valid name but `c$$adb` and `c$ad$b` are not valid names.

To create and configure a reporting database role and read-only user for HP Codar and HP Cloud Service Automation, complete the following steps:

1. Create a database user (for example, CODARReportingDBUser).
2. Create a role for this HP Codar database user (for example, CODARReportingDBRole) and grant the CREATE SESSION privilege to the role.
3. Grant the role to the HP Codar database user.
4. Alter the HP Codar database user by setting this role as the user's default role.

For example, run the following commands to create the CODARReportingDBRole role and CODARReportingDBUser read-only user:

```
Create user CODARReportingDBUser identified by CODARReportingDBUser;  
Create role CODARReportingDBRole;  
Grant CREATE SESSION to CODARReportingDBUser;  
Grant CODARReportingDBRole to CODARReportingDBUser;  
Alter user CODARReportingDBUser default role CODARReportingDBRole;
```

If you configure this user, you must provide this user's user name and password when prompted for the HP Codar reporting database user during the installation of HP Codar.

## Configure Oracle for localization (required for localization)

If you need to support localization, the Oracle database instance must support UTF-8 character encoding and multi-byte characters. Work with the database administrator to set the following parameters to the specified values (or see the manufacturer's documentation for more information):

- NLS\_CHARACTERSET = AL32UTF8
- NLS\_LENGTH\_SEMANTICS = CHAR

## Create Oracle tablespace for HP Codar (recommended)

If you chose to install embedded HP Operations Orchestration, for performance reasons, HP recommends that you create a new tablespace which stores LOBs for the CODAR\_DOCUMENT table. Work with the database administrator to create a tablespace to be used by HP Codar (or see the manufacturer's documentation for more information). HP recommends that the initial tablespace size should be at least 3 GB.

**Note:** The tablespace must be created before installing HP Codar and then must be configured immediately after HP Codar is installed.

## Microsoft SQL server

You must complete the following installation and configuration steps if you wish to use MS-SQL with HP Codar.

["Install Microsoft SQL Server" below](#)

["Configure Microsoft SQL Server" below](#)

## Install Microsoft SQL Server

Database installation is typically done in partnership with a database administrator. The Microsoft SQL Server must be installed with mixed mode authentication. During the installation of the Microsoft SQL Server, select **Mixed Mode (SQL Server authentication and Windows authentication)** from the Database Engine Configuration dialog for the authentication mode.

See the *HP Codar System and Software Support Matrix* for a list of supported database versions.

## Configure Microsoft SQL Server

The following tasks must be completed before HP Codar is installed. Work with the database administrator to complete these tasks, or see the manufacturer's documentation for more information.

**Note:** These tasks are used with both embedded and external HP Operations Orchestration, except where indicated.

- ["Enable TCP/IP on Microsoft SQL server " below](#)
- ["Configure Microsoft SQL server database user for HP Codar" on the next page](#)
- ["Configure Microsoft SQL reporting database role and read-only user for HP Codar \(required for reporting\)" on the next page](#)
- ["Configure Microsoft SQL server database user for embedded HP Operations Orchestration " on page 18](#)
- ["Configure Microsoft SQL server database user for Identity Management component" on page 19](#)
- ["Create Microsoft SQL Server filegroup with embedded HP Operations Orchestration" on page 20](#)

## Enable TCP/IP on Microsoft SQL server

TCP/IP must be enabled on the Microsoft SQL Server for HP Codar to access the database. By default, TCP/IP may be disabled on the Microsoft SQL Server. Verify the TCP/IP configuration.

From the SQL Server Configuration Manager, complete the following steps:



1. Select **SQL Server Network Configuration > Protocols for <instance\_name>**.
2. Double-Click **TCP/IP** to open the TCP/IP Properties dialog.
3. From the TCP/IP Properties dialog, select the **IP Addresses** tab.
4. Verify that TCP/IP is active and enabled, and verify that the TCP port is set to 1433. Update any properties that are not set correctly.

## Configure Microsoft SQL server database user for HP Codar

An HP Codar database user is needed when installing HP Codar.

**Caution:** On Windows, the database name and user name cannot contain more than one dollar sign symbol (\$). For example, c\$adb is a valid name but c\$\$adb and c\$ad\$b are not valid names.

To create a database user for HP Codar, complete the following steps:

1. Create a new database for HP Codar (for example, codardb)

**Caution:** Use the default database option collation value of SQL\_Latin1\_General\_CP1\_CI\_AS.

Do NOT use the collation value SQL\_Latin1\_General\_CP1\_CS\_AS. HP Codar does not work with a database that is configured with this collation value.

2. Add a database user (for example, codardbuser) with the following roles:
  - db\_datareader
  - db\_datawriter
  - db\_owner

You must provide this user name and password when prompted for the HP Codar database user during the installation of HP Codar.

## Configure Microsoft SQL reporting database role and read-only user for HP Codar (required for reporting)

If you are using both the HP Cloud Service Automation and HP Codar licenses, you can use the HP Cloud Service Automation reporting capabilities. If you want to use the reporting capabilities, you must add a Microsoft SQL reporting database role and read-only user when installing HP Codar. For details about the HP Cloud Service Automation reporting capabilities, see the *HP Cloud Service Automation Reporting and Auditing Whitepaper*.

**Note:** You must be using both the HP Cloud Service Automation and HP Codar licenses to use the reporting capabilities.

**Caution:** On Windows, the database name and user name cannot contain more than one dollar sign symbol (\$). For example, c\$adb is a valid name but c\$\$adb and c\$ad\$b are not valid names.

Add a reporting database user to the HP Codar database with no roles.

For example, run the following commands to create the CODARReportingDBUser read-only user:

```
CREATE LOGIN CODARReportingDBUser WITH PASSWORD = '<codarreportingdbuser_
password>';
CREATE USER CODARReportingDBUser FOR LOGIN CODARReportingDBUser WITH DEFAULT_SCHEMA
= codar;
```

If you configure this user, you must provide this user's user name and password when prompted for the HP Codar reporting database user during the installation of HP Codar.

## Configure Microsoft SQL server database user for embedded HP Operations Orchestration

An HP Operations Orchestration database user for embedded HP Operations Orchestration is needed when installing HP Codar.

**Caution:** On Windows, the database name and user name cannot contain more than one dollar sign symbol (\$). For example, c\$adb is a valid name but c\$\$adb and c\$ad\$b are not valid names.

To create an HP Operations Orchestration database user for HP Codar, complete the following steps:

1. Create a new database for HP Operations Orchestration.

As of the release date of the HP Codar software (found at the beginning of this guide), the mandatory database options for the Microsoft SQL Server for HP Operations Orchestration are:

- **Allow Snapshot Isolation:** True
- **Is Read Committed Snapshot On:** True
- **Auto Shrink:** False
- **Auto Create Statistics:** True

**Caution:** You should verify the latest mandatory options and follow the instructions in the *HP Operations Orchestration Database Guide* when creating the *HP Operations Orchestration*

database.

**Note:** HP Operations Orchestration recommends using the database option collation value of `SQL_Latin1_General_CP1_CS_AS`. When creating the database used by HP Operations Orchestration, this collation value is valid.

2. Add an HP Operations Orchestration database user with the following roles:

- `db_datareader`
- `db_datawriter`
- `db_owner`

You must provide this user name and password when prompted for the HP Operations Orchestration database user during the installation of HP Codar.

## Configure Microsoft SQL server database user for Identity Management component

An Identity Management component database user is needed when installing HP Codar.

**Caution:** On Windows, the database name and user name cannot contain more than one dollar sign symbol (\$). For example, `c$adb` is a valid name but `c$$adb` and `c$ad$b` are not valid names.

To create an Identity Management component database user for HP Codar, complete the following steps:

1. Create a new database for the Identity Management component (for example, `codaridmdb`).

**Caution:** Use the default database option Collation value of `SQL_Latin1_General_CP1_CI_AS`.

Do NOT use the collation value `SQL_Latin1_General_CP1_CS_AS`. HP Codar does not work with a database configured with this collation value.

2. You can use the existing database user you created for the HP Codar database (for example, `codaridmbuser`) or you may create a new database user for the Identity Management component database (for example, `codaridmbuser`). If you create a new user, add an Identity Management component database user with the following roles:

- `db_datareader`
- `db_datawriter`

- db\_owner

You must provide this database user name and, user's password when prompted for the Identity Management component database information during the installation of HP Codar.

## Create Microsoft SQL Server filegroup with embedded HP Operations Orchestration

If you chose to install embedded HP Operations Orchestration, for performance reasons, HP recommends that you associate a new filegroup with the `CSA_DOCUMENT` table. Work with the database administrator to configure a filegroup to be used by HP Codar (or see the manufacturer's documentation for more information). HP recommends that the initial filegroup size should be at least 3 GB.

The filegroup is configured after HP Codar is installed.

## PostgreSQL

You must complete the following installation and configuration steps if you wish to use PostgreSQL with HP Codar.

["Install PostgreSQL" below](#)

["Configure PostgreSQL users and database" below](#)

## Install PostgreSQL

Install the database according to the manufacturer's documentation. Database installation is typically done in partnership with a database administrator.

See the *HP Codar System and Software Support Matrix* for a list of supported database versions.

## Configure PostgreSQL users and database

The following tasks must be completed before HP Codar is installed. Work with the database administrator to complete the following tasks (or see the manufacturer's documentation for more information).

At least two database users are needed when installing HP Codar.

To configure PostgreSQL users and database, complete the following steps.

1. On the system hosting the database, install `postgres-client` if it is not already installed. As the root user, enter the following:

**Windows and Linux Ubuntu:**

```
apt-get install postgresql-client
```

### Linux Red Hat Enterprise

```
rpm ivh postgres-client.rpm
```

2. For Linux Red Hat Enterprise, set the shared library path to include the PostgreSQL libraries (<postgresql\_installation>/lib). For example, if you installed PostgreSQL in /opt/PostgreSQL/9.2/, run the following command:

```
export LD_LIBRARY_PATH=/opt/PostgreSQL/9.2/lib:$LD_LIBRARY_PATH
```

3. Log in to psql as the postgres user.
  - a. Enter the following:

```
psql -h localhost -U postgres -d template1
```
  - b. When prompted, enter the password for the postgres user.
4. Create an HP Codar database user (for example, codardbuser). The HP Codar database user is required. This user should inherit rights from parent roles and be a superuser.

**Caution:** On Windows, the user name cannot contain more than one dollar sign symbol (\$). For example, c\$adb is a valid name but c\$\$adb and c\$ad\$b are not valid names.

From the psql prompt, enter the following:

```
create role codardbuser login password '<codardbuser_password>' superuser  
inherit;
```

This is the user to whom you will grant access to the HP Codar database when you create this database.

5. For Windows and Linux Red Hat Enterprise, create an HP Operations Orchestration database user (for example, codaroodbuser). The HP Operations Orchestration database user, used by the embedded HP Operations Orchestration, is required. This user should inherit rights from parent roles and be a superuser.

**Caution:** On Windows, the user name cannot contain more than one dollar sign symbol (\$). For example, c\$adb is a valid name but c\$\$adb and c\$ad\$b are not valid names.

From the psql prompt, enter the following:

```
create role codaroodbuser login password '<odaroodbuser_password>' superuser  
inherit;
```

This is the user to whom you will grant access to the HP Operations Orchestration database when you create this database.

6. Optionally, create an Identity Management component database user (for example, `codaridmdbuser`). This user should inherit rights from parent roles and be a superuser.

**Caution:** On Windows, the user name cannot contain more than one dollar sign symbol (\$). For example, `c$adb` is a valid name but `c$$adb` and `c$ad$b` are not valid names.

From the `psql` prompt, enter the following:

```
create role codaridmdbuser login password '<codaridmdbuser_password>' superuser inherit;
```

This is the user to whom you will grant access to the Identity Management component database when you create this database. If you do not create this user, you can use the HP Codar database user (for example, `codaridmdbuser`) instead.

7. Optionally, create a reporting database user for HP Codar (for example, `CODARReportingDBUser`). A reporting database user is needed only if you want to use the reporting capabilities of HP Cloud Service Automation, and you are using both the HP Cloud Service Automation and HP Codar licenses. For details about the HP Cloud Service Automation reporting capabilities, see the *HP Cloud Service Automation Reporting and Auditing Whitepaper*. This user should have read-only rights.

**Note:** You must be using both the HP Cloud Service Automation and HP Codar licenses to use the reporting capabilities.

**Caution:** On Windows, the user name cannot contain more than one dollar sign symbol (\$). For example, `c$adb` is a valid name but `c$$adb` and `c$ad$b` are not valid names.

From the `psql` prompt, enter the following:

```
create role CODARReportingDBUser login password '<CODARReportingDBUser_password>' nosuperuser nocreatedb nocreaterole inherit;
```

If you configure this user, you must provide this user's user name and password when prompted for the HP Codar reporting database user during the installation of HP Codar.

8. Create a new database for HP Codar. Grant the HP Codar database user all rights to this database. If you added a reporting database user in step 7, grant the reporting database user read-only access to this database.

**Caution:** On Windows, the user name cannot contain more than one dollar sign symbol (\$). For example, c\$adb is a valid name but c\$\$adb and c\$ad\$b are not valid names.

For example, if you create a database named `codaradb`, an HP Codar user named `codaradbuser`, and a reporting database user `CODARReportingDBUser`, from the `psql` prompt, enter the following commands:

```
create database codaradb with owner=codaradbuser connection limit=-1;
grant all on database codaradb to codaradbuser;
grant connect on database codaradb to CODARReportingDBUser;
```

You must provide this database name, database user name and, user's password when prompted for the HP Codar database information during the installation of HP Codar.

9. For Windows and Linux Red Hat Enterprise, create a new database for HP Operations Orchestration. Grant the HP Operations Orchestration database user all rights to this database. See the *HP Operations Orchestration Database Guide* for more information about database requirements for HP Operations Orchestration.

**Caution:** On Windows, the user name cannot contain more than one dollar sign symbol (\$). For example, c\$adb is a valid name but c\$\$adb and c\$ad\$b are not valid names.

For example, if you create a database named `codaroodb` and an HP Operations Orchestration user named `codaroodbuser`, from the `psql` prompt, enter the following commands:

```
create database codaroodb with owner=codaroodbuser connection limit=-1;
grant all on database codaroodb to codaroodbuser;
```

You must provide this database name, database user name and, user's password when prompted for the HP Operations Orchestration database information during the installation of HP Codar.

10. Create a new database for the Identity Management component. Grant the Identity Management component database user (if you configured this user) or HP Codar database user all rights to this database.

**Caution:** On Windows, the user name cannot contain more than one dollar sign symbol (\$). For example, c\$adb is a valid name but c\$\$adb and c\$ad\$b are not valid names.

For example, to create a database named `codaridmdb` granting access to the Identity Management component database user named `codaridmdbuser`, from the `psql` prompt, enter the following commands:

```
create database codaridmdb with owner=codaridmdbuser connection limit=-1;
grant all on database codaridmdb to codaridmdbuser;
```

If you did NOT create an Identity Management component database user named `codaridmdbuser`, create a database named `codaridmdb` and grant access to this database to the HP Codar database user named `codardbuser`. From the `psql` prompt, enter the following commands:

```
create database codaridmdb with owner=codardbuser connection limit=-1;  
grant all on database codaridmdb to codardbuser;
```

You must provide this database name, database user name and, user's password when prompted for the Identity Management component database information during the installation of HP Codar.

11. Exit `psql`. From the `psql` prompt, enter the following:

```
\q
```



# Install external HP Operations Orchestration

Install HP Operations Orchestration to the correct version and patch level. If you are using an existing installation of HP Operations Orchestration, you should verify that the correct versions of patches and updates have been applied. See the *HP Codar System and Software Support Matrix* for version requirements.

If you are using an existing installation of HP Operations Orchestration, you should verify that the correct versions of patches and updates have been applied.

**Caution:** HP Codar supports HP Operations Orchestration 10.21.0001. If you are using an earlier version of HP Operations Orchestration, you must upgrade HP Operations Orchestration before installing HP Codar. See the *HP Codar Upgrade Guide* for instructions.

## Configure internal user

This internal user is used to configure HP Operations Orchestration for HP Codar. This step is required if you are going to integrate HP Operations Orchestration with HP Codar using the installer.

To configure an internal user to configure HP Operations Orchestration, do the following:

1. Log in to the existing HP Operations Orchestration Central.
2. Click the **System Configuration** button.
3. Select **Security > Internal Users**.
4. Click the Add (+) icon.
5. Enter the following information:

Field	Recommended value
User Name	admin
Password	cloud
Roles	ADMINISTRATOR, SYSTEM_ADMIN

6. Click **Save**.
7. Enable authentication by selecting **Enable Authentication**.
8. Click **OK** in the confirmation dialog.

## Export HP Operations Orchestration root certificate

Export the HP Operations Orchestration certificate from the HP Operations Orchestration truststore.

If HP Operations Orchestration and HP Codar are not installed on the same system, copy the certificate to the HP Codar system. This certificate will be imported into the HP Codar truststore by the HP Codar installer. SSL must be configured between HP Codar and HP Operations Orchestration.

For example, do the following:

1. On the system running HP Operations Orchestration, open a command prompt and change to the directory where HP Operations Orchestration is installed.
2. Run the following command:

**For HP Operations Orchestration 10.21 on Windows:**

```
.\java\bin\keytool -export -alias tomcat -file C:\oo.crt -  
keystore .\Central\var\security\key.store -storepass <password>
```

**For HP Operations Orchestration 10.21 on Linux:**

```
./java/bin/keytool -export -alias tomcat -file /tmp/oo.crt -  
keystore ./Central/var/security/key.store -storepass <password>
```

where C:\oo.crt and /tmp/oo.crt are examples of file names and locations used to store the exported root certificate (you can choose a different file name and location).

3. If HP Operations Orchestration is not running on the same system as HP Codar, copy oo.crt from the HP Operations Orchestration system to the system running HP Codar.

# Install HP Codar

See the appropriate sections for instructions on installing HP Codar:

- ["Install HP Codar on Windows" below](#)
- ["Install HP Codar on Linux" on page 36](#)
- ["Post-installation database configuration" on page 45](#)

## Install HP Codar on Windows

**Note:** Installation log files are written to the `CSA_HOME\ _HP_Codar_1_50_0_ installation\Logs\` folder.

To install HP Codar, complete the following steps.

1. Close all instances of Windows Explorer and command prompts and exit all programs that are running on the system.
2. Unzip the `setup.zip` file. Go to the directory to which the files have been extracted and run the `setup.bat` installation file.
3. On the Introduction screen, read the information and click **Next**.
4. Read the license agreement and select **I accept the terms of the License Agreement**. Click **Next** to continue with the installation.

If the following error message is displayed, exit the installer:

Another version of HP Codar is configured in the registry. However, HP Codar has been uninstalled (the HP Codar installation folder `CSA_HOME` does not exist). You must exit the installer and delete the entry in the registry before installing HP Codar. See the *HP Codar Installation and Configuration Guide* for more information about deleting the registry entry.

- a. Locate the `C:\Program Files\Zero G Registry\.com.zerog.registry.xml` file (you may need to show hidden files).
- b. Make a backup copy.
- c. Delete all HP Codar entries from the `.com.zerog.registry.xml` file.
- d. Restart the installer.

5. Select **HP Codar** and click **Next**.
6. Choose a location in which to install HP Codar and click **Next** (CSA\_HOME is set to this location).

The default location is C:\Program Files\Hewlett-Packard\Codar.

**Note:** If the folder in which you choose to install HP Codar is not empty, existing content in the folder may be overwritten or deleted when HP Codar is installed, upgraded, or uninstalled.

**Caution:** The entire folder path cannot contain more than one dollar sign symbol (\$). For example, C:\HP\C\$A\Java and C:\HP\CSA\Java\$ are valid paths. However C:\HP\C\$A\Java\$ and C:\HP\C\$\$A\Java are not valid paths.

7. Choose the JRE that will be used by HP Codar.

In this documentation, the folder in which the JRE is installed is referred to as CSA\_JRE\_HOME.

For a list of supported JREs, see the *HP Codar System and Software Support Matrix*.

- **OpenJDK JRE**

The OpenJDK JRE is bundled with HP Codar. If you want to use the OpenJDK JRE, click **Open JRE** and click **Next**.

The default location in which the OpenJDK JRE is installed is C:\Program Files\Hewlett-Packard\Codar\openjre.

- **Oracle JRE**

If you have installed a supported version of Oracle JRE to be used by HP Codar, click **Oracle JRE**, select the location in which you installed this JRE, and click **Next**.

The default location displayed for the Oracle JRE Home is either a supported JRE that is configured in the system registry or a supported JRE in a path that is defined in the system path variable.

If this is not the JRE that should be used by HP Codar, click **Choose** and select the location in which you installed the JRE that will be used by HP Codar.

**Caution:** The entire folder path cannot contain more than one dollar sign symbol (\$).

8. Install HP Codar database components onto the database instance to create the database schema, if it does not exist.

Click **Yes** to install HP Codar database components and create the database schema. When you select this option, the HP Codar service automatically starts when you exit the installer.

Click **No** if you are using an existing HP Codar database schema that was created as part of a prior successful installation of HP Codar version 1.50. When you select this option, the HP Codar service does not start when you exit the installer. See the end of this section for information on how to start the HP Codar service.

9. Select the type of database installed (Oracle, Microsoft SQL, or PostgreSQL) and click **Next**.

For an Oracle database, you must also enter the **JDBC Driver Directory**. This is the absolute folder path to the location of the JDBC drivers (these are the JDBC drivers you downloaded onto the HP Codar system). For a list of supported JDBC driver versions, see the *HP Codar System and Software Support Matrix*.

**Caution:** The entire folder path cannot contain more than one dollar sign symbol (\$).

10. Define the database instance on which the HP Codar database components should be installed or where the HP Codar database schema already exists. Separate database instances are required for HP Codar and the components it uses. You must create a separate database instance for:

- Embedded HP Operations Orchestration
- Identity Management component
- HP Codar

Enter the following database information and click **Next**.

Field	Description
<database_type> Database Host	The host name or IP address of the server where the database is located. When specifying an IPv6 address, it must be enclosed in square brackets. For example, [f000:253c::9c10:b4b4] or [::1].
<database_type> Database Port	The database port number, such as 1433 (Microsoft SQL Server), 1521 (Oracle), or 5432 (PostgreSQL).

Field	Description
HP Codar Database Name/Oracle service name	<p>The name of the database instance on which the HP Codar database schema will be installed.</p> <ul style="list-style-type: none"> <li>■ If you are creating a new HP Codar database schema, this is the name of the database instance on which the HP Codar database components will be installed.</li> <li>■ If you are using an existing HP Codar database schema that was created as part of a prior successful installation of HP Codar version 1.50, this is the name of the database instance on which the HP Codar database schema exists.</li> <li>■ For an Oracle database, this is the service name.</li> </ul>
HP Codar Database User Name	The user name of the database user you configured for HP Codar in the database (for example, codardbuser).
HP Codar Database Password	The password for the database user.

11. If you created a reporting database role and read-only user when you configured the HP Codar database, select **Reporting User** and enter the following information:

**Note:** You must be using both the HP Cloud Service Automation and HP Codar licenses to use the HP Cloud Service Automation reporting capabilities. For details, see the *HP Cloud Service Automation Reporting and Auditing Whitepaper*.

Field	Description
HP Codar Reporting Database User Name	The user name of the database user you configured for reporting purposes for HP Codar. For details on configuring the reporting database user, see one of these sections, depending on which database you installed: <a href="#">"Configure Oracle Database" on page 10</a> , <a href="#">"Configure Microsoft SQL Server" on page 16</a> , or <a href="#">"Configure PostgreSQL users and database" on page 20</a> .
HP Codar Reporting Database User Password	This is the password for the HP Codar reporting database user.

12. Enter the database information for the database used by the Identity Management component and

click **Next**. The database used by the Identity Management component must be the same type of database used by HP Codar. Enter the following database information.

Field	Description
<database_type> Database Host	The host name or IP address of the server where the Identity Management component database is located.
<database_type> Database Port	The Identity Management component database port number, such as 1433 (Microsoft SQL Server), 1521 (Oracle), or 5432 (PostgreSQL).
HP Identity Management Database Name/Oracle service name	The name of the database instance used by the Identity Management component. For example, <code>codaridmdb</code> . For an Oracle database, this is the Oracle service name.
HP Identity Management Database User Name	The user name of the database user you configured for the Identity Management component database (for example, <code>codaridmdbuser</code> or <code>codaradbuser</code> ). For details on configuring the Identity Management component database user, see one of these sections, depending on which database you installed: <a href="#">"Configure Oracle Database" on page 10</a> , <a href="#">"Configure Microsoft SQL Server" on page 16</a> , or <a href="#">"Configure PostgreSQL users and database" on page 20</a> .
HP Identity Management Database Password	The password for the Identity Management component database user.

- From the Enter host name screen, enter the **fully-qualified domain name of the system on which you are installing HP Codar**. The fully-qualified domain name is used to generate the self-signed SSL certificate which is used when https browser requests are issued for HP Codar. This self-signed certificate expires 120 days after HP Codar is installed.

**Caution:** If you enter an IP address, after installation completes, you must manually generate a self-signed certificate using the fully-qualified domain name of the system on which you installed HP Codar and manually reconfigure HP Codar to use this certificate. For more information, see the *HP Codar Configuration Guide*.

- By default, HP Single Sign-On (SSO) is included with HP Codar and is enabled. The HP Single Sign-On that is included can only be used when launching an application, such as HP Operations Orchestration, from the HP Codar Console. See the HP Single Sign-On documentation for more information on integrating HP Single Sign-On with an application.

If you do not want to use HP Single Sign-On, you can disable it by selecting **Disable HP SSO**.

If enabled, enter the domain name of the network to which the server on which you are installing HP Codar belongs and click **Next**.

**Note:** You must enter the full domain name of the server. For example, if you are installing HP Codar on a system whose fully-qualified domain name is `machine1.development.xyz.com`, you must enter `development.xyz.com`. If you enter only `xyz.com`, you will not be able to log in to the HP Codar Console.

Applications launched from the HP Codar Console with which you want to use HP Single Sign-On must be installed on systems that belong to this domain.

15. Specify whether you want to install the embedded (new) HP Operations Orchestration instance with HP Codar or if you are integrating with an external (existing) instance of HP Operations Orchestration:
  - To install the embedded HP Operations Orchestration, select **Install embedded HP OO** and click **Next**. Proceed to Steps 16 - 18.
  - To integrate with an external (existing) instance of HP Operations Orchestration, select **Use external HP OO** and click **Next**. Proceed to Step 19.
16. If you chose to install the embedded HP Operations Orchestration, choose a location and click **Next**.
17. Configure an internal HP Operations Orchestration user and click **Next**. This user is used for provisioning topology designs.

Field name	Description
HP Operations Orchestration User Name	The name of the user used for provisioning topology designs. This user is given the ADMINISTRATOR and SYSTEM_ADMIN roles. The recommended user name is <b>admin</b> .
HP Operations Orchestration Password	The password used by HP Operations Orchestration for the user who provisions topology designs. The recommended password is <b>cloud</b> .



Field name	Description
HP Operations Orchestration Port	The embedded HP Operations Orchestration port number, such as 8445, used to access HP Operations Orchestration Central. By default, HP Operations Orchestration uses this port and port 8080. Applications running on the system on which HP Codar and the embedded HP Operations Orchestration are installed should not be using these ports.

18. Enter the database information for the database used by the embedded HP Operations Orchestration and click **Next**. The database used by the embedded HP Operations Orchestration must be the same type of database used by HP Codar.

Field name	Description
<database_type> Database Host	The hostname or IP address of the server where the embedded HP Operations Orchestration database is located. When specifying an IPv6 address, it must be enclosed in square brackets. For example, [f000:253c::9c10:b4b4] or [::1].
<database_type> Database Port	The embedded HP Operations Orchestration database port number, such as 1433 (Microsoft SQL Server), 1521 (Oracle), or 5432 (PostgreSQL).
HP Operations Orchestration Database Name or Oracle HP Operations Orchestration SID	The name of the database instance used by the embedded HP Operations Orchestration. For an Oracle database, this is the service name.
HP Operations Orchestration Database User Name	The user name of the database user you configured for the HP Operations Orchestration database. See one of these sections, depending on which database you installed: <a href="#">"Configure Oracle Database" on page 10</a> , <a href="#">"Configure Microsoft SQL Server" on page 16</a> , or <a href="#">"Configure PostgreSQL users and database" on page 20</a> .
HP Operations Orchestration Database Password	The password for the HP Operations Orchestration database user.

19. If you chose to integrate with an external (existing) HP Operations Orchestration, define the existing HP Operations Orchestration instance with which HP Codar is to be integrated. Enter the following information (select **Enter** after each entry) and click **Next** when done.

Field	Description
HP Operations Orchestration Hostname	<p>The fully-qualified domain name or IP address of the server where HP Operations Orchestration is located. Specify the hostname that was used to generate HP Operations Orchestration's certificate. The hostname is used for SSL validation and to build the URL that the HP Codar Console uses to interact with HP Operations Orchestration. (For example, in the subscription event overview section of the <b>Operations</b> area in HP Codar, selecting the Process ID opens HP Operations Orchestration to the detailed page of the selected process when these properties are configured).</p> <p>When specifying an IPv6 address, it must be enclosed in square brackets. For example, [f000:253c::9c10:b4b4] or [::1].</p>
HP Operations Orchestration Port	<p>The port number used to communicate with HP Operations Orchestration, such as 8445. By default, HP Operations Orchestration uses this port and port 8080.</p> <div data-bbox="792 1052 1370 1297" style="background-color: #f0f0f0; padding: 10px;"> <p><b>Caution:</b> Ensure that port 8080 is not being used on the system where you install HP Codar and the embedded HP Operations Orchestration. If this port is used, then HP Operations Orchestration flows will not work properly.</p> </div>
HP Operations Orchestration User	<p>The name of the user who logs in to HP Operations Orchestration Central. HP recommends that you use the <code>admin</code> user you defined in <a href="#">"Install external HP Operations Orchestration" on page 25</a>.</p>
HP Operations Orchestration Password	<p>The password used to log in to HP Operations Orchestration Central.</p>
HP Operations Orchestration Certificate File	<p>The file name and location of HP Operations Orchestration's certificate from HP Operations Orchestration's truststore on the HP Codar system. If you have not already done so, export HP Operations Orchestration's certificate and copy it to the HP Codar system.</p>

**Note:** This information is used to set the HP Operations Orchestration properties in the `csa.properties` file and import HP Operations Orchestration's certificate into HP Codar's truststore.

20. By default, sample content (service designs and the components and HP Operations Orchestration flows required by the designs) are installed with HP Codar. You can choose to deploy this content during installation (making the sample service designs available in the Designs are of the HP Codar Console) or deploy the content at a later time.

To deploy the sample content during the HP Codar installation process, select **Install sample content** and click **Next**.

To deploy the sample content at a later time, select **Skip** content installation and click **Next**.

If you choose to skip content installation, you can install the content at a later time, by running the HP Cloud Content Capsule Installer. For details, see the *HP Cloud Service Automation Content Pack User Guide*.

**Note:** If you chose not to install the database components, this dialog will not display.

21. Review your selections and click **Install** to complete the installation.
22. You may be asked to restart your system.  
  
Click **Yes, restart my system** to restart your system when you exit the installer.  
  
Click **No, I will restart my system myself** to restart your system at a more convenient time.
23. Click **Done** to exit the installer.
24. Verify that the HP Codar and HP Operations Orchestration services have started by navigating to **Start > Administrative Tools > Services**. The service may take up to five minutes to start.

If the service has not started, right-click on the service and select **Start**.

The installer creates the HP Codar services. If you opted to install the HP Codar database components, the installer also starts these services. The HP Codar service must be running before you can access the HP Codar Console.

# Install HP Codar on Linux

## Configure group and user

To configure a group and user for HP Codar, complete the following steps:

1. Log in to the system as the root user.
2. Create a group called `codargrp`. Enter the following:

```
addgroup codargrp (Ubuntu)
groupadd codargrp (Red Hat Enterprise Linux)
```

3. Create a user called `codaruser` and assign this user to the `codargrp`. Enter the following:

```
adduser -g codargrp -m codaruser (Ubuntu)
useradd -g codargrp -m codaruser -s /bin/bash (Red Hat Enterprise Linux)
```

4. Assign a password to the `codaruser`. Enter the following:

```
passwd codaruser
```

When prompted, enter the password.

## Install HP Codar

**Note:** Installation log files are written to the `CSA_HOME/_HP_Codar_1_50_0_installation/Logs/` directory and are named `codar_*.txt`.

To install HP Codar on Linux, complete the following steps.

1. Log in to the system as the root user.
2. Create an installation directory for HP Codar (this document assumes that you will install the product in `/usr/local/hp/codar` and all examples used in this document are based on this assumption). Enter the following:

```
mkdir -p /usr/local/hp/codar
```

3. For the installation directory, set the owner to `codaruser` and the group to `codargrp`. Enter the following:

```
chown -R codaruser:codargrp /usr/local/hp/codar
```

4. Log out as the root user and log in as codaruser.
5. Copy the HP Codar installation file, `setup-codar.bin`, to the system and go to the directory in which it has been copied.
6. Verify that `setup-codar.bin` is owned by `codaruser` and that `codaruser` has full permissions for the file. If necessary, complete the following steps:
  - a. Log in as the root user
  - b. Enter one or both of the following commands:

```
chown codaruser setup-codar.bin
chmod u+rwx setup-codar.bin
```
  - c. Log out as the root user and log in as `codaruser`.
7. Check the values of the `CSA_HOME`, `PS1`, and `TITLEBAR` environment variables. If they are set, verify that they do not contain any escape sequences. If any of these variables contain an escape sequence, the variable will cause the installer to fail. The variable must either be reset to a value that does not contain an escape sequence or must be unset.
8. Run the `setup-codar.bin` installation file.

**Note:** You must run `setup-codar.bin` as the `codaruser`. If you install as another user, you may not be able to run HP Codar.

As the `codaruser`, enter the following:

```
./setup-codar.bin
```

9. Read the Introduction and press **Enter** to continue with the installation.
10. Read the license agreement. Press **Enter** to scroll through the entire agreement.
11. Select **Y** and **Enter** to accept the license agreement and continue with the installation. Select **N** and press **Enter** to exit the installation.

If the following error message displays, exit the installer:

```
Another version of HP Codar is configured in the registry. However, HP Codar
has been uninstalled (the HP Codar installation directory CSA_HOME does not
exist). You must exit the installer and delete the entry in the registry before
installing HP Codar. See the HP Codar Installation and Configuration Guide for
more information about deleting the registry entry.
```

- a. Locate the `$HOME/.com.zerog.registry.xml` file (for example, `/home/codaruser/.com.zerog.registry.xml`).

- b. Make a backup copy.
  - c. Delete all HP Codar entries from the `.com.zerog.registry.xml` file.
  - d. Restart the installer.
12. Select HP Codar and press **Enter**.
  13. Enter a location in which to install HP Codar (enter the absolute path to the location) and press **Enter**. Or, press **Enter** to accept the default location.

The default location is `/usr/local/hp/codar`.

**Note:** If the directory in which you choose to install HP Codar is not empty, existing content in the directory may be overwritten or deleted when HP Codar is installed, upgraded, or uninstalled.

If prompted, verify the installation folder. If the folder is correct, select **Y** and **Enter** to continue with the installation. If the folder is not correct, select **N** and **Enter** to re-enter the installation folder.

14. Choose the JRE that will be used by HP Codar.

In this documentation, the directory in which the JRE is installed will be referred to as `CSA_JRE_HOME`.

For a list of supported JREs, see the *HP Codar System and Software Support Matrix*.

### OpenJDK JRE

The OpenJDK JRE is bundled with HP Codar. If you want to use the OpenJDK JRE, type **1** and press **Enter**.

The default location in which the OpenJDK JRE is installed is `/usr/local/hp/codar/openjre`.

### Oracle JRE

If you have installed a supported version of Oracle JRE to be used by HP Codar, type **2** and press **Enter**. Type the location in which you installed this JRE and press **Enter**.

The default location displayed for the Oracle JRE Home is either a supported JRE that is configured in the system registry or a supported JRE in a path that is defined in the system path variable. If this is not the JRE that should be used by HP Codar, type in the location in which you installed the JRE that will be used by HP Codar and press **Enter**.

Proceed to Step 26 for instructions on configuring Oracle JRE.

15. Install HP Codar database components onto the database instance to create the HP Codar

database schema, if it does not already exist.

Type **yes** to install HP Codar database components and create the HP Codar database schema. When you select this option, the HP Codar process automatically starts when you exit the installer.

Type **no** if you are using an existing HP Codar database schema that was created as part of a prior successful installation of HP Codar version 1.50. When you select this option, the HP Codar process does not start when you exit the installer. See the end of this section for information on how to start and stop the HP Codar service.

16. Define the database instance on which the HP Codar database components should be installed. Enter the following database information (press **Enter** after each entry).

- a. Enter the type of database you have installed: MSSql (Microsoft SQL Server), Oracle, or Postgres (PostgreSQL).

For an Oracle database, you must also enter the **JDBC Driver Directory**. This is the absolute directory path to the location of the JDBC drivers (these are the JDBC drivers you downloaded onto the HP Codar system). For a list of supported JDBC driver versions, see the *HP Codar System and Software Support Matrix*.

- b. Enter the database hostname. This is the hostname or IP address of the server where the database is located. When specifying an IPv6 address, it must be enclosed in square brackets. For example, [`f000:253c::9c10:b4b4`] or [`:::1`]. The default value is the IP address of the localhost (127.0.0.1).
- c. Enter the database port. This is the database port number, such as 1433 (Microsoft SQL Server), 1521 (Oracle), or 5432 (PostgreSQL).
- d. Enter the database name. This is the name of the database instance on which the HP Codar database schema will be installed.

If you are creating a new HP Codar database schema, this is the name of the database instance on which the HP Codar database components will be installed.

If you are using an existing HP Codar database schema that was created as part of a prior successful installation of HP Codar version 1.50, this is the name of the database instance on which the HP Codar database schema already exists.

If you followed the examples in this document, enter **codardb**.

- e. Enter the Codar database user name. This is the user name of the database user you configured for HP Codar in the appropriate database configuration section of this guide.

If you followed the examples in this document, enter **codardbuser**.

- f. Enter the Codar database password. This is the password for the Codar database user.

- g. Enter the HP Codar reporting database user name (optional). This is the user name of the database user you configured for reporting purposes for HP Codar. For details on configuring the reporting database user, see one of these sections, depending on which database you installed: ["Configure Oracle Database" on page 10](#), ["Configure Microsoft SQL Server" on page 16](#), or ["Configure PostgreSQL users and database" on page 20](#).
- h. Enter the password for the HP Codar reporting database user.

**Note:** You must be using both the HP Cloud Service Automation and HP Codar licenses to use the HP Cloud Service Automation reporting capabilities. For details, see the *HP Cloud Service Automation Reporting and Auditing Whitepaper*.

- 17. Provide the database instance used by the Identity Management component. Enter the following database information (press **Enter** after each entry).
  - a. Enter the **database hostname**. The host name or IP address of the server where the database is located. When specifying an IPv6 address, it must be enclosed in square brackets. For example, `[f000:253c::9c10:b4b4]` or `[::1]`.
  - b. Enter the **database port**. This is the database port number, such as 1433 (Microsoft SQL Server), 1521 (Oracle), or 5432 (PostgreSQL).
  - c. Enter the **Identity Management component Database Name/Oracle SID**. The name of the database instance used by the Identity Management component.
  - d. Enter the **Identity Management component database user name**. This is the user name of the database user you configured for the Identity Management component database. For details on configuring the Identity Management component database user, see one of these sections, depending on which database you installed: ["Configure Oracle Database" on page 10](#), ["Configure Microsoft SQL Server" on page 16](#), or ["Configure PostgreSQL users and database" on page 20](#).
  - e. Enter the **Identity Management component database password**. This is the password for the Identity Management component database user.
- 18. Enter the HP Codar server host name. This is the **fully-qualified domain name of the system on which you are installing HP Codar**. The fully-qualified domain name is used to generate the self-signed SSL certificate which is used when https browser requests are issued for HP Codar. This self-signed certificate expires 120 days after HP Codar is installed.

**Caution:** If you enter an IP address, after installation completes, you must manually generate a self-signed certificate using the fully-qualified domain name of the system on which you installed HP Codar and manually reconfigure HP Codar to use this certificate.

- 19. By default, HP Single Sign-On (HP SSO) is included with HP Codar and is enabled. The HP



Single Sign-On that is included with HP Codar can only be used when launching an application, such as HP Operations Orchestration or HP IT Executive Scorecard, from the HP Codar Console. See the HP Single Sign-On documentation for more information on integrating HP Single Sign-On with an application.

If you do not want to use HP Single Sign-On, you can disable it. Type **2** and select **Enter**.

To enable HP Single Sign-On, type **1** and select **Enter**. Enter the Domain name of the network to which the server belongs (the server on which you are installing HP Codar) and select **Enter**.

**Note:** You must enter the full domain name of the server. For example, if you are installing HP Codar on a system whose fully-qualified domain name is `machine1.marketing.xyz.com`, you must enter `marketing.xyz.com`. If you enter only `xyz.com`, you will not be able to log in to the HP Codar Console.

Applications launched from the HP Codar Console with which you want to use HP Single Sign-On must be installed on systems that belong to this domain.

20. Specify whether you want to install the embedded (new) HP Operations Orchestration instance with HP Codar or if you are integrating with an external (existing) instance of HP Operations Orchestration.
  - Select **1** and **Enter** to integrate with an external (existing) instance of HP Operations Orchestration. Proceed to Step 20a.
  - Select **2** and **Enter** to install the embedded HP Operations Orchestration. Proceed to Step 20b.
    - a. If you are integrating with an external (existing) HP Operations Orchestration, define the HP Operations Orchestration instance with which HP Codar is to be integrated. Enter the following information (press **Enter** after each entry). Proceed to step 21.
      - i. Enter the **HP Operations Orchestration host name**. This is the fully-qualified domain name or IP address of the server where HP Operations Orchestration is located. Specify the hostname that was used to generate the HP Operations Orchestration certificate. The hostname is used for TLS validation and to build the URL that the HP Codar Console uses to interact with HP Operations Orchestration (for example, in the subscription event overview section of the **Operations** area in the HP Codar Console, selecting the Process ID opens HP Operations Orchestration to the detailed page of the selected process when these properties are configured).
      - ii. Enter the **HP Operations Orchestration port**. This is the port number used to communicate with HP Operations Orchestration, such as 8445. The port number is used to build the URL that the HP Codar Console uses to interact with HP Operations Orchestration. By default, HP Operations Orchestration uses this port and port 8080. Applications running on the system on which HP Operations Orchestration is installed should not be using these ports.

**Caution:** Ensure that port 8080 is not being used on the system where you install HP Codar and the embedded HP Operations Orchestration. If this port is used, then HP Operations Orchestration flows will not work properly.

- iii. Enter the **HP Operations Orchestration user**. This is the name of the user who logs in to HP Operations Orchestration Central. HP recommends that you use the `admin` user. If you followed all the steps documented in ["Install external HP Operations Orchestration" on page 25](#), this is the `admin` user.
- iv. Enter the **HP Operations Orchestration password**. This is the password used to log in to HP Operations Orchestration Central. If you followed all the steps documented in ["Install external HP Operations Orchestration" on page 25](#), use the password `c1oud`
- v. Re-enter the HP Operations Orchestration password.
- vi. Enter the **HP Operations Orchestration certificate file**. This is the file name and location of HP Operations Orchestration's certificate from HP Operations Orchestration's truststore on the HP Codar system. If you have not already done so, export the HP Operations Orchestration certificate and copy it to the HP Codar system (see ["Install external HP Operations Orchestration" on page 25](#) for more information).

**Note:** This information is used to set the HP Operations Orchestration properties in the `csa.properties` file and to import HP Operations Orchestration's certificate into HP Codar's truststore. See *HP Codar Configuration Guide* for more information about these properties.

- b. If you are installing embedded HP Operations Orchestration, enter a location and press **Enter**.
  - i. Enter the database information for the database used by the embedded HP Operations Orchestration (press **Enter** after each entry). The database used by the embedded HP Operations Orchestration must be the same type of database used by the HP Codar (Microsoft SQL Server, Oracle, or PostgreSQL).
    - A. Enter the **database hostname**. This is the hostname or IP address of the server where the embedded HP Operations Orchestration database is located. When specifying an IPv6 address, it must be enclosed in square brackets. For example, `[f000:253c::9c10:b4b4]` or `[::1]`.
    - B. Enter the **database port**. This is the embedded HP Operations Orchestration database port number, such as 1433 for Microsoft SQL Server, 1521 for Oracle, or 5432 for PostgreSQL.
    - C. Enter the **HP Operations Orchestration database name or Oracle HP Operations Orchestration SID**. This is the name of the database instance used by the embedded HP Operations Orchestration. For an Oracle database, this is the Oracle service name.

- D. Enter the **HP Operations Orchestration database user name**. This is the user name of the database user you configured for the HP Operations Orchestration database.
  - E. Enter the HP Operations Orchestration database password. This is the password for the HP Operations Orchestration database user.
  - F. Enter the **embedded HP Operations Orchestration port number**, such as 8445. By default, HP Operations Orchestration uses this port and port 8080. Applications running on the system on which HP Codar and the embedded HP Operations Orchestration are installed should not be using these ports.
- ii. Configure an internal HP Operations Orchestration user (press **Enter** after each entry). This user is used for provisioning topology designs.
    - A. Enter the **HP Operations Orchestration user name**. This is the name of the user used for provisioning topology designs. This user is given the ADMINISTRATOR and SYSTEM\_ADMIN roles. The recommended user name is **admin**.
    - B. Enter the **HP Operations Orchestration password**. This is the password used by HP Operations Orchestration for the user who provisions topology designs. The recommended password is **cloud**.
21. By default, sample content (service designs and the components and HP Operations Orchestration flows required by the designs) are installed with HP Codar. You can choose to deploy this content during installation (making the sample service designs available in the Designs are of the HP Codar Console) or deploy the content at a later time.
- To deploy the sample content during the HP Codar installation process, type **1** (Install sample content) and press **Enter**.
- To deploy the sample content at a later time, type **2** (Skip content installation) and press **Enter**.
- If you choose to skip content installation, you can install the content at a later time, by running the HP Cloud Content Capsule Installer. For details, see the *HP Cloud Service Automation Content Pack User Guide*.
22. Review your selections and press **Enter** to complete the installation or **Ctrl-C** to exit the installation.
23. When the installation completes, press **Enter** to exit the installer.
24. If you selected to use the OpenJDK JRE with HP Codar and installed HP Codar on a system running a headless Ubuntu Linux version 14, install the **Standard Java or Java-compatible Runtime** package. Enter the following:
- ```
apt-get install default-jre
```
25. Define the CSA\_HOME and JAVA\_HOME environment variables and add /sbin to the PATH variable

for the `codaruser` user. Set `CSA_HOME` to the location where HP Codar is installed. In a startup script for the `codaruser` user (for example, `.profile` (Ubuntu) or `.bash_profile` (Red Hat Enterprise Linux)), add the following:

```
export CSA_HOME=/usr/local/hp/codar
export JAVA_HOME=CSA_JRE_HOME
export PATH=$PATH:/sbin
```

where `CSA_JRE_HOME` is the directory where the JRE used by HP Codar is installed.

26. Source the startup file in which you set the `CSA_HOME`, `JAVA_HOME`, and `PATH` environment variables. If you edited `.bashrc` (Ubuntu) or `.bash_profile` (Red Hat Enterprise Linux), enter the following:

```
. ~/.bashrc (Ubuntu)
. ~/.bash_profile (Red Hat Enterprise Linux)
```

27. Create an HP Codar service to start and stop the HP Codar processes.

- a. Log in as the root user.
- b. Go to the directory in which HP Codar is installed. For example:

```
cd /usr/local/hp/codar
```

- c. Copy the `codar` script to the `/etc/init.d` directory. Enter the following:

```
cp ./scripts/codar /etc/init.d
```

- d. Change permissions of the scripts. Enter the following:

```
chmod 755 /etc/init.d/codar
```

- e. Log out as the root user.

28. Log in as `codaruser` and start the HP Codar service. Enter the following:

```
service codar start
```

29. As `codaruser`, restart the HP Operations Orchestration Central service. Enter the following:

```
/usr/local/hp/codar/00/central/bin/central stop
/usr/local/hp/codar/00/central/bin/central start
```

The HP Codar service must be running in order to access HP Codar Console. You can use the following commands:

`service codar start` - to start the Codar service

`service codar restart` - to restart the Codar service

`service codar stop` - to stop the Codar service

`service codar status` - to check the status of the Codar service

The HP Operations Orchestration Central service must be running in order to access HP Operations Orchestration Central. You can use the following commands:

```
/usr/local/hp/codar/00/central/bin/central start - to start the HP Operations Orchestration service
```

```
/usr/local/hp/codar/00/central/bin/central stop. - to stop the HP Operations Orchestration service
```

## Post-installation database configuration

The following steps are required for either Oracle or Microsoft SQL Server, after you have installed HP Codar.

### Configure Oracle tablespace

Configure the Oracle tablespace you created for HP Codar only if you are installing HP Codar for the first time and there is no data in the CODAR\_DOCUMENT table. The tablespace must have been created before HP Codar is installed and then must be configured immediately after HP Codar is installed (see "[Configure Oracle Database](#)" on page 10 for information on creating the Oracle tablespace).

Work with the database administrator to perform the following (or see the manufacturer's documentation for more information):

Modify the CODAR\_DOCUMENT table such that LOB segments are stored in the tablespace. For example:

```
ALTER TABLE CODAR_DOCUMENT  
  MOVE LOB(content)  
  STORE AS (TABLESPACE <new_tablespace>);
```

### Configure Microsoft SQL Server filegroup

Configure the Microsoft SQL server filegroup you created for HP Codar only if you are installing HP Codar for the first time and there is no data in the CODAR\_DOCUMENT table. The filegroup must have been created before HP Codar is installed and then must be configured immediately after HP Codar is installed (see "[Configure Microsoft SQL Server](#)" on page 16 for information on creating the Microsoft SQL server filegroup).

Work with the database administrator to perform the following (or see the manufacturer's documentation for more information):

1. Drop all constraints from the CODAR\_DOCUMENT table.
2. Drop the CODAR\_DOCUMENT table.

3. Recreate the CODAR\_DOCUMENT table and associate it with the filegroup.
4. Recreate the constraints for the CODAR\_DOCUMENT table.

# Configure HP Operations Orchestration

The HP Codar solution includes a number of HP Operations Orchestration flows that perform HP Codar operations.

- If you installed embedded HP Operations Orchestration, see "[Configure embedded HP Operations Orchestration](#)" below.
- If you installed external HP Operations Orchestration, see "[Configure external HP Operations Orchestration](#)" on page 53.

## Configure embedded HP Operations Orchestration

Complete the following tasks to configure the embedded HP Operations Orchestration to integrate successfully with HP Codar (if you are configuring an exclusive stand-alone HP Operations Orchestration, you do not need to complete these tasks):

- "[Add JRE to the system path](#)" on the next page
- "[Configure internal users](#)" on the next page
- "[Deploy content packs required by HP Codar](#)" on page 49
- "[Verify deployed content packs](#)" on page 50
- "[Deploy HP Operations Orchestration and component tool content packs](#)" on page 51
- "[Set up system accounts for the HP Codar content pack](#)" on page 52
- "[Set up system properties for the HP Codar content pack](#)" on page 53
- "[Configure HP Single Sign-On](#)" on page 53

**Note:** In the following instructions, `CSA_HOME` is the directory in which HP Codar is installed and `ICONCLUDE_HOME` is where you installed HP Operations Orchestration.

Be sure all the latest patches for HP Operations Orchestration have been installed. See the *HP Codar System and Software Support Matrix* for more information.

## Add JRE to the system path

The HP Codar flows that are imported require that a JRE be included in the system path on the system running HP Codar.

To add a JRE to the system path on Windows, complete the following steps:

1. Open the **Environment Variables** dialog:
  - a. Right-click **Computer** and select **Properties**.
  - b. Select **Advanced System Settings**.
  - c. Click **Environment Variables**.
2. Select the **Path** system variable.
3. Click **Edit**.
4. At the end of the value for **Variable value**, add a semicolon (;) and the following path:  
`CSA_JRE_HOME\bin`  
where `CSA_JRE_HOME` is the directory in which the JRE used by HP Codar is installed. .
5. Click **OK** and close all windows.

To add a JRE to the system path on Linux, complete the following steps:

Open a shell and enter the following command:

```
export PATH=$PATH:CSA_JRE_HOME/bin
```

where `CSA_JRE_HOME` is the directory in which the JRE used by HP Codar is installed.

**Note:** By setting the system path, all applications (that require a JRE) use the JRE that is installed with HP Codar (if it is the only path or the first path set to a JRE in the system path). If you need to run another JRE with an application, you must type in the relative path to that JRE in order to run it (for example, when you configure SSL).

## Configure internal users

Internal users can be used to configure HP Operations Orchestration for HP Codar.



**Note:** The user is automatically added while installing Codar.

1. Log in to the existing HP Operations Orchestration central,
2. Click the **System Configuration** button.
3. Select **Security > Internal Users**.
4. Click the **Add (+)** icon.
5. Enter the following information:

| Field     | Recommended value           |
|-----------|-----------------------------|
| User Name | codarouser                  |
| Password  | cloud                       |
| Roles     | ADMINISTRATOR, SYSTEM_ADMIN |

The codarouser user is used to import the HP Operations Orchestration flows. When importing flows, this user is configured in the HP Operations Orchestration input file used by the process definition tool.

6. Click **Save**.
7. Enable authentication by selecting the **Enable Authentication** check box.
8. Click **OK** in the confirmation dialog.
9. Log out of HP Operations Orchestration Central and log back in as the codarouser.

## Deploy content packs required by HP Codar

There are three sets of content packs that should be deployed for HP Codar: the base HP Operations Orchestration content packs, the HP Codar component tool content packs, and the HP Codar content pack.

The base HP Operations Orchestration and HP Codar component tool content packs were deployed automatically when you installed HP Codar. If these content packs failed to deploy during installation, you must deploy them manually.

Download the HP Codar HP Cloud Content Capsule using the HP Cloud Content Capsule Installer. You can access the HP Cloud Content Capsule Installer from the `CSA_HOME\tools\CSLContentInstaller` directory after installing HP Codar. The HP Codar content pack must be deployed after the base HP Operations Orchestration content packs have been deployed. For details about the HP Cloud Content Capsule Installer, see the *HP Cloud Service Automation Content Pack User Guide*.

## Verify deployed content packs

To verify that the HP Operations Orchestration and component tool content packs were successfully deployed during installation, complete the following steps:

1. Log in to HP Operations Orchestration Central.
2. Click the **Content Management** button.
3. Click the **Content Packs** tab.
4. Look for the names and versions of content packs in the list. If a content pack is missing, follow the instructions below to manually deploy it.

The content packs that should have been automatically deployed are:

- CSA-HPOO
- CODAR
- EXISTING-INFRASTRUCTURE-WINDOWS
- CSA-VMWARE
- CSA-SITESCOPE
- CSA-SA
- CSA-HP-HELION-PUBLIC-CLOUD
- CSA Chef Provisioner
- CSA-AMAZON
- SM
- SA
- Virtualization
- HP Solutions
- Cloud
- Base
- EXISTING-INFRASTRUCTURE
- CSA-Docker

## Deploy HP Operations Orchestration and component tool content packs

If one or more of the base HP Operations Orchestration or HP Codar component tool content packs are not deployed, you must deploy them manually.

To manually deploy the HP Operations Orchestration or HP Codar component tool content packs, complete the following steps:

1. Log in to HP Operations Orchestration Central.
2. Click the **Content Management** button.
3. Click the **Content Packs** tab.
4. From HP Operations Orchestration Central, click the **Content Management** button.
5. Click the **Content Packs** tab.
6. Click the **Deploy New Content** icon.
7. In the Deploy New Content dialog, click the **Add files for deployment** icon.
8. Navigate to the `CSA_HOME\oo\00ContentPack\` directory. From the subdirectories, select a content pack and click **Open** then **Deploy**. Select, open, and deploy the following base content packs in the order shown below:
  - `oo10-base-cp-1.4.4`
  - `oo10-cloud-cp-1.4.0`
  - `oo10-hp-solutions-cp-1.4.0`
  - `oo10-virtualization-cp-1.4.0`
  - `oo10-sa-cp-1.2.0.001`
  - `oo10-sm-cp-1.0.3`

**Note:** Do not deploy the HP Codar content pack until after you have deployed the base content packs. The HP Codar content pack must be deployed separately and after you have deployed the base content packs.

The deployment may take a few minutes and the dialog will show a progress bar.

When the deployment succeeds, click **Close** to close the dialog.

9. Click the **Deploy New Content** icon.

10. Click the **Add files for deployment** icon.
11. Navigate to the `CSA_HOME\Tools\ComponentTool\contentpacks\` directory, select all the content packs, and click **Open**.
12. Click **Deploy**.

The deployment may take a few minutes and the dialog will show a progress bar.

13. When the deployment succeeds, click **Close** to close the dialog.

## Deploy HP Codar content pack

The HP Codar content pack must be deployed after you have deployed the HP Operations Orchestration content packs.

Download the HP Codar HP Cloud Content Capsule using the HP Cloud Content Capsule Installer. You can access the HP Cloud Content Capsule Installer from the `CSA_HOME\tools\CSLContentInstaller` directory after installing HP Codar. For details about the HP Cloud Content Capsule Installer, see the *HP Cloud Service Automation Content Pack User Guide*.

## Set up system accounts for the HP Codar content pack

Set up system accounts for the HP Codar content pack:

1. Log in to HP Operations Orchestration Central.
2. Click the **Content Management** button.
3. Select **Configuration Items > System Accounts**.
4. Click the **Add** icon.
5. Enter the following information if it is not already configured:

| Field               | Recommended value      |
|---------------------|------------------------|
| System Account Name | CODAR_REST_CREDENTIALS |
| User Name           | ooInboundUser          |
| Password            | cloud                  |

**Note:** The **User Name** configured for the CODAR\_REST\_CREDENTIALS System Account setting must match the **Override Value**(HP Operations Orchestration version 10.21)

configured for the CODAR\_00\_USER system property setting.

6. Click **Save**.

## Set up system properties for the HP Codar content pack

Set up the following system properties for the HP Codar content pack:

1. Log in to HP Operations Orchestration Central.
2. Click the **Content Management** button.
3. Select **Configuration Items > System Properties**.
4. Click the **Add** icon.
5. Enter the following information if it is not already configured:

| Field          | Recommended Value                     |
|----------------|---------------------------------------|
| Name           | CODAR_REST_URI                        |
| Override Value | https://<codar_hostname>:8444/csa/api |

6. Click **Save**.

## Configure HP Single Sign-On

For instructions, see ["Configure HP Single Sign-On between HP Codar and HP Operations Orchestration" on page 60](#).

## Configure external HP Operations Orchestration

Complete the following tasks to configure HP Operations Orchestration to integrate with HP Codar:

- ["Add JRE to system path" on the next page](#)
- ["Install HP Codar content packs" on page 55](#)
- ["Configure internal users" on page 55](#)
- ["Deploy content packs required by HP Codar" on page 56](#)

- ["Set up system accounts for HP Codar content pack" on page 58](#)
- ["Set up system properties for HP Codar content pack" on page 59](#)
- ["Configure HP Single Sign-On" on page 59](#)

**Note:** In the following instructions, `CSA_HOME` is the directory in which HP Codar is installed and `ICONCLUDE_HOME` is where you installed HP Operations Orchestration.

Be sure all the latest patches for HP Operations Orchestration have been installed. See the *HP Codar System and Software Support Matrix* for more information.

## Add JRE to system path

The HP Codar flows that are imported require that a JRE be included in the system path on the system running HP Codar.

### On Windows:

1. Open the **Environment Variables** dialog:
  - a. Right-click **Computer** and select **Properties**.
  - b. Select **Advanced System Settings**.
  - c. Click **Environment Variables**.
2. Select the **Path** system variable.
3. Click **Edit**.
4. At the end of the value for **Variable value**, add a semicolon (;) and the following path:

If HP Operations Orchestration and HP Codar are installed on the same system:

```
ICONCLUDE_HOME\java\bin
```

or

If HP Operations Orchestration and HP Codar are installed on different systems:

```
CSA_JRE_HOME\bin
```

5. Click **OK** and close all windows.

### On Linux:

Open a shell and enter the following command:

If HP Operations Orchestration and HP Codar are installed on the same system:

```
export PATH=$PATH:$ICONCLUDE_HOME/java/bin
```

or

If HP Operations Orchestration and HP Codar are installed on different systems:

```
export PATH=$PATH:CSA_JRE_HOME/bin
```

**Note:** By setting the system path, all applications (that require a JRE) use the JRE that is installed with HP Operations Orchestration or HP Codar (depending on the path you configured and if it is the only path or the first path set to a JRE in the system path). If you need to run another JRE with an application, you must type in the relative path to that JRE in order to run it (for example, when you configure SSL).

## Install HP Codar content packs

Install the HP Codar content packs by running the HP Cloud Content Capsule Installer. Download the HP Codar HP Cloud Content Capsule using the HP Cloud Content Capsule Installer. You can access the HP Cloud Content Capsule Installer from the `CSA_HOME\tools\CSLContentInstaller` directory after installing HP Codar. For details about running the HP Cloud Content Capsule Installer, see the *HP Cloud Service Automation Content Pack User Guide*.

## Configure internal users

Internal users can be used to configure HP Operations Orchestration for HP Codar.

1. Log in to HP Operations Orchestration Central.
2. Click the **System Configuration** button.
3. Select **Security > Internal Users**.
4. Click the Add (+) icon.
5. Enter the following information:

| Field     | Recommended value           |
|-----------|-----------------------------|
| User Name | codarouser                  |
| Password  | cloud                       |
| Roles     | ADMINISTRATOR, SYSTEM_ADMIN |

The codarouser user is used to import the HP Operations Orchestration flows. When importing flows, this user is configured in the HP Operations Orchestration input file used by the process definition tool.

6. Click **Save**.
7. Enable authentication by selecting the **Enable Authentication** check box.
8. Select **OK** in the confirmation dialog.
9. Enter the following information:

| Field     | Recommended value           |
|-----------|-----------------------------|
| User Name | admin                       |
| Password  | cloud                       |
| Roles     | ADMINISTRATOR, SYSTEM_ADMIN |

10. Click **Save**.
11. Enable authentication by selecting **Enable Authentication**.
12. Click **OK** in the confirmation dialog.
13. Log out of HP Operations Orchestration Central and log back in as the codarouser.

## Deploy content packs required by HP Codar

Download the HP Codar HP Cloud Content Capsule using the HP Cloud Content Capsule Installer. You can access the HP Cloud Content Capsule Installer from the `CSA_HOME\tools\CSLContentInstaller` directory after installing HP Codar. For details about the HP Cloud Content Capsule Installer, see the *HP Cloud Service Automation Content Pack User Guide*.

The HP Codar content pack must be deployed after the base HP Operations Orchestration content packs have been deployed.

### Verify the deployed content packs

To verify that all content packs were successfully deployed during installation, complete the following steps:

1. Log in to HP Operations Orchestration Central.
2. Click the **Content Management** button.
3. Click the **Content Packs** tab.



4. Look for the names and versions of content packs in the list. If a content pack is missing, follow the instructions below to manually deploy it.

The content packs that should have been automatically deployed are:

- CSA-HPOO
- CODAR
- EXISTING-INFRASTRUCTURE-WINDOWS
- CSA-VMWARE
- CSA-SITESCOPE
- CSA-SA
- CSA-HP-HELION-PUBLIC-CLOUD
- CSA Chef Provisioner
- CSA-AMAZON
- SM
- SA
- Virtualization
- HP Solutions
- Cloud
- Base
- EXISTING-INFRASTRUCTURE
- CSA-Docker

## Deploy the HP Operations Orchestration and component tool content packs

If one or more of the base HP Operations Orchestration or HP Codar component tool content packs are not deployed, you must deploy them manually.

To manually deploy the HP Operations Orchestration or HP Codar component tool content packs, complete the following steps:

1. Log in to the existing HP Operations Orchestration Central.
2. Click the **Content Management** button.
3. Click the **Content Packs** tab.

4. In the Deploy New Content dialog, click the **Add files for deployment** icon.
5. Click the **Deploy New Content** icon.
6. Click the **Add files for deployment** icon.
7. Navigate to the `CSA_HOME\oo\OOContentPack\` directory. Select, open, and deploy the following HP Codar content packs in the order shown below:

- `oo10-base-cp-1.4.4`
- `oo10-cloud-cp-1.4.0`
- `oo10-hp-solutions-cp-1.4.0`
- `oo10-virtualization-cp-1.4.0`
- `oo10-sa-cp-1.2.0.001`
- `oo10-sm-cp-1.0.3`

The deployment may take a few minutes and the dialog will show a progress bar.

8. Click the **Deploy New Content** icon.
9. Click the **Add files for deployment** icon.
10. Navigate to the `CSA_HOME\Tools\ComponentTool\contentpacks\` directory, select all the content packs, and click **Open**.
11. Click **Deploy**.

The deployment may take a few minutes and the dialog will show a progress bar.

12. When the deployment succeeds, click **Close** to close the dialog.

## Set up system accounts for HP Codar content pack

Set up system accounts for the HP Codar content pack:

1. Log in to HP Operations Orchestration Central.
2. Click the **Content Management** button.
3. Select **Configuration Items > System Accounts**.
4. Click the **Add** icon.

5. Enter the following information if it is not already configured:

| Field               | Recommended value    |
|---------------------|----------------------|
| System Account Name | CSA_REST_CREDENTIALS |
| User Name           | oolnboundUser        |
| Password            | cloud                |

**Note:** The **User Name** configured for the CSA\_REST\_CREDENTIALS System Account setting must match the **Override Value**(HP Operations Orchestration version 10.21) configured for the CODAR\_OO\_USER System Property setting.

6. Click **Save**.

## Set up system properties for HP Codar content pack

Set up the following system properties for the HP Codar content pack:

1. Log in to HP Operations Orchestration Central.
2. Click the **Content Management** button.
3. Select **Configuration Items > System Properties**.
4. Click the **Add** icon.
5. Enter the following information if it is not already configured:

| Field          | Recommended Value                     |
|----------------|---------------------------------------|
| Name           | CSA_REST_URI                          |
| Override Value | https://<codar_hostname>:8444/csa/api |

6. Click **Save**.

## Configure HP Single Sign-On

For instructions, see "[Configure HP Single Sign-On between HP Codar and HP Operations Orchestration](#)" on the next page.

## Configure HP Single Sign-On between HP Codar and HP Operations Orchestration

If HP Single Sign-On was enabled during installation of HP Codar, HP Single Sign-On can be configured between HP Codar and HP Operations Orchestration. Configuring HP Single Sign-On allows you to launch HP Operations Orchestration from the HP Codar Console without having to log in to HP Operations Orchestration.

HP Codar provides an out-of-the-box user (**admin**) and password (**cloud**) and, earlier in this guide, you configured an internal user for HP Operations Orchestration with the same user name and password. When HP Single Sign-On is configured between HP Codar and HP Operations Orchestration, this user can be used for single sign-on. That is, if you are logged in to HP Codar as the admin user, you can launch HP Operations Orchestration from the HP Codar Console and not have to log in to HP Operations Orchestration.

You can also configure LDAP users for single sign-on. In order to enable single sign-on for LDAP users, you must either configure HP Codar and the embedded HP Operations Orchestration to use the same LDAP source or, if HP Codar and the embedded HP Operations Orchestration use different LDAP sources, configure the same users in both sources. In either case, the HP Codar user must be assigned to the Codar Administrator or Service Operations Manager role and the embedded HP Operations Orchestration user must be assigned any role that allows flows to be viewed.

**Note:** To use HP Single Sign-On between HP Codar and HP Operations Orchestration, the systems on which HP Codar and HP Operations Orchestration are installed must be in the same domain.

### Enable HP Single Sign-On

To configure and enable HP Single Sign-On on HP Operations Orchestration, complete the following steps:

1. Log in to HP Operations Orchestration Central.
2. Click the **System Configuration** button.
3. Select **Security > SSO**.
4. Select the **Enable** checkbox.
5. Enter the **InitString**. The `initString` setting for HP Codar and HP Operations Orchestration must be configured to the same value. In HP Codar, `initString` is configured in the `crypto` element in the `CSA_HOME\jboss-as\standalone\deployments\csa.war\WEBINF\hpsssoConfiguration.xml` file. The `initString` value represents a secret key and should be treated as such in your environment (this string is used to encrypt and decrypt the `LWSSO_COOKIE_KEY` cookie that is used to authenticate the user for single sign-on).

6. Enter the **Domain**. This is the domain name of the network of the servers on which HP Codar and HP Operations Orchestration are installed.

7. Click **Save**.

## Configure LDAP Users for Single Sign-On

In order to enable single sign-on for LDAP users, you must either configure HP Codar and HP Operations Orchestration to use the same LDAP source or, if HP Codar and HP Operations Orchestration use different LDAP sources, configure the same users in both sources. In either case, the HP Codar user must be assigned to the Codar Administrator or Service Operations Manager role and the HP Operations Orchestration user must be assigned any role that allows flows to be viewed.

To configure LDAP for HP Operations Orchestration, complete the following steps:

1. Log in to HP Operations Orchestration Central.
2. Click the **System Configuration** button.
3. Select **Security > LDAP**.
4. Enter the information to configure LDAP.
5. Click **Save**.

# Post-installation

You have completed the initial installation and configuration of HP Codar and can begin familiarizing yourself with the capabilities of HP Codar.

Launch the HP Codar Console (type the following URL in a supported Web browser: `https://<codar_hostname>:8444/csa`) and log in using the out-of-the-box user (`admin`) and password (`cloud`).

See the following sections for post-installation options:

- ["Install VMware vCenter" below](#)
- ["Install HP SiteScope" on page 64](#)
- ["Install HP Server Automation" on page 66](#)
- ["Configure resource providers" on page 74](#)
- ["Apply HP Codar licenses" on page 75](#)
- ["Jenkins" on page 76](#)
- ["Import and configure sample designs" on page 82](#)

## Install VMware vCenter

Install vCenter according to the manufacturer's recommendations. For example, follow the VMware best practices for managing individual ESX servers from a vCenter instance. You can find the VMware documentation at <http://www.vmware.com/support/pubs/>.

You must have a vCenter instance that can support the flows that actuate vSphere VMs. See *HP Codar System and Software Support Matrix* for version requirements.

Both the *HP Codar Console Help*, which is available in a printable PDF format, and the *HP Codar System and Software Support Matrix* are available on the HP Software Support web site at <http://h20230.www2.hp.com/selfsolve/manuals/>. You must sign in or register for an HP Passport.

# Configure VMware vCenter

Configure VMware vCenter by installing prepared templates. In the vSphere environment, a template is a master copy of a virtual machine that can be used to create many clones. A clone is a copy of a virtual machine.

You can learn more about creating templates and working with clones in vSphere by referring to VMware's *vSphere Virtual Machine Administration Guide for vCenter Server* (EN-000312-02), available in the VMware documentation. You can find the VMware documentation at <http://www.vmware.com/support/pubs/>.

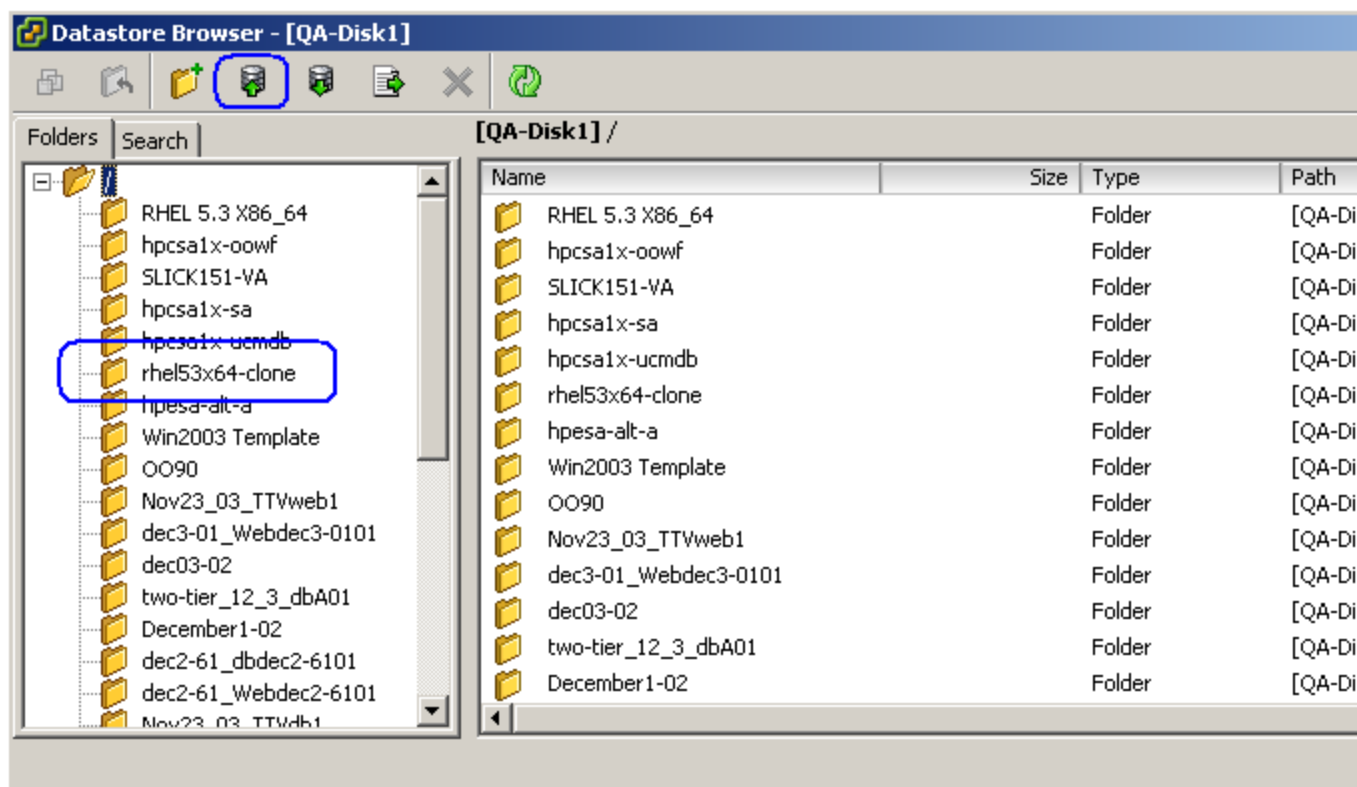
Virtual machines created by the HP Codar solution are created based on virtual machine templates. To allow applications (such as Apache) to be deployed to the image, you must create a template that includes HP Server Automation Agent software. See *Prepare a VMware Template to Self-Register with HP Server Automation* for more information.

To install a prepared template, do the following:

1. Locate a prepared template.
2. Copy the template folder to the system containing the vSphere client software.
3. From your vSphere client software menu, select **View > Inventory > Datastores** to see a list of available datastores on your vCenter server.
4. Right-click one of the available datastores and select **Browse Datastore** to see the directory structure of that datastore.
5. Copy the template folder to the datastore by clicking on the **Upload files to this datastore** button.

The following image shows the Datastore Browser window with **Upload files to this datastore**

highlighted. It also shows a `rhel53x64-clone` folder that was uploaded to this datastore:



Consult the vSphere documentation for additional details. You can find the VMware documentation at <http://www.vmware.com/support/pubs/>.

## Install HP SiteScope

Install HP SiteScope to the correct version and patch level. See *HP Codar System and Software Support Matrix* for version requirements.

Installation notes:

- Do not install HP SiteScope on the HP Operations Orchestration server. It must be on its own server.
- Calculate the resources needed for the HP SiteScope server using the information in the HP SiteScope documentation. This calculation should include the number of target servers that you expect Codar to monitor.
- During installation, you can change the port for the HP SiteScope service to avoid potential conflicts with other web servers that use the default port value of 8080. Select any available port on the system and keep track of the port number that you select.



## Configure HP SiteScope

The following tasks are required to configure HP SiteScope to integrate successfully with HP Codar:

- ["Enable HP Codar to configure HP SiteScope monitors" below](#)
- ["Manually import additional HP Codar templates" below](#)
- ["Configure HP Codar credential profiles" on the next page](#)
- ["Configure HP SiteScope administrator credentials" on the next page](#)

## Enable HP Codar to configure HP SiteScope monitors

HP SiteScope is installed with a default of secured API calls required for configuring monitors. HP Codar does not support secured API calls; therefore, you must change this setting. To re-configure HP SiteScope so it does not use secure APIs, you must make the following change to the configuration:

1. Stop the HP SiteScope service by typing the following command in a console window:

```
net stop SiteScope
```

2. Open the HP SiteScope <sitescopeInstallDir>\groups\master.config file in a text editor.
3. Change the `_accessControlled=true` property value to `_accessControlled=false`.
4. Restart the HP SiteScope service by typing the following command in a console window:

```
net start SiteScope
```

## Manually import additional HP Codar templates

Two additional HP Codar templates, `CSA templates Silver` and `CSA templates Gold`, must be manually imported. These templates are used by the `CSA_BP_VCENTER_COMPUTE_SITESCOPE_MODIFY_v3.20.00.zip` service design.

1. Log in to the HP SiteScope Dashboard.

**Note:** You must be able to access files in the `CSA_HOME\CSAKit-4.5\Lib\sitescope` directory from the HP SiteScope Dashboard. If necessary, copy this directory to the system from which you are launching the HP SiteScope Dashboard.

2. Select the **Templates** context.
3. In the template tree, right-click **SiteScope** and select **Import**.

4. Browse to `CSA_HOME\CSAKit-4.5\Lib\sitescope` (or the directory to which this directory was copied) and import CSA templates `Silver.tpl`.
5. Repeat steps 3 and 4, but import CSA templates `Gold.tpl`.

## Configure HP Codar credential profiles

Configure the credentials used to log in to every Windows system and every Linux system monitored by HP SiteScope. The credentials to all Windows systems must be the same. Likewise, the credentials to all Linux systems must be the same.

1. Log in to the HP SiteScope Dashboard.
2. Select **Preferences** context > **Credential Preferences**.
3. Edit the **LINUX-CSA-TARGETS** credential profile and supply login credentials for your Linux environment.
4. Edit the **WINDOWS-CSA-TARGETS** credential profile and supply login credentials for your Windows environment.

## Configure HP SiteScope administrator credentials

Configure the credentials used to log in as the administrator of HP SiteScope. These credentials are used by HP Codar when configuring HP SiteScope resource providers from the HP Codar Console.

1. Log in to the HP SiteScope Dashboard.
2. Select **Preferences** context > **User Management Preferences**.
3. Right-click **SiteScope Administrator** and select **Edit User**.
4. If not already specified, enter a login name and password for the HP SiteScope administrator.

## Install HP Server Automation

Install HP Server Automation to the correct version and patch level. See *HP Codar System and Software Support Matrix* for version requirements.

You can determine your version and patch level by using the HP Server Automation Client and selecting **Help > About**.

Installation notes:

- You can use the DHCP services included with HP Server Automation. For information on configuring a DHCP server with HP Server Automation, see *HP Server Automation Simple/Advanced Installation Guide*.
- The HP Server Automation Client should be installed on the HP Operations Orchestration server.
- The HP Server Automation Client does not register right away after installation. A delay occurs before you can continue with configuration.

## Configure HP Server Automation

The following tasks are required to configure HP Server Automation to allow read and write access to the required areas:

- ["Create HP Codar service account" below](#)
- ["Create HP Codar administrators group and assign permissions" on the next page](#)
- ["Validate Codar service account" on page 69](#)
- ["Validate HP Server Automation client" on page 69](#)

## Create HP Codar service account

1. Open the HP Server Automation Web Client in a browser.
2. Log in using the HP Server Automation Administrator user name and password (created when the HP Server Automation server was installed).
3. Click **Administration > Users & Groups**.
4. Click **New User** in the Users tab toolbar and complete the following fields using the values listed in the following table:

| Field Name    | Value                |
|---------------|----------------------|
| Last Name     | Service Account      |
| First Name    | CSA                  |
| Full Name     | CSA Service Account  |
| Email Address | <your email address> |
| User Name     | hpcsa                |
| Password      | <password>           |

5. Select **Superusers** from the Group Membership list to enable this option.

6. Click **Save**.
7. Click **Log Out**.

## Create HP Codar administrators group and assign permissions

1. Open the HP Server Automation Web Client in a browser.
2. Log in using the HP Server Automation Administrator user name and password.
3. Click **Administration > Users & Groups**.
4. Select the **Groups** tab.
5. Click **New Group** and complete the following fields using the values listed in the following table:

| Field Name        | Value                |
|-------------------|----------------------|
| Group Name        | hpcsa-admin          |
| Group Description | HPCSA Administrators |
| Not Assigned      | Read & Write         |
| Opware            | Read                 |

6. Click **Save**.
7. Select **hpcsa-admin** in the list of groups.
8. Select the **Users** tab and add the **admin** and **hpcsa** users to the hpcsa-admin group.
9. Click **Save**.
10. Select the **Facilities** tab and select **Read & Write** to the appropriate facility.  
If only one facility exists, select **Read & Write** for it.
11. Click **Save**.
12. Select the **Features** tab and click **Select All** in the header row to select all features.
13. Click **Save**.
14. Select the **Client Features** tab and change all values to **Read & Write** and **Yes** where applicable.
15. Click **Save**.
16. Select the **Other** tab and select all options *except* **Generate Security Reports**.

17. Click **Save**.
18. Select the **OGFS Permissions** tab, click **Add Permissions**, and enter the following permissions:
  - **Features:** Select **Run Command on Server**.
  - **Servers:** Click the **Customers** option and select **Not Assigned** from the list.
  - **Login Names:** Select **Opware user name**, and select **Log in as** and enter root.
19. Click **Grant**.
20. Click **Add Permissions** and enter the following permissions:
  - **Features:** Select **Launch Global Shell**.
21. Click **Grant**.
22. Click **Log Out**.

## Validate Codar service account

1. Open the HP Server Automation Web Client in a browser and verify that the login screen appears.
2. Log in using the Codar Service Account credentials you created in the previous steps.
3. Verify that the HP Server Automation Web Client home page is displayed. A list of tasks and jobs is shown.
4. Click the **Managed Servers** option on the left side of the screen and verify that a list of servers with their IP addresses and operating system information is displayed.
5. Click **Log Out** and close the Web browser.

## Validate HP Server Automation client

1. Connect to the system where HP Operations Orchestration is installed.
2. Verify that the client is installed.
  - If an icon appears on the desktop labeled HP Server Automation Client or a link appears in the Start Menu, the client is installed. Continue to step 3.
  - If neither the icon nor the Start Menu link appear, then you need to install the client by performing the following steps:
    - i. Open the HP Server Automation Web Client in a browser and select **Download Opware Launcher** at the login screen.

- ii. Install the client using the default parameters.

You must have a JRE installed in order to use the Opsware Launcher on a Windows system.

3. Launch the client with the following credentials:

- **Username:** hpcsa
- **Password:** <hpcsa password>
- **Core Server:** <SA Server Host Name>

The above login information may vary depending on your installation.

4. Verify that the HP Server Automation application starts and Device Groups appear in the left hand navigation pane.
5. Click **All Managed Servers** and verify that a list of servers with their names, IP addresses, and operating system information is displayed.
6. Exit the client.

## Prepare VMware template

The steps below prepare a VMware template to self-register with HP Server Automation.

Virtual machines (VMs) created by the HP Codar solution are created based on virtual machine templates. The HP Codar flows reference a vSphere template name, and perform a clone operation to provision new virtual machines. These templates would generally provide an operating system image only, with no application software installed.

To allow applications (such as Apache) to be deployed to the image, you must install and configure HP Server Automation and create a template that includes the HP Server Automation Agent software. That is, in order to manage the virtual server and to install application software, the clones are configured to self-register upon power-on with an HP Server Automation system. Once registered as a managed server, software policies are applied to the server in order to install and configure the correct applications. See the *HP Server Automation Policy Setter Guide* and the *HP Server Automation Application Deployment User Guide* in the HP Server Automation documentation for more information on managing servers and configuring software policies.

- ["Template preparation overview" on the next page](#)
- ["Detailed process" on the next page](#)
- ["Provision an operating system on a virtual machine" on page 72](#)
- ["Sanitize agent configuration on a template machine" on page 72](#)
- ["Basic customization" on page 74](#)
- ["Install prepared template" on page 74](#)

## Template preparation overview

For cloned virtual machines to register with the HP Server Automation system upon power-on, prepare a template with an HP Server Automation agent. The following is a general outline of the steps to be performed:

- First, create a virtual machine with the appropriate operating system image that you would like to template. Provision the VM with an operating system through any method supported by vSphere:
  - Manually install the operating system on a prepared, configured VM.
  - Provision the operating system through a network boot operation from the HP Server Automation system.

See the appropriate vSphere documentation to create a new virtual machine with an installed operating system image.

- When preparing a virtual machine as a template to be used to clone many new virtual machines, leave the configuration as generic as possible. No hostname can be configured, and the network configuration can be obtained via DHCP.
- Install and test the appropriate VMware Tools on the virtual machine.
- Install the HP Server Automation agent. The agent registers the template with the HP Server Automation system so that this machine is in a Managed state for the next step.
- An APX utility in the HP Server Automation system library is run to prepare the agent on the virtual machine to re-install and register with the HP Server Automation system on the next bootup.
- The virtual machine is shut down and converted to a template.
- Delete the virtual machine server record from the HP Server Automation system.

## Detailed process

See the vSphere documentation set for detailed information on the creation, configuration, and operating system installation for a new virtual machine. There are several options to install an operating system onto a new virtual machine. One of the options available is to use the PXE network boot facility from the HP Server Automation server, with an operating system installation profile that integrates the installation of an HP Server Automation agent. A virtual machine which is provisioned using this method starts the agent upon bootup, and attempts to register it with the HP Server Automation system.

If you use another method to provision an operating system on the virtual machine, the HP Server Automation agent can be installed from the HP Server Automation system. See the product documentation for an expanded discussion of this process. The following instructions describe one method.

## Provision an operating system on a virtual machine

1. Boot the virtual machine and make sure that it is connected to the network. Verify that the HP Server Automation (HP SA) system can be reached.
2. Discover the virtual machine in the **Unmanaged Servers** (HP SA 9.x) or **SA Agent Installation** (HP SA 10.x) window in HP Server Automation. You can scan an entire subnet or enter the IP address for the virtual machine and initiate a scan to discover it.
3. Select the virtual machine, right-click, and then select **Manage Server** (HP SA 9.x) or **Install SA Agent** (HP SA 10.x). A new dialog opens.
4. Provide the appropriate login credentials, and select the action to verify prerequisites, copy installer, and install the agent. Set any desired Installer Options at this time, referring to the HP Server Automation documentation for details.
5. Click **OK**.

When the installation process completes successfully, the agent is installed, and the virtual machine is visible in the **All Managed Servers** tab. The hostname has not been set, as we plan to convert this virtual machine to a generic template. So, the default host name is used for the virtual machine.

6. From the **Server Information Properties** tab, select the virtual machine and press **Enter**.
7. Select **Properties**.
8. Record the **Object ID** of the virtual machine, which can be found in the Management Information section of the Properties panel.

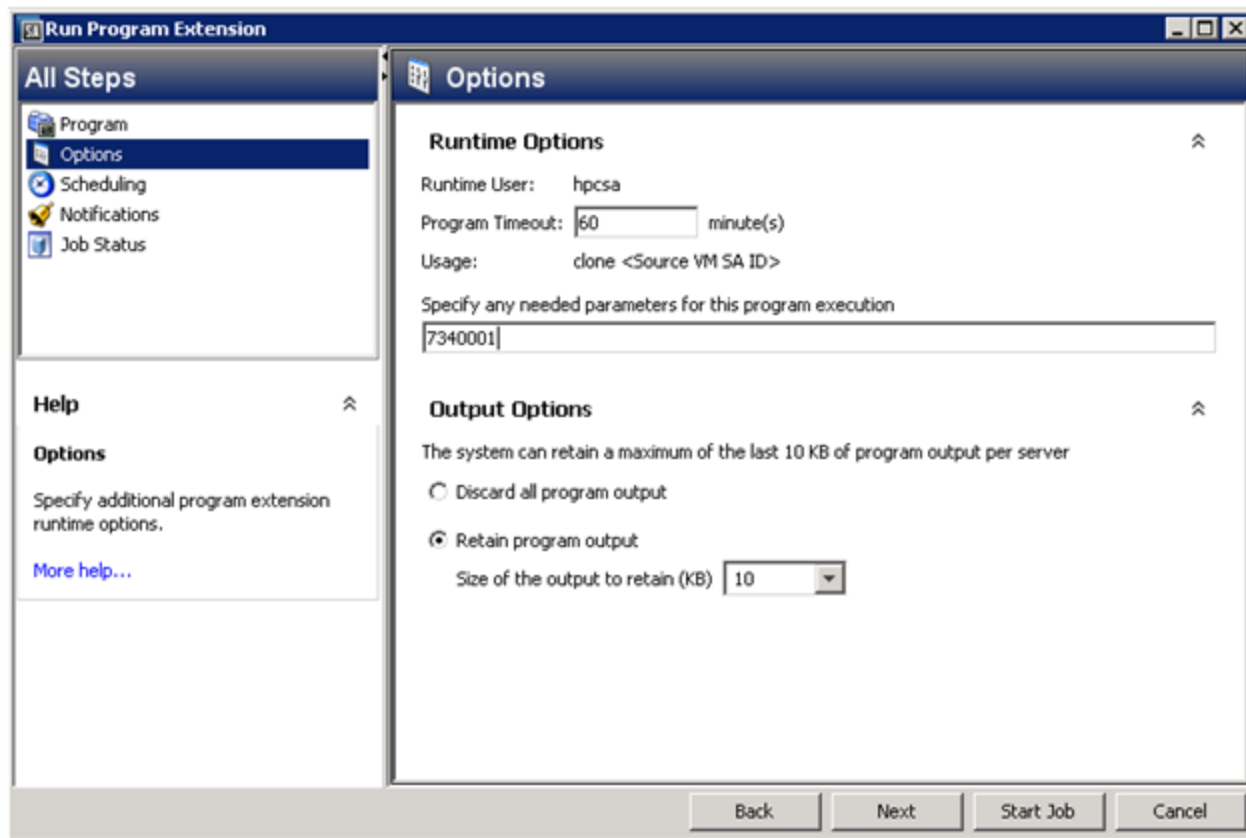
## Sanitize agent configuration on a template machine

The agent on our virtual machine template must be prepared to install and register a new machine server with HP Server Automation each time we create a new clone. To prepare the agent we must sanitize the agent configuration on our template machine by doing the following:

1. Switch to the **Library** tab in the HP Server Automation client.
2. Expand the **Extensions** folder.
3. Select **Program**.
4. Locate the **BRDC HPSA agent sanitizer** Automation Platform Extension (APX).
5. Execute the BRDC HPSA agent sanitizer APX:
  - a. Right-click the APX and select **Run**.
  - b. Select the **Options** tab in the Run Program Extensions dialog.



- c. In the **Specify any needed parameters for this program execution** field, enter the **Object ID**, which you previously obtained for the virtual server template:



- d. Click **Start Job**.
- e. Shut down the virtual machine after the job completes successfully and the agent has been prepared.  
  
Do not reboot this virtual machine again until after it has been converted to a vSphere template.
- f. Using the vSphere client, convert this virtual machine to a template.
- g. The last step is to clean up the server records for the virtual machine template from HP Server Automation. In the All Managed Servers tab:
  - i. Deactivate the server.
  - ii. Delete the server.

The template is now ready to use to clone new virtual machines. HP Codar uses a simple customization template that sets the hostname equal to the VM name. Additional customization is possible during the clone operation. See ["Basic customization" on the next page](#).

When a newly cloned virtual machine powers up, the HP Server Automation Agent installs and then contacts the HP Server Automation system to self-register. Shortly after power on, you can refresh the All Managed Servers view in the HP Server Automation client to locate the new virtual machine record.

## Basic customization

Perform the following basic customizations:

1. On the vCenter environment click **View > Management > Customization Specifications Manager**.
2. Click the **New** icon.
3. Select Windows or Linux for your Target Virtual Machine OS. You can create one of each.
4. If you are creating a Windows target, name it useVmName\_Windows. If you are creating a UNIX target, name it useVmName\_Linux.
5. Customize as appropriate, noting two important items:
  - On the screen with the NetBIOS Name you must choose **Use the virtual machine name**.
  - If the virtual machine name exceeds 15 characters, it will be truncated.

## Install prepared template

The template must be installed on the system containing the vSphere client software. See *Configure VMware vCenter* for more information.

Consult the vSphere documentation for additional details. You can find the VMware documentation at <http://www.vmware.com/support/pubs/>.

## Configure resource providers

HP recommends that you follow this procedure to create two resource providers. These resource providers should be associated with two different data centers which are associated with two different environments, likely named Development and Testing.

To configure a resource provider,

1. Open HP Codar at `https://<ipaddress>:<port>/csa`  
  
where *<ipaddress>* is the IP address or host name of the HP Codar server, and *<port>* is the port number, which is 8444 by default.
2. Log in as the administrator. The default user name is **admin** and the default password is **cloud**.
3. Click the Providers tile.

4. Under All Providers on the left, select the provider type that will be used for application deployment.
5. Click **Create** and enter details for the resource provider you will use for application deployment.
6. After the provider has been created, select the Properties tab and provide the values for the properties that are defined for the provider type.

For example, if the provider chosen is the vCenter provider, you might create a property named **DATACENTERNAME** with the value **DEVELOPMENT**.

7. Return to the main Providers screen and choose **By Environment** in the drop-down field in the upper right corner of the screen.
8. Click **Create your first Resource Environment**.
9. Enter details for the resource environment.

The resource environment you enter here should be the same as the Environment you entered in ["Install HP Codar Jenkins plug-in" on page 77](#).

10. Click **Select Resource Providers**.
11. Add the provider you created and then click **Save**.

## Apply HP Codar licenses

After installation is complete, apply an HP Codar permanent license. You can then apply an HP Cloud Service Automation permanent license, if desired. After an HP Cloud Service Automation license is installed, you can use all of HP Codar and HP Cloud Service Automation features.

The following license types are available:

- HP Codar permanent license only.
- HP Cloud Service Automation permanent license only.

If you install HP Cloud Service Automation, then you must add an HP Cloud Service Automation license first. If you install HP Codar, then you must install an HP Codar license first. After you apply a base license, you can add an upgrade license. If you have licenses for both, you can apply an HP Cloud Service Automation and an HP Codar license.

When upgrading, if an HP Cloud Service Automation license is applied to HP Codar, or the HP Codar license is applied to HP Cloud Service Automation, the upgraded product is always HP Cloud Service Automation. For details, see "Appendix A: Cross-product upgrade between HP Codar and HP Cloud Service Automation" in the *HP Codar Upgrade Guide*.

## OSI capacity

The number of operating systems you can use in active applications or subscriptions is known as the OSI capacity. If you have HP Cloud Service Automation and HP Codar licenses, then the OSI capacity is the lowest of the two. Here's an example: You have an HP Cloud Service Automation license with 100 OSI and an HP Codar license with 50 OSI, so your OSI capacity is 50.

## Jenkins

Jenkins is optional, but you must install Jenkins and dependencies if you intend to use the sample design, and it is required for the Sample Continuous Deployment Demo purpose.

You should consult product documentation for installation and usage instructions.

Using Jenkins with HP Codar requires the following dependencies:

- Collabnet Subversion Edge: [collab.net/support/documentation](http://collab.net/support/documentation)
- TortoiseSVN: [tortoisesvn.net/support.html](http://tortoisesvn.net/support.html)
- Jenkins: [jenkins-ci.org/](http://jenkins-ci.org/)
- JDK 1.7
- Maven: [maven.apache.org/guides/index.html](http://maven.apache.org/guides/index.html)

## Install Collabnet Subversion Edge

Download and install a version appropriate to your system from [collab.net/downloads/subversion](http://collab.net/downloads/subversion).

## Install Tortoise

Download and install the latest version from [tortoisesvn.net](http://tortoisesvn.net). Use the default settings.

After installation, you will see new options when you right-click a file or folder in Windows Explorer.

## Install Jenkins

Download the Windows installer for Jenkins from [jenkins-ci.org](http://jenkins-ci.org).

After installation, you should access the Jenkins server at <http://localhost:8080> to validate the installation.

## Install the JDK

Install the JDK version 1.7x on the Jenkins server.

## Install the Maven plug-in

Download and install Maven from [maven.apache.org](http://maven.apache.org).

## Configure Jenkins to use with HP Codar

The following steps are for Jenkins version 1.583.

To configure Jenkins to use with HP Codar, complete the following steps:

1. Make sure the JDK and Maven are installed.
2. Log in to the Jenkins Dashboard in a browser at `http://<host>:<port>/`, substituting the host and port information appropriate for your Jenkins environment.
3. Click **Manage Jenkins**.
4. Click **Configure System**.
5. In the JDK section, click **Add JDK**.
6. Enter the name and path for `JAVA_HOME`.
7. Deselect **Install automatically**.
8. In the Maven section, click **Add Maven**.
9. Enter the name and path for `MAVEN_HOME`.
10. Deselect **Install automatically**.
11. Enter the value for `MAVEN_OPTS`.
12. Click **Save**.

## Install HP Codar Jenkins plug-in

To install the HP Codar Jenkins plug-in, complete the following steps:

1. Log in to the Jenkins Dashboard in a browser at `http://<host>:<port>/`, substituting the host and port information appropriate for your Jenkins environment.
2. Click **Manage Jenkins** from the Dashboard
3. Click the **Manage plug-ins**.
4. Select the **Advanced** tab.
5. In the **Upload plug-in** section, browse to select the following file:  

```
Hewlett-Packard\Codar\CSAKit-4.5\Content Archives\topology\Jenkins plugin\HP_Codar.hpi
```
6. Click **Upload**.
7. Select the Installed tab and verify that the HP Codar plug-in was installed.

## Enable the HP Codar Jenkins plug-in

To enable the HP Codar Jenkins plug-in, complete the following steps:

1. Click **Manage Jenkins** from the Dashboard.
2. Click **Configure System**.
3. Scroll down to the HP Codar Plug-in section of the **Configure System** page and select the **Enable** check box.
4. Click **Save**.

## Configure Pet Clinic sample application project

HP Codar includes a Pet Clinic sample application project, which is available on HP Live Network (HPLN) at <https://hpln.hp.com/group/project-codar>.

To configure the Pet Clinic sample application project, complete the following steps:

1. Check in the source code for the PetClinic project into the Subversion server.
2. Create a new PetClinic project in the Jenkins server using the **Build a maven2/3 project** option.
3. Click the **PetClinic** link on the Jenkins Dashboard, and then click the **Configure** link on the page that opens.
4. Configure Subversion for Source Code Management for the PetClinic project by choosing the **Subversion Modules** option and adding the Subversion PetClinic source code URL in the Repository URL field.

- After saving, update the Subversion credentials like this:

**Source Code Management**

---

CVS  
 CVS Projectset  
 None  
 Subversion

Modules                      Repository URL                        
                                          Local module directory (optional)                        
                                          Repository depth                        
                                          Ignore externals                     

Check-out Strategy                        
                                         

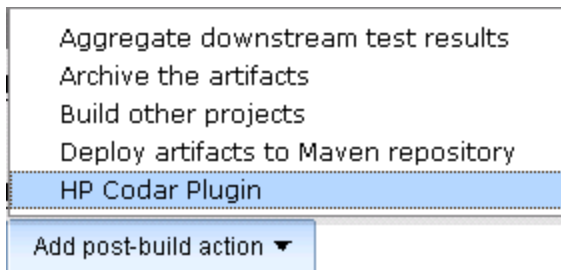
Repository browser                     

- Configure Jenkins to automatically trigger a build if any code is checked-in by selecting the **Poll SCM** check box and adding **\*/\* \* \* \* \*** as the schedule.
- Scroll down and click **Add post-build action**, select **Archive the artifacts**, and then enter **\*/\*.war, target/classes/\*/\*.sh** in the **Files to archive** text box.

## Configure plug-in for Pet Clinic sample application

To configure the plug-in for the Pet Clinic projects, complete the following steps:

- Click the **PetClinic** link on the Jenkins Dashboard, and then click the **Configure** link on the page that appears.
- Click **Add post build action** and select **HP Codar plug-in**.



- Enter the applicable HP Codar plug-in properties:
  - HostName** – The host name or IP address of the server on which HP Codar is installed.
  - Port** – The port number on which the HP Codar application is listening.
  - Username** – The name of a user that has HP Codar administrative privileges.

- **Password** – The password for the HP Codar user.

**Caution:** Do not use the default HP Codar admin user because this might be a security issue. After installing HP Codar and configuring LDAP, add a user to the Application Architect role. Use the credentials for that user here.

- **Application Design Location** – The relative path and filename from the source repository URL of the application design JSON file, which contains the application to be deployed by HP Codar (for example, `designs\PetClinicApp.json`). See “API calls” in the *HP Codar API and CLI Reference Guide* for information on how to get the JSON file using REST APIs.
- **Environment** – The environment in HP Codar in which the provider that is to be used for deployment is contained.

**Note:** The environment value is mandatory if you want to use HP Codar for continuous deployment.

- **Package properties** – Specify the component properties of the design that will be parameterized within the build. The input to this field should be specified in this format:

```
component1id:property1id:property1value,component2id:property2id:property2value,component3id:property3id:property3value
```

- **Component Id/Name**– The ID of the component in the application design. This can be obtained from the Application design's json file. A PetClinic application component could be: `PetClinic_Application__VERSION__1__GROUPID__com.hp.csa.type0001`.
  - **Property Name** – The name of the property within the component. This can be obtained from the Application design's json file. For example, an `artifacturl` property within the PetClinic application could be: `artifacturl_a36`.
  - **Property Value** – The value of the property. If it is a Jenkins build output artifact, then the URL of the artifact will be automatically computed and the value will represent the complete HTTP URL from which this artifact can be downloaded. For example, the Jenkins build artifact for PetClinic could be: `petclinic.war`.
  - For example: `PetClinic_Application__VERSION__1__GROUPID__com.hp.csa.type0001:artifacturl_a36:petclinic.war`
- **Extended Properties File** – Optionally enter the name of the properties file. This properties file needs to be specified only when the user wants to specify a different CI process than what is provided by default. This properties file can specify a different HP Operations Orchestration flow containing necessary CI logic. You can specify a different flow ID by creating a property file with **key** as the `uuid` and **value** as the `uuid` of HP Operations Orchestration flow. For example, `uuid=asdaasdasdsdasdad99f`.

You can also specify the required properties to this flow as key value pairs in this property file.



- **Nodetid** – Enter the component ID for which you want to extract component properties. These component ids can be obtained from the Application design JSON file which has been exported. Multiple components are specified by separating those with commas.

For example, you may want to retrieve an IP address and host name of the VCenter component, `VcenterServerType__VERSION__04.20.0000__GROUPID__com.hp.csa.type0002`, to run tests on the provisioned server.

- **Httpusername** – Enter the user name for accessing artifacts from HTTP location. For example, the username for the Jenkins Server.
- **HttpPassword** – Enter the password for accessing artifacts from HTTP location. For example, the password of the Jenkins Server.
- **SSLCertificatePath** – Enter the SSL certificate path for HP Codar and pick up the certificate from the HP Codar setup. The certificate will be in the machine where HP Codar is installed in the path `\Hewlett-Packard\Codar\IA-openjre\lib\security\cacerts`.
- **CertificatePassword** – Enter the SSL certificate keystore password for HP Codar. By default it is **changeit**.

## Sample Pet Clinic extended properties file

Change the extended properties file to the following

```
## Properties accessed by the ARA API to invoke OO flows.

##This properties file contains the oo flow id(uuid) as well as the relevant
parameters to be passed to the oo flow.

##Dynamic properties can be specified by <<property>> prefixing and suffixing
with angular brackets. These properties

## will be substituted with the value passed in JSON input.

csaTruststore=C:/codar/cacerts

#uuid of the oo flow. This flow contains the necessary logic for the Continuous
integration process.

#uuid=377898bc-d92e-4e6a-b542-718539fdb9a

#Specify the artifacts that are built by Jenkins to manage it within ARA. These
artifacts would be dynamically obtained from Jenkins and deployed via ARA.

##Format is
component1id:property1id:property1value,component1id:property2id:property2value,
component2id:property3id:property3value where

##where COMPONENT1id - represents the id of the component as displayed in the
design

## property1id - represents the property of the component which needs to be
dynamically replaced
```

```

##property1value - will represent the artifacts which need to be deployed.

##Sample

##Pet_Clinic_DB_Configuration_87424824_fdfd_485d_b392_7e5b58cadb1a_
320fb4ee61694fd9a4ea347537d08fcb__VERSION__1__GROUPID__com.hp.csa.type.VMWARE_
VCENTER0001:artifacturl:petclinic.war

#The server node which needs to be queried for obtaining IP address. This is
relevant for Continuous Delivery where tests can be run against the provisioned
virtual machine via ip address.

#serverNodeId=VcenterServerType__VERSION__04.10.00000002

#componentid:propertyname:jenkinsout,componentid:propertyname:jenkinsout

```

## Create custom design

You can configure continuous deployment for custom applications by creating custom HP Operations Orchestration flows.

If a custom application in an enterprise needs continuous deployment users can create deployment scripts using Chef or HP Operations Orchestration. Those flows can be embraced (imported) as components in HP Codar and used in the creation of an application design, which can then be exported from HP Codar in JSON format and checked into the source repository. Jenkins can be configured for a continuous build. When an application developer checks in the code, a Jenkins build is triggered and the application is deployed using an application model on a specific environment.

## Import and configure sample designs

Sample application designs are installed with HP Codar Console.

These designs are imported to the HP Codar Console when the HP Cloud Content Capsule is downloaded using the HP Cloud Content Capsule Installer. You can access the HP Cloud Content Capsule Installer from the `CSA_HOME\tools\CSLContentInstaller` directory. For details about the HP Cloud Content Capsule Installer, see the *HP Cloud Service Automation Content Pack User Guide*.

## Import sample designs

Complete the following steps to import any other sample designs manually:

1. Click the **Designs** tile in the HP Codar Console to go to the main Topology Designs screen.
2. Click **Import**.

3. Select a sample application zip file and click **Import**.
4. Repeat these steps to import the other sample design zip files.

The topology designs for these applications should now be listed under All Designs in the main Topology Designs screen.

## Configure sample designs

Imported sample HP Codar Console designs can be configured using the instructions provided in the *HP Cloud Service Automation Content Pack User Guide*.

The sample designs can be validated by deploying the designs using the Test run functionality.

# Send Documentation Feedback

If you have comments about this document, you can [contact the documentation team](#) by email. If an email client is configured on this system, click the link above and an email window opens with the following information in the subject line:

**Feedback on Installation and Configuration Guide (Codar 1.50)**

Just add your feedback to the email and click send.

If no email client is available, copy the information above to a new message in a web mail client, and send your feedback to [clouddocs@hp.com](mailto:clouddocs@hp.com).

We appreciate your feedback!

