

# HP Propel

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CentOS

## Installation and Configuration Guide

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# Overview

HP Propel enables IT departments to offer their services in an online shopping experience, similar to what users experience today at popular online retailers. Users may select from a variety of service providers, giving back IT a level of control over the computing environment while allowing their consumers to choose from a wide variety of sources.

This document provides information on how to install and configure HP Propel, which includes the HP Propel virtual machine (VM).

## Audience

The person who installs and configures HP Propel should have knowledge of or work with someone who has knowledge of the following:

- Working with VMware ESX Server 5
- Installing OVA packages
- Deploying VMs, including configuration and administration
- Configuring VM networking
- Configuring SSL certificates
- Executing Linux operating system commands with the Bash shell
- Using a text editor, such as `vi` or `vim`, to edit files

## Additional Information

Refer to the following guides for more information about HP Propel:

- HP Propel requirements: *HP Propel System and Software Support Matrix*
- HP Propel latest features and known issues: *HP Propel Release Notes*
- HP Propel system administration: *HP Propel Administration Guide*
- HP Propel Catalog Aggregation: *HP Propel Catalog Aggregation Help*
- HP Propel Marketplace Portal (MPP): *HP Propel Marketplace Portal Help*
- HP Propel troubleshooting tips: *HP Propel Troubleshooting Guide*
- HP Propel security considerations: *HP Propel Security Guide*

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## Before You Begin

HP Propel contains an OVA template that is imported into a VMware ESX server environment and instantiated as a VM.

The HP Propel OVA template contains HP Propel Marketplace Portal (MPP), HP Catalog Aggregation, HP Identity Manager, HP Micro Services (Knowledge Management and Ticket Management), and HP Propel Service Exchange components.

You will need to use the following (default) passwords to install HP Propel:

- Use "propel2014" as the root user password on the HP Propel VM.
- Use "propel2014" as the keystore password on the HP Propel VM.
- Default HP Propel user accounts passwords are provided in the *HP Propel Administration Guide*

You will need the following for end-point system integration and SSL certificates:

- If you are integrating HP Service Manager (HP SM) with HP Propel: the hostname, the root password, and the keystore password for the HP SM system.
- If you are integrating HP Cloud Service Automation (HP CSA) with HP Propel: the hostname, the root password, and the keystore password for the HP CSA system .

## Preparing Your ESX Server Environment

Before installing HP Propel, you need to make sure your VMware environment has enough resources to instantiate the VM template that is included in the HP Propel product. Refer to the *HP Propel System and Software Support Matrix* for all HP Propel requirements.



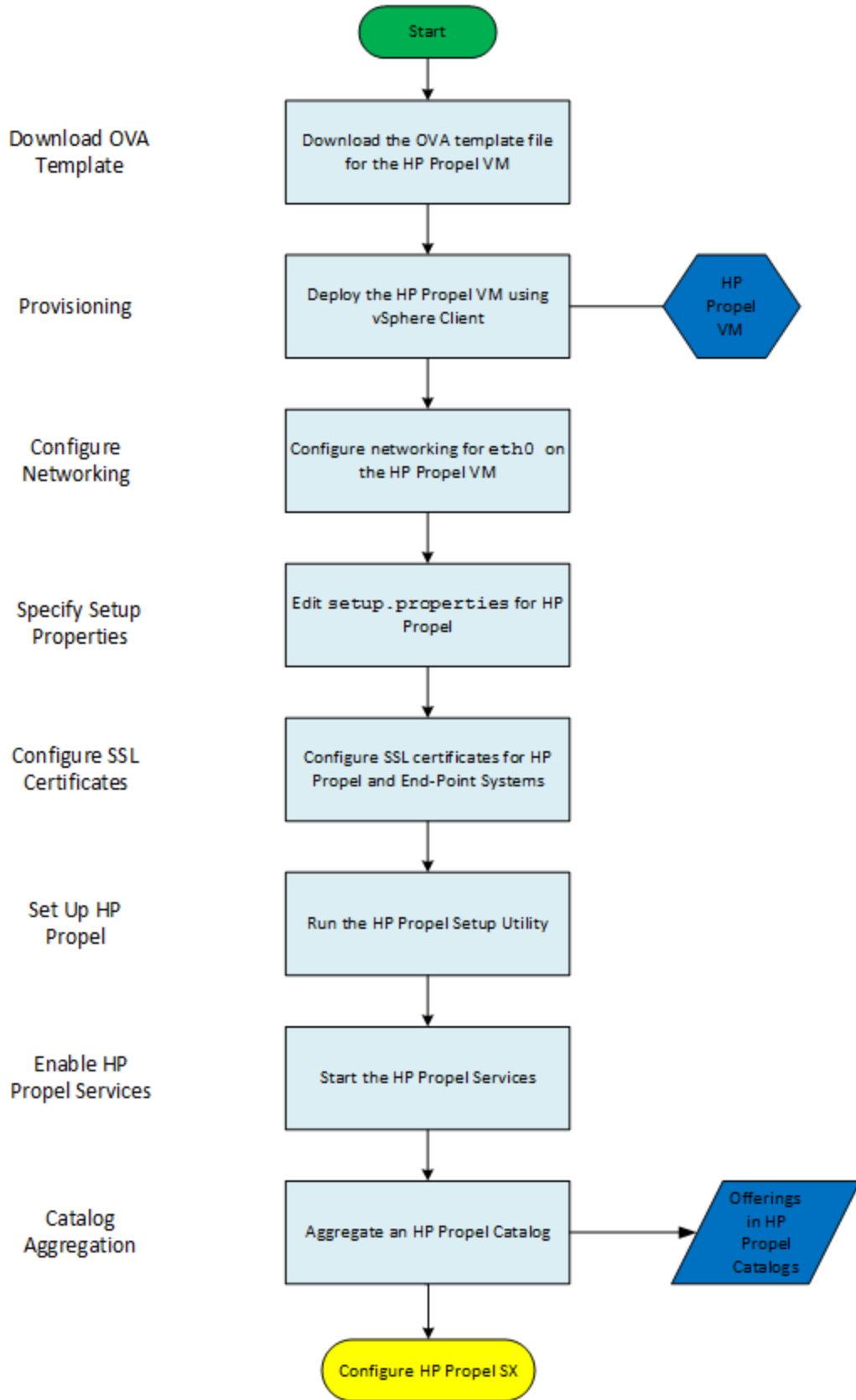
## Installation Overview

The general procedure to install HP Propel is:

1. From the HP Software Support website, download the HP Propel OVA template.
2. Using the VMware vSphere Client, deploy the HP Propel VM into the VMware ESX environment by importing the OVA template.
3. Using the VMware vSphere Client, configure the HP Propel VM network adapter.
4. Specify the HP Propel VM hostname and configure networking for eth0.
5. Edit the `setup.properties` file for your HP Propel environment and end-point systems.
6. Configure Secure Socket Layer (SSL) communication.
7. Run the HP Propel setup tool.
8. Start the HP Propel services.

The following figure shows the general HP Propel installation process.

### HP Propel Installation Procedure



# HP Propel Installation

**Tip:** To assist copying and pasting commands from these installation instructions into your HP Propel virtual machine's (VM) terminal window, set the \$PROPEL\_VM\_HOSTNAME environment variable to the HP Propel VM's fully qualified hostname. For example:

```
# export PROPEL_VM_HOSTNAME=mypropel.example.com
```

Where *mypropel.example.com* is the fully qualified hostname that you will use for your HP Propel VM. (This environment variable is temporary and needs to be set after rebooting the HP Propel VM.)

Perform the following steps to install HP Propel:

1. Download the HP Propel OVA template file from [HP Software Support](#).

**Tip:** To verify the GPG code signing of the OVA file, download the .sig file and the two HP public key files, then refer to the *HP Propel Administration Guide* for details.

2. On the ESX server, use the VMware vSphere Client to deploy the OVA image into the HP Propel virtual machine (VM):
  - Click **File->Deploy OVF Template...**
  - Select the HP Propel OVA file that you downloaded.
  - Specify a name and location for the HP Propel VM and deploy.
3. After the HP Propel VM has been deployed and is available, use the VMware vSphere Client to edit the VM properties. Click the **Getting Started** tab, and then click **Edit virtual machine settings**. Click **Network adapter 1** in the Virtual Machine Properties window, and change the network label to the network configured for the ESX server.
4. Power on the HP Propel VM.
5. Click the **Console** tab in the VMware vSphere Client, and log in to the HP Propel VM as `root`, using "propel2014" as the password.
6. Specify the HP Propel hostname and configure networking for `eth0` on the HP Propel VM. You can use the `/opt/hp/propel-install/configureNetwork.sh` utility to accomplish this. In the following example, DHCP is specified; however, you can also use the `--configurestatic` option to configure a static IP address for the HP Propel VM.

```
# cd /opt/hp/propel-install
# ./configureNetwork.sh --hostname $PROPEL_VM_HOSTNAME --configuredhcp
```

Where \$PROPEL\_VM\_HOSTNAME is the fully qualified hostname you specify for the HP Propel VM.

**Important:** The hostname of the HP Propel VM must contain only valid characters under DNS. Characters such as the underscore character ("\_"), which are used in resolution algorithms, and mixed-case hostnames cannot be used. For more information, refer to [RFC 1178](#) and [RFC 2872](#).

Reply "Y" to the prompt to configure networking and the prompt to reboot the VM.

7. Verify that you have a configured IP address on eth0 for the HP Propel VM. You can accomplish this with the `nslookup` and `ifconfig` commands. If the HP Propel VM does not have a configured IP address, take corrective action to resolve the problem.
8. On the HP Propel VM, edit the `setup.properties` file, entering your unique values for the end-point systems that need to be integrated with HP Propel. This file controls the setup process and is located in the `/opt/hp/propel-install` directory. It has the format of Java properties, supports comments (lines beginning with "#"), and allows simple property assignments. See the example below.

**Note:** The `setup.properties` file can contain only one instance of HP SM and HP CSA (end-point) systems. Any additional instances must be added into the relevant `instances.json` file. For details of adding additional instances, see "[Adding additional HP CSA instances](#)" on page 28 and "[Setting up HP SX to work with HP SM](#)" on page 33.

```
### LWSSO properties
sx.lwssDomain=
sx.lwssInitString=LWSSO_INIT_STRING

### whether certificates should be validated or not.
sx.skipCertificateValidation=false

### oo/properties.json
## Setting the mail properties is mandatory for proper sx functionality.
sx.smtpHost=localhost
sx.smtpPort=25
sx.smtpFrom=
sx.emailBcc=
sx.smtpUser=
sx.smtpPassword=

### sm/instances.json
## If HP Service Manager is used uncomment and set sx.sm properties
## accordingly.
```

```

# sx.sm.url=https://smHostname:13443/SM
# sx.sm.password
# sx.sm.user
# sx.sm.withProcessDesigner=false

### This is needed to configure KM
# km.url=http://XXX:8085
# km.attachUrl=http://XXX:13080
# km.user=falcon
# km.password=

### csa/instances.json
## If HP Cloud Service Automation is used uncomment and set sx.csa
## properties accordingly.
# sx.csa.url=https://csaHostname:8444/csa
# sx.csa.organization=
# sx.csa.password=
# sx.csa.user=

### infrastructure.json
## Don't change (uncomment) oo.* properties unless an external
## HP Operation Orchestration server is used
## Set your own credentials only if they have been changed in OO accordingly#
oo.endpoint=http://${hostname}:8080/oo
# oo.user=admin
# oo.password=changeit

## When using external rabbitmq-server change all rabbit.*
## properties accordingly.
## If local rabbitmq-server is used don't change rabbit.host value
## (credentials will be created during installation)
rabbit.host=localhost
rabbit.user=rabbit_sx
rabbit.password=propel2014

### default configuration for single OVA mode
## parameter value from installer will be used (--hostname).
## Do not change unless you know what you are doing.
sx.endpoint=https://${hostname}:8444/sx
consumption.endpoint=https://${hostname}:8444/consumption
idm.endpoint=https://${hostname}:8444/idm-service
idmAdmin.endpoint=https://${hostname}:9200
aggregation.endpoint=https://${hostname}:8444/aggregation
aggrAdmin.endpoint=https://${hostname}:9300
mpp.endpoint=https://${hostname}:8089
msvc.endpoint=https://${hostname}:9100

```

9. SSL configuration with HP Propel is mandatory. HP Propel does not support HTTP communication and must use HTTPS to communicate with end-point systems, such as HP Cloud Service Automation (HP CSA) and HP Service Manager (HP SM). You can use your own Certificate Authority-signed certificates or HP Propel's generated Certificate Authority-signed certificates. (For details of additional SSL considerations, refer to the *HP Propel Administration Guide*.)
  - a. There are three alternatives for configuring SSL for HP Propel. Choose one of the following methods:
    - Use the HP Propel utility that generates HP Propel CA-signed SSL certificates. This alternative is recommended if you do not have CA-signed certificates and you want to get HP Propel quickly operating. Continue with step 9b to use the automated utility.
    - Use existing CA-signed SSL certificates that you have. Perform the instructions in "[SSL Configuration Using Existing CA-Signed SSL Certificates](#)" on page 86, then continue with step 10 below.
    - Manually create and configure the SSL certificates. Perform the instructions in "[Manual SSL Configuration](#)" on page 88, then continue with step 10 below.
  - b. To configure HP Propel with SSL certificates that are generated by HP Propel, log in to the HP Propel VM as root, and run the following command from the `/opt/hp/propel-install` directory:

**Note:** The following `auto` option uses the HP CSA and HP SM URLs that are configured in the `setup.properties` file to retrieve the end-point systems' SSL certificates, and then import the end-point systems' SSL certificates into the HP Propel's truststore (`propel.truststore`).

```
# ./propel-ssl-setup.sh auto --hostname $PROPEL_VM_HOSTNAME [<CA_SUBJECT>]
```

Where `$PROPEL_VM_HOSTNAME` is the fully qualified HP Propel VM hostname and `CA_SUBJECT` is the optional CA subject. By default the string `/CN=Generated Propel CA` is used. If you specify the `CA_SUBJECT` option:

- The "CN" field must be present and in uppercase. The value for "CN" can be any string.
- This is the subject of your private HP Propel CA, not your HP Propel VM; it is not used for the hostname.
- All fields must be separated with a slash ("/").

**Tip:** You can specify the fully qualified hostname of the HP Propel VM in either of the following ways:

- Enter the hostname with the `--hostname` option with the `propel-ssl-setup.sh` utility.
- Manually replace all occurrences of `${hostname}` in the `setup.properties` file prior to running the `propel-ssl-setup.sh` utility.

10. On the HP Propel VM, navigate to the `/opt/hp/propel-install` directory and run the HP Propel setup utility as `root`:
  - *Optional and only for a standalone HP Propel Service Exchange installation:* to reduce the footprint of HP Propel and install only the standalone HP Propel Service Exchange product, run the following additional command:

```
# ./setup.sh sxonly
```

**CAUTION:** Use the `sxonly` option only for standalone HP Propel Service Exchange installations. This option eliminates unnecessary HP Propel features for HP Service Exchange-only customers, such as Catalog Aggregation and the HP Marketplace Portal.

- To install the HP Propel product:
 

```
# ./setup.sh install $PROPEL_VM_HOSTNAME
```

Where `$PROPEL_VM_HOSTNAME` is the fully qualified hostname you specify for the HP Propel VM.

**IMPORTANT:** This command is necessary for both the standalone HP Propel Service Exchange installation and the full HP Propel installation.

11. Start the HP Propel services:

```
# propel start
```

Congratulations, you have successfully installed HP Propel and configured the SSL certificates between HP Propel and an end-point system. You can now display the HP Propel Management Console by opening a browser window and entering the following URL:

```
https://$PROPEL_VM_HOSTNAME:8444/consumption  
(Use "admin" as the user and "cloud" as the password.)
```

To display the HP Propel Marketplace Portal, enter the following URL:

```
https://$PROPEL_VM_HOSTNAME:8089  
(Use "consumer" as the user and "cloud" as the password.)
```

**Tip:** If the HP Propel installation is unsuccessful and you need to repeat the installation, use the `/opt/hp/propel-install/setup.sh purge` command to remove the installed HP Propel software, including the Postgres databases.



## Next Steps

After you have successfully installed HP Propel, you must perform the following configuration tasks:

- Only if you are integrating HP Propel with an HP Cloud Service Automation (HP CSA) system, see "[SSL Configuration for HP CSA Integration](#)" on page 90 for details of importing the HP Propel certificate into the HP CSA system's truststore.
- Configure Catalog Aggregation and create a new catalog. For details, refer to the *HP Propel Catalog Aggregation Help*. (If required, you can change the default port number (13080) used for communication with HP Service Manager. Refer to the *HP Propel Administration Guide* for details.)
- Improve security with HP Propel by changing the default user accounts' passwords. Though this is an optional task, HP recommends that you change the default passwords. Refer to the *HP Propel Administration Guide* for details.
- *Optional*: If you have Knowledge Management documents that you need to load into HP Service Manager, refer to the *HP Propel Administration Guide* for details.

**Important:** The HP Propel Service Exchange must be configured. Continue to "[HP SX Configuration after VM install](#)" on page 18.

# HP SX Configuration after VM install

HP Propel Service Exchange (HP SX) is the component that brings the Propel experience together, integrating the portal, catalog, and back-end fulfilment engines to enable functional integration with multiple providers. HP SX features built-in content that exchanges service messages and orchestrates and dramatically simplifies the integration of new and existing products, services and solutions.

To run the complex tasks it is capable of, HP SX needs some configuration. This involves some or all of the following:

- Examine and edit the three configuration files that HP SX needs in order to run correctly, see ["HP SX Basic configuration"](#) for details.
- Add any additional HP SM or HP CSA instances you wish connected to HP Propel, see ["Adding additional HP CSA instances"](#), and ["Adding additional HP SM instances"](#).
- Add any HP SAW or JIRA instances you wish connected to HP Propel, see ["Connecting HP SAW to HP SX"](#) and ["Connecting JIRA to HP SX"](#).
- Set HP SX user roles and organizations to allow viewing of HP SX management and Testing UIs ["Setting User roles and Organizations"](#).
- Run HP SX Self-test to verify that components are configured and connected correctly. It alerts administrators to any problems connecting to essential components, or with out-dated versions of customized files. **Self-test** is located on the top level of the HP SX management UI, see ["Self-test HP SX configuration"](#) for details.
- If you are using HP CSA, check through ["Connecting HP CSA to HP SX"](#) for any necessary LDAP and Approval configuration required.
- If you are using HP SM, check for further configuration steps required both in your HP SM instance and in HP SX, see ["Connecting HP SM to HP SX"](#).
- If you want to enable Case Exchange (CX) functionality see ["Configuring Case Exchange"](#).
- View and manage HP SX content packs (["HP SX Content Management"](#)) and adapters (["HP SX Adapters"](#)).

**NOTE:** Throughout this guide, [%SX\_HOME%] is used as a shortcut for the path:  
/opt/hp/propel/jboss-as/standalone/deployments/sx.war/

# HP SX Basic configuration

There are a few basic configuration files that HP SX needs in order to start and run correctly:

- ["instances.json"](#)
- ["infrastructure.json"](#)
- ["sx.properties"](#)

## instances.json

Each adapter needs its own `instances.json` file. These files are located on a classpath in the `[%SX_HOME%] /WEB-INF/classes/config/{adapterType}/` directory. They contain connection information for the remote systems and how they will integrate with HP SX.

The structure varies for different system types. See the sections that cover the specific system's setup for details.

A few examples:

### CSA

```
{
  "CSA-instance": {
    "endpoint": "https://mpavm0011.wren4labs.adapps.wren4.com:8444/csa", //
url to remote system's API
    "user": { // login information
      "loginName": "admin",
      "password": "cloud"
    },
    "organization": "CSA_CONSUMER"
  }
}
```

### JIRA

```
{
  "JIRA-instance": {
    "endpoint": "http://mpavmint01.wren4labs.adapps.wren4.com:8080", //
url to remote system's API
    "user": { // login information
      "loginName": "System.admin",
```

```

        "password": "noname"
    }
}
}
SAW
{
    "SAW-instance": {
        "endpoint": "https://wren4003sngx.saas.wren4.com", // url to remote
system's API
        "user": { // login information
            "loginName": "robin.friend@wren4.com",
            "password": "1Q2w3e4r5t6y"
        },
        "organization": "689570538"
    }
}

```

```

SM
{
    "SM-instance": {
        "endpoint": "http://mpavmsmapp05.wren4labs.adapps.wren4.com:13080/SM",
// url to remote system's API
        "user": { // login information
            "loginName": "falcon",
            "password": "changeit"
        },
        "withProcessDesigner": true, // has this instance Process Designer
extension installed or not?
        "useLwss0": true // should SX use Lightweight SSO to login to SM?
    }
}

```

## infrastructure.json

This file is located on a classpath in the config directory. It contains information about HP SX components like RabbitMQ and OO.

```

{
  "OO": { // Operation Orchestration connection information
    "endpoint": "http://localhost:8080/oo/rest",
    "loginName": "admin",
    "password": "changeit"
  },
  "JMS_BROKER": {
    "endpoint": "localhost",
    "loginName": "rabbit_sx",
    "password": "propel2014"
  },
  "REST": {
    "endpoint": "http://${env.HOSTNAME}:8080/sx/api/request",
    "operationEndpoint": "http://${env.HOSTNAME}:8080/sx/api/operation",
    "bundleCallbackEndpoint": "http://${env.HOSTNAME}:8080/sx/api/bundle",
    "csaNotificationEndpoint": "http://${env.HOSTNAME}:8080/sx/api/csa",
    "emailCallbackEndpoint": "http://${env.HOSTNAME}:8080/sx/api/email"
  },
  "SERVICE_CATALOG": {
    "catalogApprovalPageLink": "http://localhost:8080/sx/notifications.jsp",
    "requestCallbackEndpoint": "",
    "subscriptionCallbackEndpoint": "",
    "internalCallbackEndpoint": "http://localhost:8080/sx/api/catalog"
  },
  "AUTHENTICATION": {
    "secretKey": "cloud"
  }
}

```

## sx.properties

The `sx.properties` file contains configuration for the HP SX web application.

```
catalog.notificationUserOrganization=Provider
```

```
catalog.notificationUserPassword=ENC(B/vX8k7pZk1n2VxV2HaDiPesUUKF0hc3ZVLIAtGzG28\=)
```

```
catalog.notificationUser=sxCatalogTransportUser
catalog.notificationMaxEntries=50
db.dialect=org.hibernate.dialect.PostgreSQLDialect
db.driverClassName=org.postgresql.Driver
db.password=ENC(4w0oS736x0bjhMmJTCq87Q\=\=)
db.url=jdbc\:postgresql\://localhost\:5432/sx
db.username=sx
security.encryptedSigningKey=cloud
security.idmHostname=mpavmcsa05.hpswlab.s.adapps.hp.com
security.idmPort=8444
security.idmProtocol=https
security.idmTenant=CONSUMER
security.idmTransportUser=idmTransportUser
security.idmTransportUserPassword=ENC
(8ZHTqNTKpZn4+1bfFnkrPrRebZeUUu99yCXkT6N4DHQ\=)
skipCertificateValidation=true
sx.catalog.notifications.queue=CN
sx.content.oo.delete=true
sx.content.oo.init=checkVersion
sx.content.oo.upload=always
sx.dlx.delay.queue=DELAY
sx.dlx.exchange=sx.dlx
sx.dlx.fail.queue=FAIL
sx.dlx.redelivery.interval.ms=30000
sx.dlx.redelivery.max.count=5
sx.dlx.retry.queue=RETRY
sx.http.connectionTimeout = 600000
sx.mock.requests.queue=MOCK
sx.oo.configuration=oo/properties
sx.oo.invocations.queue=OO
sx.oo.callback.queue=OC
sx.queue.prefix=
```

```

sx.queue.main=SX
sx.storage.location=.
sx.url=http\://localhost\:8080/sx
sx.ticketing.maxAttachmentSize=50000000
sx.ticketing.forbidAttachmentExtensions=exe,bat,cmd,com
    
```

**Parameters for HP SX internal database configuration**

Property name	Description
db.dialect	Configuration of db connection. Dialect for SX db. Possible values are <a href="http://docs.jboss.org/hibernate/orm/3.5/javadocs/org/hibernate/dialect/package-summary.html">http://docs.jboss.org/hibernate/orm/3.5/javadocs/org/hibernate/dialect/package-summary.html</a>
db.driverClassName	Configuration of db connection. JDBC driver class name.
db.password	DB password in plain text.
db.url	JDBC db url. Key for IDM token validation.
db.username	Username of DB user.

**Parameters for HP SX security configuration**

Property name	Description
security.encryptedSigningKey	It will be encrypted at first start of SX.
security.idmHostname	Hostname part of IDM url.
security.idmPort	Port part of IDM url.
security.idmProtocol	Protocol part of IDM url.
security.idmTenant	Tenant user wants to log in.
security.idmTransportUser	Username of integration account for communicating with IDM.
security.idmTransportUserPassword	Password in plain text of integration account. It will be encrypted once SX starts.
skipCertificateValidation	Whether SX should validate ssl certificates.

**Parameters for HP SX internal configuration**

Property name	Description
---------------	-------------

sx.catalog.notifications.queue	Name of RabbitMQ queue for notifications.
sx.content.oo.delete	Tells if content management should delete content pack from OO during SX content pack deletion. Values are true or false.
sx.content.oo.init	<p>Defines strategy of checking if content packs in OO are up to date during SX start.</p> <ul style="list-style-type: none"> <li>• checkName - check if content pack with given name is already uploaded, no version check, if content pack with given name is not uploaded it uploads.</li> <li>• checkVersion - check for latest version, if OO contains obsolete or no version it uploads.</li> <li>• always - always upload new content pack.</li> <li>• never - never upload.</li> </ul>
sx.content.oo.upload	Defines strategy of checking if content packs are up to date in OO during SX content pack upload. Possible values are same as for sx.content.oo.init.
sx.dlx.delay.queue	See DLX Queues.XXXX
sx.dlx.exchange	Name of dlx exchange. See DLX Queues.XXXX
sx.dlx.fail.queue	See DLX QueuesXXXX.
sx.dlx.redelivery.interval.ms	Time after that will be failing message redelivered to SX. In ms.
sx.dlx.redelivery.max.count	Maximum count of retries.
sx.dlx.retry.queue	See DLX QueuesXXXX
sx.http.connectionTimeout	Connection timeout for HTTP connections. In ms.
sx.oo.configuration	Path to file with OO configuration.
sx.queue.prefix	Prefix that will be used in all queue names. Can be used for separation of multiple SX instances so that they use their own queues.
sx.queue.main	Main SX RabbitMQ queue.
sx.url	SX URL.
sx.ticketing.maxAttachmentSize	Maximum size for ticket attachments.
sx.ticketing.forbidAttachmentExtensions	Comma separated list of forbidden file extensions for ticket attachments.



## Self-test HP SX configuration

Use Self-test to check for correct configurations, connections and file version details.

From the HP SX administrator's UI, click **Self-test**. A script will run, checking the connections with:

- HP SX url
- HP IdM
- HP Propel catalog
- HP SM and HP CSA instances
- OO mappings
- AMQP configuration

For HP SM instances, Self-test also checks versions of all installed unload files, and lists them.  
Example results, including error:

**Check configuration: csa/instances.json**

Check instance CSAFTC : **OK**

**Check configuration: sx.properties**

Check security.idm% : **OK**

Check catalog.notification% : **OK**

Check sx.url : **OK**

**Check configuration: sm/instances.json**

-----SMFortCollins-----

Check instance SMFortCollins is accessible : **OK**

Check instance SMFortCollins - checking unload files ... :

Unload 'SXR2FCustomizations' in version '1.01.1' ... **OK**

Unload 'SXR2FDB' in version '1.01.1' ... **OK**

Unload 'SXR2FExtAccess' in version '1.01.2' ... **OK**

Unload 'SXTicketing' in version '1.01.2' ... **OK**

Unload 'SXCaseExchange' in version '1.01.1' ... **OK**

Unload 'SXBaseCustomizations' in version '1.01.1' ... **OK**

Unload 'SXBaseDB' in version '1.01.4' ... **OK**

Unload 'SXBaseExtAccess' in version '1.01.3' ... **OK**

Unload 'SXUnloadChecker' in version '1.01.1' ... **OK**

**Check configuration: operationMappings.json**

Check instance.targetInstance : **OK**

**Check AMQP configuration**

Check AMQP connection : **OK**

Check message listeners : **OK**

**Check configuration: oo/properties.json**

Check properties : **OK**

**Check configuration: infrastructure.json**

Check OO.endpoint : **OK**

Check REST.endpoint : **ERROR: Invalid credentials**

Check REST.operationEndpoint : **OK**

Check REST.csaNotificationEndpoint : **OK**

Check SERVICE\_CATALOG.requestCallbackEndpoint : **OK**

Check SERVICE\_CATALOG.subscriptionCallbackEndpoint : **OK**

Check SERVICE\_CATALOG.internalCallbackEndpoint : **OK**

NOTE: See the *HP Propel Troubleshooting Guide* for troubleshooting recommendations and tips for the entire HP Propel product.

## Connecting HP CSA to HP SX

- ["Adding additional HP CSA instances "](#) on page 28
- ["LDAP and Approval settings"](#) on page 29
- ["Configure HP CSA to use LDAP"](#) on page 30
- ["Configure HP CSA Approval settings"](#) on page 31

## Adding additional HP CSA instances

During install, the `installer.properties` file adds one HP CSA instance to the appropriate configuration JSON file. However, it is possible to connect any number of instances of HP CSA to HP SX. To add additional HP CSA instances the following file must be edited manually:

```
[%SX_HOME%] /WEB-INF/classes/config/csa/instances.json
```

Required fields: `endpoint`, `loginName` and `password`

Assuming `CSAEurope1` was added through the `installer.properties` file during install, add additional instances as in the `CSAEurope2` example below.

NOTE: Enter your unique instance names, URLs, loginNames and passwords in place of the values in italics in the `CSAEurope2` section below.

Example:

```
{
  "CSAEurope1": {
    "endpoint": "https://example1.com:8444/csa",
    "user": {
      "loginName": "johndoe",
      "password": "mypassword"
    },
    "organization": "CSA_CONSUMER"
  },
  "CSAEurope2": {
    "endpoint": "https://example2.com:8444/csa",
    "user": {
      "loginName": "janedoe",
      "password": "my2password"
    },
    "organization": "CSA_CONSUMER"
  }
}
```

**IMPORTANT:** For a specific module to use the correct instance, relevant configuration files must be edited to include the appropriate HP CSA instance names.

## LDAP and Approval settings

For HP CSA to integrate with HP SX, LDAP and Approval settings need to be configured. If these are already set, further action is not required. If not, see:

- ["Configure HP CSA to use LDAP" on page 30](#)
- ["Configure HP CSA Approval settings" on page 31](#)

## Configure HP CSA to use LDAP

1. Login to HP CSA.
2. Select **Organizations**.
3. Select **HP CSA Consumer**.
4. Select the **LDAP** section.
5. Fill in your LDAP server information and click **Save**.
6. Select the **Access Control** section.
7. Click **Add On**.
8. Fill in the AC Config and click **Update**.

## Configure HP CSA Approval settings

1. Login to CSA.
2. Select **Catalogs**.
3. Create a new catalog.
4. Go to the **Approval Policies** section of the new catalog.
5. Fill in **Name**, select a **Template** (ie. Named Approver Template) and add **Approver**.
6. Save the policy.

## Connecting HP SM to HP SX

- ["Setting up HP SX to work with HP SM" on page 33](#)
- ["Setting up HP SM to work with HP SX" on page 38](#)



## Setting up HP SX to work with HP SM

- ["Adding HP SM instances" below](#)
- ["Setting up HP SX to use LWSSO" on page 35](#)
- ["Configure for ticketing" on page 36](#)
- ["Configure Case Exchange" on page 37](#)

## Adding HP SM instances

During install, the `installer.properties` file adds one HP SM instance to the appropriate configuration JSON file. However, it is possible to connect any number of instances of HP SM to HP SX. To add additional HP SM instances the following file must be edited manually:

```
[%SX_HOME%] /WEB-INF/classes/config/sm/instances.json
```

Required fields: endpoint, loginName and password

### NOTE:

- In version 1.0 there was a 'db' section in this file for direct JDBC connection. This is no longer supported and needs to be removed from the configuration file.
- Instances of HP SM with Process Designer installed must have the `withProcessDesigner` parameter set to **true**.
- The example below uses the default port number that HP Propel uses to communicate with HP SM. If you changed the port number, specify yours in the endpoint address in place of *13080*.
- See ["Setting up HP SX to use LWSSO" on page 35](#) concerning the `"useLwss": true` line in the example.

Assuming *SMEurope1* was added through the `installer.properties` file during install, add any additional HP SM instances as in the *SMEurope2* example below. Replace the values in italics with your unique urls, names and passwords.

Example:

```
{
  "SMEurope1":{
    "endpoint":"http://sm1.example.com:13080/SM",
    "user": {
      "loginName": "johndoe",
      "password": ""
    },
    "withProcessDesigner": true
  },
  "SMEurope2":{
```

```
"endpoint": "http://sm2.example.com:13080/SM",  
"user": {  
  "loginName": "janedoe",  
  "password": ""  
},  
"useLwso": true  
}  
}
```

**IMPORTANT:** For a specific module to use the correct instance, relevant configuration files must be edited to include the appropriate HP SM instance names.

## Setting up HP SX to use LWSSO

The above example shows that HP SX is configured to access the SMEurope2 instance via LWSSO. Note that it is not necessary to supply the password in this case. However, to make the LWSSO communication work, it is necessary that the file `[sx.war]/WEB-INF/classes/config/lwssofmconf.xml` contains proper LWSSO configuration that matches the target HP SM instance. In particular:

- The domain element must contain the common domain for HP SX and the target HP SM instance.
- The `initString` attribute of the `crypto` element must contain the same passphrase as the HP SM instance.

## Configure for ticketing

Users of a particular organization are only able to manage tickets on systems configured for that organization.

For ticketing REST API to use a certain instance, edits need to be made to the following file:

```
[%SX_HOME%]/WEB-INF/classes/config/tenantInstanceMappings.json
```

In `tenantInstanceMappings.json`:

- The `backendSystemType` and `instanceName` field values have to be set in the file for each organization.
- The `DEFAULT` values need to be added for all users whose organization is not specifically defined elsewhere in the file.

Example:

```
{
  <ORGANIZATION_NAME>: {
    "backendSystemType": "SM",
    "instanceName": "SMInstance1"
  },
  "DEFAULT": {
    "backendSystemType": "SM",
    "instanceName": "SMInstance2"
  }
}
```

In this example, `SMInstance1` and `SMInstance2` need to be the unique names previously defined in `instances.json`, and used for identifying these HP SM instances in other configuration files.

## Configure Case Exchange

To set up Case Exchange functionality, there are a number of configuration steps necessary.

See "[Configure HP SX](#)" on page 76 for further details.

# Setting up HP SM to work with HP SX

HP SX requires the HP SM instances to have specific customizations applied in order to enable HP SX functionality.

- ["Import SX Unload scripts " below](#)
- ["HP SX Unload files" on page 39](#)
- ["Apply general unloads" on page 41](#)
- ["Manual configuration for Case Exchange" on page 42](#)
- ["HP SM Process Designer - additional manual configuration" on page 43](#)
- ["Apply R2F unload scripts" on page 45](#)
- ["Manual configuration - Approvals" on page 47](#)
- ["Manual configuration for Ticketing" on page 49](#)
- ["Import Certificates" on page 50](#)
- ["Create and apply new unload files" on page 52](#)
- ["Using Self-test to check unload versions " on page 54](#)

## Import SX Unload scripts

Necessary customizations of HP SM are performed by HP SM unload files. To import unload files into HP SM:

1. In your HP SM instance, go to **System Administration > Ongoing Maintenance > Unload Manager > Apply Unload**.
2. Select the Unload File: e.g. *{path-to-unload-file}*
3. Select **Backup To**: e.g. *{path-to-unload-file}.backup*
4. Click **Next**.

If there is a conflict with an entry, double-click that entry to see details, and look at ["Manual configuration for Case Exchange" on page 42](#) to understand what customizations each HP SM unload pack contains. Consider checking all the changes made by the unload scripts to verify your HP SM configuration is correct.

## HP SX Unload files

The following unload files contain fundamental HP SM customizations that are needed for HP SX to integrate with your HP SM instance.

### **SXBaseDB.unl**

**Description:** The triggers in the following entities:

- **cm3r (changes)**
- **subscription**
  - SX.subscription.delete
- **incidents**
  - SX.incidents.after.add
  - SX.incidents.after.update
  - SX.incidents.after.delete

...use the included scripts:

- SX\_EntityChangeV2
- SX\_SubscriptionDelete

...to write the triggered changes into these newly created tables:

- SxEntityChangesV2
- SxRegisteredEntitiesV2

### **SXBaseExtAccess.unl**

**Description:** Provides remote interfaces (SOAP/REST) for the following tables:

- Change detection (see SXBaseDB.unl) - SxEntityChanges (read changes from SxEntityChangesV2 table), SxRegisteredEntities (write into SxRegisteredEntitiesV2 table when its necessary to be informed about changes in SM. These are then written into the SxEntityChangesV2 table.)
- Other functionality that is shared for Quotes, Changes and Ticketing features - for example, providing remote access to the following HP SM objects for HP SX: Relation (screlation), Cart Item (svcCartItem), Interaction (incidents), svcCatalog, Approval, operator and Attachment (SYSATTACHMENTS.)

## SXTicketing.unl

**Description:** Changes for Ticketing feature. Customizes SOAP/REST interfaces:

- **SXGlobalLists** - provides access (add, delete, save) to globallists for HP SX.
- **SXActivityServiceMgt** - provides access (add) to activityservicemgt HP SM item for HP SX - exposes Activity Lines in Interaction Items. It is used for storing comments in Tickets.
- **SXTicketInteraction** - provides remote access to Interaction (incidents) HP SM items for HP SX - this is a duplicate of SXInteraction remote interface (with a line added to Expressions tab: \$G.ess=true.) This is needed ONLY to escalate Tickets in HP SM.

## SXCaseExchange.unl

**Description:** Changes for Case Exchange feature support: adding rest endpoints and table triggers.

- Adds new REST endpoint SX/SXCE\_Incident - providing remote access to probsummary SM object for SX.
- Adds new REST endpoint SX/SXCE\_IncidentActivity - providing remote access to activity SM object for SX.
- Adds triggers for tables:
  - **probsummary** - writes **Incident** changes into SxEntityChangesV2 table (see SXBaseDB.unl.)
  - **activity** - writes **Activity** changes into SxEntityChangesV2 table (see SXBaseDB.unl.)

## SXPDCaseExchange.unl

**Description:** Triggers and APIs Task supporting Task case exchange use case. This unload script is intended exclusively for HP SM with Process Designer. Note that both this file and SXCaseExchange.unl are mandatory for HP SM with Process Designer.

## SXExtRefTable.unl

**Description** Adds *ExternalReferences* table. Necessary only in HP SM 9.33 and older. For newer versions of HP SM, the table is present out of the box.



## Apply general unloads

Apply the following general unload files. Their locations are relative to the `/opt/hp/propel/jboss-as/standalone/deployments/sx.war/contentStorage` path:

- `./sx-base/sm/SXBaseDB.unl`
- `./sx-base/sm/SXBaseExtAccess.unl`
- `./sx-base/sm/SXUnloadChecker.unl`
  
- `./sm-ticketing/sm/SXTicketing.unl`
  
- `./case-exchange/sm/SXCaseExchange.unl`
- `./case-exchange/sm/SXExtRefTable.unl` – **Only for HP SM 9.33 and older**
- `./case-exchange/sm/SXPDCaseExchange.unl` – **Only for HP SM with Process Designer**

## Manual configuration for Case Exchange

Add **Add** activity privileges to the user account HP SX will use:

1. Go to **Tailoring > Format Control**.
  - a. In the **Name** field add the string `activity` and click **Search**. The activity unload file contents will load.
  - b. Open the tab (click the button) **Privileges**.
2. Change "false" to "true" for operation **Add**.
3. Click **Save**.

## HP SM Process Designer - additional manual configuration

### **Configuration for Ticketing** (for HP SM with Process Designer only)

Remove the `$G.ess=true` line from the Expressions tab of SXTicketInteraction Web Service:

1. Go to **Tailoring > Web Services > Web Service Configuration**
  - a. In the **Object Name** field add the string "SXTicketInteraction" and click **Search**. The SXTicketInteraction settings will load.
  - b. Open the tab (click the button) **Expressions**.
2. Remove the string `$G.ess=true`.
3. Click **Save**.

### **Configuration for Change R2F** (for HP SM with Process Designer only)

1. Login to your web client.
2. Go to **Change Management > Configuration > Change Workflows**.
3. Select **Subscription** from the list.
4. Remove the second phase from the diagram.
5. Connect the first and third phases by relation.
6. Click to the new relation.
7. Fill the Command Name with "nextphase".

NOTE: Be careful not to remove anything beyond this.

The result of this step should look like this:

To Do Queue: My To Do List | Workflows ✕ | Workflow: Subscription ✕

Save | Zoom in | Zoom out | Add phase | Delete | Workflow properties



## Apply R2F unload scripts

Apply the following request-to-fulfillment (R2F) unload scripts. Their locations are relative to the /opt/hp/propel/jboss-as/standalone/deployments/sx.war/contentStorage path:

- ./sm-r2f/sm/SXR2F940ExtAccess.unl – **Only for HP SM 9.40**
- ./sm-r2f/sm/SXR2FDB.unl
- ./sm-r2f/sm/SXR2FExtAccess.unl

## Manual configuration

### 1. Customize the approval process/lifecycle of Quotes

1. Go to **Request Management > Quotes > Quote Categories**, click **Search** and select the **Customer** record.
2. Click the first phase box (**Front Line Management Approval**) and remove 'Financial Approval' on the **Approvals** tab. Click **OK**. If the tab "Select Event For New Phase" opens, click the **Back** button.
3. Click the last phase (**Customer Approves Delivery of Item**) and remove 'Manager Approval' on the **Approvals** tab. Click **OK**. If the tab "Select Event For New Phase" opens, click the **Back** button.

### 2. Rebuild the "Extaccess Actions" Global List

NOTE: Use the HP SM client directly.

1. Go to **System Definition > Tables > globallist** and open it.
2. Click **View all records in the table**.
3. Select the line **Extaccess Actions**.
4. Mouse right click anywhere in the bottom part of the screen (the Item View panel), and select **Rebuild Global List**.
5. Click **Save**.

### 3. Modify the DEFAULT profile

NOTE: This step will not work if you have Process Designer installed.

1. Go to **System Administration > Ongoing Maintenance > Profiles > Service Desk Profiles** (Request Management Profiles on SM with PD.)
2. Click **Search** and select the **DEFAULT** profile.

3. Check the **Close** check-box.
4. Click **Save**.

## Manual configuration – Approvals

**NOTE:** The following configuration is **not needed** if the HP SM instance is accessed via LWSSO.

### Modify Change and Request profiles used by your Approvers

1. Login as Admin.
2. Go to **System Administration > Ongoing Maintenance > Operators**.
3. Enter the login name and click **Search**.
4. Click the magnifying glass icon beside **Change Profile**.
5. Select the **Approvals/Groups** tab.
6. Check **Can Delegate Approvals**.
7. Click **OK**.
8. Click the magnifying glass icon beside **Request Profile**.
9. Change to **Alert/Approval** tab.
10. Check **Delegate Approvals**.
11. Click **OK**.
12. Select the **Startup** tab.
13. Change the parameter values in the first table in this way:
  1. name = MAIN MENU
  2. prompt =
  3. string1 = HOME
14. Click **OK**.

### Delegate Change approving

**NOTE:** This step is only necessary if you have Process Designer installed.

1. Go to **System Administration > Operators**.
2. Fill **Login Name**: as "joe.manager", and click **Search**.
3. Add the "change approver" **Security Role** to joe.manager.

4. Click **Save**.
5. Go to **System Administration > Security > Roles**.
6. Select the change approver and click **Search**
7. Click the **Change** row.
8. Check **Can Delegate Approvals** under **Settings**.
9. Click **Save**.

## Setup approval delegation for each Approver

1. Login as the Approver.
2. Go to **Miscellaneous > Approval Delegation**.
3. Click **Add New Delegation**.
4. Select **Delegate Selected Approvals**.
5. Click **Next**.
6. Select the module **Request Management**.
7. Click **Next**.
8. Move "jane.doe" to the right column.
9. Click **Next**.
10. Delegate to: johndoe. Fill in the Start and End dates.
11. Click **Next**.
12. Click **Finish**.
13. Repeat for the the **Change Management** module.



## Manual configuration for Ticketing

**NOTE:** This is only necessary for Process Designer-enabled HP SM.

1. Login as Admin.
2. Go to **Tailoring > Tailoring Tools > Display Options**.
3. Enter `db.view_add` into the **Unique ID** field.
4. Change the condition from  

```
evaluate(add in $L.env) and filename($L.filed)~="dbdict" and  
nullsub($L.io.cond.flag, true)
```

to  

```
(evaluate(add in $L.env) or evaluate(new in $L.env)) and  
filename($L.filed)~="dbdict" and nullsub($L.io.cond.flag, true)
```
5. Click **Save**.

# Import Certificates

## On the HP SX Machine

1. Download the HP SM certificate, for example by using the following command:

```
openssl s_client -connect sm_host:8443 </dev/null | sed -ne '/-BEGIN
CERTIFICATE-/,/-END CERTIFICATE-/p' >sm.crt
```

2. `keytool --import -file sm.crt -keystore /usr/lib/jvm/java-1.7.0-openjdk-1.7.0.55.x86_64/jre/lib/security/cacerts -alias sm_host`
3. Enter the password *changeit*.
4. Enter *yes*.

## Setup LDAP

When LDAP has been configured in HP SM:

1. Identify the operator template used, by:
  - Go to **System Administration > Base System Configuration > Miscellaneous > System Information Record**, and note the **Operator Template** field. Follow this method if you used the second approach from the *LDAP Configuration Guide*.
  - Otherwise, go to **System Administration > Ongoing Maintenance > Operators** and search for the operator template, for example in LDAP.template or Operator.General

If there is a value for **Contact ID**, remove it.

2. For non-Process Designer installations: add **Change manager** to the **Change Profiles**.  
For Process Designer-enabled installations: add **Change manager** to the **Security Roles**.
3. Switch to the **Startup** tab.
4. Into **Execute Capabilities** add **SOAP API** and **RESTful API**.
5. Click **Save**.

**Temporarily, for every LDAP user perform the following:**

1. Login into HP SM.
2. Logout.
3. Login as Admin.
4. Go to **System Administration > Ongoing Maintenance > Operators** and find your user.
5. Click **Create Contact**.

6. Select a contact to clone.
7. Click **Finish**.

## Create and apply new unload files

To enable HP SX to communicate with your HP SM instance, you may need to customize the out-of-the-box unload files, or create new ones.

If you develop your own HP SX content and make modifications to your HP SM instance, you will need to export these modifications into your own new unload file, or create a new version of an unload file. Using unload files enables you to backup changes and transfer them to other HP SM instances.

NOTE: After creating a new unload file, edit and then run **Self-test** to check that you have all the latest versions of files installed, see "[Using Self-test to check unload versions](#) " on page 54.

### Creating unloads in HP SM Unload manager

1. In **System Administration > Ongoing maintenance > Unload manager** select **Create Unload**.
  - **Defect ID** - Use this field to hold the version of the unload file. Versions must be unique and follow this format: `<unl_file_name>_<version>`. For example: `SXBaseCustomizations_1.01.1`.
  - **Summary** - Enter a name for the unload file, without file extension.
  - **Apps version** and **Hotfix type** are not currently used. *SM9.30* and *Official* are chosen in the example below.

hotfix	
Defect ID:	SXTest_1.01.1
Summary:	SXTest
Apps Version:	SM9.30
Hotfix Version:	1.0
Hotfix type	Official

Object Type

NOTE: the unload object does not need to be in the unload when using Unload manager.

2. Click **Add**.
3. The unload is created. The next step is to export it into a file. Click **Proceed**.

4. Export the unload to a file with the same value as entered in **Summary**.

**HP SERVICE MANAGER UNLOAD**  
This feature exports information from the unload script to an external file.

---

---

Append to File

When loading records into an existing dbdict

Use existing dbdict  
 Use dbdict of loaded record (replace old dbdict)

---

When loading records

Add new records and update existing records  
 Add new records only

5. Click **Proceed** and your new unload file is complete.

## Apply unload in HP SM Unload manager

In **System Administration > Ongoing maintenance > Unload manager** select **Apply Unload** and follow the wizard instructions. After you finish you will see your unload with its version under **View Unload**.

NOTE: The table of applied unloads under **View Unload** is not updated automatically. Close and then reopen Unload manager to view your new unload.

## Creating and updating version numbers

After implementing a change you may want to create a new version number for your unload.

To do so:

1. Double click your unload in **Unload manager > View Unload**.
2. Increment the version in the **Defect ID** field.
3. Export the unload into a file, see Step 4 above.
4. Apply the unload, see ["Apply general unloads" on page 41](#).

## Using Self-test to check unload versions

As well as checking for correct connections and configurations, HP SX Self-test checks the current versions of unload files, listing them in the output file. For this to happen, `SXUnloadChecker.unl` must be applied, and `metadata.json` edited to include all current unload file versions.

Before using the SX Self-test to check versions:

1. Apply `SXUnloadChecker.unl` to your HP SM instance.
2. Edit your `metadata.json` file, specifying any new unload files, and any new version numbers of unload files.

For example:

```
{
  "id": "sx-base"
  "name": "Service Exchange base content",
  "description": "",
  "version": "1.0.0",
  "adapter": "SX",
  "features": [
  ],
  "files": [
    {
      "path": "sm/SXBaseDB.unl",
      "version": "1.01.1",
      "type": "sm_unload"
    },
    {
      "path": "sm/SXBaseExtAccess.unl",
      "version": "1.01.1",
      "type": "sm_unload"
    }
  ]
}
```

3. Run the HP SX Self-test, see ["Self-test HP SX configuration" on page 25](#).
4. Verify that the versions of unload files listed are your latest.

## Connecting HP SAW to HP SX

This topic describes the steps required to have an HP SAW instance participate in HP SX Case Exchange.

NOTE: Any HP SAW instance to be integrated into HP Propel needs to be added to the `sx.war/WEB-INF/classes/config/saw/instances.json` file.

The settings required are outlined in the **instances.json** section of "[HP SX Basic configuration](#)".

## HP SAW Setup for Case Exchange

First it is necessary to add a definition of an External System into HP SAW. The name of this External System is the name that will be used to identify the HP SAW system in the necessary HP SX CX configuration (`external-systems.json`). Second, the defined External System must be added to a Group that has the integration account assigned as the Authorized user.

Follow these steps:

1. In the HP SAW UI, from the **Administration** menu select **Administration > Integration Management**.
2. Open the **External Systems** tab.
3. Click the **+Add** button. Choose a name and enter it as the System ID, for example `<YOUR_SYSTEM_ALIAS>`. Set your desired Authorized user.
4. Open the **Administration** menu again, select **Administration > People**.
5. Open the **Groups** tab.
6. Click the **+ New** button and enter the following in the appropriate fields:
  - **Name:** `<YOUR_GROUP_NAME>`. Enter any value for your group name.
  - **Upn:** `<YOUR_GROUP_UPN_NAME>`. Enter any value for your group Upn.
  - **External system:** `<YOUR_SYSTEM_ALIAS>`. IMPORTANT: This is used when sending incidents from HP SAW to HP SM and so must match the system ID you chose in Step 3.
  - **Authorized user:** Enter the integration user set in the `instances.json` file.

## How to connect two HP SAW systems

In this section the previous procedure is described again, but this time for two systems called *sawA* and *sawB*, to demonstrate how to set up two HP SAW systems to work with HP SX.

**IMPORTANT: All names in these examples are just for example purposes. In your configurations they must be the unique names you choose and define.**

Add connections for both HP SAW systems to HP SX in:

```
sx.war/WEB-INF/classes/config/saw/instances.json
```

1. Add the endpoint.
2. Add the integration user.
3. Enter the correct **Organization**. You can find it in the HP SAW UI:
  - From the menu in the top right corner select **About > Tenant Id**.
4. Enter the default **Service**, as a number. You can find this in the HP SAW UI by following these steps:
  - Open an incident.
  - Click to view the Service list.
  - Choose any service from the list.
  - Make a note of the Column Id number.
5. Enter the default **Category**, as a number. You can find it in the HP SAW UI by following these steps:
  - Open an incident.
  - Open the browser developer console (click F12.)
  - Start a network log in the developer console.
  - Click the category list in the HP SAW UI.
  - Look at the REST request body in the developer console - the category IDs will be there in JSON format.
  - Choose a category ID.

**WARNING:** Organization, Service and Category have different IDs in different HP SAW instances, even though the names are the same.

Example:



```

{
  "sawA":{
    "endpoint":"https://sawA.saas.hp.com",
    "user":{
      "loginName":"user.XXX@hp.com",
      "password":"12345"
    },
    "organization":"689550538",
    "defaultRegisteredForActualService":"21219",
    "defaultCategory":"20719"
  },
  "sawB":{
    "endpoint":"https://sawB.saas.hp.com",
    "user":{
      "loginName":"user.YYY@hp.com",
      "password":"12345"
    },
    "organization":"698114386",
    "defaultRegisteredForActualService":"21200",
    "defaultCategory":"20583"
  }
}

```

### Configure CX for both HP SAWs:

sw.war/WEB-INF/classes/config/caseexchange/external-systems.json

Example:

```

{
  "externalSystems": [
    {
      "instanceType": "SAW",
      "instance": "sawA",
      "registeredEventGroups": [
        "IncidentCaseExchangeEvents"
      ]
    },
    {
      "instanceType": "SAW",
      "instance": "sawB",
      "registeredEventGroups": [
        "IncidentCaseExchangeEvents"
      ]
    }
  ],
  "externalSystemAliases": [
    {
      "sourceInstanceType": "SAW",

```

```

        "sourceInstance": "sawA",
        "targetInstanceType": "SAW",
        "targetInstance": "sawB",
        "targetAlias": "sawB"
    },
    {
        "sourceInstanceType": "SAW",
        "sourceInstance": "sawB",
        "targetInstanceType": "SAW",
        "targetInstance": "sawA",
        "targetAlias": "sawA"
    }
]
}

```

### Configuration in sawA

1. In the HP SAW UI, from the top pop-up menu go to **Administration > Integration Management**.
2. Go to the **External Systems** tab.
3. Click the **+Add** button, enter *sawB* as System ID, and set your desired Authorized user (for example, *user.XXX@hp.com.*)
4. From the same menu, go to **Administration > People**.
5. Go to the **Groups** tab.
6. Click the **+ New** button and set the following in the dialog:
  - **Name:** *<sawB group>*. Enter any value for your group name.
  - **Upn:** *<sawB\_group>*. Enter any value for your group Upn.
  - **External system:** *sawB* IMPORTANT: This is used when sending incidents from sawA to sawB and must match the system ID given in Step 3.
  - **Authorized user:** This must be the integration user (*user.XXX@hp.com.*)

**IMPORTANT:** Check that the integration user (*user.XXX@hp.com*) has the **Tenant Admin Role**.

### Configuration in sawB

1. In the HP SAW UI, from the top pop-up menu go to **Administration > Integration Management**.
2. Go to the **External Systems** tab.

3. Click the **+Add** button, enter *sawA* as System ID, and set your desired Authorized user (*user.YYY@hp.com*).
4. From the same menu, go to **Administration > People**.
5. Go to the **Groups** tab.
6. Click the **+ New** button and set the following in the dialog:
  - **Name:** *<sawA group>*. Enter any value for your group name.
  - **Upn:** *<sawA\_group>*. Enter any value for your group Upn.
  - **External system:** *sawA* IMPORTANT: This is used when sending incidents from *sawB* to *sawA* and must match the system ID given in Step 3.
  - **Authorized user:** This must be an integration user (*user.YYY@hp.com*).

**IMPORTANT:** Check that the integration user (*user.YYY@hp.com*) has the **Tenant Admin Role**.

# Connecting JIRA to HP SX

## JIRA ticket management setup

In order to use a JIRA server for ticket management in HP SX, you need to add a JIRA instance to `config/jira/instances.json`, and then register it in `config/tenantInstanceMappings.json`.

Here is an example of the `instances.json` file with a JIRA instance added:

```
{
  "exampleJira": {
    "endpoint": "http://jira.example.com:8080",
    "user": {
      "loginName": "adminUser",
      "password": "secret"
    }
  }
}
```

Now the JIRA instance needs to be registered in the `tenantInstanceMappings.json` file in

`[%SX_HOME%]/WEB-INF/classes/config/tenantInstanceMappings.json`.

In the file, provide the configuration according to your desired behavior.

Example:

```
{
  <ORGANIZATION_NAME>: {
    "backendSystemType": "JIRA",
    "instanceName": "exampleJira"
  },
  "DEFAULT": {
    "backendSystemType": "SM",
    "instanceName": "SMInstance2"
  }
}
```

**IMPORTANT:** As demonstrated in this example with *exampleJira*, the **instanceName** entered in `tenantInstanceMappings.json` must be the unique name previously defined in `instances.json` and used for identifying the JIRA instance in other configuration files.

### Further requirements:

- The user in the instance configuration must be the user under whom HP SX performs all actions, so it must have sufficient rights in all projects.
- The **content-jira** content pack must be loaded.

## Enabling JIRA adapter and content

To use JIRA with HP SX you need to install the JIRA adapter and upload the JIRA content pack to HP SX.

### Install the adapter:

1. Stop jboss (/etc/init.d/jboss-as stop)
2. Copy the `sx-adapter-jira-version.jar` to `sx.war/WEB-INF/lib`. This is usually in `/opt/hp/propel/jboss-as/standalone/deployments/sx.war/WEB-INF/lib/`.
3. Edit or create `jira/instances.json` (see above.)
4. Start jboss (/etc/init.d/jboss-as start).

### Upload the content pack:

1. Download the content pack for JIRA locally.
2. Open SX UI (<https://hostname:8444/sx/>)
3. Go to **Content Management**.
4. Click **Upload**.
5. Select the downloaded content pack file (step 1.)

# Setting User roles and Organizations

HP SX has both some management pages and a Testing UI. The management pages include the Content Management UI, the Testing UI includes for example the order wizard.

The two UIs have a similar configuration but the Testing UI is shipped separately as a part of the SDK package. See the HP SX SDK package documentation for details on how to install it.

These UIs are only accessible by users having certain roles. The roles recognized by HP SX are described below.

The roles valid for the HP SX **management pages** are:

- ADMINISTRATOR – An administrative User.
- CONSUMPTION – Used for the transport User and shared with the consumption component.

The roles valid for the HP SX **testing UI** are:

- ADMINISTRATOR – An administrative User.
- UI – The role used for development and testing.

A user needs to be assigned an ADMINISTRATOR or UI role to access any of the HP SX UI pages.

To assign or change HP SX user roles, see ["Role association" on page 63](#).

## Role association

Users are associated with roles in the `users.json` configuration file, located at `[%SX_HOME%]/WEB-INF/config/users.json`

A simple example configuration:

```
{
  "Provider": {
    "sxCatalogTransportUser": {
      "roles": [
        "CONSUMPTION"
      ]
    },
    "admin": {
      "roles": [
        "ADMINISTRATOR"
      ]
    }
  }
}
```

The file structure reflects the organization structure. In this example the Provider is at the top level, with two users with their roles underneath. A user name can also be `*` which means all users within the organization will have the same roles. When multiple entries match a user all their roles are merged together.

A more complex example:

```
{
  "CONSUMER": {
    "admin": {
      "roles": [
        "ADMINISTRATOR"
      ]
    },
    "*": {
      "roles": [
        "UI"
      ]
    }
  },
  "Provider": {
    "sxCatalogTransportUser": {
      "roles": [
        "CONSUMPTION"
      ]
    }
  }
}
```

In this example all the users of the CONSUMER organization have access to the testing UI for creating orders, and the admin user also has access to the administration section.



## Selecting the Organization

When a user tries to access the HP SX UI using `http://sx_host:8444/sx` they need to log in, but are unable to select an organization as only one organization can be specified in the HP SX configuration.

To change the default organization:

- Open the `sx.properties` file at `[%SX_HOME%]/WEB-INF/sx.properties`
- Change the `security.idmTenant` property to match your organization name.

# HP SX Content Management

Content packs are the key customization components in HP SX. They contain the high level process definition modeled in HP Operation Orchestration flows (OO flows), and definitions of backend system interactions (operations). They provide business logic to the specific adapter. For example the approval process of an order is modeled in OO Flow. The create order, approve operations etc. must be defined.

OO Flow implementation and the operations that have to be defined depend on the specific features that the content pack supports.

The operations are defined in a special HP SX JSON notation that is interpreted by a component of the adapter called operation executor. The operations typically define a set of calls to backend systems' APIs. These calls (steps of the operation) are executed sequentially. The operation definition framework uses Freemarker templates to compose URLs, request bodies, transform responses and other actions. The Freemarker templates are also a part of the content packs.

Content packs can be deployed into HP SX at runtime.

Technically a content pack is a zipped file containing operation definitions, Freemarker templates, OO flows and optionally other configuration files. HP SX offers out-of-the-box functionality through content packs that can be used as-is or customized. The HP SX Content Management UI provides an easy interface to view, download, upload and remove available content packs. Access to this UI is limited to users with the appropriate user roles, see ["Setting User roles and Organizations" on page 62](#).

Upload and removal operations include the automatic upload or removal of relevant OO jar files, and the merging of HP SX customizations into the running HP SX server.

See ["Content Packs and their contents"](#) for the OOB content packs contained in this release, and the *HP Propel Service Exchange SDK* for details on how to customize a content pack or create a new one.

# Using the Content Management UI

1. Click the Content Management link from the HP SX UI.
2. In the Content Management UI, view the available content packs and their details:
  - Version numbers
  - Which adapter they connect to
  - When last uploaded
  - Their high level features
  - The relevant OO content pack name.

Example section of the Content Management UI:



## Content Management



<b>Id/Name</b>	<b>Version</b>	<b>Adapter</b>	<b>Upload Time</b>	<b>Features</b>
<input type="checkbox"/> csa-r2f	1.0.0	CSA	2014-10-02T09:18:39+0000	r2f, csa-r2f
CSA request to fullfilment				

## Downloading content packs

1. To download a content pack, check the appropriate content pack in the **Id/Name** column.
2. Click the **Download** button.
3. When prompted, **Save** the *<contentpack>.zip*. Depending on your browser settings, select the location through **Save As...** or copy the *<contentpack>.zip* from the **Downloads** folder to another location.
4. View and customize the files.

## Deleting content packs

To delete one or more content packs:

1. Check the appropriate content packs in the **Id/Name** column.
2. Click the **Delete** button.
3. A confirmation with the number of content packs deleted appears, below the buttons on the top of the Content Management UI.

## Uploading content packs

To upload a content pack:

1. Click the **Upload** button.
2. Locate the .zip or .jar to be uploaded, for example, the sm-case-exchange.jar containing a customized case-exchange.json file.
3. Select **Open**.
4. It takes a moment for the upload to process. When it is complete a confirmation appears below the buttons on the top of the Content Management UI and the Upload Time for the relevant content pack is updated.

NOTE: HP SX will automatically locate the appropriate content pack to upload to, it does not need to be selected or specified. The upload creates a new content pack, or if there is one with a matching ID already it replaces the existing one.

## Content Packs and their contents

HP SX contains the following out-of-the-box content packs:

- **sx-base** - the base content for HP SX. This content pack is required and cannot be removed.
- **saw-case-exchange** – the content pack providing files for HP SAW Case Exchange customizations.
- **csa-r2f** - the content pack providing files for HP CSA requests to fulfillment (r2f.)
- **sm-r2f** - the content pack providing files for HP SM requests to fulfillment.
- **sm-ticketing** - the content pack providing files for HP SM ticketing.
- **sm-case-exchange** - the content pack providing files for HP SX Case Exchange customizations.
- **sm-test-ui-support** - the content pack providing files for HP SM related functions of HP SX UI.
- **csa-test-ui-support** - the content pack providing files for HP CSA related functions of HP SX UI.
- **mock-r2f** - an empty content pack.
- **email-r2f** - files to enable Email requests to fulfillment of native offerings.
- **sm-problem** - SM problem demo content.

# HP SX Case Exchange (CX)

CX is a subsystem of HP SX, designed for exchanging entity data between two or more external systems. The aim is to have some entity data, for example Incidents, automatically synchronized between two different systems without the need for human intervention.

CX does all the work of data transformation including connecting systems of different types, for example HP SM and HP SAW. In addition, CX removes the need to setup the two systems to communicate directly with each other, which helps simplify the security and environment setup. Instead of having to provide an adapter for each possible system type pair combination, it is sufficient to implement CX between system A and HP SX, and system B and HP SX.

CX works in the following way:

1. A pairing between source and target system is defined.
2. The source system is observed for changes CX is interested in.
3. Once an interesting entity change is detected (Creation, Update, Status change), CX performs the following:
  - a. Retrieves any important entity data from the source system.
  - b. Transforms the entity data to the canonical model representation.
  - c. Changes the data of a connected entity on a target system in a way defined by the configuration

## Example:

There is an HP SM instance called SM03 and an HP SAW instance called SAW02.

To set up CX to clone any new Incident created on SM03 to SAW02 systems:

1. Create a CX pairing (XXXXsee External systems and entities pairing) between SM03 and SAW02, where SM03 is a source system and SAW02 is the target system.
2. Set up cloning of new incidents for the pairing. External systems and entities pairing

Once finished with the configuration, any new Incident created on SM03 is automatically cloned to SAW02.

When a new system type adapter (for example for Remedy) is being written, the adapter can be implemented to support Case Exchange, see the *HP Propel Service Exchange SDK* for details on how to do this.

When configured, Case Exchange can listen out for entity changes where an entity in one HP SM instance is referring to an entity in another HP SM instance. If a referring entity is changed in one HP SM instance, HP SX is notified and registers a listener for entity changes in the other (referred) HP SM instance.



**Examples of SX Case Exchange supported use cases:**

1. An administrator can configure SX to be notified:
  - if an entity of type {entityType} complying with filter condition {entityFilterExpr} in external system {instance} is created/updated/deleted
  - if an entity of type {entityType} with id {entityId} in external system {instance} is created/updated/deleted.
2. An administrator can configure SX to be notified about an entity change in an external system then:
  - execute a custom OO flow
  - execute a custom SX operation.
3. OO flows can call custom (Case Exchange specific) SX operations to:
  - register/unregister new entity change listener in external systems
  - store mapping from entity {instanceTypeA}:{instanceA}:{entityTypeA}:{entityIdA} to {instanceTypeB}:{instanceB}:{entityTypeB}:{entityIdB}
  - remove mapping from/to entity {instanceType}:{instance}:{entityType}:{entityId}

# Configuring Case Exchange

This requires two procedures:

- ["Configure HP SM" on page 75](#)
- ["Configure HP SX" on page 76](#)

# Configure HP SM

## 1. Apply unload script SXCaseExchange.unl

Find the SXCaseExchange.unl unload script inside the sm-case-exchange content pack.

To apply the SXCaseExchange.unl script into each of your HP SM instances, follow these steps:

1. Go to **System Administration > Ongoing Maintenance > Unload Manager > Apply Unload**.
2. Select **SXCaseExchange.unl**.
3. Select **Backup To:** and enter or select a backup location.
4. Click **Next**.
5. If there is a conflict with an entry, double-click that entry and manually resolve the conflict based on the description of what the unload script should do.
6. Click **Next**.

The unload script contains the following customizations:

- Adds new REST endpoint SX/SXCE\_Incident
- Adds new REST endpoint SX/SXCE\_IncidentActivity
- Adds triggers for the following tables:
  - probsummary
  - activity

## 2. Configure Activity privileges

Add activity privileges:

1. Open the HP SM client.
2. Go to **Tailoring > Format Control > <Name: activity> > Privileges**.
3. Change false to true for operation **Add**.
4. Click **Save**.

## Configure HP SX

To set up Case Exchange functionality, one or more entries have to be added to this file:

[content-sm-case-exchange]\src\main\resources\sm\case-exchange.json

### Configure case-exchange.json

1. Download the content pack sm-case-exchange.zip from sx/contentManagement.
2. Open the **sm** folder in the **sm-case-exchange** content pack.
3. Open the case-exchange.json file, and using the format used in the case-exchange.json.example file, replace *SMInstance1* with the name of your HP SM instance (SM-A) that contains referring entities.

**IMPORTANT:** Make sure that your HP SM instances have the same names as those entered in your HP SX instances.jsonfile.

For example:

```
{
  " SMInstance1" : {
    "registeredEntities" : [
      {
        "reason" : "referringEntity",
        "subReason" : "vendorIsSet",
        "entityType" : "probsummary",
        "entityFilterExpr" : "(RECORD['vendor'] != null && RECORD
['reference.no'] != null) || (ISUPDATE && OLDRECORD['vendor'] != null && OLDRECORD
['reference.no'] != null)"
      }
    ]
  },
}
```

Where SMInstance1 must be the name assigned to your HP SM instance in your instances.json file.

5. Add any additional HP SM instances (which contain referring entities) to the case-exchange.json file, using a comma to separate each instance. Use the example format in the case-exchange.json.example file.
6. Save and close the case-exchange.json file.
7. Upload the updated sm-case-exchange.zip back to HP SX through the Content Management UI, for details see ["Uploading content packs" on page 70](#).
8. When the upload is finished HP SX will automatically register all entity change listeners defined in case-exchange.json

### Contents of case-exchange.json

The content of the `case-exchange.json` configuration file above defines that HP SX is interested in entity changes occurring in HP SM instance `SMIInstance1`:

- where the changed (create/update/delete) entities are of type "probSummary" (Incidents)
- where the changed (create/update/delete) entities have (or had before update) set fields "vendor" (Vendor) and "reference.no" (Vendor Ticket) fields
- and if such a change occurs then this change will be reported to HP SX with reason/subreason set to "referringEntity"/"vendorIsSet"

The filter expression in "entityFilterExpr" has a JavaScript format and the following variables can be used in them:

- ISCREATE - Boolean variable, set to TRUE, if the change operation was a creation of a new entity.
- ISUPDATE - Boolean variable, set to TRUE, if the change operation was an update of an existing entity.
- ISDELETE - Boolean variable, set to TRUE, if the change operation was a delete of an existing entity.
- RECORD - Map, containing the created/updated/deleted entity's fields. To access these fields use syntax `RECORD['fieldName']`.
- OLDRECORD - Map, if the operation is update, then it contains the entity's fields before the change.
- NEWRECORD - Map, if the operation is update, then it contains the entity's fields after the change.

# HP SX Adapters

HP SX adapters interact with underlying (backend) systems, making them accessible to HP SX processes. Examples of backend systems are HP SM, HP CSA, SAP. In order for a backend system to be accessed by HP SX an adapter is required. In this way the adapters make the functionality of the backend systems available to HP SX clients.

HP SX contains the following OOB adapters:

- SX adapter - the internal SX adapter. This is always the first adapter and implements the HP SX CX functionality.
- SM adapter - specifically for HP SM backend systems.
- CSA adapter - specifically for HP CSA backend systems.
- EMAIL adapter - this adapter enables the fulfillment by email of offerings created independent of third party products.
- MOCK adapter - for testing.

NOTE: To create your own adapter, see detailed procedures in the *HP Propel Service Exchange SDK*.

## Enabling an HP SX adapter

To connect external systems with HP SX you need to install the appropriate adapter.

### **Install an adapter:**

This example uses JIRA, replace *jira* with your chosen adapter:

1. Stop jboss (/etc/init.d/jboss-as stop)
2. Copy the *sx-adapter-jira-version.jar* to *sx.war/WEB-INF/lib*. This is usually in */opt/hp/propel/jboss-as/standalone/deployments/sx.war/WEB-INF/lib/*.
3. Edit or create *jira/instances.json*.
4. Start jboss (/etc/init.d/jboss-as start).

## Manually configure HP SX-required files

NOTE: If you followed the HP Propel Service Exchange installation procedure and have a functional system up and running, these configurations will already be in place.

Use the following instructions to check, troubleshoot or customize configurations:

- ["Configuring for OO server" on page 81](#)
- ["Configuring for RabbitMQ" on page 82](#)
- ["Configuring for the HP Propel Portal " on page 83](#)
- ["Configuring for IdM" on page 84](#)
- ["Configuring for PostgreSQL" on page 85](#)



## Configuring for OO server

To set an internal connection to a specific OO server add/edit the OO entry in the JSON file:

[%SX\_HOME%] /WEB-INF/classes/config/infrastructure.json

Required fields: endpoint, loginName and password

Example:

```
{
  "OO": {
    "endpoint": "http://oo.example.com:8080/oo/rest",
    "loginName": "oouser",
    "password": "oopassword"
  }
}
```

NOTE: Change the endpoint, loginName and password to your unique values.

To enable the OO server to send email messages, change values in the JSON file:

[%SX\_HOME%] /WEB-INF/classes/config/oo/properties.json

Example:

```
{
  "smtpServer": "smtp3.example.com", "smtpPort": "25", "mailFrom":
  "noreply@example.com", "emailBcc": "joe.doe@example.com"
}
```

## Configuring for RabbitMQ

To set an internal connection to a specific RabbitMQ add/edit the JMS\_BROKER entry in the JSON file:

[%SX\_HOME%] /WEB-INF/classes/config/infrastructure.json

Required field: endpoint

Example:

```
{
  "JMS_BROKER": {
    "endpoint": "oo.example.com"
  }
}
```

NOTE: Change the endpoints to those for your organization.

## Configuring for the HP Propel Portal

To enable communication with the HP Propel Portal, entry SERVICE\_CATALOG has to be added/edited in the JSON file:

```
[%SX_HOME%] /WEB-INF/classes/config/infrastructure.json
```

Example:

```
{
  "SERVICE_CATALOG": {
    "requestCallbackEndpoint": "https://<CATALOG_
HOSTNAME>:8444/consumption/api/service/state/request",
    "subscriptionCallbackEndpoint": "https://<CATALOG_
HOSTNAME>:8444/consumption/api/service/state/subscription",
    "internalCallbackEndpoint": "https://<SX_HOSTNAME>:8444/sx/api/catalog"
  }
}
```

NOTE: Change the endpoints to those for your organization.

It is possible to use the string `${hpIPAddress}` instead of a specific IP address of SX, but it is still required to add the server port manually.

## Configuring for IdM

To use Identity Manager, the entry AUTHENTICATION has to be added/edited in the JSON file:

[%SX\_HOME%] /WEB-INF/classes/config/infrastructure.json

Example:

```
{  
  "AUTHENTICATION": {  
    "secretKey": "<YourSecretKey>"  
  }  
}
```

Required field: secretKey

Endpoint and other information has to be set in the properties file:

[%SX\_HOME%] /WEB-INF/sx.properties

Concerned lines contain the prefix **security**.

## Configuring for PostgreSQL

To use your PostgreSQL installation, change properties with the prefix 'db' in the properties file:

`[%SX_HOME%] /WEB-INF/sx.properties`

Preset values:

- `username=sx`
- `password=sx`
- `dbname=sx`

# SSL Configuration Using Existing CA-Signed SSL Certificates

Perform the following steps to configure HP Propel with existing Certificate Authority-signed SSL certificates.

**Note:** The following commands must be executed as root in the /opt/hp/propel-install directory on the HP Propel VM.

1. Initialize the SSL working directory:

```
# ./propel-ssl-setup.sh init
```

By default, the SSL working directory is /opt/hp/propel-install/ssl-tmp.

2. Generate the SSL certificate signing request (CSR) for the Certificate Authority (CA):

```
# ./propel-ssl-setup.sh --password <PASSWORD> generateSigningRequest <SUBJECT>
```

Where

- *PASSWORD* is the passphrase used to encrypt the generated private key.
- *SUBJECT* is the signing request subject in the slash-separated form, where "CN" is the last field and must contain the fully qualified hostname of the HP Propel VM. Enclose the subject in double quotes, such as: "/C=US/ST=California/L=San Francisco/O=StartUp Company/OU=Software/CN=mypropelserver.example.com"

A CSR is written to the /opt/hp/propel-install/ssl-tmp/\$PROPEL\_VM\_HOSTNAME directory and named propel\_host.key.csr. The private secret is stored in the same directory and named private.key.pem, and converted to propel\_host.key.rsa in the out subdirectory.

3. Send the CSR containing the public key to your CA. This is a process specific to your company, and network administrators should know how to accomplish this.
4. Add trust for the end-point server you want HP Propel to integrate with.

The public keys of end-point systems that HP Propel integrates with (HP CSA and HP SM) must be added to the HP Propel truststore. For each of the end-point servers, run the following command:

```
# ./propel-ssl-setup.sh addTrustedServer <END_POINT_HOSTNAME>:<END_POINT_PORT>
```

Where *END\_POINT\_HOSTNAME* is the fully qualified end-point hostname and *END\_POINT\_PORT* is the end-point system's port that is used by the HP Propel VM for communication.

5. After the CA has returned the signed certificates, finish the SSL configuration:
  - a. Make sure you have the following files under the `/opt/hp/propel-install/ssl-tmp` directory:
    - `CA.crt` – the PEM encoded public X.509 certificate of the CA.
    - `$(PROPEL_VM_HOSTNAME)/out/propel_host.crt` – a certificate for the HP Propel server that is issued by the CA in X.509 PEM format.
  - b. Complete the SSL configuration:

```
# ./propel-ssl-setup.sh finish
```

**Important:** After you complete this procedure, run the setup tool by continuing with [step 10 in the HP Propel installation instructions](#).

# Manual SSL Configuration

This section describes how to manually configure SSL for HP Propel and end-point systems – HP Cloud Service Automation (HP CSA) and HP Service Manager (HP SM). None of the HP Propel SSL configuration utilities are used and instead you manually create and control your own certificates.

1. On the HP Propel VM, create a ZIP file in the `/opt/hp/propel-install/res/ssl` directory named `$PROPEL_VM_HOSTNAME.zip`.

Where `$PROPEL_VM_HOSTNAME` is the fully qualified HP Propel VM hostname.

2. Add the following files to the ZIP file:
  - `CA.crt` – the PEM-encoded public X.509 certificate of the CA.
  - `.keystore` – the HP Propel keystore in JKS format that contains the private key for SSL use by the HP Propel VM. (The "CN" field in the subject must contain the fully qualified hostname of the HP Propel VM.) The private key must be certified by the CA, stored with an alias of the form `propeljboss_$PROPEL_VM_HOSTNAME`, and encrypted with the "propel2014" keystore password.
  - `propel.truststore` – the HP Propel truststore in JKS format. It must contain the public keys of all other machines that are trusted by HP Propel (HP CSA and HP SM), the certificate for the Propel VM, and the certificate of the CA that signed it. The certificates must be encrypted with the "propel2014" keystore password.
  - `propel_host.crt` – the PEM-encoded public X.509 certificate for the HP Propel VM that is issued by the CA.
  - `propel_host.key.rsa` – a RSA private key (2048-bit by default, in SSLeay format) for the HP Propel VM.
  - `propel_host.pfx` – a cryptography object archive in PKCS#12 format, protected by the "propel2014" password that contains two items:  
(= `propel_host.key.rsa` + `propel_host.crt`).

These files are used in the following way by HP Propel:

- Java/JBoss AS-based components of Propel use the `.keystore` and the `propel.truststore` files.
- Nodejs-based components use the `CA.crt` and the `propel_host.pfx` files.
- RabbitMQ uses all `propel_host.*` files.
- HP Operations Orchestration Central uses the `propel_host.crt` and the `propel_host.pfx` files.



**Important:** After you complete the manual SSL configuration, run the setup tool by continuing with [step 10 in the HP Propel installation instructions](#).

# SSL Configuration for HP CSA Integration

If you are integrating HP Propel with an HP Cloud Service Automation (HP CSA) system, the HP Propel certificate must be imported into the HP CSA system's truststore. Perform the following steps to import the HP Propel CA certificate into the HP CSA truststore:

1. On the HP Propel VM, copy the `CA.crt` file to the HP CSA system. For example, run the following command on the HP Propel VM in the `/opt/hp/propel-install/ssl-tmp` directory:

```
# scp CA.crt root@$HP_CSA_HOSTNAME:/tmp
```

Where `$HP_CSA_HOSTNAME` is the fully qualified hostname of the HP CSA system.

2. On the HP CSA system, import the HP Propel certificate as a trusted certificate by running the following command:

```
# $HP_CSA_JRE_HOME/bin/keytool -importcert -alias propel_ca -file /tmp/CA.crt  
-trustcacerts -keystore $HP_CSA_CACERTS_HOME/cacerts
```

Where `$HP_CSA_JRE_HOME` is the directory that contains the JRE for the end-point system and `$HP_CSA_CACERTS_HOME` is the directory that the `cacerts` keystore file is located. When prompted, type the keystore password. (The default password is "changeit" for the HP CSA keystore.) Reply "yes" when prompted to trust the certificate.

3. On the HP CSA system, restart HP CSA so that the newly imported Propel certificate will take effect:

```
# service csa restart
```

# Troubleshooting

This section offers some general recommendations and troubleshooting tips for HP Propel Service Exchange. See the *HP Propel Troubleshooting Guide* for a more comprehensive listing of troubleshooting recommendations for the entire HP Propel product.

- ["General recommended steps" below](#)
- ["Where to find help " below](#)

## General recommended steps

1. Run Self-test from the HP SX admin UI to check your connections are working and your configuration is correct, see ["Self-test HP SX configuration" on page 25](#).
2. When a problem happens, go first to the relevant log files (for locations see ["Log files" on the next page](#)), and look for any sign of an error.
2. If no error is found, look into the OO Flows input parameters (see ["OO Flows" below](#).) For example, look for wrongly set notification email addresses etc.
3. If you can access it, use the SX Debug UI. If the functionality you tried to perform through the HP Propel Portal is available in the SX Debug UI, try to run it there. If it is successful, it is an important point to note in any defect report logged to HP Support. If it still does not work, check the UI error messages and see the log files for any changes in the error printouts, when compared with the HP Propel Portal execution.

## Where to find help

- OO Flows
- Log files
- SX Debug UI
- HP SM item types supported by HP SX

### **OO Flows**

If a problem occurs and you suspect the OO Flows did not execute properly:

1. Navigate to OO.

The URL of the OO used for HP SX will look similar to this:

`http://oo_server_hostname:8080/oo/#/runtimeWorkspace/runs`

2. Check the following:
  - a. Check that there is an entry in the **Run Management** section that corresponds to your request. View it.
  - b. Check that the Flow was executed properly. It is fine that it goes through failure transitions, but the Flow should not end in an error state.
  - c. If the flow ends in an error state, follow these steps to look for details in the Flow Input parameters:
    - i. When viewing the Flow, click on its header (where the Flow name is displayed together with a down-expand arrow.)
    - ii. You will see all the input parameters for the flow. Look for any suspicious or incorrect values, and make a note of them in case you need to report the issue later.

## Log files

### SX

Log files are located in the log directory of the JBoss server, where HP SX is deployed. Typically: `jboss-as/standalone/log`.

Below is a listing of HP SX log files:

Log file	Description
<b>sx.log</b>	All the HP SX debug and error messages. Search here first for error messages.
<b>server.log</b> (for JBoss server)	Look here during HP SX deployment when something happens during boot time. After booting up, all the HP SX related information is logged to the other HP SX log files.
<b>notification.log</b>	Contains all callbacks SENT TO Catalog (HP Propel Portal) Look here for possible explanations when having difficulty connecting to Catalog.
<b>sx-messages.log</b>	Contains all messages RECEIVED FROM Catalog (HP Propel Portal) Look here for possible explanations when having difficulty receiving from Catalog.
<b>csa-messages.log</b> <b>sm-messages.log</b>	Contains all callbacks sent to HP CSA and HP SM servers. Search here when experiencing problems connecting to these two server types.

<b>case-exchange.log</b>	<p>Contains all Case Exchange module initialization messages, including database initialization, runtime message, and processing information regarding the Case Exchange feature.</p> <p>Could be helpful when Case Exchange seems not to be working for you.</p>
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## OO

The OO Flows should be viewed in the OO UI, see ["Where to find help " on page 91.](#)

## HP Propel MPP

Log file	Description
<b>aggregation.log</b>	All the aggregation related errors and information messages are logged here. Look into this file when you have a problem aggregating data from external servers.
<b>ccue.log</b> <b>consumption.log</b> <b>hpcloud-idm-service.log</b> <b>mpp.log</b>	See the HP Propel MPP Documentation for detailed descriptions of these log file contents.
<b>server.log</b>	Look here only when something happens during the HP Propel MPP deployment. After deployment all application related information is logged to other log files.

## HP SM item types supported by HP SX

Two Service Manager item types are supported by the current version of HP SX: Changes and Quotes. See the following for details:

- How to discern supported items in HP SM
- Quotes order processing in HP SM
- Changes order processing in HP SM

### How to discern supported items in HP SM

Look at the item in HP SM, and view the details in the **Service Catalog > Administration > Manage Catalog** section under the **Connector Details** tab. To function correctly with HP SX an item should have the following attributes:

Changes:

- **Interface Type:** Open a Change
- **Create Subscription:** Checked

Quotes:

- **Interface Type:** Open New Request
- **Create Subscription:** *NOT* checked

**Quotes order processing in HP SM**

The expected process advancement of a Quote Offering order in HP SM is:

1. The Offering Item order is started and an Interaction is created in HP SM.
  2. An interaction starts in **Open - Idle** status.
  3. It then moves to the **Open - Linked** state, which indicates a Quote was created for the Item and it is now linked with the Interaction.
  4. The Quote starts in the **Initial** state and its Approval Status is set to **Manager Approval**.
  5. After an Approval, the Quote's status changes to **Ordering**.
  6. Now all Line Items defined for this Quote (if any) need to be solved.
  7. When all Line Items are solved, the Quote moves to the **Customer Follow-up** state.
  8. When the Item is received by the Requester, he acknowledges receipt and the Quote moves to the **Closed** state.
- Find the **Interactions** in HP SM under **Service Desk > Interaction Queue > Search**.
  - Find **Quote** details in HP SM under **Request Management > Quotes > Search Quotes**.

**Changes order processing in HP SM**

The Changes ordering functionality is similar to that for Quotes (see above), minus a few steps. See the process description in the following table:

	<b>Change</b>	<b>Interaction</b>	<b>Subscription</b>
Order by requester		Status: <b>Open - Idle</b> Approval Status: <b>Approved</b>	
After 30 - 60 seconds	Phase: <b>Subscription Approval</b> Status: <b>Initial</b> Approval Status: <b>Pending</b>	Status: <b>Open - Linked</b> Approval Status: <b>Approved</b>	Status: <b>Requested</b>
Approve by manager	Phase: <b>Subscription Acceptance</b> Status: <b>Initial</b> Approval Status: <b>Approved</b>		

Approve by requester	Phase: <b>Subscription Acceptance</b> Status: <b>Closed</b> Approval Status: <b>Approved</b>	Status: <b>Closed</b> Approval Status: <b>Approved</b>	Status: <b>Active</b>
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# Send Documentation Feedback

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## **Feedback on Installation and Configuration Guide (Propel 1.10)**

Just add your feedback to the email and click send.

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We appreciate your feedback!



