Abstract

This document provides an overview of the certification workflow for Software Certification partners who want to offer their own applications, management applications or plug-in(driver) software for use with Red Hat OpenStack Platform in a jointly supported customer environment. Version 8.72 updated December 13, 2023.
# Table of Contents

MAKING OPEN SOURCE MORE INCLUSIVE ............................................................. 4

CHAPTER 1. INTRODUCTION TO RED HAT OPENSTACK CERTIFICATION PROGRAM ................................................. 5
1.1. THE RED HAT CERTIFICATION PROGRAM OVERVIEW ................................................................. 5
1.2. CERTIFICATION WORKFLOW ................................................................. 5
1.3. GETTING SUPPORT AND GIVING FEEDBACK ................................................................. 6

CHAPTER 2. ONBOARDING CERTIFICATION PARTNERS .................................................... 8
2.1. ONBOARDING EXISTING CERTIFICATION PARTNERS ................................................................. 8
2.2. ONBOARDING NEW CERTIFICATION PARTNERS ................................................................. 8

CHAPTER 3. CREATING A NEW CERTIFICATION OR RECERTIFICATION PROJECT .................................. 10

CHAPTER 4. SETTING UP THE TEST ENVIRONMENT ................................................................. 12
4.1. SETTING UP THE TEST HOST ................................................................. 12
4.2. SETTING UP THE CONTROLLER AND COMPUTE NODES ................................................................. 13

CHAPTER 5. DOWNLOADING THE TEST PLAN FROM RED HAT CERTIFICATION PORTAL ................................................................. 16

CHAPTER 6. CONFIGURING THE SYSTEMS AND RUNNING TESTS USING COCKPIT ................................................. 17
6.1. SETTING UP THE COCKPIT SERVER ................................................................. 17
6.2. ADDING THE TEST SYSTEMS TO COCKPIT ................................................................. 17
6.3. GETTING AUTHORIZATION ON THE RED HAT SSO NETWORK ................................................................. 18
6.4. DOWNLOADING TEST PLANS IN COCKPIT FROM RED HAT CERTIFICATION PORTAL ................................................................. 18
6.5. USING THE TEST PLAN TO PROVISION THE CONTROLLER AND COMPUTE NODES FOR TESTING ................................................................. 19
6.6. RUNNING THE CERTIFICATION TESTS USING COCKPIT ................................................................. 20
6.7. REVIEWING AND DOWNLOADING THE TEST RESULTS FILE ................................................................. 20
6.8. SUBMITTING THE TEST RESULTS FROM COCKPIT TO THE RED HAT CERTIFICATION PORTAL ................................................................. 21
6.9. UPLOADING THE TEST RESULTS FILE TO RED HAT CERTIFICATION PORTAL ................................................................. 21

CHAPTER 7. CONFIGURING THE SYSTEMS AND RUNNING TESTS USING RHCERT CLI TOOL ................................................................. 23
7.1. USING THE TEST PLAN TO PROVISION THE CONTROLLER AND COMPUTE NODES FOR TESTING ................................................................. 23
7.2. RUNNING THE CERTIFICATION TESTS USING CLI ................................................................. 24

CHAPTER 8. CERTIFYING AND RECERTIFYING A PRODUCT WITH NATIVE CONTAINER IMAGES ................................................................. 25
8.1. FINDING YOUR PROJECT ON RED HAT PARTNER CONNECT ................................................................. 25
8.2. COMPLETING THE PRE-CERTIFICATION CHECKLIST ................................................................. 25
8.2.1. Complete the export control questionnaire ................................................................. 25
8.2.2. Accept the Red Hat OpenStack Appendix ................................................................. 26
8.2.3. Attach a completed product listing ................................................................. 26
8.2.4. Validate the functionality of your product on this OpenStack release ................................................................. 26
8.2.5. Complete your company profile ................................................................. 26
8.3. MANAGING PROJECT SETTINGS ................................................................. 26
8.4. NEXT STEPS ................................................................. 27

CHAPTER 9. CERTIFYING AND RECERTIFYING A PRODUCT WITH CUSTOMIZED CONTAINER IMAGES ................................................................. 28
9.1. FINDING YOUR PROJECT ON RED HAT PARTNER CONNECT ................................................................. 28
9.2. COMPLETING THE PRE-CERTIFICATION CHECKLIST ................................................................. 28
9.2.1. Complete the export control questionnaire ................................................................. 28
9.2.2. Accept the Red Hat OpenStack Appendix ................................................................. 29
9.2.3. Provide details about your container ................................................................. 29
9.2.4. Submit your container image for verification ................................................................. 29
9.2.5. Attach a completed product listing ................................................................. 29
9.2.6. Validate the functionality of your product on this OpenStack release ................................................................. 30
9.2.7. Complete your company profile 30
9.3. CERTIFYING CUSTOMIZED CONTAINER IMAGES 30
9.3.1. Running the certification test suite 30
9.3.2. Viewing the image test results 31
9.3.3. Publishing a container image 32
9.4. MANAGING THE CONTAINER PROJECT SETTINGS 32
9.5. NEXT STEPS 34

CHAPTER 10. RUNNING CERTIFICATION TESTS FOR OPENSTACK CERTIFICATION 35
10.1. RUNNING CERTIFICATION TESTS FOR PRODUCTS IMPLEMENTING OPENSTACK APIs 35
10.1.1. Running tempest_config test 35
10.2. RUNNING CERTIFICATION TESTS FOR PRODUCTS CONSUMING OPENSTACK APIs 36
10.3. RUNNING TRUSTED CONTAINER TEST 36
10.4. RUNNING THE OPENSTACK DIRECTOR TEST AND THE SUPPORTABILITY TESTS 37
10.5. ADDITIONAL RESOURCES 37

CHAPTER 11. PUBLISHING ON THE CATALOG 38
MAKING OPEN SOURCE MORE INCLUSIVE

Red Hat is committed to replacing problematic language in our code and documentation. We are beginning with these four terms: master, slave, blacklist, and whitelist. Due to the enormity of this endeavor, these changes will be gradually implemented over upcoming releases. For more details on making our language more inclusive, see our CTO Chris Wright’s message.
CHAPTER 1. INTRODUCTION TO RED HAT OPENSTACK CERTIFICATION PROGRAM

Use this guide to certify your hardware, software, and applications relying on OpenStack services or APIs.

1.1. THE RED HAT CERTIFICATION PROGRAM OVERVIEW

The Red Hat certification program ensures the compatibility of your hardware, software, and cloud products on the OpenStack Platform. The program has three main elements:

- **Test suite**: Comprises tests for hardware or software applications undergoing certification.
- **Red Hat Certification Ecosystem**: Helps to explore and find certified products including hardware, software, cloud, and service providers.
- **Support**: A joint support relationship between you and Red Hat.

1.2. CERTIFICATION WORKFLOW

Follow these high-level steps to certify your hardware, software, and cloud products:

1. Create a certification request for a specific software or hardware component using the Red Hat Certification tool.
2. Run the tests specified in the workflow guide, and submit the results by using the Red Hat Certification tool to the Red Hat certification team for analysis.
3. The certification team analyzes the test results and communicates any required retesting.
4. When all tests have favorable results, the certification is complete and the certified product is made available on the Red Hat Ecosystem Catalog.

The following diagram gives an overview of the certification workflow.
Additional resources

- For more information about the requirements and policies for Red Hat OpenStack Certification, see Red Hat OpenStack Certification Policy Guide.

1.3. GETTING SUPPORT AND GIVING FEEDBACK

For any questions related to the Red Hat certification toolset, certification process, or procedure described in this documentation, refer to the KB Articles, Red Hat Customer Portal, and Red Hat Partner Connect.

You can also open a support case to get support or submit feedback.

To open a support case see, How do I open and manage a support case on the Customer Portal?

Questions During Certification

If you have any questions or responses about a specific certification, record them in the Comments section of the Dialog Tab of the certification entry.
WARNING

Issues that can block a certification and might require resolution must be resolved through your Engineering Partner Manager or other engineering engagements.
CHAPTER 2. ONBOARDING CERTIFICATION PARTNERS

Use the Red Hat Customer Portal to create a new account if you are a new partner, or use your existing Red Hat account if you are a current partner to onboard with Red Hat for certifying your products.

2.1. ONBOARDING EXISTING CERTIFICATION PARTNERS

As an existing partner you could be:

- A member of the one-to-many EPM program who has some degree of representation on the EPM team, but does not have any assistance with OpenStack certification.
  OR

- A member fully managed by the EPM team in the traditional manner with a dedicated EPM team member who is assigned to manage the partner, including questions about OpenStack certification requests.

Prerequisites

You have an existing Red Hat account.

Procedure

2. Enter your Red Hat login or email address and click Next. Then, use either of the following options:
   a. Log in with company single sign-on
   b. Log in with Red Hat account
3. From the menu bar on the header, click your avatar to view the account details.
   a. If an account number is associated with your account, then contact the certification team to proceed with the certification process.
   b. If an account number is not associated with your account, then first contact the Red Hat global customer service team to raise a request for creating a new account number. After you get an account number, contact the certification team to proceed with the certification process.

2.2. ONBOARDING NEW CERTIFICATION PARTNERS

Creating a new Red Hat account is the first step in onboarding new certification partners.

2. Enter the following details to create a new Red Hat account:
   a. Select Corporate in the Account Type field. If you have created a Corporate type account and require an account number, contact the Red Hat global customer service team.
NOTE

Ensure that you create a company account and not a personal account. The account created during this step is also used to sign in to the Red Hat Ecosystem Catalog when working with certification requests.

b. Choose a Red Hat login and password.

IMPORTANT

If your login ID is associated with multiple accounts, then do not use your contact email as the login ID as this can cause issues during login. Also, you cannot change your login ID once created.

c. Enter your Personal information and Company information.

d. Click Create My Account
   A new Red Hat account is created.

3. Contact your Ecosystem Partner Management (EPM) representative, if available. Else contact the certification team to proceed with the certification process.
CHAPTER 3. CREATING A NEW CERTIFICATION OR RECERTIFICATION PROJECT

Certification projects are tied to container images on a one-to-one basis. To certify several container images, you must create a project for each of them.

To update container images that are already certified, create a project for each image that is separate from the original certification project.

Procedure

1. Log in to Red Hat Partner Connect portal.
   The Access the partner portals web page displays.

2. Navigate to the Certified technology portal tile, and click Log in for technology partners.

3. Enter the login credentials and click Login.
   The Red Hat Partner Connect web page displays.

4. On the page header, select Product certification and click Manage certification projects.
   The page displays Product Listings and Certification Projects, if available.

5. Under the Certification Projects tab, click Create Project.

6. In the What platform do you want to certify on? dialog box, select Red Hat OpenStack and click Next.

7. In the What do you want to certify? dialog box, select Openstack Infrastructure and click Next.

8. On the Create OpenStack Infrastructure project web page, provide the following details to create your project:
   - **Project Name.** The name you enter is for internal use only, and not published on the catalog.
   - **Are your product’s containers already a part of the Red Hat OpenStack Platform distribution?** Your product must use container images provided by Red Hat as part of the RHOSP native distribution.
     - If you have not customized the container images, select Yes. Your container images are already certified, and you need to certify your product only.
     - If you have customized the container images with, for example, additional software, select No. You need to certify your container images as well as your product.
   - **Openstack Version**
   - **Services.** On the drop-down menu, select the purpose of your product:
     - Neutron (Networking)
     - Cinder (Block Storage)
     - Manila (File Storage)
After creating the project, proceed to one of the following sections:

- If you did not customize your container images, see Configuring the project for a product with native container images.

- If you customized your container images, see Configuring the project for a product with customized container images.
CHAPTER 4. SETTING UP THE TEST ENVIRONMENT

The first step towards certifying your product is setting up the environment where you can run the tests.

The test environment consists of three systems:

- **Test host**: A workstation, referred to as the test host, is used as a medium for accessing the Controller and Compute nodes. The tests are only initiated on this system but are run on the two nodes.

- **Controller**: The tests designed for the specific plugin undergoing certification are run on the Controller node.

- **Compute**: Remaining certification-related tests are run on the Compute node. In multi-host, information is provided to the Compute node for test execution.

4.1. SETTING UP THE TEST HOST

The test host is used only to initiate a test run on the Controller and Compute node, display the progress of the tests, and present the final result file after gathering results from both nodes.

**Prerequisites**

- You have installed RHEL 8 or 9 on the system.
- You have enabled access to the Controller and Compute nodes from the test host.
- You have installed Cockpit on the system.

**Procedure**

1. Use your RHN credentials to register your system using Red Hat Subscription Management:

   ```bash
   # subscription-manager register
   ```

2. Display the list of available subscriptions for your system:

   ```bash
   # subscription-manager list --available*
   ```

3. Search for the subscription that provides the Red Hat Certification (for RHEL Server) repository and make a note of the subscription and its Pool ID.

4. Attach the subscription to your system:

   ```bash
   # subscription-manager attach --pool=<pool_ID>
   ```

   Replace the pool_ID with the Pool ID of the subscription.

**NOTE**

You don’t have to attach the subscription to your system, if you enable the option **Simple content access for Red Hat Subscription Management**. For more details, see **How do I enable Simple Content Access for Red Hat Subscription Management?**
5. Subscribe to the Red Hat Certification channel:
   - On RHEL 8:
     ```
     # subscription-manager repos --enable=cert-1-for-rhel-8-<HOSTTYPE>-rpms
     ```
     Replace HOSTTYPE with the system architecture. To find out the system architecture, run
     ```
     uname -m
     ```
     Example:
     ```
     # subscription-manager repos --enable=cert-1-for-rhel-8-x86_64-rpms
     ```
   - On RHEL 9:
     ```
     # subscription-manager repos --enable=cert-1-for-rhel-9-<HOSTTYPE>-rpms
     ```
     Replace HOSTTYPE with the system architecture. To find out the system architecture, run
     ```
     uname -m
     ```
     Example:
     ```
     # subscription-manager repos --enable=cert-1-for-rhel-9-x86_64-rpms
     ```

6. Install the certification and Cockpit RPMs.
   ```
   # yum install redhat-certification-cockpit
   ```
   - Only on RHEL 9
     ```
     # yum install redhat-certification
     ```

4.2. SETTING UP THE CONTROLLER AND COMPUTE NODES

Separate tests are run on the two nodes based on the defined role of each node in the test plan.

**NOTE**

Repeat the following process for setting up each node.

**Prerequisites**

- You have installed RHOSP on the system based on the supported RHEL version, as applicable. The corresponding supported versions are as follows:

<table>
<thead>
<tr>
<th>RHOSP version</th>
<th>Supported RHEL version</th>
</tr>
</thead>
<tbody>
<tr>
<td>RHEL 16.0</td>
<td>8.1</td>
</tr>
</tbody>
</table>
You have installed and enabled Cockpit on both nodes.

NOTE
You have installed the plugin that needs certification.

This is applicable only to the Controller node.

Procedure
1. Use your RHN credentials to register your system using Red Hat Subscription Management:

```bash
# subscription-manager register
```

2. Display the list of available subscriptions for your system:

```bash
# subscription-manager list --available*
```

Search for the subscription that provides the Red Hat Certification (for RHEL Server) repository and make a note of the subscription and its Pool ID.

3. Attach the subscription to your system:

```bash
# subscription-manager attach --pool=<pool_ID>
```

Replace the pool_ID with the Pool ID of the subscription.

4. Subscribe to the Red Hat Certification channel:

- On RHEL 8:

```bash
# subscription-manager repos --enable=cert-1-for-rhel-8-<HOSTTYPE>-rpms
```

Replace HOSTTYPE with the system architecture. To find out the system architecture, run

```bash
uname -m
```

Example:

```bash
# subscription-manager repos --enable=cert-1-for-rhel-8-x86_64-rpms
```
• On RHEL 9:
  # subscription-manager repos --enable=cert-1-for-rhel-9-<HOSTTYPE>-rpms

  Replace HOSTTYPE with the system architecture. To find out the system architecture, run
  
  `uname -m`

  Example:

  # subscription-manager repos --enable=cert-1-for-rhel-9-x86_64-rpms

5. Install the certification RPMs.
   • Only on RHEL 8
     
     # yum install redhat-certification-backend
   
   • Only on RHEL 9
     
     # yum install redhat-certification

6. Install OpenStack test suite package:
   
   `yum install redhat-certification-openstack`
CHAPTER 5. DOWNLOADING THE TEST PLAN FROM RED HAT CERTIFICATION PORTAL

NOTE
You must download the test plan to the test host.

Procedure

1. Log in to Red Hat Certification portal.
2. Search for the case number related to your product certification, and copy it.
3. Click Cases → enter the product case number.
4. Optional: Click Test Plans.
   The test plan displays a list of components that will be tested during the test run.
5. Click Download Test Plan.

Next steps
If you plan to use Cockpit to run the tests, see Configuring the systems and running tests by using Cockpit

Otherwise, if you plan to use CLI to run the tests, see Configuring the systems and running tests by using CLI.
CHAPTER 6. CONFIGURING THE SYSTEMS AND RUNNING TESTS USING COCKPIT

To run the certification tests using Cockpit, you must first set up the Cockpit, add systems, upload the test plan to Cockpit.

6.1. SETTING UP THE COCKPIT SERVER

Cockpit is a RHEL tool that lets you change the configuration of your systems as well as monitor their resources from a user-friendly web-based interface.

The Cockpit uses RHCert CLI locally and through SSH to other hosts.

**NOTE**
- You must set up Cockpit on the same system as the test host.
- Ensure that the Cockpit can access both the Controller and Compute nodes.

For more information on installing and configuring Cockpit, see *Getting Started using the RHEL web console* on RHEL 8, *Getting Started using the RHEL web console* on RHEL 9 and *Introducing Cockpit*.

**Prerequisites**
- You have installed the Cockpit plugin on the test host.
- You have enabled the Cockpit service.

**Procedure**

1. Log in to the test host.
2. Install the Cockpit RPM provided by the Red Hat Certification team.

```bash
# yum install redhat-certification-cockpit
```

You must run Cockpit on port 9090.

6.2. ADDING THE TEST SYSTEMS TO COCKPIT

Adding the test host, Controller, and Compute nodes to Cockpit establishes a connection between the test host and each node.

**NOTE**
Repeat the following process for adding each node.

**Prerequisites**
- You have the IP address of the test host, Controller, and Compute nodes.

**Procedure**
1. Enter `http://<Cockpit_system_IP>:9090/` in your browser to launch the Cockpit web application.

2. Enter the username and password, and then click **Login**.

3. Click the down-arrow on the logged-in cockpit user name → **Add new host**. The dialog box displays.

4. In the **Host** field, enter the IP address or hostname of the system.

5. In the **User name** field, enter from one of the three applicable accounts:

   **NOTE**
   - Enter “tripleo-admin” if you use RHOSP 17.1 or later.
   - Enter “heat-admin” if you use RHOSP 17 or earlier.
   - Enter “root” if you have configured root as the ssh user for Controller and Compute nodes.

6. Optional: Select the predefined color or select a new color of your choice for the host added.

7. Click **Add**.

**Verification**

On the left panel, click **Tools → Red Hat Certification**.
Verify that the system you just added displays under the Hosts section on the right.

### 6.3. GETTING AUTHORIZATION ON THE RED HAT SSO NETWORK

**Procedure**

1. Enter `http://<Cockpit_system_IP>:9090/` in your browser’s address bar to launch the Cockpit web application.

2. Enter the username and password, and then click **Login**.

3. Select **Tools → Red Hat Certification** in the left panel.

4. On the Cockpit homepage, click **Authorize**, to establish connectivity with the Red Hat system. The **Log in to your Red Hat account** page displays.

5. Enter your credentials and click **Next**. The **Grant access to rhcert-cwe** page displays.

6. Click **Grant access**. A confirmation message displays a successful device login. You are now connected to the Cockpit web application.

### 6.4. DOWNLOADING TEST PLANS IN COCKPIT FROM RED HAT CERTIFICATION PORTAL

For Non-authorized or limited access users:
For authorized users:

Procedure

1. Enter http://<Cockpit_system_IP>:9090/ in your browser’s address bar to launch the Cockpit web application.

2. Enter the username and password, and then click Login.

3. Select Tools → Red Hat Certification in the left panel.

4. Click the Test Plans tab. A list of Recent Certification Support Cases will appear.

5. Click Download Test Plan. A message displays confirming the successful addition of the test plan.

6. The downloaded test plan will be listed under the File Name of the Test Plan Files section.

6.5. USING THE TEST PLAN TO PROVISION THE CONTROLLER AND COMPUTE NODES FOR TESTING

Provisioning the Controller and Compute nodes through the test host performs several operations, such as installing the required packages on the two nodes based on the certification type and creating a final test plan to run. The final test plan is generated based on the test roles defined for each node and has a list of common tests taken from both the test plan provided by Red Hat and tests generated on discovering the system requirements.

For instance, required OpenStack packages will be installed if the test plan is designed for certifying an OpenStack plugin.

Prerequisites

- You have downloaded the test plan provided by Red Hat.

Procedure

1. Enter http://<Cockpit_system_IP>:9090/ in your browser address bar to launch the Cockpit web application.

2. Enter the username and password, and then click Login.

3. Select Tools → Red Hat Certification in the left navigation panel.

4. Click the Hosts tab to see the list of systems added.

5. Click the Test Plans tab and click Upload.

   a. In the Upload Test Plan dialog box, click Upload, and then select the new test plan.xml file saved on the test host.

   b. Click Upload to Host

      A successful upload message displays along with the file uploaded. Optionally, if you want to reuse the previously uploaded test plan, then select it again to reupload.
NOTE

During the certification process, if you receive a redesigned test plan for the ongoing product certification, then you can upload it following the previous step. However, you must run `rhcert-clean all` in the Terminal tab before proceeding.

6. Click **Provision** beside the test plan you want to use.
   
   a. In the **Role** field, enter the IP address of the Controller node, and from the **Host** drop-down menu, select **Controller**.
   
   b. In the **Role** field, enter the IP address of the Compute node, and from the **Host** drop-down menu, select **Compute**.
   
   c. In the **Provisioning Host** field, enter the IP address of the test host.
   
   d. Select the **Run with sudo** check box.
   
   e. Click **Provision**.
      The terminal is displayed.

6.6. RUNNING THE CERTIFICATION TESTS USING COCKPIT

NOTE

The tests run in the foreground on the Controller node, they are interactive and will prompt you for inputs, whereas the tests run in the background on the Compute node and are non-interactive.

Prerequisites

- You have prepared the Controller and Compute nodes

Procedure

1. Enter `http://<Cockpit_system_IP>:9090/` in your browser address bar to launch the Cockpit web application.

2. Enter the username and password, and click **Login**.

3. Select **Tools → Red Hat Certification** in the left panel.

4. Click the **Hosts** tab and click on the host on which you want to run the tests, then click the **Terminal** tab.

5. Click **Run**.
   The `rhcert-run` command will appear and run on the Terminal window.
   
   When prompted, choose whether to run each test by typing **yes** or **no**.
   
   You can also run particular tests from the list by typing `select`.

6.7. REVIEWING AND DOWNLOADING THE TEST RESULTS FILE
6.8. SUBMITTING THE TEST RESULTS FROM COCKPIT TO THE RED HAT CERTIFICATION PORTAL

Procedure

1. Enter \texttt{http://<Cockpit	extunderscore system	extunderscore IP>:9090/} in your browser address bar to launch the Cockpit web application.

2. Enter the username and password, and then click \textit{Login}.

3. Select \textit{Tools} → \textit{Red Hat Certification} in the left panel.

4. Click the \textit{Result Files} tab to view the test results generated.

   a. Optional: Click \textit{Preview} to view the results of each test.

   b. Click \textit{Download} beside the result files.

       By default, the result file is saved as \texttt{/var/rhcert/save/rhcert-multi-openstack-\textless certification ID\textgreater -\textless timestamp\textgreater .xml}.

6.9. UPLOADING THE TEST RESULTS FILE TO RED HAT CERTIFICATION PORTAL

Prerequisites

- You have downloaded the test results file from the test host.

Procedure

1. Log in to \textit{Red Hat Certification portal}.

2. On the homepage, enter the product case number in the search bar. Select the case number from the list that is displayed.

3. On the \textit{Summary} tab, under the Files section, click \textit{Upload}. 
Next steps

Red Hat will review the results file you submitted and suggest the next steps. For more information, visit Red Hat Certification portal.
CHAPTER 7. CONFIGURING THE SYSTEMS AND RUNNING TESTS USING RHCERT CLI TOOL

Cockpit is the preferred method to configure systems and run tests. However, RHCert CLI will be continued as an alternative for performing the same tasks.

7.1. USING THE TEST PLAN TO PROVISION THE CONTROLLER AND COMPUTE NODES FOR TESTING

Provisioning the Controller and Compute nodes through the test host performs several operations, such as installing the required packages on the two nodes based on the certification type and creating a final test plan to run. The final test plan is generated based on the test roles defined for each node and has a list of common tests taken from both the test plan provided by Red Hat and tests generated on discovering the system requirements.

For instance, required OpenStack packages will be installed if the test plan is designed for certifying an OpenStack plugin.

Prerequisites
- You have the IP address of both the Controller and Compute nodes.
- You have downloaded the test plan to the test host.

Procedure

1. Log into the test host using CLI.

2. Provision the Controller and Compute nodes from the test host.

   ```bash
   # rhcert-provision <path_to_test_plan_document> --host controller:<IP address of the controller> --host compute:<IP address of the compute>
   ```

   Replace `<path_to_test_plan_document>` with the test plan file saved on the test host.

   Example:

   ```bash
   ```

   In addition to starting the Controller and Compute nodes and sending the test plan to both the nodes where the tests actually run, the command also establishes communication between the test host and each node.

3. Select the RHOSP administrator account when prompted.
NOTE

- Enter “tripleo-admin” if you use RHOSP 17.1 or later.
- Enter “heat-admin” if you use RHOSP 17 or earlier.
- Enter “root” if you have configured root as the ssh user for Controller and Compute nodes.

4. Select None for “What is this host’s role” when prompted.
   Tests applicable for each node will be displayed.

7.2. RUNNING THE CERTIFICATION TESTS USING CLI

NOTE

The tests run in the foreground on the Controller node, they are interactive and will prompt you for inputs, whereas the tests run in the background on the Compute node and are non-interactive.

Procedure

1. Run tests

   ```bash
   # rhcert-run --host controller:<_IP address of the controller_> --host compute:<_IP address of the compute_>
   
   Example:
   
   ```

2. Select the RHOSP administrator account when prompted.

NOTE

- Enter “tripleo-admin” if you use RHOSP 17.1 or later.
- Enter “heat-admin” if you use RHOSP 17 or earlier.
- Enter “root” if you have configured root as the ssh user for Controller and Compute nodes.

3. When prompted, choose whether to run each test by typing yes or no.
   You can also run particular tests from the list by typing select.

   Separate test results from each node are transferred to the test host, where they are merged into a single result file.

   By default, the result file is saved as `/var/rhcert/save/rhcert-multi-openstack-<certification ID>-<timestamp>.xml`.  

24
CHAPTER 8. CERTIFYING AND RECERTIFYING A PRODUCT WITH NATIVE CONTAINER IMAGES

After creating a certification or recertification project, find it and complete the pre-certification checklist. Publish your certification on the Red Hat Ecosystem Catalog. You can also change the settings of your project.

TIP

If your product uses container images distributed with RHOSP, you only need to certify your product. The container images are already certified and provided by Red Hat.

If your product uses customized container images, see Certifying and recertifying a product with customized container images instead.

8.1. FINDING YOUR PROJECT ON RED HAT PARTNER CONNECT

Procedure

1. Log in to Red Hat Partner Connect portal.
   The Access the partner portals website page displays.

2. Navigate to the Certified technology portal tile, and click Log in for technology partners.

3. Enter the login credentials and click Login.
   The Red Hat Partner Connect website page displays.


5. Click Manage Projects and select the project created in the Creating a new certification or recertification project section.
   The project website page has the following sections:
   - Overview. Contains the pre-certification checklist.
   - Settings. Lets you configure the project settings.
     Additionally, click the Actions menu to open a support case or archive the project.

8.2. COMPLETING THE PRE-CERTIFICATION CHECKLIST

The tasks detailed in the certification checklist give Red Hat more information about your application and your company. It also starts the certification or recertification process.

You must complete all the tasks on the checklist to publish the certification on the catalog.

8.2.1. Complete the export control questionnaire

The export control questionnaire contains a series of questions through which the Red Hat legal team evaluates the export compliance by third-party vendors.

Your legal representative must review and answer the questions. Red Hat will evaluate the responses and either approve or deny the request, or will request more information.
8.2.2. Accept the Red Hat OpenStack Appendix

Procedure

1. Click Start. The Red Hat Partner Connect Container Appendix document displays.

2. Read the document to know the terms related to the distribution of container images and agree to the terms.

8.2.3. Attach a completed product listing

Procedure

1. Click the Select Method drop-down menu.

2. Select Attach/edit. You can either create a new product listing, or select an existing OpenStack product listing:
   - To select an existing product listing, click View Product Listing or Related product listing
   - To create a new product listing, click on Create new product listing
     Product listings must be fully completed and published before you can attach them to the checklist.

8.2.4. Validate the functionality of your product on this OpenStack release

After you click Start, Red Hat opens a certification case for you, and you are redirected to the Red Hat Certification portal site.

The certification team will contact you to start the certification testing process, and will follow up with you in case of a problem.

Additional resources

The following links will help you during product certification:

- Certification tests for OpenStack certification

8.2.5. Complete your company profile

Ensure that your company profile is ready to be published on the catalog.

8.3. MANAGING PROJECT SETTINGS

You can configure the project settings by using the Settings tab. Enter the required details in the following fields:

<table>
<thead>
<tr>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project name</td>
<td>Name of the project for internal purposes</td>
</tr>
<tr>
<td>Technical contact email address</td>
<td>Primary contact details of your product</td>
</tr>
</tbody>
</table>
8.4. NEXT STEPS

After completing the checklist, your product is certified. Now you are ready to publish your certification on the catalog.
CHAPTER 9. CERTIFYING AND RECERTIFYING A PRODUCT WITH CUSTOMIZED CONTAINER IMAGES

After creating a certification or recertification project, find it and complete the pre-certification checklist. Publish your certification on the Red Hat Ecosystem Catalog. You can also change the settings of your project.

TIP

If your product uses customized RHOSP container images, you must certify both the container images and the product.

If your product uses native RHOSP container images, see Certifying and recertifying a product with native container images instead.

9.1. FINDING YOUR PROJECT ON RED HAT PARTNER CONNECT

Procedure

1. Log in to Red Hat Partner Connect portal. The Access the partner portals web page displays.

2. Navigate to the Certified technology portal tile, and click Log in for technology partners.

3. Enter the login credentials and click Login. The Red Hat Partner Connect web page displays.


5. Click Manage Projects and select the project created in the Creating a new certification or recertification project section. The project web page has the following sections:
   - Overview. Contains the pre-certification checklist.
   - Images. Displays container image test results.
   - Settings. Lets you configure the project settings. Additionally, click the Actions menu to open a support case or archive the project.

9.2. COMPLETING THE PRE-CERTIFICATION CHECKLIST

The tasks detailed in the certification checklist give Red Hat more information about your product and your company. It also starts the certification or recertification process.

You must complete all the tasks on the checklist to publish the certification on the catalog.

9.2.1. Complete the export control questionnaire

The export control questionnaire contains a series of questions through which the Red Hat legal team evaluates the export compliance by third-party vendors.
Your legal representative must review and answer the questions. Red Hat will evaluate the responses and either approve or deny the request, or will request more information.

**NOTE**

If you are using a version of UBI (Universal Base Image) to build your container image, you can host your image in a private repository. This allows you to skip the Export Compliance. The export compliance form is required if you are hosting your images on the Red Hat Container Catalog only.

### 9.2.2. Accept the Red Hat OpenStack Appendix

**Procedure**

1. Click **Start**. The Red Hat Partner Connect Container Appendix document displays.
2. Read the document to know the terms related to the distribution of container images and agree to the terms.

### 9.2.3. Provide details about your container

Enter the details of your container and your repository. This information will appear on the catalog after you publish the container on the catalog.

### 9.2.4. Submit your container image for verification

**Procedure**

1. Run the certification suite on your container image. See [Running the certification test suite](#).
2. Upload the test results on this pre-certification checklist step. You can later see the test results on the **Images** tab.
3. Publish the container image certification on the Red Hat catalog. See [Publishing a container image](#).

**TIP**

This step certifies your container only. You certify your application as part of the Validate the functionality of your product in this OpenStack release step on the checklist.

### 9.2.5. Attach a completed product listing

**Procedure**

1. Click the **Select Method** drop-down menu.
2. Select **Attach/edit**. You can either create a new product listing, or select an existing OpenStack product listing:
   - To select an existing product listing, click [View Product Listing or Related product listing](#).
   - To create a new product listing, click on [Create new product listing](#)
Product listings must be fully completed and published before you can attach them to the checklist.

9.2.6. Validate the functionality of your product on this OpenStack release

After you click Start, Red Hat opens a certification case for you, and you are redirected to the Red Hat Certification portal site.

The certification team will contact you to start the certification testing process, and will follow up with you in case of a problem.

Additional resources

The following links will help you during product certification:

- Certification tests for OpenStack certification

9.2.7. Complete your company profile

Ensure that your company profile is ready to be published on the catalog.

9.3. CERTIFYING CUSTOMIZED CONTAINER IMAGES

You must certify your container images as part of certifying your OpenStack product when you are using customized container images. This certification is part of the pre-certification checklist, which you must complete before you can publish your product certification on the Red Hat catalog.

9.3.1. Running the certification test suite

Follow the instructions to run the certification test suite:

Prerequisites

- You have a Red Hat Enterprise Linux (RHEL) system.
- You can use Podman to log in to your image registry. For example:

$$ podman login --username <your_username> --password <your_password> --authfile ./temp-authfile.json <registry>

- You have set up your container project on the Red Hat Partner Connect portal. The pre-certification checklist must at least be in progress.
- You have a pyxis API key.

Procedure

1. Build your container image by using Podman.

   **NOTE**

   Using Podman to build container images is optional.

2. Upload your container to any private or public registry of your choice.
3. Download the latest Preflight certification utility.

4. Perform the following steps to verify the functionality of the container being certified:
   a. Run the Preflight certification utility:
      
      ```
      $ preflight check container \\
      registry.example.org/<namespace>/<image_name>:<image_tag>
      ```
   b. Review the log information and change the container as needed. For more information, see the troubleshooting information page.
      
      If you find any issues, either submit a support ticket or run the following command:
      
      ```
      $ preflight support
      ```
      
      Red Hat welcomes community contributions. If you experience a bug related to Preflight or the Red Hat Partner Connect Portal, or if you have a suggestion for a feature improvement or contribution, please report the issue. Before reporting an issue, ensure to review the open issues to avoid duplication.
   c. Run the container certification utility and make changes until all the tests pass.

5. Submit the certification test results by running the following command:
   
   ```
   $ preflight check container \\
   registry.example.org/<namespace>/<image_name>:<image_tag> \\
   --submit \\
   --pyxis-api-token=<api_token> \\
   --certification-project-id=<project_id> \\
   --docker-config=./temp-authfile.json
   ```
   
   After you submit your test results to the Red Hat Partner Connect portal, Red Hat will scan the layers of your container for package vulnerabilities.

6. Review your certification and vulnerability test results in the certification project UI by navigating to the Images tab in the Red Hat Partner Connect portal. For more information, see Viewing the image test results.

9.3.2. Viewing the image test results

The Images tab displays the test results of your container image along with the following details:

- **Specific image ID**
- **Certification test.** Shows either pass or fail. Click on the word for more details.
- **Health Index.** The container health index measures whether your image is up to date regarding security updates. For example, an index of A is means that the image is more up to date than an index of F. For more information, see Container Health Index grades as used inside the Red Hat Container Catalog.
- **Architecture.** Indicates the architecture of your image, if applicable.
- **Created.** Indicates the day in which the submission was processed.
• **Status.** Indicates the published status of your image.

### 9.3.3. Publishing a container image

After you submit your test results from the preflight tool on your Partner Connect project, your container images are scanned for vulnerabilities within the project. When the scanning is successfully completed, the publish button will be enabled for your image. After you click the publish button, your image will be available in the Red Hat Ecosystem Catalog.

### 9.4. MANAGING THE CONTAINER PROJECT SETTINGS

You can configure the registry and repository details by using the **Settings** tab.

Enter the required details in the following fields:

<table>
<thead>
<tr>
<th>Field name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Container registry namespace</td>
<td>This field is non-editable and is auto-populated from your company profile. For example, <em>mycompany</em>.</td>
</tr>
<tr>
<td>Outbound repository name</td>
<td>Repository name that you have selected or the name obtained from your private registry in which your image is hosted. For example, <em>ubi-minimal</em>.</td>
</tr>
<tr>
<td>Repository description</td>
<td>Repository description displayed in the Ecosystem Catalog listing, available at Overview and Technical Information → General information → Description.</td>
</tr>
<tr>
<td>Application categories</td>
<td>Select the respective application type of your software product.</td>
</tr>
<tr>
<td>Supported platforms</td>
<td>Select the supported platforms of your software product.</td>
</tr>
</tbody>
</table>
### Host level access

Select between the two options:

- **Unprivileged** - If your container is isolated from the host.
- **Privileged** - If your container requires special host-level privileges.

**NOTE**

If your product’s functionality requires root access, you must select the privileged option, before running the preflight tool. This setting is subject to Red Hat review.

### Release Category

Select between the two options:

- **Generally Available** - When you select this option, the application is generally available and supported.
- **Beta** - When you select this option, the application is available as a pre-release candidate.

### Project name

Name of the project for internal purposes.

### Auto-publish

When you enable this option, the container image gets automatically published on the Red Hat Container catalog, after passing all the certification tests.

### Technical contact email address

Primary technical contact details of your product.

**NOTE**

Note: All the fields marked with asterisk * are required and must be completed before you can proceed with container certification.
9.5. NEXT STEPS

After completing the checklist, your container and project are certified, and your container is published on the catalog. Now you are ready to publish your product certification on the catalog.
CHAPTER 10. RUNNING CERTIFICATION TESTS FOR OPENSTACK CERTIFICATION

Run certification tests on the OpenStack deployment under test based on the type of OpenStack application undergoing certification.

10.1. RUNNING CERTIFICATION TESTS FOR PRODUCTS IMPLEMENTING OPENSTACK APIS

If the OpenStack application undergoing certification implements OpenStack APIs, complete the following steps on the test server to run certification tests on the OpenStack deployment under test or test client.

This category includes OpenStack plugins and drivers which implement OpenStack APIs for Networking, Block Storage, and File Share services.

Additional resources

- For more information about products implementing OpenStack APIs, see Red Hat OpenStack Certification Policy Guide.

10.1.1. Running tempest_config test

The `tempest_config` test automatically generates a tempest.conf file at run time. If you need to change the default configurations of the test, replace `tempest.conf` with a new file at the same location.

Although the updated configuration can address any known tempest issues, note that tempest still needs to fulfill certification testing requirements.

Prerequisites

- You have subscribed the application under test to the OpenStack product repositories to allow tempest to get installed.

- You have OpenStack administrator login privileges and credentials.

Procedure

The test is interactive. It checks for the presence of the tempest.conf file at location `/etc/redhat-certification/openstack`. If the file exists, you will receive a prompt asking if you want to replace it and enter the details manually. If you choose no, the test will use the keystone credentials from the existing file and proceed. However, if you choose yes, or if the tempest.conf file is not present in the location you will be prompted to provide the following details:

1. In the keystone auth url field, enter the URL to allow the test access the OpenStack platform service endpoints.

2. Enter the OpenStack administrator username and password.

3. Update the tempest.conf file to enable all the flags applicable for the plugins that you are certifying.

4. Click Submit.
Additional resources

- If you face any tempest issues unrelated to the certification testing, use the following links to raise bugs:
  - Upstream tempest project
  - For Downstream bugs, use either RHOSP Tempest component or Red Hat Certification Component.
    In the Component field:
    - Select openstack-tempest for tempest-related issues.
    - Select openstack-neutron, openstack-cinder, or openstack-manila for component-related issues.

10.2. RUNNING CERTIFICATION TESTS FOR PRODUCTS CONSUMING OPENSTACK APIs

Red Hat considers the following as products or applications consuming OpenStack APIs:

- Products that facilitate deploying an OpenStack environment.
- Products that complement the cloud infrastructure with additional functionality, such as configuration, scaling, and management.
- Applications for OpenStack management and monitoring.
- Applications that are OpenStack-enabled, such as virtual network functions (VNFs).

If the OpenStack application that you are certifying consumes OpenStack APIs, perform the following steps:

Procedure

1. Review the policy information described in the Red Hat OpenStack Certification Policy Guide.
2. Run the certification tests as described in the Setting up the test server section.

10.3. RUNNING TRUSTED CONTAINER TEST

Procedure

1. Navigate to the rhcert tool home page and select the trusted container test.
2. Click on the Run Selected.
3. Perform the following actions when the test prompts you:
   a. Provide the reason why you configured non-Red Hat containers on the host under test.
   b. Select the checkboxes of the containers you want to run the test on.
10.4. RUNNING THE OPENSTACK DIRECTOR TEST AND THE SUPPORTABILITY TESTS

Procedure

1. On the Red Hat Certification home page, click the Server settings tab.

2. In the Register a System field, enter the hostname or IP address of the overcloud node where you installed the application under test. Then, click Add.

3. Click the existing product entry from the Red Hat Certification home page. Then, click the relevant certification entry from the Certifications page.
   The Progress page opens and displays the tests available. It also displays the status of the previous runs, if any.

4. Click Testing to open the Testing tab.

5. On the Testing tab, click Select Test Systems.

6. On the Select Host page, select the hostname of the overcloud node where you installed the application-under-test. Then, click Test to return to the Testing tab.
   The rhcert tool now creates a certification test plan for the application-under-test.

   When the test plan is ready, the status column displays "Finished test run". The Continue Testing button also appears.

7. Click Continue Testing.

8. Select interactive next to the openstack/supportable checkbox and then click Run Selected.

Certification tests are run on the application-under-test. The status of the certification test run is displayed on the Testing Page under the relevant hostname.

The tool now runs the certification tests. You can find the status of the test run on the Testing tab under the relevant hostname.

After the test run completes, the test logs from the openstack/supportable tests are stored in the same log file as for the openstack/director test on the test server.

10.5. ADDITIONAL RESOURCES

- For more information about certification targets, see Red Hat OpenStack Certification Policy Guide.
CHAPTER 11. PUBLISHING ON THE CATALOG

You can publish your product on the Red Hat Ecosystem Catalog after completing the pre-certification checklist.

A RHOSP infrastructure certification is generated if, as part of the checklist:

- You ran the required tests successfully.
- Red Hat reviewed the testing configuration report, and found it was valid and appropriate for the certification.

Perform the following steps to publish your product on the catalog:

Procedure

1. Navigate to your Product listing page.
2. Click Publish.

Your certified application is now published on the Red Hat Ecosystem Catalog.