Install Owner and Partner RPMs Using IOS XR Install Infrastructure

This chapter describes how to install and manage Owner and Partner RPMs using the IOS XR install infrastructure.

Who is the intended audience?

This document is intended for network operators who want to install and manage propreitary Owner and Partner RPMs on devices running the Cisco IOS XR software. It assumes that these users are familiar with the basic concepts and commands of IOS XR and docker.

What are Owner and Partner RPMs?

Owner RPMs: RPMs created by Cisco customers, or by other third parties. Cisco's customer (also known as the Owner) is responsible for the content and security of these RPMs.

Partner RPMs: RPMs created by Cisco Partners. These are supplied by Cisco and are signed with Cisco-managed security keys.

Note Owner and Partner RPMs are installed as docker container images that run on the router.

Table 1: Feature History Table

Feature Name	Release Information	Feature Description
Install Owner and Partner RPMs Using IOS XR Install Infrastructure	Release 24.2.11	You can now use the existing IOS XR install infrastructure to install your proprietary Owner and Partner RPMs. This enhancement streamlines the process of integrating third-party software seamlessly into the IOS XR environment, including bundling the owner and partner RPMs into a GISO. In previous releases, you could only install Owner and Partner applications using the Application Manager interface. This feature introduces the keyword **skip-implicit-owner-packages-checks** in the following install commands: • **install package add** • **install replace** • **install replace reimage**

Limitations and Guidelines

General Limitation and Guidelines

- Owner and partner RPMs can be installed only on route processors, and not on the line

- Owner and partner RPMs are managed by App Manager, which is responsible for running the docker containers and handling notifications from Install.

- Owner and partner RPMs must install files only to the designated filesystem locations. These locations are `/opt/owner/` and `/opt/partner/` respectively.

- When installing Owner and partner RPMs, the maximum size of a GISO that can be used for bootstrap or when using the **install replace** command is 4GB.

- If you are upgrading from an IOS XR release that does not support installing the Owner or Partner RPMs (for example, upgrading from IOS XR Release 24.1.1 to IOS XR Release 24.2.11), owner and partner RPMs will not be installed automatically during the upgrade process. See the *Two-Step Upgrade Process for Installing Owner or Partner RPMs* section for more information.

Limitation and Guidelines for Owner RPMs

- Names of all Owner RPMs must begin with the string "owner-".

- Owner RPMs can either be unsigned or signed with a non-Cisco key. However, signatures are not verified during installation.

- Owner RPMs must not include any RPM scriptlets, including pre-install and post-install scripts.

- You must request the installation of an Owner RPMs either by listing them explicitly or by including an additional parameter *skip-implicit-owner-packages-checks* in the install commands.

- During the network boot process using PXE or when booting from a USB drive, Owner RPMs are not automatically installed. This limitation arises because in these scenarios, there is no mechanism for the owner (Cisco customer) to convey consent for the installation of Owner RPMs. That is, there is no way for the owner to provide the *skip-implicit-owner-packages-checks* parameter.

  If you want to include Owner RPMs after booting from an ISO via PXE or USB, execute the **install replace** command with the ISO that contains the desired Owner RPM packages. This action incorporates the Owner RPM packages into your installation without affecting any other aspects of the system.

Limitation and Guidelines for Partner RPMs

- All Partner RPMs must be signed with a Cisco key; otherwise, they are treated as owner RPMs.

- Names of all Partner RPMs must begin with the string "partner-".

Installing Owner and Partner RPMs

This section describes how to install owner and partner RPMs using different install operations, such as install package add, install replace, install rollback, and so on.

Workflow to Install Owner and Partner RPMs

- Create an RPM containing the application (in the form of a docker container image), according to the requirements for Owner and Partner RPMs.

  You can also include the RPMs in the GISO using the appropriate Cisco tools.

- Install the RPM using the XR Install infrastructure, that is, by using any of the install commands listed in the following table.

- Activate the RPM (or let the system do this automatically if requested in the install operation).

- Commit the transaction (or let the system do this automatically).

Note All owner and partner RPMs can be installed exactly like any IOS XR RPM, through any of the Install user interfaces (any of the install commands listed in Table 1).

However, when installing an owner RPM, you must do one of the following:

- Option 1: Specify the RPM explicitly by name, for example,

  ```
  install package add owner-foo
  ```

- Option 2: Specify the skip-implicit-owner-packages-checks parameter, for example,

  ```
  install replace [iso] skip-implicit-owner-packages-checks
  ```

Install Operations for Owner and Partner RPMs

Use one of the following install operations to install Owner and Partner RPM:

1. **install package add**

   Use this command to add one or more packages to the active software without replacing the entire software.

   This command enables you to install owner and partner RPMs individually or in combination with other packages.

   ```
   Router# install package add disk0:owner-app-24.2.1.x86_64.rpm activate commit
   ```

   Or

   ```
   Router# install package add disk0:partner-cisco-app-2.0.0-24.2.1.x86_64.rpm activate
   commit
   ```

   Or

   ```
   Router# install package add skip-implicit-owner-packages-checks activate commit
   ```

   Note The skip-implicit-owner-packages-checks parameter is required only if the owner RPM is not explicitly listed by name.

2. **install replace**

   Use this command to replace the currently installed software with a new GISO that includes new owner and partner RPMs.

   ```
   Router# install replace /harddisk:/8000-64-24.2.1-owner.iso activate commit
   ```

   Or

   ```
   Router# install replace skip-implicit-owner-packages-checks activate commit
   ```

   Note The skip-implicit-owner-packages-checks parameter is required only if the owner RPM is not explicitly listed by name.

3. **install replace reimage**

Use this command to reimage the router with a fresh copy of the operating system. You can use this command to recover from a corrupt state or to upgrade to a new major version that requires a fresh install rather than an incremental package upgrade.

> **Note** This command is a disruptive process that erases the current configuration and operating system and replaces them with the specified new image. It is crucial to have a backup of the current configuration or any important data before performing this action.

```
Router# install replace reimage /harddisk:/8000-64-24.2.1-owner.iso activate commit
```

Or

```
Router# install replace reimage skip-implicit-owner-packages-checks activate commit
```

> **Note** The `skip-implicit-owner-packages-checks` parameter is required only if the owner RPM is not explicitly listed by name.

4. install rollback

Use this command to roll back to the software associated with the specific transaction ID. You can also use this command to roll back the installation of owner and partner RPMs.

```
Router# install rollback skip-implicit-owner-packages-checks
```

> **Note** The `skip-implicit-owner-packages-checks` parameter is required only if the owner RPM is not explicitly listed by name.

Use the `show install active summary` command to verify the above install operations.

Other Install Operations

The install infrastructure supports other install operations that can be used to install Owner and Partner RPMs, such as `install package remove`, `install package deactivate`, and `install source`.

For information on using the Application Manager, see the *Customize Docker Run Options Using Application Manager* section in the *Application Hosting Configuration Guide for Cisco 8000 Series Routers*.

Two-Step Upgrade Process for Installing Owner or Partner RPMs

If you are upgrading from an IOS XR release that does not support installing the Owner or Partner RPMs (any release prior to IOS XR Release 24.2.1), these RPMs will not be installed automatically during the upgrade process.

This is because the installation process governed by the previous releases does not have the functionality to handle the new RPMs.

To install Owner or Partner RPMs, you must perform the upgrade in two distinct steps:

1. Upgrade from the previous release to IOS XR Release 24.2.1 without the Owner or Partner RPMs.

2. Perform an additional upgrade using the same newer version, that is, IOS XR Release 24.2.1 to IOS XR Release 24.2.1. This time explicitly by including the Owner or Partner RPMs.

These upgrade steps can be accomplished using the same ISO that contains the new version (for example, IOS XR Release 24.2.1) and the additional Owner or Partner RPMs. This two-step process ensures that the new features are properly implemented and that the Owner or Partner RPMs are correctly installed on your system.

Troubleshooting Installation Failures

Normal Installation Failures (While IOS XR is Running)

If you encounter a failure while installing Owner or Partner RPMs during routine operations, such as **install replace** or **install package add**, the system treats this failure exactly like the failure to install any IOS XR RPMs.

The installation is aborted, and you must resolve the issue to continue. Standard recovery procedures for failed RPM installations should be followed in this case. For more information, see the *Troubleshoot Router Setup and Upgrade* chapter.

Bootstrap Installation Failures (During System Reimage)

If an Owner or Partner RPM fails to install during the bootstrap process, such as during a reimage from a disk, the system continues to boot, assuming all IOS XR software have been installed successfully.

After the system restarts, you will be alerted if any Owner or Partner RPMs were not installed. Use the **show install boot packages-not-installed** command for a list of uninstalled packages and the reasons they were not applied.

This distinction exists because the IOS XR system can fully boot and operate without the Owner or Partner RPMs, allowing you to troubleshoot the issue in a fully operational environment.

Inconsistencies in Owner/Partner RPMs Across Route Processors

If the system detects inconsistent versions of the IOS XR software on the active and standby RPs, the standby RP is repeatedly reimaged until the versions match.

However, if the system detects different versions of Owner or Partner applications on the active and standby route processors (RPs), you are required to address the discrepancy.

Let's assume the standby RP comes up with a different tOwner or Partner RPM version than that installed to the active RP, the following events take place:

1. The standby RP reimaged.

2. If the RP comes up with the same RPM version as the active RP, no further action is required.

3. If the RP still comes up with different a RPM version, the system updates the syslog and raises an alarm to indicate that the RPs have different Owner or Partner RPM versions installed.