



Red Hat build of Cryostat 3

Migrating Cryostat 2.4 to Cryostat 3.0

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Abstract

Red Hat build of Cryostat is a Red Hat offering on OpenShift Container Platform. The Migrating Cryostat 2.4 to Cryostat 3.0 guide provides information on how to upgrade your Cryostat 2.4 application to Cryostat 3.0.

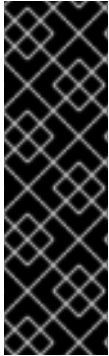
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PREFACE

The Red Hat build of Cryostat is a container-native implementation of JDK Flight Recorder (JFR) that you can use to securely monitor the Java Virtual Machine (JVM) performance in workloads that run on an OpenShift Container Platform cluster. You can use Cryostat 3.0 to start, stop, retrieve, archive, import, and export JFR data for JVMs inside your containerized applications by using a web console or an HTTP API.

Depending on your use case, you can store and analyze your recordings directly on your Red Hat OpenShift cluster by using the built-in tools that Cryostat provides or you can export recordings to an external monitoring application to perform a more in-depth analysis of your recorded data.



IMPORTANT

Red Hat build of Cryostat is a Technology Preview feature only. Technology Preview features are not supported with Red Hat production service level agreements (SLAs) and might not be functionally complete. Red Hat does not recommend using them in production. These features provide early access to upcoming product features, enabling customers to test functionality and provide feedback during the development process.

For more information about the support scope of Red Hat Technology Preview features, see [Technology Preview Features Support Scope](#).

MAKING OPEN SOURCE MORE INCLUSIVE

Red Hat is committed to replacing problematic language in our code, documentation, and web properties. We are beginning with these four terms: master, slave, blacklist, and whitelist. Because of the enormity of this endeavor, these changes will be implemented gradually over several upcoming releases. For more details, see [our CTO Chris Wright's message](#).

CHAPTER 1. CRYOSTAT MIGRATION OVERVIEW

As a cluster administrator in Red Hat OpenShift, you can upgrade from Cryostat 2.4 to Cryostat 3.0. This guide covers new updates available in the Cryostat 3.0 release, deprecated and unsupported features, and any required application and Operator configuration updates to maintain consistent behavior.

Before you begin the [migration process](#), complete the following steps:

- Review the [major Cryostat Operator changes in Cryostat 3.0](#) .
- Review the [application configuration changes](#) .
- Review [migration recommendations](#) .

1.1. MAJOR CRYOSTAT OPERATOR CHANGES

Red Hat build of Cryostat 3.0 includes major updates to the installation mode of the Cryostat Operator as well as the types of provided APIs.

Installation mode changes

Red Hat build of Cryostat version	Installation modes
2.4 and earlier	<ul style="list-style-type: none"> • All namespaces on the cluster (default) • A specific namespace on the cluster
3.0	<ul style="list-style-type: none"> • All namespaces on the cluster (default)

In Red Hat OpenShift, the Cryostat Operator can now only be installed on a cluster-wide basis (**All namespaces on the cluster**) rather than into a subset of cluster namespaces. Cluster-wide installation is the preferred mode for the Operator Lifecycle Manager and per-namespace installations are a deprecated feature.

Figure 1.1. Installation modes in Cryostat 3.0

OperatorHub > Operator Installation

Install Operator

Install your Operator by subscribing to one of the update channels to keep the Operator up to date. The strategy determines either manual or automatic updates.


Update channel * ⓘ
stable

Version *
3.0.0


Installation mode *

All namespaces on the cluster (default)
Operator will be available in all Namespaces.

A specific namespace on the cluster
This mode is not supported by this Operator

 **Red Hat build of Cryostat**
provided by Red Hat

Provided APIs

 **Cryostat** Required

Cryostat allows you to install Cryostat for a single namespace, or multiple namespaces. It contains configuration options for controlling the Deployment of the Cryostat application and its related components. A Cryostat instance must be created to...

Provided API changes


Red Hat build of Cryostat version	Provided APIs
2.4 and earlier	<ul style="list-style-type: none"> ● ClusterCryostat ● Cryostat
3.0	<ul style="list-style-type: none"> ● Cryostat

ClusterCryostat and **Cryostat** APIs have now been unified into a singular **Cryostat** API. You can use the **Cryostat** API and its optional **Target Namespaces** field to create one or more Cryostat instances that correspond to namespaces or groups of namespaces that contain your applications.

Figure 1.2. Provided APIs available in Cryostat 3.0


Project: openshift-operators ▾

[Installed Operators](#) ▸ Operator details

 **Red Hat build of Cryostat**
3.0.0 provided by Red Hat

[Details](#) [YAML](#) [Subscription](#) [Events](#) **Cryostat**

Provided APIs

 **Cryostat**

Cryostat allows you to install Cryostat for a single namespace, or multiple namespaces. It contains configuration options for controlling the Deployment of the Cryostat application and its related components. A Cryostat instance must be created to...

[⊕ Create instance](#)

1.2. APPLICATION CONFIGURATION CHANGES

For applications that are deployed with the Cryostat agent, an updated 0.4.0 version of the agent is available and required for using Red Hat build of Cryostat 3.0. For information about the latest available build version of the Cryostat agent, refer to the [Red Hat Maven repository](#).

In addition to upgrading the agent, some of the agent configuration properties have changed:

Agent configuration property	Cryostat 2.4 value	Cryostat 3.0 value	Details
CRYOSTAT_AGENT_BASEURI	http://cryostat.myname.space.mycluster.svc:8181	http://cryostat.myname.space.mycluster.svc:4180	Service port has changed from 8181 to 4180.
CRYOSTAT_AGENT_AUTHORIZATION	Bearer Base64 token	Bearer raw (plain-text) token	Bearer token no longer needs to be Base64-encoded.

For more information about agent configuration changes and other new features and enhancements, see the [Release notes for the Red Hat build of Cryostat 3.0](#).



NOTE

For applications that are using remote JMX connections, Red Hat build of Cryostat does not include any configuration changes.

1.3. MIGRATION RECOMMENDATIONS

Before migrating, consider backing up any Cryostat data to ensure that customizations can be restored after upgrading.

This data includes:

- Custom profile templates
- Custom dashboard layouts
- Active and archived recordings
- Custom automated rules

If there are previous SSL certificates and stored credentials configurations, ensure that these are available during migration.

CHAPTER 2. CRYOSTAT MIGRATION PROCESS

The process of migrating to Cryostat 3.0 includes the following tasks:

- [Familiarize with your current Cryostat installation and configured instances](#) .
- [Upgrade your existing Cryostat installation](#) .
- [Update your deployed applications](#) .
- [Restore previous configurations](#) .

2.1. FAMILIARIZING WITH YOUR CURRENT CRYOSTAT INSTALLATION AND CONFIGURED INSTANCES

The Cryostat Operator is normally updated automatically if the **Update approval** strategy is set as **Automatic**. However, because Cryostat 3.0 introduces changes to the installation mode and provided APIs as described in [Major Cryostat Operator changes](#), you might need to perform manual actions to ensure that Cryostat is properly updated.

To determine whether manual intervention is required, review the following steps to familiarize with your current Cryostat installation and configured instances.

Procedure

1. As an administrator, in the main navigation of the Red Hat OpenShift web console, click the drop-down menu and select **Administrator**.
2. In the navigation menu, click **Operators > Installed Operators**
3. Search for the installed **Red Hat build of Cryostat** Operator.
4. To check Cryostat's installation mode, note the value in the **Managed Namespaces** column. This value can be **All Namespaces** or a user-defined namespace.




Figure 2.1. Managed Namespaces details in Cryostat

Project: cryostat-test ▾

Installed Operators

Installed Operators are represented by ClusterServiceVersions within this Namespace. For more information, see the [Understanding Operators documentation](#) [🔗](#). Or create an Operator and ClusterServiceVersion using the [Operator SDK](#) [🔗](#).

Name ▾ Search by name... [?](#)

Name	Managed Namespaces	Status	Last updated	Provided APIs
 Red Hat build of Cryostat 2.4.0+6 provided by Red Hat	All Namespaces	 Succeeded Up to date	 Jun 21, 2024, 10:50 a.m.	Cluster Cryostat Cryostat

5. In the **Name** column, click **Red Hat build of Cryostat**
6. In the **Operator details** panel, click the **Subscription** tab.
7. In the **Subscription details** panel, to check Cryostat's update approval strategy, note the value in the **Update approval** area. This value can be **Manual** or **Automatic**.

Figure 2.2. Update approval details in Cryostat

Subscription details

The screenshot shows the 'Subscription details' section of the Cryostat interface. It contains three main components:

- Update channel**: Set to 'stable' with a pencil icon for editing.
- Update approval**: Set to 'Automatic' with a pencil icon for editing. This section is highlighted with a yellow border.
- Upgrade status**: Shows a green checkmark and 'Up to date'. To its right, a bracket indicates the number of instances: '1 installed' and '0 installing'.

8. To check your configured instances:
 - a. Click the **Cluster Cryostat** tab. This displays a list of the ClusterCryostat instances that have already been created. If there are no instances, the page displays **No operands found**.
 - b. Click the **Cryostat** tab. This displays a list of the Cryostat instances that have already been created. If there are no instances, the page displays **No operands found**.

Once you have identified the combination of installation mode and configured instances, you can upgrade Cryostat by completing the appropriate steps in [Upgrading your Cryostat installation](#) that match your deployment.

2.2. UPGRADING YOUR CRYOSTAT INSTALLATION

The steps you must follow to upgrade Cryostat will vary depending on which of the following scenarios matches your existing Cryostat installation, based on Cryostat installation and instance combinations:

- Cryostat was installed to **All Namespaces** and **Cryostat** instances were previously created .
- Cryostat was installed to **All Namespaces** and **ClusterCryostat** instances were previously created.
- Cryostat was installed to **All Namespaces** and **ClusterCryostat** and **Cryostat** instances were previously created.
- Cryostat was installed to **a target namespace** and **Cryostat** instances were previously created .
- Cryostat was installed to **a target namespace** and **ClusterCryostat** instances were previously created.
- Cryostat was installed to **a target namespace** and **ClusterCryostat** and **Cryostat** instances were previously created.

2.2.1. Upgrading installations where Cryostat was installed to "All Namespaces" and "Cryostat" instances were previously created



NOTE

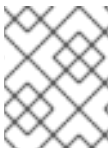
For this scenario, if the **Update approval** strategy is set to **Automatic**, no upgrade steps are required.

For this scenario, if the **Update approval** strategy is set to **Manual**, complete the steps in the following procedure.

Procedure

1. As an administrator, in the main navigation of the Red Hat OpenShift web console, click the drop-down menu and select **Administrator**.
2. In the navigation menu, click **Operators > Installed Operators**
3. Search for the installed **Red Hat build of Cryostat** Operator.
4. Check the version and status of the Cryostat Operator.
The Cryostat version will be 2.4 and the **Status** column should display **Upgrade available**.
5. Click **Upgrade available**.
6. Click **Preview InstallPlan** and then click **Approve**.

You have now successfully upgraded to Cryostat 3.0.



NOTE

To ensure that cached sessions are reset, a hard browser refresh might be required when opening the Cryostat web application.

2.2.2. Upgrading installations where Cryostat was installed to "All Namespaces" and "ClusterCryostat" instances were previously created

For this scenario, complete the steps in the following procedure:

Procedure

1. As an administrator, in the main navigation of the Red Hat OpenShift web console, click the drop-down menu and select **Administrator**.
2. In the navigation menu, click **Operators > Installed Operators**
3. Search for the installed **Red Hat build of Cryostat** Operator.
4. Check the version and status of the Cryostat Operator.
 - a. If the **Update approval** strategy for Cryostat is **Automatic**, the Cryostat version will have already been upgraded to 3.0. Continue to [Step 5](#).
 - b. If the **Update approval** Strategy for Cryostat is **Manual**, the Cryostat version will be 2.4 and the **Status** column should display **Upgrade available**.
 - i. Click **Upgrade available**.
 - ii. Click **Preview InstallPlan** and then click **Approve**.
5. Once Cryostat 3.0 is installed, navigate to **Administration > CustomResourceDefinitions**
6. Search for and click into **ClusterCryostat CRD** (custom resource definition).
7. Click the **Instances** tab.
8. For each **ClusterCryostat** instance that you need to migrate, make a copy of the YAML configuration:
 - a. Click the name of the ClusterCryostat instance. Then click the **YAML** tab and click

Download in the lower-right corner of the panel.

- b. Repeat step 8a for each instance that you need to migrate.
9. Navigate back to the ClusterCryostat **Instances** tab.
10. Remove each ClusterCryostat instance by clicking the ellipsis icon on the right. This includes the instances that you downloaded in [Step 8](#).
11. Navigate to the **Installed Operators > Red Hat build of Cryostat > Cryostat** tab.
12. For each **ClusterCryostat** instance in [Step 8](#):
 - a. Click **Create Cryostat**
 - b. Use the **YAML** view to modify your ClusterCryostat configurations.
For example:

Old YAML settings:

```
apiVersion: operator.cryostat.io/v1beta1
kind: ClusterCryostat
metadata:
  name: cryostat-sample
spec:
  enableCertManager: true
  installNamespace: cryostat
  targetNamespaces:
    - openshift-operators
```

New YAML settings:

```
apiVersion: operator.cryostat.io/v1beta2
kind: Cryostat
metadata:
  name: cryostat-sample
  namespace: openshift-operators
spec:
  enableCertManager: true
  targetNamespaces:
    - openshift-operators
```

- c. Click **Create**.

You have now successfully migrated your Cryostat instances. For more information about updating your deployed applications, see [Updating your deployed applications](#).

2.2.3. Upgrading installations where Cryostat was installed to "All Namespaces" and "ClusterCryostat" and "Cryostat" instances were previously created

For information about migrating **ClusterCryostat** instances, see [Upgrading installations where Cryostat was installed to "All Namespaces" and "ClusterCryostat" instances were previously created](#).

**NOTE**

Cryostat instances do not need to be modified or removed.

2.2.4. Upgrading installations where Cryostat was installed to a target namespace and "Cryostat" instances were previously created

For this scenario, regardless of whether the **Update approval** strategy is **Automatic** or **Manual**, the upgrade paths for Cryostat Operators will fail with the following error:

error: OwnNamespace InstallModeType not supported, cannot configure to watch own namespace

Before you continue, review the information in [Migration recommendations](#).

For this scenario, complete the steps in the following procedure.

Procedure

1. As an administrator, in the main navigation of the Red Hat OpenShift web console, click the drop-down menu and select **Administrator**.
2. In the navigation menu, click **Operators > Installed Operators**

**NOTE**

Ensure that you have selected the correct project (namespace) in which Cryostat was installed.

3. Search for the installed **Red Hat build of Cryostat** version 2.4 Operator.
4. Uninstall Red Hat build of Cryostat from **Operators > Installed Operators**
 - a. If the **Update approval** strategy is **Manual**, only Cryostat 2.4 is displayed in the Installed Operators table. Click the ellipsis icon on the right and select **Uninstall Operator**.
 - b. If the **Update approval** Strategy is **Automatic**, Cryostat 2.4 and 3.0 are both displayed in the Installed Operators table.
 - i. For Cryostat 2.4, click the ellipsis icon and select **Delete ClusterServiceVersion**.
 - ii. For Cryostat 3.0, click the ellipsis icon and select **Uninstall Operator**.
5. Navigate to **Operators > OperatorHub** and search for Cryostat.
6. Click the **Red Hat build of Cryostat** tile and install **version 3.0** into the **openshift-operators** namespace. **Openshift-operators** is the default namespace for Operator installations to "All Namespaces".

You have now successfully migrated to the Cryostat 3.0 Operator. For more information about updating your deployed applications, see [Updating your deployed applications](#).

**NOTE**

To ensure that cached sessions are reset, a hard browser refresh might be required when opening the Cryostat web application.

2.2.5. Upgrading installations where Cryostat was installed to a target namespace and "ClusterCryostat" instances were previously created

For this scenario, regardless of whether the **Update approval** strategy is **Automatic** or **Manual**, the upgrade paths for Cryostat Operators will fail with the following error:

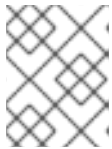
error: OwnNamespace InstallModeType not supported, cannot configure to watch own namespace

Before you continue, review the information in [Migration recommendations](#).

For this scenario, complete the steps in the following procedure.

Procedure

1. As an administrator, in the main navigation of the Red Hat OpenShift web console, click the drop-down menu and select **Administrator**.
2. In the navigation menu, click **Operators > Installed Operators**



NOTE

Ensure that you have selected the correct project (namespace) in which Cryostat was installed.

3. Search for the installed **Red Hat build of Cryostat** version 2.4 Operator.
4. Click the **Cluster Cryostat** tab.
 - a. To export an instance that needs to be migrated, click this instance name. Then click the **YAML** tab and click **Download** in the lower-right corner of the panel.
 - b. Repeat step 4a for each instance that you need to migrate.
 - c. Once the instances have been exported, to delete these instances, select **Delete ClusterCryostat** from the **Actions** drop-down menu in the upper-right corner of the panel.
5. Uninstall Red Hat build of Cryostat from **Operators > Installed Operators**
 - a. If the **Update approval** strategy is **Manual**, only Cryostat 2.4 is displayed in the Installed Operators table. Click the ellipsis icon on the right and select **Uninstall Operator**.
 - b. If the **Update approval** Strategy is **Automatic**, Cryostat 2.4 and 3.0 are both displayed in the Installed Operators table.
 - i. For Cryostat 2.4, click the ellipsis icon and select **Delete ClusterServiceVersion**.
 - ii. For Cryostat 3.0, click the ellipsis icon and select **Uninstall Operator**.
6. Navigate to **Operators > OperatorHub** and search for Cryostat.
7. Click the **Red Hat build of Cryostat** tile and install **version 3.0** into the **openshift-operators** namespace. **Openshift-operators** is the default namespace for Operator installations to "All Namespaces".
8. For each ClusterCryostat instance that you exported in [Step 4](#):

Click **ClusterCryostat**

- a. Click **Create Cryostat**.
- b. Using the YAML from [Step 4](#), use the **YAML** view to modify your ClusterCryostat configurations.
For example:

Old YAML settings:

```
apiVersion: operator.cryostat.io/v1beta1
kind: ClusterCryostat
metadata:
  name: cryostat-sample
spec:
  enableCertManager: true
  installNamespace: cryostat
  targetNamespaces:
    - openshift-operators
```

New YAML settings:

```
apiVersion: operator.cryostat.io/v1beta2
kind: Cryostat
metadata:
  name: cryostat-sample
  namespace: openshift-operators
spec:
  enableCertManager: true
  targetNamespaces:
    - openshift-operators (or Target Namespace)
```

- c. Click **Create**.

You have now successfully migrated to the Cryostat 3.0 Operator. For more information about updating your deployed applications, see [Updating your deployed applications](#).

2.2.6. Upgrading installations where Cryostat was installed to a target namespace and "ClusterCryostat" and "Cryostat" instances were previously created

For information about migrating **ClusterCryostat** instances, see [Upgrading installations where Cryostat was installed to a target namespace and ClusterCryostat instances were previously created](#).

**NOTE**

Cryostat instances do not need to be modified or removed.

2.3. UPDATING YOUR DEPLOYED APPLICATIONS

For more information about configuring your Java applications in Cryostat 3.0, see [Configuring Java applications](#).

2.4. RESTORING PREVIOUS CONFIGURATIONS

For previously customized Cryostat configurations such as event templates, dashboard layouts, JFR recordings, and automated rules, review the following guides to restore these customizations:

Event templates

For more information, see Step 7 in [Using custom event templates](#).

Dashboard layouts

For more information, see [Restoring a dashboard layout](#).

JFR recordings

For more information, see [Uploading a JFR recording to the Cryostat archives location](#).

Automated rules

For more information, see [Uploading an automated rule in JSON](#).

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