Red Hat build of Cryostat 2

Configuring sidecar containers on Cryostat

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Legal Notice

Abstract

The Configuring sidecar containers on Cryostat document is for users who want to generate reports in a container that is separate from the main Cryostat container, so that they can manage resources more efficiently. This document explains how to set up and configure a sidecar container in a Red Hat OpenShift environment.

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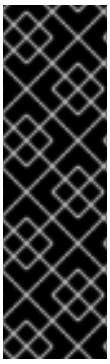
PREFACE

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 2.4 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. OVERVIEW OF THE SIDECAR CONTAINER

Cryostat supports sidecar containers, so you can use a sidecar container to generate automated analysis reports.

Before Cryostat 2.3, you had to rely on the main Cryostat container to generate automated analysis reports. This approach is resource intensive and could impact the performance of running your Cryostat application because you might need to provision additional resources for the main Cryostat container.

By generating automated analysis reports in the sidecar report container, you can efficiently use the Red Hat build of Cryostat Operator to provision resources for your Cryostat application. This provides your Cryostat container with a lower resource footprint, because the Cryostat instance that interacts with the target applications can focus on running low-overhead operations over HTTP and JMX connections.

Additionally, you can duplicate a sidecar report container and then configure this duplicated container to meet your needs.

CHAPTER 2. SETTING UP A SIDECAR CONTAINER

You can set up a sidecar container when you create a Cryostat instance with an installed Red Hat build of Cryostat Operator on the Red Hat OpenShift web console.

Additionally, you can set up a sidecar container by modifying an existing Cryostat resource on Red Hat OpenShift. This action instructs the Red Hat build of Cryostat Operator to modify the existing Cryostat installation on Red Hat OpenShift.

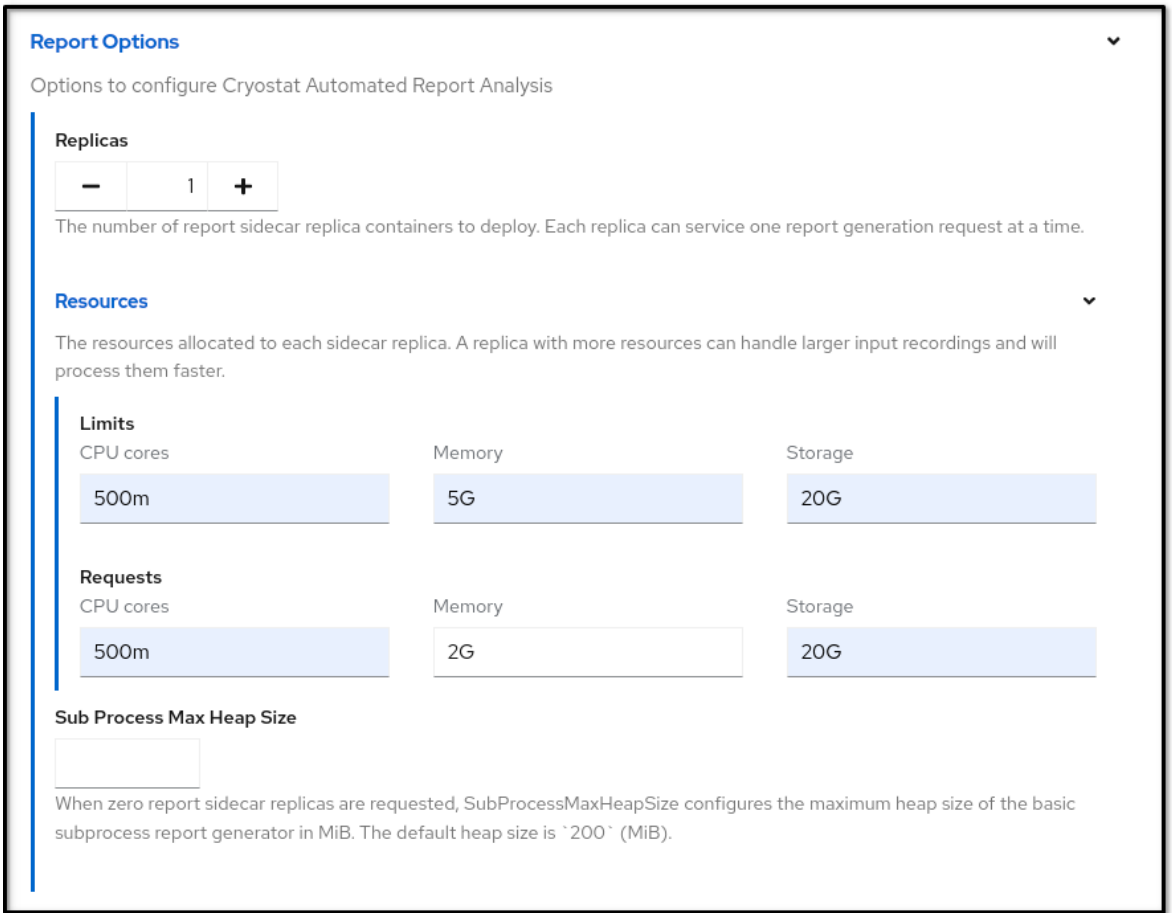
Prerequisites

- Logged in to the OpenShift Container Platform by using the Red Hat OpenShift web console.
- Installed the Red Hat build of Cryostat Operator in a project on Red Hat OpenShift. See Installing Cryostat on Red Hat OpenShift by using a Red Hat build of Cryostat Operator (Installing Cryostat).
- Deployed a Java application that has JMX or the Cryostat agent enabled inside the same namespace as your Cryostat instance.

Procedure

1. From the Red Hat OpenShift web console, go to **Operators > Installed Operators**.
2. From the list of installed operators, click the name of your Red Hat build of Cryostat Operator instance. An **Operator details** page opens on your web console.
3. In the **Provided APIs** section, click **Create instance**.
4. Complete any mandatory fields, which are marked with an asterisk, such as the **Name** field.
5. From the **Create Cryostat** configuration page, go to the **Report Options** section.
6. To show options for configuring the Cryostat's automated report analysis implementation, click the expand icon.

Figure 2.1. The Report Options section on the Create Cryostat configuration page



7. Configure any of the following report options to meet your needs:

   a. **Replicas**: Defaults to **0**, which indicates that the main Cryostat container handles report generation. You must set to a value greater than **0**, so that a replica or replicas of your sidecar container can generate and handle analysis reports.

   b. **Resources**: Sets the resource limits for each sidecar replica. To show configurable limits and request options for each sidecar replica, click the expand icon. Options include **CPU cores**, **Memory**, and **Storage**. The **Storage** option has the least relevance to the generation of a sidecar report. Red Hat OpenShift sets the supported units for each option.

   c. **Sub Process Max Heap Size** Option applies only to the main Cryostat container. Allocates the maximum amount of memory for the main Cryostat container that it can use to generate reports.

NOTE

The following limitations might exist with the type of value you specify for the **Sub Process Max Heap Size** option:

- A low value might cause report-generation requests to fail, because the report size might exceed the allocated memory for the main Cryostat container. Additionally, report generation might time out, because the JVM must constantly run garbage collection (GC) operations to process the report.
- A high value might deplete memory resources for the Cryostat instance that operates inside the main Cryostat container, because the memory limitation applies to two memory partitions until the report-generation operation finishes.

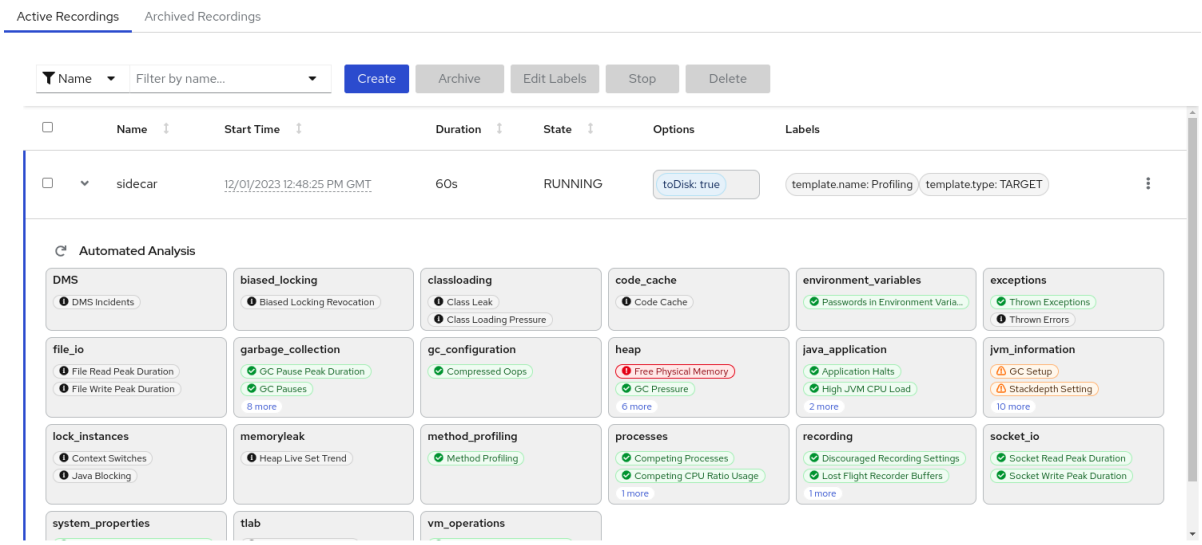
Consider generating a report with the option's default setting. If the default setting does not match your requirements and then consider configuring the option.

8. To generate a Cryostat instance, click **Create**.

Verification

1. Go to your Cryostat instance's **Cryostat details** page and then select the **Details** tab.
2. Click the URL that is available under the **Application URL** field. Your web browser redirects you to a OpenShift Container Platform login page, where you must enter your credentials.
3. From the Cryostat web console, select your target JVM.
4. Go to the **Recordings** menu item and start a JFR recording of your Java Virtual Machine (JVM).
5. On the **Active Recordings** tab or the **Archived Recordings** tab, view automated analysis information for the sidecar by expanding the twistie icon (**v**) next to your listed recording:

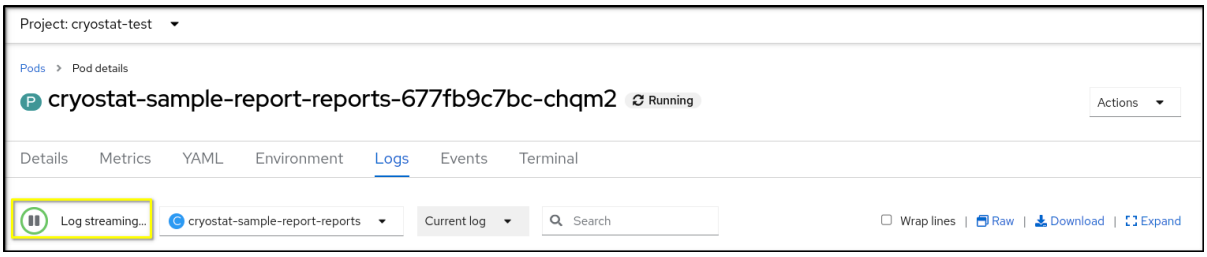
Figure 2.2. Example of viewing automated analysis information for a sidecar recording



6. Go to your Red Hat OpenShift web console and select **Workloads > Pods**

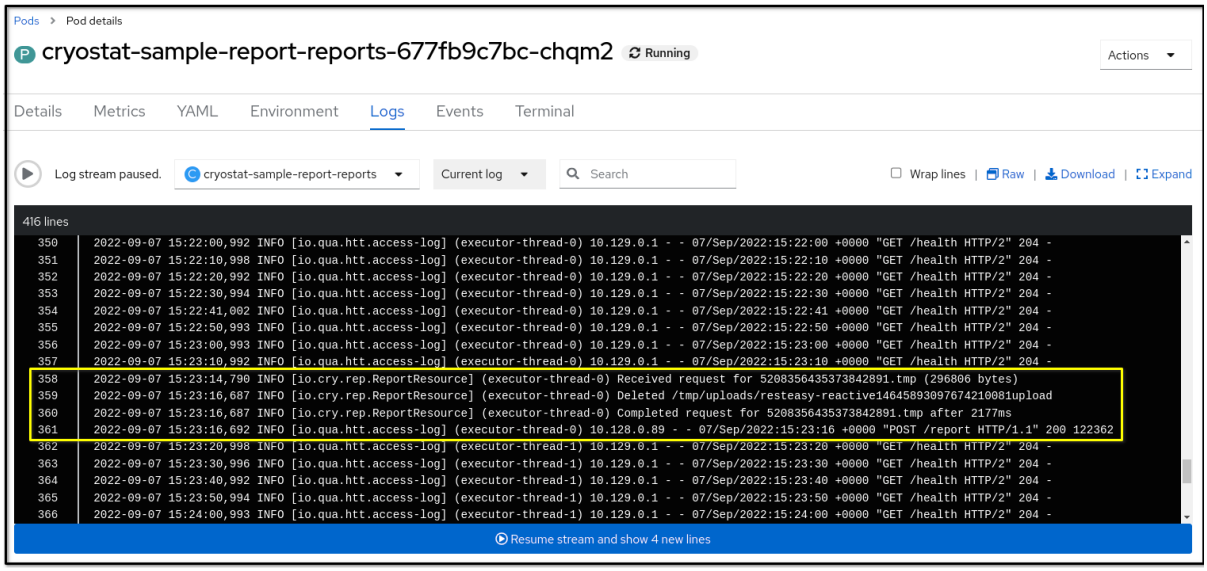
7. Click the name of your pod.
8. From the **Pod details** page, click the **Logs** tab.
9. To stop the log stream, click the pause icon. A series of log messages opens in the log window.

Figure 2.3. The Log streaming button on the Pod details page



10. Locate any log messages that confirm that the sidecar report container received the generated report requests from the main Cryostat container.

Figure 2.4. Example of log messages in the Logs tab



Additional resources

- Installing Cryostat on Red Hat OpenShift by using a Red Hat build of Cryostat Operator (Installing Cryostat)
- Creating a JDK Flight Recorder (JFR) recording (Creating a JFR recording with Cryostat)
- Red Hat build of Cryostat Operator (Using the Red Hat build of Cryostat Operator to configure Cryostat)

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