Red Hat build of Cryostat 2

Release notes for the Red Hat build of Cryostat 2.3

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Legal Notice

Abstract

The Release notes for the Red Hat build of Cryostat 2.3 document provides an overview of new features in Cryostat 2.3 and a list of potential known issues and possible workarounds.

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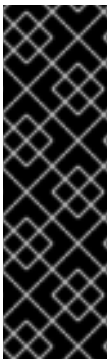
PREFACE

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 2.3 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.

PROVIDING FEEDBACK ON RED HAT DOCUMENTATION

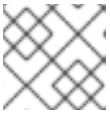
We appreciate your feedback on our documentation. To provide feedback, you can highlight the text in a document and add comments. Follow the steps in the procedure to learn about submitting feedback on Red Hat documentation.

Prerequisites

- Log in to the Red Hat Customer Portal.
- In the Red Hat Customer Portal, view the document in **Multi-page HTML** format.

Procedure

1. Click the **Feedback** button to see existing reader comments.



NOTE

The feedback feature is enabled only in the **Multi-page HTML** format.

2. Highlight the section of the document where you want to provide feedback.
3. In the prompt menu that opens near the text you selected, click **Add Feedback**.
   A text box opens in the feedback section on the right side of the page.
4. Enter your feedback in the text box and click **Submit**.
   You have created a documentation issue.
5. To view the issue, click the issue tracker link in the feedback view.

CHAPTER 1. SUPPORT POLICY FOR CRYOSTAT

Red Hat supports a major version of Cryostat for a minimum of 6 months. Red Hat bases this figure on the time that the product gets released on the Red Hat Customer Portal.

You can install and deploy Cryostat on Red Hat OpenShift Container Platform 4.10 or a later version that runs on an x86_64 architecture.

Additional resources

- For more information about the Cryostat life cycle policy, see Red Hat build of Cryostat on the Red Hat OpenShift Container Platform Life Cycle Policy web page.

CHAPTER 2. NEW FEATURES

Cryostat 2.3 introduces new features that enhance your use of the Cryostat product.

Connection to GraalVM Native Images

From Cryostat 2.3.1 onward, Cryostat can connect to GraalVM Native Images over Java Management Extensions (JMX). This feature requires that the target applications are built with GraalVM or Mandrel 23.0 or later. You must also ensure that the target applications are correctly configured to support connections to Cryostat over JMX.

Cross-namespace target application discovery

In Cryostat 2.3, you can deploy a Cryostat instance that services multiple Red Hat OpenShift namespaces. The Red Hat build of Cryostat Operator introduces the Cluster Cryostat API, which you can use to create Cryostat instances that work across multiple namespaces.

Users who can access the multi-namespace Cryostat instance have access to all target applications in any namespace that is visible to that Cryostat instance. Therefore, when you deploy a multi-namespace Cryostat instance, you must consider which namespaces to select for monitoring, which namespace to install Cryostat into, and the users to which you want to grant access.

Topology view

In Cryostat 2.3, a new view is introduced to help you view and perform actions on your target Java Virtual Machines (JVM)s. The **Topology** view provides a visual representation of the target JVMs and all the resources that are associated with those JVMs. You can view your deployment scenarios on Cryostat and verify that your deployments are as you expect.

You can customize the **Topology** view according to your requirements. For example, you can switch from a graph display to a list display and use filters to specify the information that you want to show.

You can also use the **Topology** view to perform actions on one or more target applications at the same time. You can select a pod or a deployment and, by clicking the **Actions** menu, you can run various actions, for example, starting or stopping recordings, on all target applications in the selection.

QuickStart guides and guided tour

In Cryostat 2.3, Quick Start guides and an interactive guided tour are delivered to help you get started with Cryostat and learn more about its features and capabilities.

The Quick Start guides provide step-by-step instructions on how to perform tasks, such as starting a recording, using the Cryostat dashboard, or getting started with automated rules.

Cryostat 2.3 also delivers an interactive guided tour to help you navigate the Cryostat user interface (UI) and learn how to perform specific tasks. The tour guides you through the Cryostat UI, the navigation menus and the available functions. The tour opens automatically the first time you start Cryostat 2.3, however, you can skip or restart the tour at any time.

You access the Quick Start guides and the guided tour from the upper right corner of the Cryostat UI by clicking the "?" icon.

Cryostat agent

Cryostat 2.3 introduces a new Java instrumentation agent to help you detect and monitor your target JVM applications. The Cryostat agent is an HTTP API that acts as a plug-in for applications that run on the JVM and retrieves a wide range of information from the applications for analysis by Cryostat.

Previously, Cryostat required target applications to expose a Java Management Extensions (JMX) port. Cryostat then communicated with the application JVMs over this JMX port to start and stop Java Flight Recorder (JFR) recordings and to pull JFR data over the network.

The new Cryostat agent retrieves JFR data from the JVM and sends it back to Cryostat over HTTP. The agent exposes only a small, read-only HTTP API, making it easier to audit and secure than a JMX port.

Customizable features on the Cryostat dashboard

Cryostat 2.3 introduces several new features to enhance the Cryostat dashboard to help users view important information about their target JVMs. The following new features are delivered:

- Dashboard cards to display information and metrics about your connected JVMs in a chart format. You can switch between different card configurations, which enable you to quickly access and analyze the most relevant data.
- Layout templates to help you customize the dashboard layout according to your requirements. You can create custom views that highlight the specific metrics or information that you want to focus on. You can also switch between different views and do not need to modify your dashboard each time you want to view different information.
- Ability to view static and dynamic information about your connected JVMs
- New dashboard card view for displaying and accessing **Automated analysis** reports.

With these new features, you can better customize the dashboard to suit your requirements and have more flexibility in monitoring and analyzing your Java applications.

Label to denote beta features

In Cryostat 2.3, a new label is available to highlight beta features. You can use this label if you want to be aware of and preview any beta features. A beta feature might not yet be functionally complete and ready to use in production.

To be able to preview beta features, you can set this flag from the **Settings** view. On the **Settings** view, click **Advanced** and, from the **Feature level** menu, select **Beta**.

CHAPTER 3. FEATURE ENHANCEMENTS

Cryostat 2.3 includes feature enhancements that build upon the Cryostat 2.2 offerings.

User actions on node groups disabled when performing back-end checks

From Cryostat 2.3.1 onward, the Topology view of the Cryostat web console automatically disables user actions on groups of target JVMs while back-end checks are in progress. This ensures that users cannot perform actions in the Cryostat web console when, for example, network latency might delay the completion of a back-end check.

Settings view

In Cryostat 2.3, the **Settings** view is updated with various enhancements to the visual display of the view and to provide additional settings that you can configure. The updates include the following enhancements:

- Option to set dark and light display themes for your console
- Setting options are grouped into categories, for example, General or Advanced
- Option to configure language settings and date and time formats

Automated analysis reports

In Cryostat 2.3, the **Automated analysis** reports are enhanced. Enhancements include the following updates:

- New user interface to display the **Automated analysis** reports in the form of cards on your dashboard. You can view and filter the information according to your requirements.
- Expanded analysis performed on your JFR recordings to incorporate additional categories of errors in the data.
- Additional error description provided and guidance to help you to troubleshoot.

Ability to bookmark URL links

With Cryostat 2.3, you can create bookmarks on your browser to the direct URLs of different sections and views of your Cryostat instance.

Multiple file upload

With Cryostat 2.3, you can upload multiple files simultaneously by using the **File upload** action on the Cryostat user interface. To upload the selected files, click **Upload**. When the upload is complete, click **Submit**.

More informative target application connection URL

In Cryostat 2.3, the format of the **Connection URL** of your target application is enhanced to provide more detail about the application that your Cryostat instance is connected to.

Previously, if you were running Cryostat on Red Hat OpenShift, this connection URL showed only the IP address information and port number. With this update, the URL format shows the IP address, the namespace in which the application was located, and the port number.

CHAPTER 4. UNSUPPORTED AND DEPRECATED FEATURES

Cryostat 2.3 removes some features because of their high maintenance costs, low community interest, and better alternative solutions.

Removed static Kubernetes environment variable-based target discovery

In Cryostat 2.3, the **io.cryostat.platform.internal.KubeEnvPlatformStrategy** value is removed as an option for the **CRYOSTAT_PLATFORM** environment variable.

CHAPTER 5. FIXED ISSUES

The Cryostat release might include fixes for issues that were identified in earlier releases of Cryostat. Review each fixed issue note for a description of the issue and the subsequent fix.

Issues fixed in Cryostat 2.3.1

The following issues have been fixed in the Cryostat 2.3.1 release:

Stored credentials incorrectly match against target applications that require JMX authentication and integrate the Cryostat Agent

Typically, the Cryostat Agent is configured to expose a readonly HTTP API that Cryostat interacts with. The Cryostat Agent provides this HTTP API URL to Cryostat as a discovery plug-in implementation. If a target application has an embedded Cryostat Agent and Cryostat attempts to connect to the target over Java Management Extensions (JMX) rather than HTTP, a conflict might arise. In this situation, the stored credentials of the Agent might overlap and conflict with any stored credentials that are necessary for JMX authentication of the target application.

Before Cryostat 2.3.1, this conflict resulted in the wrong credentials being presented for JMX authentication, and Cryostat operations such as listing recordings or activating Automated Rules might fail. This issue could occur when the integrated Agent was configured with the property **cryostat.agent.registration.prefer-jmx** and the target application had JMX enabled. This issue could also occur when the integrated Agent was configured to register itself with an HTTP URL for discovery, which is the default behavior, but the target application instance was also discoverable by some other mechanism such as Kubernetes API discovery.

From Cryostat 2.3.1 onward, the Cryostat Agent uses a more specific and unique selector for identifying its credentials. This fix enables Cryostat to distinguish between the Agent's credentials and any credentials necessary for JMX authentication.

CRYOSTAT_DISABLE_BUILTIN_DISCOVERY environment variable disables Custom Targets

Before Cryostat 2.3.1, when you set the **CRYOSTAT_DISABLE_BUILTIN_DISCOVERY** environment variable to **True**, this action also disabled Custom Targets functionality in addition to other built-in discovery mechanisms. The expected behavior is that the **CRYOSTAT_DISABLE_BUILTIN_DISCOVERY** environment variable disables all built-in discovery mechanisms except Custom Targets.

This issue is resolved in the Cryostat 2.3.1 release, which ensures that the Custom Targets functionality is always available, even if you set **CRYOSTAT_DISABLE_BUILTIN_DISCOVERY** environment variable to **True**.

Unable to log out of the Cryostat web application on OpenShift Container Platform 4.12 and later

Before Cryostat 2.3.1, when you clicked **Logout** to log out of the Cryostat web application, the logout operation failed for Cryostat instances that were deployed on OpenShift Container Platform 4.12 and later. The expected behavior is that the logout operation redirects you to the cluster OAuth login. Instead, the logout attempt failed and the following error message appeared:

Cross-Origin Request Blocked: The Same Origin Policy disallows reading the remote resource at https://oauth-openshift.apps-crc.testing/logout. (Reason: CORS header 'Access-Control-Allow-Origin' missing). Status code: 200.

Creating automated rules through HTTP API fails for multipart/form-data submissions

Before Cryostat 2.3.1, when you attempted to create automated rules by using data submitted as a **multipart/form-data** media type through an HTTP API, an "HTTP 415" error occurred. This error occurred because Cryostat did not support the **multipart/form-data** media type.

From Cryostat 2.3.1 onward, Cryostat can create automated rules for data submitted through any of the following media types:

- **multipart/form-data**
- **application/x-www-form-urlencoded**
- **application/json**

Deleting a namespace containing a Cryostat installation might freeze

Before Cryostat 2.3.1, when you attempted to delete a namespace on which a Cryostat instance was still installed, the deletion operation might freeze. This could occur if the **Lock ConfigMap** object was deleted before final cleanup actions were completed for the Cryostat or Cluster Cryostat custom resource (CR). The expected behavior is that the deletion operation succeeds and cleanup actions on any resources that were created for the Cryostat installation are complete.

This issue is resolved in the Cryostat 2.3.1 release in all cases except when the Cryostat Operator is part of the deleted namespace. In this situation, consider reinstalling the Cryostat Operator by using the default installation mode **All namespaces on the cluster (default)**. The reinstalled Operator can then clean up any leftover state and allow your namespace to be deleted.

JMC probe template validation error

Before Cryostat 2.3.1, when you attempted to upload a probe template through the Events view in the Cryostat web console, the upload could fail with a validation error. This validation error resulted from issues when parsing method parameter content types that you can define in the probe template.

Unable to upload JMC probe templates after a failure

Before Cryostat 2.3.1, if a failure occurred when uploading a probe template, any further attempts to upload this template also failed with an HTTP 500 error. This issue occurred if you uploaded an invalid template that failed validation checks and you subsequently attempted to upload a valid version of the same template. In this situation, Cryostat did not alert you that a template with the same name already existed.

From Cryostat 2.3.1 onward, Cryostat displays an error message if you attempt to upload probe templates with duplicate file names.

Wrong port number in Agent configuration when publishing a JMX URL

Before Cryostat 2.3.1, if you configured the Cryostat Agent to register itself as reachable through JMX rather than HTTP, the publication URL in the Agent configuration did not contain the correct JMX port number.

Wrong text in warning modal for disabling a rule

Before Cryostat 2.3.1, when you disabled an automated rule in the Cryostat web console, the warning modal displayed the following incorrect text:

If you click Delete, the rule will be disabled.

From Cryostat 2.3.1 onward, the warning modal displays the following text:

If you click Disable, the rule will be disabled.

Topology view shows toggle icons in the wrong order

Before Cryostat 2.3.1, the Topology view of the Cryostat web console did not show toggle icons in the correct order when you toggled between graph mode and list mode.

From Cryostat 2.3.1 onward, the graph mode correctly shows the list mode icon, and the list mode correctly shows the graph mode icon.

CHAPTER 6. KNOWN ISSUES

Sometimes a Cryostat release might contain an issue or issues that Red Hat acknowledges and might fix at a later stage during the product's development. Review each known issue for its description and its resolution.

Cryostat agent reports a "Boot class path mechanism is unsupported" warning message

Description

The Cryostat agent reports a "Boot class path mechanism is unsupported" warning message in the error log.

This message occurs when the Cryostat agent tries to gather information about the host Java Virtual Machine (JVM) and encounters the "boot class path mechanism" attribute, which is not supported by the JVM.

This attribute is supported in OpenJDK versions 9 and earlier only, however, the Cryostat agent is supported from OpenJDK version 11. Therefore, because this attribute is attached to JVMs where it is not supported, an exception is flagged and appears in the error log as a warning.

Workaround

No action is required.

CHAPTER 7. ADVISORIES RELATED TO THIS RELEASE

The following advisory has been issued to document bug fixes and CVE fixes included in the Cryostat 2.3 release:

- RHSA-2023:3167
- RHBA-2023:4786

Revised on 2023-08-29 14:37:02 UTC