Red Hat Data Grid 8.3

Data Grid Operator 8.3 Release Notes

Get release information for Data Grid Operator 8.3

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Abstract

Find out about features and enhancements in Data Grid Operator 8.3 as well as known and resolved issues.
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RED HAT DATA GRID

Data Grid is a high-performance, distributed in-memory data store.

**Schemaless data structure**
- Flexibility to store different objects as key-value pairs.

**Grid-based data storage**
- Designed to distribute and replicate data across clusters.

**Elastic scaling**
- Dynamically adjust the number of nodes to meet demand without service disruption.

**Data interoperability**
- Store, retrieve, and query data in the grid from different endpoints.
DATA GRID DOCUMENTATION

Documentation for Data Grid is available on the Red Hat customer portal.

- Data Grid 8.3 Documentation
- Data Grid 8.3 Component Details
- Supported Configurations for Data Grid 8.3
- Data Grid 8 Feature Support
- Data Grid Deprecated Features and Functionality
DATA GRID DOWNLOADS

Access the Data Grid Software Downloads on the Red Hat customer portal.

NOTE

You must have a Red Hat account to access and download Data Grid software.
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 technical content and encourage you to tell us what you think. If you’d like to add comments, provide insights, correct a typo, or even ask a question, you can do so directly in the documentation.

**NOTE**

You must have a Red Hat account and be logged in to the customer portal.

To submit documentation feedback from the customer portal, do the following:

1. Select the **Multi-page HTML** format.
2. Click the **Feedback** button at the top-right of the document.
3. Highlight the section of text where you want to provide feedback.
4. Click the **Add Feedback** dialog next to your highlighted text.
5. Enter your feedback in the text box on the right of the page and then click **Submit**.

We automatically create a tracking issue each time you submit feedback. Open the link that is displayed after you click **Submit** and start watching the issue or add more comments.

Thank you for the valuable feedback.
CHAPTER 1. DATA GRID OPERATOR 8.3

Get version details for Data Grid Operator 8.3 as well as information about issues.

1.1. DATA GRID OPERATOR 8.3.1

What’s new in 8.3.1.

Updated OpenShift bundle for Data Grid Operator deployments
The OpenShift bundle for Data Grid Operator deployments includes images built with OpenJDK 11 to support multiple system architectures including:

- x86 (x86_64)
- s390x (IBM Z)
- ppc64le (IBM Power Systems)

OpenJ9 deprecation
Any OpenJ9 images for IBM Z and IBM Power Systems will be deprecated.

For more information see Java Change in Power and Z OpenShift Images.

Enhancements to memory and CPU requests and limits
This release increases the default values for memory and CPU resources that Data Grid Operator requests from the OpenShift scheduler when creating Data Grid pods.

- 1Gi of memory.
- CPU requests are unbounded.

Additionally you can now allocate resources in the format of `<limit>:<requests>` in your Infinispan CR as follows:

```
spec:
  container:
    cpu: "2000m:1000m"
    memory: "2Gi:1Gi"
```

Readiness and liveness probes updated for better performance
Settings for the readiness and liveness probes are updated so that Data Grid clusters become available sooner.

1.2. DATA GRID OPERATOR 8.3 GA

What’s new in 8.3 GA.

Numerous improvements to the Data Grid Operator code base
The Data Grid team have invested a lot of time and effort into internal improvements to the Data Grid Operator code base to enable future enhancements.

Full support for native CLI installation and operation
To improve the installation and operation experience, Data Grid 8.3 offers full support for the native CLI as an oc client plugin. Installing the native CLI extends your oc client with the following commands:
### Command Description

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>oc infinispan install</code></td>
<td>Creates Data Grid Operator subscriptions and installs into the global namespace by default.</td>
</tr>
<tr>
<td><code>oc infinispan create cluster</code></td>
<td>Creates Data Grid clusters.</td>
</tr>
<tr>
<td><code>oc infinispan get clusters</code></td>
<td>Displays running Data Grid clusters.</td>
</tr>
<tr>
<td><code>oc infinispan shell</code></td>
<td>Starts an interactive remote shell session on a Data Grid cluster.</td>
</tr>
<tr>
<td><code>oc infinispan delete cluster</code></td>
<td>Removes Data Grid clusters.</td>
</tr>
<tr>
<td><code>oc infinispan uninstall</code></td>
<td>Removes Data Grid Operator installations and all managed resources.</td>
</tr>
</tbody>
</table>

### Custom Data Grid Server configuration

You can now add Data Grid Server configuration to a **ConfigMap** and make it available to Data Grid Operator. Data Grid Operator can then apply the custom configuration to your Data Grid cluster.

### Configurable number of relay nodes for cross-site replication

Data Grid clusters now use router pods, which are GossipRouter instances, to coordinate RELAY messages for cross-site replication. You can also configure the number of pods in each cluster that can send RELAY messages to router pods with the `sites.local.maxRelayNodes` field.

### TLS security for cross-site connections

Add keystores, and optional trust stores, to encrypt RELAY messages and secure cross-site replication traffic between Data Grid clusters.

### Cache service type deprecation

The **Cache** service type was designed to provide a convenient way to create a low-latency data store with minimal configuration. Additional development on the **Infinispan** CRD has shown that the **Cache** CR offers a better approach to achieving this goal, ultimately giving users more choice and less deployment overhead. For this reason, the **Cache** service type is planned for removal in the next version of the **Infinispan** CRD and is no longer under active development.

Red Hat recommends configuring the **DataGrid** service type for clusters. The **DataGrid** service type continues to benefit from new features and improved tooling to automate complex operations such as cluster upgrades and data migration.

You can create **DataGrid** service clusters as follows:

- Set `spec.service.type: DataGrid` in your **Infinispan** CR.
- Use the `-Pservice.type=DataGrid` argument with the native CLI plugin.

### 1.3. DATA GRID OPERATOR 8.3.X RELEASE INFORMATION

The following table provides detailed version information for Data Grid Operator.
NOTE

Data Grid Operator versions do not always directly correspond to Data Grid versions because the release schedule is different.

<table>
<thead>
<tr>
<th>Data Grid Operator version</th>
<th>Data Grid version</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.3.2</td>
<td>8.3.0</td>
<td>Fixes security vulnerabilities.</td>
</tr>
<tr>
<td>8.3.1</td>
<td>8.3.0</td>
<td>* Updates bundle for Data Grid Operator deployments.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Increases default memory and CPU limits.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Adds separate settings for requests and limits to the Infinispan CRD.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Updates readiness and liveness probes for better performance.</td>
</tr>
<tr>
<td>8.3.0</td>
<td>8.3.0</td>
<td>See Data Grid Operator 8.3 GA</td>
</tr>
</tbody>
</table>
CHAPTER 2. KNOWN AND FIXED ISSUES

Learn about known issues for Data Grid Operator and find out which issues are fixed.

2.1. KNOWN ISSUES WITH DATA GRID OPERATOR DEPLOYMENTS

This section describes issues that affect Data Grid clusters that you manage with Data Grid Operator. For complete details about Data Grid, you should refer to the Data Grid 8.3 release notes.

Unexpected behavior occurs after OOM exceptions

**Issue:** JDG-3991

**Description:** If out of memory exceptions cause Data Grid Server to terminate on OpenShift, unexpected behavior can occur. In some cases nodes cannot restart and the `org.infinispan.LOCKS` enters degraded mode. The following exception is written to the pod log file:

```
FATAL (main) [org.infinispan.SERVER] ISPN080028: Red Hat Data Grid Server failed to start
java.util.concurrent.ExecutionException:
org.infinispan.manager.EmbeddedCacheManagerStartupException:
org.infinispan.commons.CacheException: Initial state transfer timed out for cache
org.infinispan.LOCKS on <pod-name-id>
```

**Workaround:** There is no workaround for this issue. You should configure eviction in Data Grid caches to help avoid OOM exceptions.

2.2. FIXED IN DATA GRID OPERATOR 8.3.0

Data Grid Operator 8.3.0 includes the following notable fixes:

- **JDG-4682** Removing Infinispan CR deletes user created secrets
- **JDG-4763** Clients cannot connect to remote caches that use TLS/SSL encryption
- **JDG-4572** Native CLI `oc plugin infinispan delete` command does not fail without subcommand
- **JDG-4568** Native CLI `oc plugin` does not interpret arrow keys correctly
- **JDG-4574** Native CLI `oc plugin install` command does not work
- **JDG-5026** Cluster is unable to start after graceful shutdown

2.3. FIXED IN DATA GRID OPERATOR 8.3.1

Data Grid Operator 8.3.1 includes the following notable fixes:

- **JDG-5078** Ensure compatibility with sidecar injection
CHAPTER 3. DATA GRID ON OPENSIFHT

3.1. DATA GRID 8.3 IMAGES

Data Grid 8.3 includes two container images, the Data Grid Operator image and Data Grid Server image.

Data Grid images are hosted on the Red Hat Container Registry, where you can find health indexes for the images along with information about each tagged version.

Custom Data Grid Deployments
Red Hat does not support customization of any 8.3 images from the Red Hat Container Registry through the Source-to-Image (S2I) process or ConfigMap API.

As a result it is not possible to use custom:

- Discovery protocols
- JGroups SYM_ENCRYPT or ASYM_ENCRYPT encryption mechanisms

Additional resources
- Data Grid Container Images

3.2. EMBEDDED CACHES ON OPENSIFHT

Using embedded Data Grid caches in applications running on OpenShift, which was referred to as Library Mode in previous releases, is intended for specific uses only:

- Using local or distributed caching in custom Java applications to retain full control of the cache lifecycle. Additionally, when using features that are available only with embedded Data Grid such as distributed streams.

- Reducing network latency to improve the speed of cache operations.

The Hot Rod protocol provides near-cache capabilities that achieve equivalent performance to a standard client-server architecture.

Requirements
Embedding Data Grid in applications running on OpenShift requires you to use a discovery mechanism so Data Grid nodes can form clusters to replicate and distribute data.

Red Hat supports only DNS_PING as the cluster discovery mechanism.

DNS_PING exposes a port named ping that Data Grid nodes use to perform discovery and join clusters. TCP is the only supported protocol for the ping port, as in the following example for a pod on OpenShift:

```yaml
spec:
  ...
  ports:
  - name: ping
```
Limitations
Embedding Data Grid in applications running on OpenShift also has some specific limitations:

- Persistent cache stores are not currently supported.
- UDP is not supported with embedded Data Grid.

Custom caching services
Red Hat highly discourages embedding Data Grid to build custom caching servers to handle remote client requests. To benefit from regular, automatic updates with performance improvements and fix security issues, you should create Data Grid clusters with the Data Grid Operator instead.

Additional resources
- Embedding Data Grid in Java Applications