

Foglight for Redis  
**Cartridge Guide**

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# Table of Contents

<b>Table of Contents .....</b>	<b>3</b>
<b>Introduction .....</b>	<b>6</b>
Description.....	6
Business Challenge.....	6
Key Features .....	6
<b>Foglight for Redis Requirements .....</b>	<b>7</b>
Redis Version Requirements.....	7
Foglight Version Requirements .....	7
<b>Installing and Configuring Agents .....</b>	<b>8</b>
Redis Pre-Configuration .....	9
Redis Agent User Permissions .....	9
Enable Certificate Authentication.....	9
Cartridge Installation.....	11
Using the Agent Status Dashboard .....	12
Agent Properties.....	13
Environment.....	13
REST Connection .....	13
Collection Periods .....	14
Options.....	14
Roles.....	15
Upgrading the Agent.....	16
<b>Administration .....</b>	<b>17</b>
Reviewing Rule Definitions.....	17
<b>Dashboards .....</b>	<b>18</b>
Redis Environments .....	18
Redis Enterprise Cluster.....	19

Redis Node .....	20
Redis Database .....	21
Enterprise Alerts .....	22
Enterprise Logs .....	23
<b>Rules .....</b>	<b>24</b>
Redis Enterprise Cluster Connections.....	24
Redis Enterprise Cluster Latency .....	24
Redis Enterprise Database Connections .....	24
Redis Enterprise Database Latency .....	24
Redis Enterprise Node Connections .....	24
Redis Enterprise Node Latency .....	24
Redis Integrated bdb_backup_delayed .....	24
Redis Integrated bdb_crdt_src_high_syncer_lag .....	24
Redis Integrated bdb_crdt_src_syncer_connection_error.....	25
Redis Integrated bdb_crdt_src_syncer_general_error .....	25
Redis Integrated bdb_high_latency .....	25
Redis Integrated bdb_high_syncer_lag .....	25
Redis Integrated bdb_high_throughput .....	25
Redis Integrated bdb_long_running_action.....	25
Redis Integrated bdb_low_throughput.....	25
Redis Integrated bdb_ram_dataset_overhead .....	25
Redis Integrated bdb_ram_values.....	25
Redis Integrated bdb_replica_src_high_syncer_lag .....	26
Redis Integrated bdb_replica_src_syncer_connection_error .....	26
Redis Integrated bdb_replica_src_syncer_general_error .....	26
Redis Integrated bdb_shard_num_ram_values .....	26
Redis Integrated bdb_size.....	26

Redis Integrated bdb_syncer_connection_error .....	26
Redis Integrated bdb_syncer_general_error .....	26
Redis Integrated cluster_certs_about_to_expire .....	26
Redis Integrated cluster_even_node_count .....	26
Redis Integrated cluster_flash_overcommit .....	27
Redis Integrated cluster_inconsistent_redis_sw .....	27
Redis Integrated cluster_inconsistent_rl_sw .....	27
Redis Integrated cluster_internal_bdb .....	27
Redis Integrated cluster_multiple_nodes_down .....	27
Redis Integrated cluster_ram_overcommit .....	27
Redis Integrated cluster_too_few_nodes_for_replication .....	27
Redis Integrated node_aof_slow_disk_io .....	27
Redis Integrated node_checks_error .....	27
Redis Integrated node_cpu_utilization .....	28
Redis Integrated node_ephemeral_storage .....	28
Redis Integrated node_failed .....	28
Redis Integrated node_free_flash .....	28
Redis Integrated node_insufficient_disk_aofrw .....	28
Redis Integrated node_internal_certs_about_to_expire .....	28
Redis Integrated node_memory .....	28
Redis Integrated node_net_throughput .....	28
Redis Integrated node_persistent_storage .....	28

# Introduction

## Description

Redis is an open source, in-memory data structure store. Redis supports various simple data structures, including strings, hashes, lists, sets, and sorted sets. More complex data structures supported include hyperloglogs, geospatial data, and streams. Redis is written in C, with builds for Linux, various BSD, and Mac OS X. Persistence is available by database dump or operation logging. Additionally, it is possible to spread part of the dataset across memory and flash to achieve a larger active dataset at lower cost. Asynchronous replication is available in a master-replica configuration, where a master may have multiple replicas, and replicas can be chained to masters that are themselves replicas. Replication can be used to increase read scalability, data safety, and/or data availability. Redis Cluster provides an option to distribute data across multiple master instances, which may be replicated, with linear scalability. Only a single database is allowed on instances running as part of a cluster. Server-side scripting is provided by an embedded Lua runtime. Extensions can be installed as Redis Modules. Some popular modules include RediSearch, RedisJSON, RedisGraph, and RedisBloom.

Redis Enterprise is proprietary software released by the company Redis, formerly called Redis Labs. Redis Enterprise exposes a Redis interface for one or more databases distributed across a cluster of similarly configured nodes. It includes a management UI for database creation, user configuration, rudimentary monitoring, and other administrative tasks. A REST API provides more detailed information on cluster operation and performance, as well as offering some programmatic administrative capabilities.

Redis Enterprise Cloud is a hosted version of Redis Enterprise available through Redis on all three major cloud hosting providers. Restricted-usage free plans are available. The REST API offered by Redis Enterprise Cloud offers different features and is not compatible with the Redis Enterprise REST API.

## Business Challenge

Redis Enterprise is a complex suite of software that coordinates multiple data shards of potentially multiple databases across multiple nodes. Administrative capabilities such as database creation and access control are provided by the Redis Admin Console, and monitoring and cluster operations can be performed via the REST API. But the Admin Console has only limited monitoring data available as charts displayed in fixed time frames, and the JSON responses provided by the REST API are of limited human usability.

## Key Features

Foglight for Redis® is designed to provide enterprises with a powerful tool that can stand alone or act as part of broader cross-platform database monitoring requirements. To support enterprise performance

monitoring, Foglight for Redis® captures metrics on key functionality of Redis Enterprise, including node and database state, logs, integrated alerts, connections, persistence, backup, memory, traffic, CPU usage, and latency.

As with all Foglight solutions, Foglight for Redis® will run as a native Foglight process leveraging the Foglight Agent Manager (FglAM) for communications with the agent. Foglight for Redis® can be run locally (Agent on the Host) or remotely (Agent on FMS or Proxy Server). The solution will leverage the Foglight Rules Engine providing the ability to evaluate and alert on potential issues before they significantly affect performance and availability.

## Foglight for Redis Requirements

### Redis Version Requirements

Foglight for Redis® is compatible with **Redis Enterprise 6.2+**.

### Foglight Version Requirements

Foglight for Redis® can be installed on **FMS 6.0.0.10+** and agents require **FglAM 6.0.0.10+**.

# Installing and Configuring Agents

Installation of Foglight for Redis® is covered in the following sections, which should be performed in order:

- [Redis Pre-Configuration](#)
- [Cartridge Installation](#)
- [Agent Properties](#)



## Redis Pre-Configuration

Configuration of the Redis Enterprise environment consists of creating or identifying an existing user with the appropriate permissions for accessing the REST API.

### Redis Agent User Permissions

Foglight requires a user with one of the following Cluster Management Access roles:

- DB Member
- Cluster Viewer
- Cluster Member
- Admin

It is recommended to use one of the relatively less powerful roles DB Member or Cluster Viewer, if possible. For a full description of each role see the Redis Enterprise documentation at <https://docs.redis.com/latest/rs/references/rest-api/permissions/>.

No Data Access Controls (Redis ACLs) are required.

To create a user with REST API permissions, open the Redis management UI in a browser and click on the “access control” section at the top. On the “users” tab, click the plus sign below the users table. Give the new user a name, email as appropriate, and password. For role, select one of the four roles given above. Finally, save the user.

### Enable Certificate Authentication

To communicate securely with the Redis Enterprise REST API endpoint, the Foglight Agent Manage requires a copy of the root certificate in its truststore. When Redis Enterprise is installed, it is configured with a self-signed certificate. This certificate can be found on any database node at the following path:

```
/etc/opt/redislabs/api_cert.pem
```

Copy this certificate, if using the default, or the production certificate if one has been installed. Then import the certificate into a truststore to be used by the FglAM. If the FglAM is already configured to use a truststore, import into that truststore. One example of generating a truststore for use with Foglight, given below, is to create a JKS truststore using `keytool`. Set the store and certificate filenames, alias name, and password as appropriate.

```
keytool -importcert \  
-keystore truststore.jks \  
-alias redis_<cluster-name>_api_cert \  
-file api_cert.pem \  
-keypass <password> \  
-storepass <password> \  
-storetype JKS \  
-noprompt
```

Next, edit the `baseline.jvmargs.config` file in the `<FglAM-install-root>/state/default/config` directory by adding the following parameters. Set the file paths and passwords appropriate for your system.

```
vmparameter.0 = "-Djavax.net.ssl.trustStore=/path/to/truststore.jks";  
vmparameter.1 = "-Djavax.net.ssl.trustStorePassword=changeit";  
vmparameter.2 = "-Djavax.net.ssl.trustStoreType=JKS";
```

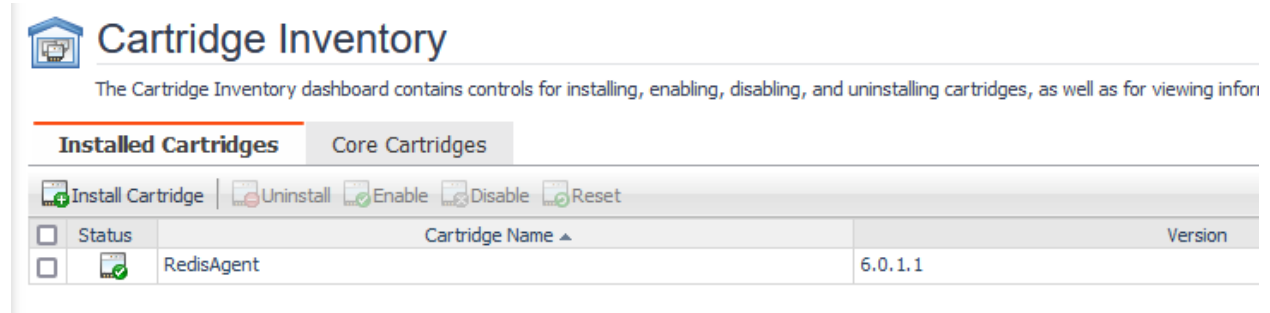
Escape any quotes with a backslash (`\`). On an Agent Manager installed on Windows, use forward slashes in the file paths, like so:

```
vmparameter.0 = "-Djavax.net.ssl.trustStore=\"C:/path/to/truststore\"";
```

Finally, restart the Foglight Agent Manager to load the modified JVM parameters. The Foglight for Redis agent may now be run with the “Disable certificate authentication?” checkbox unchecked (see [Agent Properties](#), below).

# Cartridge Installation


1. Open Foglight Management Console.
2. From the navigation pane, select: **Administration > Cartridges > Cartridge Inventory**. The Cartridge Inventory screen appears. For more information on agents, see the *Foglight User Guide*.
3. Load the **RedisAgent-xxx.car** file by browsing to the location where the .car file exists and then clicking on “Install Cartridge”. Leave the “Enable on Install” check box checked.
4. Once the installation is completed on the Foglight Management Server, the RedisAgent Cartridge will appear in this list below as an installed cartridge.



The Cartridge Inventory dashboard contains controls for installing, enabling, disabling, and uninstalling cartridges, as well as for viewing information.

**Installed Cartridges** | Core Cartridges

Install Cartridge | Uninstall | Enable | Disable | Reset

<input type="checkbox"/>	Status	Cartridge Name ▲	Version
<input type="checkbox"/>		RedisAgent	6.0.1.1

## Using the Agent Status Dashboard

The Agent Status page can be used to create new agents and configure and manage existing agents. To access the page from the navigation pane, select: Administration > Agents > Agent Status.

### Use the following steps to create a new agent instance:

1. If the latest version of the Redis agent package installed on the FMS has not yet been deployed to the FglAM that will be used to host the agent, this must be done before creating an agent. You can use the Deploy Agent Package button on the Agent Status or Agent Managers page to perform this action.
2. Click the Create Agent button and follow the instructions for the cards:
  - a. **Host Selector** - Choose the Agent Manager on which the agent should run. Considerations for this may include physical or virtual locality to the monitored instance, allocated resources, or grouping with other agents of the same type or monitored environment.
  - b. **Agent Type and Instance Name** – Select the RedisAgent type. Then, select the Specify Name radio button and provide a name for the agent that will be created. This is not canonical and should be representative of the database instance that this agent will monitor.
  - c. **Summary** – Click Finish.
3. Once the agent has been created, click the checkbox next to the Redis agent.
4. Click the **Edit Properties** button.
5. Select **Modify the default properties for this agent**.
6. Edit the agent properties for the Redis agent instance (see [Agent Properties](#) below).
7. Click the **Activate** button.

To modify the properties for an existing agent, skip to step 3. Remember to Deactivate and then Reactivate the modified agent(s) after changing any configuration.

# Agent Properties

Below is a full list, with explanations, of the configurable properties of the Foglight for Redis® agent. To modify the agent configuration after creation, use the Agent Status dashboard.

Environment	
Environment Name	<input type="text" value="Redis_app83_prod"/>
Is Redis Enterprise Cloud?	<input type="checkbox"/>
REST Connection	
REST Address	<input type="text" value="some.redis.cluster.com:9443"/>
REST API Key	<input type="text" value="....."/>
REST API Secret	<input type="text" value="....."/>
Disable certificate authentication?	<input type="checkbox"/>
Collection Periods	
Collection Periods (sec)	CustomPeriods-03
Options	
Host Aliases	HostAliasesList

## Environment

An environment is a container internal to Foglight used to encapsulate and differentiate different logical groupings of Redis components. This facilitates, for example, differentiation in Foglight of Redis databases with the same name in production and development environments.

- **Environment Name** – The Environment property is an arbitrary label. It is crucial that a unique value be set for each agent to prevent the agents' data from being merged into a single environment. If a monitoring agent is deleted and replaced with another agent, the same value should be used for the environment so that data collected from the new agent is merged into the existing data. Alternatively, use a different label to prevent merging with existing data.

## REST Connection

Monitoring data for Redis Enterprise clusters is gathered via the REST API.

- **REST Address** – The REST API endpoint. This address must, in most cases, include a port number, e.g., <https://some.address.com:9443>. The REST API endpoint is normally the cluster's

FQDN followed by the port 9443. The address used must match the name SSL certificate (see also [Enable Certificate Authentication](#)). Typically, take the public endpoint of one of the cluster's databases and replace the port number with 9443. If this endpoint is not a published domain name record, add an appropriate entry to the Foglight Agent Manager's *hosts* file to facilitate lookup.

- **REST API Key** – The REST user's username. See [Redis Agent User Permissions](#).
- **REST API Secret** – The REST user's password.
- **Disable SSL certificate authentication?** – When disabled, the agent does not verify that SSL chains terminate in a trusted authority. Check this box if the Redis Enterprise nodes are using self-signed certificates that have not been imported into the FglAM's truststore. It is recommended to only disable SSL certificate authentication for testing or in trial environments.

## Collection Periods

**Collection Periods** – Intervals in seconds between agent data collections. Different collection types can be scheduled at different intervals. Defaults are set based on the type of data being collected. A given collection can be disabled by setting its interval to zero. The following are the configurable collection periods: "Alerts", "Log", "Cluster", "Cluster Stats", "Node", "Node Stats", "DB", and "DB Stats".

## Options

**Host Aliases** – A list that maps a host name or IP address to an alias. Enter the address the host should be known as within Foglight into the "Connection Address" field, and enter any other address under which the host may be encountered within the monitoring environment into the "Alternate Address" field. An alias can be used to standardize internal representations (e.g., in a cloud environment) to their external address. This enables, for example, the Redis agent cartridge dashboards to link directly to the Foglight Hosts dashboard by ensuring host data is submitted uniformly across the monitoring environment.

## Roles

Two roles, Redis User and Redis Administrator, are installed with the cartridge. Viewing Redis dashboards requires that a user be assigned either of these roles or the core Administrator role. Currently, there are no added privileges for the Redis Administrator role. Future cartridge versions may offer the ability to perform administration actions on the monitored Redis environment, which would only be enabled for users assigned the Redis Administrator role.

## Upgrading the Agent

1. Go to Administration > Cartridges > Cartridge Inventory and click the Install Cartridge button.
2. Locate the .car file on your system and install it with auto-enable selected. If you get a message that a bundled cartridge is of an older version than the one currently enabled on your FMS and will not be enabled, ignore it and continue.
3. Once the cartridge is installed and enabled, go to Administration > Agents > Agent Managers. Agent Managers that can be upgraded with newer agent packages will show “yes” in the Upgradable | Agents column. Select all Agent Managers you wish to upgrade and click the Upgrade button.

**Note:** If an Agent Manager is not upgradable, check that the Agent Manager version is compatible with the newer agent version. If it is not, the Agent Manager will need to be upgraded first.



# Administration

## Reviewing Rule Definitions

If you want to review the conditions of a rule, open the rule in the Rule Management dashboard.

**IMPORTANT:** Avoid editing rules in the Rule Management dashboard unless you are creating your own rules or copies. These rules may be modified during regular software updates and your edits will be lost.

You can create user-defined rules from the Rule Management dashboard. If you want to modify a rule, we recommend copying the rule and creating a user-defined rule. User-defined rules need to be managed from the Rule Management dashboard; these rules are not displayed in the Alarms view of the Databases Administration dashboard. For help creating rules, open the online help from the Rule Management dashboard.

### *To open the Rule Management dashboard:*

1. On the navigation panel, click **Administration**.
2. In the Administration dashboard, click **Rules**.
3. Type **Redis** in the Search field to see the list of predefined rules for Redis. The Redis rules are displayed. From here, you can review threshold values, alarm counts, and descriptions.
4. To see the full rule definition, click a rule and then click **View and Edit**.
5. In the Rule Detail dialog box, click **Rule Editor**.
6. When you are done with your review, click Rule Management in the bread crumbs to return to the dialog box.
7. Click **Cancel** to avoid changing the rule unintentionally.

# Dashboards

## Redis Environments

This dashboard lists all monitored Redis environments. It offers direct links to the Enterprise Cluster, environment-wide alerts and logs. Nodes and databases are accessible via the popup tables in their respective columns. Clicking on or hovering over an icon in the Health column of any table (with the exception of Selector popup tables) produces a popup showing current alerts scoped to the object described in the given row. The “Hide Inactive Objects” checkbox in the upper right can be unchecked to view environments, nodes, and databases with a history in the Foglight repository, but for which there is no data available in the current time range. These could include environments monitored by disabled agents, decommissioned nodes, or deleted databases, which are all hidden by default.

Hide Inactive Objects

Health	Environment	Type	Nodes	Databases	Alerts	Logs	Agent
✔	Fouquieriaceae	Redis Cloud	<i>Cloud nodes not available</i>	<i>Cloud DBs not available</i>	🔔	📄	❌
⚠	asteraceae	Enterprise Cluster	3	4	🔔	📄	🟢

Health	Database	Status	Persistence	Shards
✔	Glebionis	❌ NO RECENT DATA	disabled	1
✔	Delairea	✔ active	snapshot	1
⚠	Cynara	✔ active	aof	1
⚠	Ainsliaea	✔ active	disabled	1

*Ainsliaea (RedisDatabase)* (RedisDatabase)  
has 1 alarm source(s)

Long Name	Health	Alarms	Health History
bdb_low_throughput (RedisD...	⚠	0	1

# Redis Enterprise Cluster

Displays detailed information on the Redis Enterprise Cluster's properties and statistics. Visualized metrics include number of connections, cluster-wide available memory, cluster-wide available persistent storage, bytes of traffic in and out of the cluster, total CPU usage, and average latency. Links are provided to overview dashboards for all of the environment's nodes and databases. The Summary sidebar can be toggled between showing the latest 10 environment-wide log entries in the current time range and the top 10 active alerts scoped to the cluster, by severity. For visibility of all alerts across the environment, select any cluster alert, or select the explore icon in the respective row of the Redis Environments dashboard (see above), to go to the Enterprise Alerts dashboard. The Latest 10 Logs sidebar likewise links, via a click in any row, to the corresponding log entry in the Enterprise Logs dashboard, which is not restricted to just 10 entries. All metric indicators (spinners, bar charts, line plots, etc.) can be selected or hovered over to view a larger popup diagram. The Enterprise Cluster selector in the top left can be used to switch to the overview of any other actively or historically monitored cluster, subject to the "Hide Inactive Objects" checkbox in the upper right.

Enterprise Cluster: **asteraceae**  Hide Inactive Objects

**Properties**

Name: asteraceae  
 Created: 2022-06-21T14:43:14Z  
 Rack Aware: Yes  
 Email Alerts: No  
 HTTP Support: Yes  
 Replica HA: Yes  
 SMTP TLS Mode: none

**Nodes**

Health	UID	Host	Rack ID
⚠	1	172.31.5.219	first-rack
⚠	2	172.31.14.141	second-rack
✅	3	52.205.213.150	second-rack

**Databases**

Health	Database	Status	Persistence	Shards
⚠	Ainslaiea	active	disabled	1
⚠	Cynara	active	aof	1
✅	Delairaea	active	snapshot	1

**Summary** Health ⚠

**Last 10 Log Entries** | Top 10 Alerts

Severity	Name	Time
INFO	User login successful	7/28/22 4:08 P
INFO	User login successful	7/28/22 3:00 P
WARNING	Cluster failed authentication attempt	7/25/22 7:56 P
WARNING	Cluster failed authentication attempt	7/25/22 7:56 P
WARNING	Cluster failed authentication attempt	7/25/22 7:56 P
WARNING	Cluster failed authentication attempt	7/25/22 7:56 P
WARNING	Cluster failed authentication attempt	7/25/22 7:56 P
WARNING	Cluster failed authentication attempt	7/25/22 7:56 P
WARNING	Cluster failed authentication attempt	7/25/22 7:56 P
WARNING	Cluster failed authentication attempt	7/25/22 7:56 P

**Connections**

Cluster Connections: 0.00 m

**Memory**

Available Memory:

**Persistence**

Persistent Storage Available:

**Traffic**

Cluster Traffic:

**CPU**

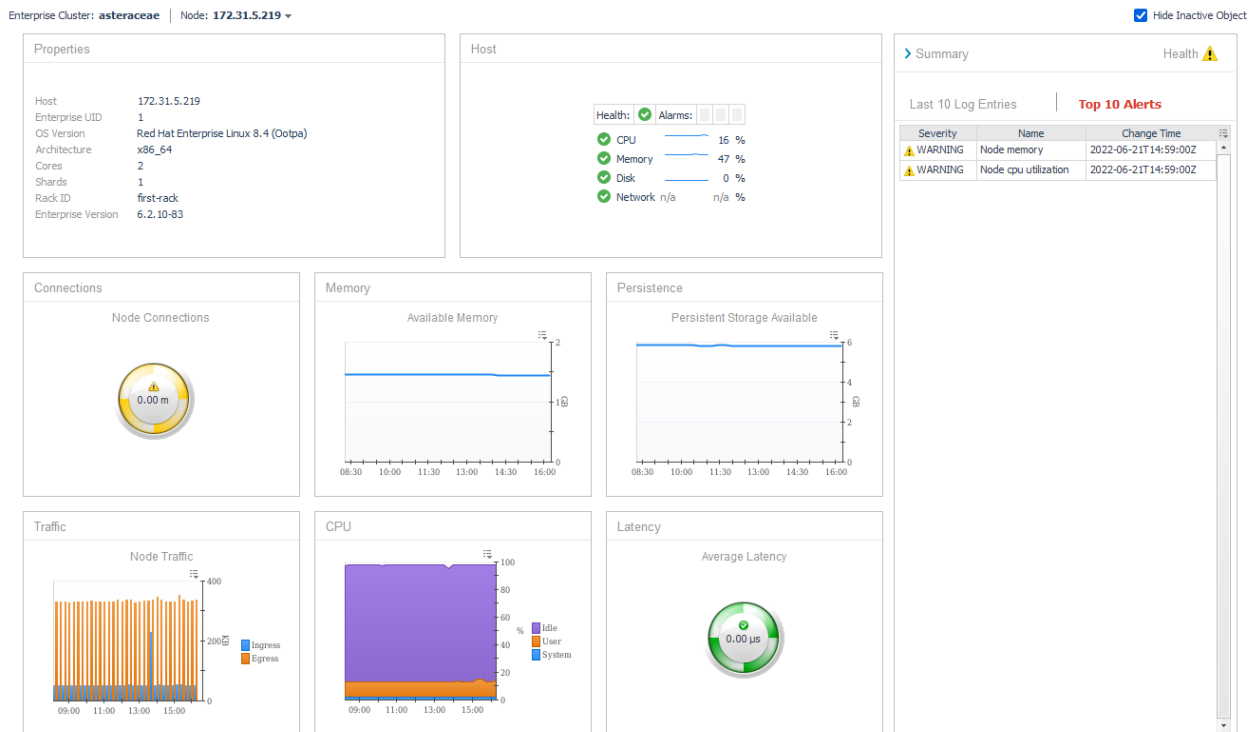
CPU Usage:

**Latency**

Average Latency: 0.00 us

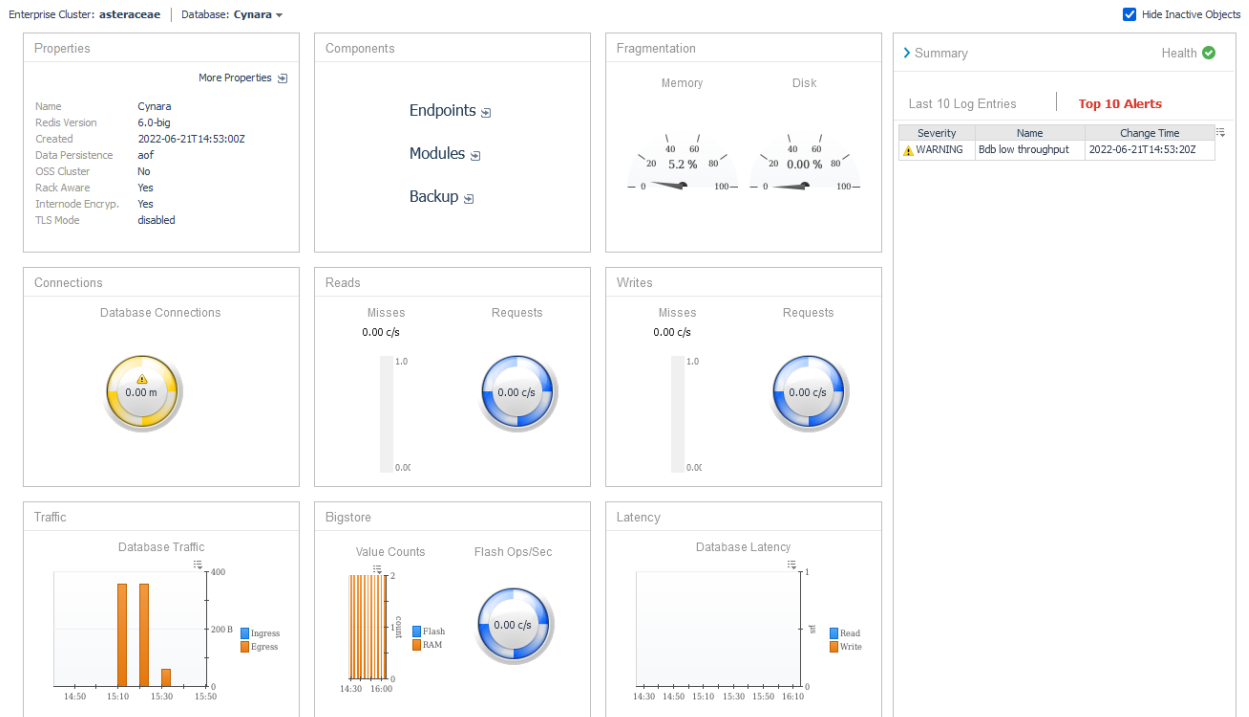
# Redis Node

Displays detailed information on a Redis node's properties and statistics. Links directly to the Host monitoring dashboard if the Infrastructure Cartridge's host agent has been configured. Visualized metrics include connections to the host, available memory, available persistent storage, bytes of traffic in and out of the node, CPU usage, and average latency. The Summary sidebar can be toggled between showing the latest 10 environment-wide log entries in the current time range and the top 10 active alerts scoped to the node, by severity. All metric indicators (spinners, bar charts, line plots, etc.) can be selected or hovered over to view a larger popup diagram. The Enterprise Cluster selector in the upper left enables switching to the overview of the cluster associated with this node, while the Node selector enables switching between the overview of any node in the cluster.



# Redis Database

Displays detailed information on a Redis database's properties and statistics. Visualized metrics include database connections, reads, writes, traffic, and latency. If the database is configured to use flash storage, Bigstore operation and storage counts are also provided, as is disk fragmentation. The Summary sidebar can be toggled between showing the latest 10 environment-wide log entries in the current time range and the top 10 active alerts scoped to the database, by severity. All metric indicators (spinners, bar charts, line plots, etc.) can be selected or hovered over to view a larger popup diagram. The Enterprise Cluster selector in the upper left enables switching to the overview of the cluster containing this database, while the Database selector enables switching between the overview of any database in the cluster.



## Enterprise Alerts

Displays currently active alerts relating to any object within the environment: cluster, nodes, and databases. The Environment selector in the top left can be used to switch between displaying current alerts for different environments. This dashboard always shows active alerts and does not respond to the current time range. Selecting or hovering over an entry in the Change Value column produces a popup table containing all change value key-value pairs. The “Hide Inactive Objects” checkbox only controls whether environments for which there is no data in the current time range are shown in the Environment selector.

Current Enterprise Alerts

Environment: **asteraceae**  Hide Inactive Objects

Severity	Scope Type	Scope	Name	Threshold	Change Time	Change Value
⚠️ WARNING	Node	52.205.213.150	Node memory	n/a	2022-07-04T10:52:00Z	global_threshold: 10, memory_util: 52.090045255, state: true, used_memor...
⚠️ WARNING	Node	52.205.213.150	Node cpu utilization	n/a	2022-07-04T10:52:00Z	cpu_util: 12.5, global_threshold: 4, state: true
⚠️ WARNING	Node	172.31.14.141	Node memory	n/a	2022-06-21T14:59:00Z	global_threshold: 10, memory_util: 52.6590258119, state: true, used_memo...
⚠️ WARNING	Node	172.31.14.141	Node cpu utilization	n/a	2022-06-21T14:59:00Z	cpu_util: 13.0, global_threshold: 4, state: true
⚠️ WARNING	Node	172.31.5.219	Node memory	n/a	2022-06-21T14:59:00Z	global_threshold: 10, memory_util: 52.1041641821, state: true, used_memo...
⚠️ WARNING	Node	172.31.5.219	Node cpu utilization	n/a	2022-06-21T14:59:00Z	cpu_util: 13.0, global_threshold
⚠️ WARNING	Database	Ainslaea	Bdb low throughput	1	2022-07-15T14:33:40Z	state: true, threshold
⚠️ WARNING	Database	Cynara	Bdb low throughput	2	2022-06-21T14:53:20Z	state: true, threshold
⚠️ WARNING	Database	Delairea	Bdb low throughput	10	2022-06-28T08:31:20Z	state: true, threshold

global_threshold	10
memory_util	52.1041641821
state	true
used_memory	2040098816

## Enterprise Logs

Displays the latest cluster-wide log entries from within the current time range. The Enterprise Cluster selector in the top left can be used to switch between displaying log entries for different environments. The Enterprise Logs dashboard always shows log entries from the current time range. Selecting or hovering over an entry in the Properties column produces a popup table containing all property key-value pairs. The “Hide Inactive Objects” checkbox only controls whether environments for which there is no data in the current time range are shown in the Environment selector.

Enterprise Logs In Time Range

Environment: **asteraceae**  Hide Inactive Objects

	Severity	Name	Time	Properties
<input checked="" type="radio"/>	INFO	User login successful	7/12/22 11:25 AM	originator_uid: 0, originator_username: system, user_uid: 1
<input type="radio"/>	INFO	Bdb roles permissions updated	7/11/22 4:41 PM	bdb_uid: 1, new_val: [{"role_uid": 7, "redis_ad_uid": 4}], old_val: [],...
<input type="radio"/>	INFO	Bdb roles permissions updated	7/11/22 4:41 PM	bdb_uid: 2, new_val: [{"role_uid": 7, "redis_ad_uid": 4}], old_val: [],...
<input type="radio"/>	INFO	Bdb roles permissions updated	7/11/22 4:41 PM	bdb_uid: 4, new_val: [{"role_uid": 7, "redis_ad_uid": 4}], old_val: [],...
<input type="radio"/>	INFO	testRole	7/11/22 4:41 PM	management: cluster_viewer, originator_uid: 0, originator_username: system, user_uid: 1
<input type="radio"/>	INFO	testAd	7/11/22 4:41 PM	ad: +ping +info +cluster +client se
<input type="radio"/>	INFO	Node net throughput	7/11/22 3:47 PM	global_threshold: 1048576, net_used: 4008746, node_uid: 1, originator_uid: 0, originator_username: system, state: true
<input type="radio"/>	INFO	User login successful	7/11/22 3:47 PM	originator_uid: 0, originator_username: system, user_uid: 1
<input type="radio"/>	WARNING	Node net throughput	7/11/22 3:47 PM	global_threshold: 1048576, net_used: 4008746, node_uid: 1, originator_uid: 0, originator_username: system, state: true
<input type="radio"/>	WARNING	Cluster failed authentication attempt	7/11/22 3:27 PM	originator_uid: 0, originator_username: system, username: 8hYTSUFk
<input type="radio"/>	WARNING	Cluster failed authentication attempt	7/9/22 10:53 AM	originator_uid: 0, originator_username: system, username: 8hYTSUFk
<input type="radio"/>	WARNING	Cluster failed authentication attempt	7/9/22 8:10 AM	originator_uid: 0, originator_username: system, username: admin
<input type="radio"/>	WARNING	Cluster failed authentication attempt	7/8/22 9:50 AM	originator_uid: 0, originator_username: system, username: user
<input type="radio"/>	WARNING	Cluster failed authentication attempt	7/8/22 9:50 AM	originator_uid: 0, originator_username: system, username: user
<input type="radio"/>	WARNING	Cluster failed authentication attempt	7/8/22 9:50 AM	originator_uid: 0, originator_username: system, username: user
<input type="radio"/>	WARNING	Cluster failed authentication attempt	7/8/22 9:50 AM	originator_uid: 0, originator_username: system, username: superadmin
<input type="radio"/>	WARNING	Cluster failed authentication attempt	7/8/22 9:50 AM	originator_uid: 0, originator_username: system, username: superadmin

# Rules

## Redis Enterprise Cluster Connections

Alert if the number of Redis Enterprise Cluster connections falls out of range.

## Redis Enterprise Cluster Latency

Alert if Redis Enterprise Cluster Latency exceeds the threshold.

## Redis Enterprise Database Connections

Alert if the number of Redis Enterprise database connections falls out of range.

## Redis Enterprise Database Latency

Alert if Redis Enterprise database latency exceeds the threshold.

## Redis Enterprise Node Connections

Alert if the number of Redis Enterprise node connections falls out of range.

## Redis Enterprise Node Latency

Alert if Redis Enterprise node latency exceeds the threshold.

## Redis Integrated bdb\_backup\_delayed

Periodic backup has been delayed for longer than specified threshold value (minutes)

## Redis Integrated bdb\_crdt\_src\_high\_syncer\_lag

CRDB source sync lag is higher than specified threshold value (seconds)



## **Redis Integrated bdb\_crdt\_src\_syncer\_connection\_error**

CRDB source sync had a connection error while trying to connect to replica source

## **Redis Integrated bdb\_crdt\_src\_syncer\_general\_error**

CRDB sync encountered in general error

## **Redis Integrated bdb\_high\_latency**

Latency is higher than specified threshold value (microsec)

## **Redis Integrated bdb\_high\_syncer\_lag**

Replica of sync lag is higher than specified threshold value (seconds) (deprecated)

## **Redis Integrated bdb\_high\_throughput**

Throughput is higher than specified threshold value (requests / sec)

## **Redis Integrated bdb\_long\_running\_action**

An alert for state machines that are running for too long

## **Redis Integrated bdb\_low\_throughput**

Throughput is lower than specified threshold value (requests / sec)

## **Redis Integrated bdb\_ram\_dataset\_overhead**

Dataset RAM overhead of a shard has reached the threshold value (% of its RAM limit)

## **Redis Integrated bdb\_ram\_values**

Percent of values kept in a shard's RAM is lower than (% of its key count)

## **Redis Integrated bdb\_replica\_src\_high\_syncer\_lag**

Replica of source sync lag is higher than specified threshold value (seconds)

## **Redis Integrated bdb\_replica\_src\_syncer\_connection\_error**

Replica of source sync has connection error while trying to connect replica source

## **Redis Integrated bdb\_replica\_src\_syncer\_general\_error**

Replica of sync encountered in general error

## **Redis Integrated bdb\_shard\_num\_ram\_values**

Number of values kept in a shard's RAM is lower than (values)

## **Redis Integrated bdb\_size**

Dataset size has reached the threshold value (% of the memory limit)

## **Redis Integrated bdb\_syncer\_connection\_error**

Replica of sync has connection error while trying to connect replica source (deprecated)

## **Redis Integrated bdb\_syncer\_general\_error**

Replica of sync encountered in general error (deprecated)

## **Redis Integrated cluster\_certs\_about\_to\_expire**

Cluster certificate expiration in day(s)

## **Redis Integrated cluster\_even\_node\_count**

True high availability requires an odd number of nodes with a minimum of three nodes

## **Redis Integrated cluster\_flash\_overcommit**

Flash memory committed to databases is larger than cluster total flash memory

## **Redis Integrated cluster\_inconsistent\_redis\_sw**

Not all databases are running the same open source version

## **Redis Integrated cluster\_inconsistent\_rl\_sw**

Not all nodes in the cluster are running the same Redis Enterprise Cluster version

## **Redis Integrated cluster\_internal\_bdb**

Issues with internal cluster databases

## **Redis Integrated cluster\_multiple\_nodes\_down**

Multiple cluster nodes are down - this might cause data loss

## **Redis Integrated cluster\_ram\_overcommit**

Cluster capacity is less than total memory allocated to its databases

## **Redis Integrated cluster\_too\_few\_nodes\_for\_replication**

Database replication requires at least two nodes in cluster

## **Redis Integrated node\_aof\_slow\_disk\_io**

AOF reaching disk I/O limits

## **Redis Integrated node\_checks\_error**

Some node checks have failed

## **Redis Integrated node\_cpu\_utilization**

Node CPU utilization has reached the threshold value (% of the utilization limit)

## **Redis Integrated node\_ephemeral\_storage**

Node ephemeral storage has reached the threshold value (% of the storage limit)

## **Redis Integrated node\_failed**

Node failed

## **Redis Integrated node\_free\_flash**

Node flash storage has reached the threshold value (% of the storage limit)

## **Redis Integrated node\_insufficient\_disk\_aofrw**

Insufficient AOF disk space

## **Redis Integrated node\_internal\_certs\_about\_to\_expire**

Internal certificate on node will expire in x days

## **Redis Integrated node\_memory**

Node memory has reached the threshold value (% of the memory limit)

## **Redis Integrated node\_net\_throughput**

Node network throughput has reached the threshold value (bytes/s)

## **Redis Integrated node\_persistent\_storage**

Node persistent storage has reached the threshold value (% of the storage limit)