



# Red Hat Virtualization 4.3

## Metrics Store Installation Guide

Installing Metrics Store for Red Hat Virtualization



# Red Hat Virtualization 4.3 Metrics Store Installation Guide

---

Installing Metrics Store for Red Hat Virtualization

Red Hat Virtualization Documentation Team

Red Hat Customer Content Services

[rhev-docs@redhat.com](mailto:rhev-docs@redhat.com)

## Legal Notice

Copyright © 2020 Red Hat, Inc.

The text of and illustrations in this document are licensed by Red Hat under a Creative Commons Attribution–Share Alike 3.0 Unported license ("CC-BY-SA"). An explanation of CC-BY-SA is available at

<http://creativecommons.org/licenses/by-sa/3.0/>

. In accordance with CC-BY-SA, if you distribute this document or an adaptation of it, you must provide the URL for the original version.

Red Hat, as the licensor of this document, waives the right to enforce, and agrees not to assert, Section 4d of CC-BY-SA to the fullest extent permitted by applicable law.

Red Hat, Red Hat Enterprise Linux, the Shadowman logo, the Red Hat logo, JBoss, OpenShift, Fedora, the Infinity logo, and RHCE are trademarks of Red Hat, Inc., registered in the United States and other countries.

Linux<sup>®</sup> is the registered trademark of Linus Torvalds in the United States and other countries.

Java<sup>®</sup> is a registered trademark of Oracle and/or its affiliates.

XFS<sup>®</sup> is a trademark of Silicon Graphics International Corp. or its subsidiaries in the United States and/or other countries.

MySQL<sup>®</sup> is a registered trademark of MySQL AB in the United States, the European Union and other countries.

Node.js<sup>®</sup> is an official trademark of Joyent. Red Hat is not formally related to or endorsed by the official Joyent Node.js open source or commercial project.

The OpenStack<sup>®</sup> Word Mark and OpenStack logo are either registered trademarks/service marks or trademarks/service marks of the OpenStack Foundation, in the United States and other countries and are used with the OpenStack Foundation's permission. We are not affiliated with, endorsed or sponsored by the OpenStack Foundation, or the OpenStack community.

All other trademarks are the property of their respective owners.

## Abstract

A comprehensive guide to installing and configuring Metrics Store for Red Hat Virtualization. Metrics Store collects logs and metrics for Red Hat Virtualization 4.2 and later.

---

## Table of Contents

<b>PREFACE</b> .....	<b>3</b>
<b>CHAPTER 1. WORKFLOW AND ARCHITECTURE</b> .....	<b>4</b>
<b>CHAPTER 2. INSTALLING METRICS STORE</b> .....	<b>5</b>
2.1. CREATING THE METRICS STORE VIRTUAL MACHINES	5
2.1.1. Configuring the Metrics Store installation	5
2.1.2. Creating Metrics Store virtual machines	6
2.1.3. Verifying the creation of the virtual machines	7
2.1.4. Changing the default LDAP authentication identity provider (optional)	7
2.2. CONFIGURING NETWORKING FOR METRICS STORE VIRTUAL MACHINES	7
2.2.1. Configuring DNS resolution for Metrics Store virtual machines	7
2.2.2. Setting a static MAC address for a Metrics Store virtual machine (optional)	7
2.2.3. Configuring firewall ports	7
2.3. DEPLOYING METRICS STORE SERVICES ON RED HAT OPENSIFT	8
<b>CHAPTER 3. DEPLOYING COLLECTD AND RSYSLOG</b> .....	<b>10</b>
<b>CHAPTER 4. VERIFYING THE METRICS STORE INSTALLATION</b> .....	<b>11</b>
<b>APPENDIX A. INSTALLING METRICS STORE WITH SATELLITE</b> .....	<b>12</b>
<b>APPENDIX B. SHARING REPORTS WITH NON-ADMINISTRATORS</b> .....	<b>14</b>
<b>APPENDIX C. REMOVING METRICS STORE</b> .....	<b>15</b>



## PREFACE

Metrics Store collects logs and metrics from Red Hat Virtualization. The data is transferred from Red Hat Virtualization to Red Hat OpenShift where it is stored and aggregated in Elasticsearch and saved in indexes. The data can then be analyzed and visualized in Kibana.

- **Elasticsearch** is a distributed, RESTful search and analytics engine that lets you perform and combine many types of searches.
- **Kibana** is an open source analytics and visualization platform designed to work with Elasticsearch. You can easily perform advanced data analysis and visualize your data in a variety of charts and tables.

## CHAPTER 1. WORKFLOW AND ARCHITECTURE

To install Metrics Store, complete the following major tasks:

1. [Create the Metrics Store virtual machines.](#)
2. [Deploy Metrics Store services on Red Hat OpenShift .](#)
3. [Configure networking for Metrics Store virtual machines .](#)
4. [Deploy collectd and rsyslog.](#)
5. [Verify the Metrics Store installation.](#)

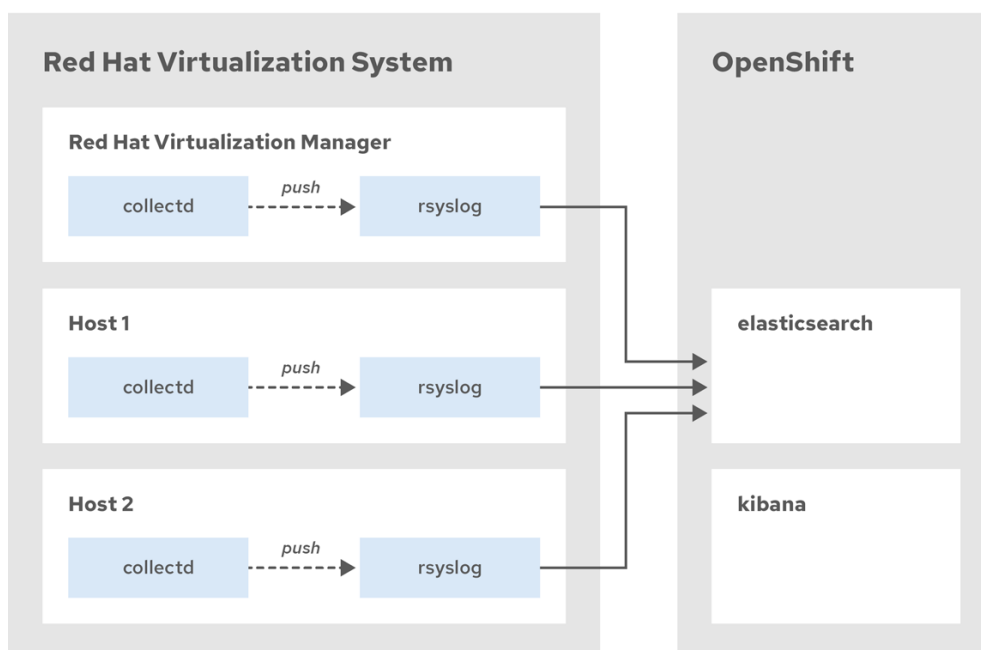
### Metrics Store architecture

The Metrics Store architecture is based on the [Red Hat OpenShift EFK logging stack](#) , running on [Red Hat OpenShift Container Platform 3.11](#).

Metrics Store uses the following services:

- [collectd](#) (hosts) collects metrics from hosts, virtual machines, and databases.
- [rsyslog](#) (hosts) collects metrics, adds log data, enriches the data with metadata, and sends the enriched data to Elasticsearch.
- [Elasticsearch](#) (Metrics Store virtual machine) stores and indexes the data.
- [Kibana](#) (Metrics Store virtual machine) analyzes and presents the data as dashboards and charts.

Figure 1.1. Metrics Store architecture



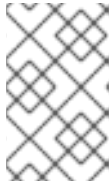
RHV\_24\_0519



## CHAPTER 2. INSTALLING METRICS STORE

### Prerequisites

- Computing resources:
  - 4 CPU cores
  - 30 GB RAM
  - 500 GB SSD disk
- For the Metrics Store Installer virtual machine:
  - 4 CPU cores
  - 8 GB RAM



### NOTE

The computing resource requirements are for an *all-in-one* installation, with a single Metrics Store virtual machine. The all-in-one installation can collect data from up to 50 hosts, each running 20 virtual machines.

- Operating system: [Red Hat Enterprise Linux 7.7](#) or later
- Software: [Red Hat Virtualization 4.3.5](#) or later
- Network configuration: see [Configuring networking for Metrics Store virtual machines](#)

## 2.1. CREATING THE METRICS STORE VIRTUAL MACHINES

To create the Metrics Store virtual machines, perform the following tasks:

1. Configure the Metrics Store installation.
2. Create the following Metrics Store virtual machines:
  - The Metrics Store Installer virtual machine - a temporary virtual machine for deploying Red Hat OpenShift and services on the Metrics Store virtual machines.
  - One or more Metrics Store virtual machines.
3. Verify the Metrics Store virtual machines.

### 2.1.1. Configuring the Metrics Store installation

#### Procedure

1. Log in to the Manager machine using SSH.
2. Update the packages:

```
# yum update
```

3. Copy **metrics-store-config.yml.example** to create **metrics-store-config.yml**:

```
# cp /etc/ovirt-engine-metrics/metrics-store-config.yml.example /etc/ovirt-engine-
metrics/config.yml.d/metrics-store-config.yml
```

4. Edit the parameters in **metrics-store-config.yml** to match your installation environment, and save the file. The parameters are documented in the file.
5. To set the logical network that is used for the **metrics-store-installer** and Metrics Store virtual machines, add the following lines to **metrics-store-config.yml**:

```
# ovirt_template_nics - the following are the default values for setting the logical network
used by the metrics_store_installer and the Metrics Store virtual machines
ovirt_template_nics:
  - name: nic1
    profile_name: ovirtmgmt
    interface: virtio
```

6. On the Manager machine, copy **/etc/ovirt-engine-metrics/secure\_vars.yml.example** to **/etc/ovirt-engine-metrics/secure\_vars.yml**:

```
# cp /etc/ovirt-engine-metrics/secure_vars.yml.example /etc/ovirt-engine-
metrics/secure_vars.yml
```

7. Edit the parameters in **/etc/ovirt-engine-metrics/secure\_vars.yml** to match the details of your specific environment.
8. Encrypt the **secure\_vars.yml** file:

```
# ansible-vault encrypt /etc/ovirt-engine-metrics/secure_vars.yml
```

## 2.1.2. Creating Metrics Store virtual machines

### Procedure

1. Go to the **ovirt-engine-metrics** directory:

```
# cd /usr/share/ovirt-engine-metrics
```

2. Run the **ovirt-metrics-store-installation** playbook to create the virtual machines:

```
# ANSIBLE_JINJA2_EXTENSIONS="jinja2.ext.do"
./configure_ovirt_machines_for_metrics.sh --playbook=ovirt-metrics-store-installation.yml --
ask-vault-pass
```



### NOTE

To enable verbose mode for debugging, add **-vvv** to the end of the command, or add **'-v'** to enable light verbose mode, or add **-vvvv** to enable connection debugging. For more extensive debugging options, enable debugging through the Ansible playbook as described in [Enable debugging via Ansible playbook](#)

### 2.1.3. Verifying the creation of the virtual machines

#### Procedure

1. Log in to the Administration Portal.
2. Click **Compute** → **Virtual Machines** to verify that the **metrics-store-installer** virtual machine and the Metrics Store virtual machines are running.

### 2.1.4. Changing the default LDAP authentication identity provider (optional)

In the standard Metrics Store installation, the **allow\_all** identity provider is configured by default. You can change this default during installation by configuring the **openshift\_master\_identity\_providers** parameter in the inventory file **integ.ini**.

You can also configure the session options in the OAuth configuration in the **integ.ini** inventory file.

#### Procedure

1. Locate the **integ.ini** in the root directory of the **metrics-store-installer** virtual machine.
2. Follow the instructions for updating the identity provider configuration in [Configuring identity providers with Ansible](#).

## 2.2. CONFIGURING NETWORKING FOR METRICS STORE VIRTUAL MACHINES

### 2.2.1. Configuring DNS resolution for Metrics Store virtual machines

#### Procedure

1. In the **metrics-store-config.yml** **DNS zone** parameter, **public\_hosted\_zone** should be defined as a wildcard DNS record (**\*.example.com**). That wildcard DNS should resolve to the IP address of your **master0** virtual machine.
2. Add the hostnames of the Metrics Store virtual machines to your DNS server.

### 2.2.2. Setting a static MAC address for a Metrics Store virtual machine (optional)

#### Procedure

1. Log in to the Administration Portal.
2. Click **Compute** → **Virtual Machines** and select a Metrics Store virtual machine.
3. In the **Network Interfaces** tab, select a NIC and click **Edit**.
4. Select **Custom MAC Address**, enter the MAC address, and click **OK**.
5. Reboot the virtual machine.

### 2.2.3. Configuring firewall ports

The following table describes the firewall settings needed for communication between the ports used by Metrics Store.

**Table 2.1. Configure the firewall to allow connections to specific ports**

ID	Port(s)	Protocol	Sources	Destinations	Purpose
MS1	9200	TCP	RHV Red Hat Virtualization Hosts RHV Manager	Metrics Store VM	Transfer data to ElasticSearch.
MS2	5601	TCP	Kibana user	Metrics Store VM	Give users access to the Kibana web interface.



#### NOTE

Whether a connection is encrypted or not depends on how you deployed the software.

## 2.3. DEPLOYING METRICS STORE SERVICES ON RED HAT OPENSIFT

Deploy and verify Red Hat OpenShift, Elasticsearch, Curator (for managing Elasticsearch indices and snapshots), and Kibana on the Metrics Store virtual machines.

### Procedure

1. Log in to the **metrics-store-installer** virtual machine.
2. Run the **install\_okd** playbook to deploy Red Hat OpenShift and Metrics Store services to the Metrics Store virtual machines:

```
# ANSIBLE_CONFIG="/usr/share/ansible/openshift-ansible/ansible.cfg" \
ANSIBLE_ROLES_PATH="/usr/share/ansible/roles:/usr/share/ansible/openshift-
ansible/roles" \
ansible-playbook -i integ.ini install_okd.yaml -e @vars.yaml -e @secure_vars.yaml --ask-
vault-pass
```



#### NOTE

To enable verbose mode for debugging, add **-vvv** to the end of the command, or add **-v** to enable light verbose mode, or add **-vvvv** to enable connection debugging.

3. Verify the deployment by logging in to each Metrics Store virtual machine:
  - a. Log in to the **openshift-logging** project:

```
# oc project openshift-logging
```

- b. Check that the Elasticsearch, Curator, and Kibana pods are running:

```
# oc get pods
```

If Elasticsearch is not running, see [Troubleshooting related to ElasticSearch](#) in the *OpenShift Container Platform 3.11* documentation.

4. Check the Kibana host name and record it so you can access the Kibana console in [Chapter 4, Verifying the Metrics Store installation](#):

```
# oc get routes
```

### Cleanup

1. Log in to the Administration Portal.
2. Click **Compute** → **Virtual Machines** and delete the **metrics-store-installer** virtual machine.

## CHAPTER 3. DEPLOYING COLLECTD AND RSYSLOG

Deploy **collectd** and **rsyslog** on the hosts to collect logs and metrics.



### NOTE

You do not need to repeat this procedure for new hosts. The Manager configures the hosts automatically.

### Procedure

1. Log in to the Manager machine using SSH.
2. Copy **/etc/ovirt-engine-metrics/config.yml.example** to create **/etc/ovirt-engine-metrics/config.yml.d/config.yml**:

```
# cp /etc/ovirt-engine-metrics/config.yml.example /etc/ovirt-engine-
metrics/config.yml.d/config.yml
```

3. Edit the **ovirt\_env\_name** and **elasticsearch\_host** parameters in **config.yml** and save the file. These parameters are mandatory and are documented in the file.



### NOTE

If you add a Manager or an Elasticsearch installation, copy the Manager's public key to your Metrics Store virtual machine using the following commands:

```
# mytemp=$(mktemp -d)
# cp /etc/pki/ovirt-engine/keys/engine_id_rsa $mytemp
# ssh-keygen -y -f $mytemp/engine_id_rsa > $mytemp/engine_id_rsa.pub
# ssh-copy-id -i $mytemp/engine_id_rsa.pub root@{elasticsearch_host}
# rm -rf $mytemp
```

4. Deploy **collectd** and **rsyslog** on the hosts:

```
# /usr/share/ovirt-engine-metrics/setup/ansible/configure_ovirt_machines_for_metrics.sh
```

## CHAPTER 4. VERIFYING THE METRICS STORE INSTALLATION

Verify the Metrics Store installation using the Kibana console. You can view the collected logs and create data visualizations.

### Procedure

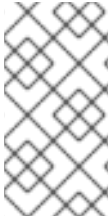
1. Log in to the Kibana console using the URL (**<https://kibana.example.com>**) that you recorded in [Section 2.3, “Deploying Metrics Store services on Red Hat OpenShift”](#). Use the default **admin** user, and the password you defined during the metrics store installation. Optionally, you can access the Red Hat OpenShift Container Platform portal at **<https://example.com:8443>** (using the same **admin** user credentials).
2. Select the **Discover** tab, and check that you can view the **project.ovirt-logs-ovirt\_env\_name-uuid** index.  
See the [Discover](#) section in the *Kibana User Guide* for information about working with logs.
3. Select the **Visualize** tab, where you can create data visualizations for the **project.ovirt-metrics-ovirt\_env\_name-uuid** and the **project.ovirt-logs-ovirt\_env\_name-uuid** indexes. The [Metrics Store User Guide](#) describes the available parameters. See the [Visualize](#) section of the *Kibana User Guide* for information about visualizing logs and metrics.

## APPENDIX A. INSTALLING METRICS STORE WITH SATELLITE

You can use Satellite to install Metrics Store on a disconnected environment.

### Prerequisites

- The Satellite server is configured. For more information, see [Disconnected installation using Satellite Docker registry](#)



### NOTE

If you encounter a missing image or a reference to an online image (depending on which applications you are using), consider updating the references in the deployment or build configuration of the application, or re-tag Docker images as a temporary measure (just to rule out that the image is not reachable).

- The following **OpenShift** component images are synchronized through Docker on your Satellite server:

```
openshift3/oauth-proxy
openshift3/ose-console
openshift3/ose-control-plane
openshift3/ose-deployer
openshift3/ose-docker-registry
openshift3/ose-haproxy-router
openshift3/ose-logging-auth-proxy
openshift3/ose-logging-curator5
openshift3/ose-logging-elasticsearch5
openshift3/ose-logging-fluentd
openshift3/ose-logging-kibana5
openshift3/ose-node
openshift3/ose-pod
openshift3/ose-web-console
openshift3/registry-console
rhel7/etcd
```

- Two hosts are created on the Satellite server - one for the Metrics Store Installer virtual machine, and one for the OpenShift virtual machine, as follows:
  1. Create hosts on Satellite - see [Creating a Host](#).
  2. Assign static IP addresses and MAC addresses for the virtual machines. The host for the OpenShift virtual machine should be of the format **master-<suffix>0** to match the OpenShift virtual machine hostname.
- The **qcow** image is available on the Manager machine.
  1. Go to [RHEL product software](#).
  2. In the **Product Software** tab, download the **Red Hat Enterprise Linux KVM Guest Image** to the Manager machine.

### Running the Ansible role



1. On the Manager machine, copy **/etc/ovirt-engine-metrics/metrics-store-config-satellite.yml.example** to **metrics-store-config.yml**.

```
# cp /etc/ovirt-engine-metrics/metrics-store-config-satellite.yml.example /etc/ovirt-engine-
metrics/config.yml.d/metrics-store-config.yml
```

2. Update the values of **/etc/ovirt-engine-metrics/metrics-store-config.yml** to match the details of your specific environment.

```
# vi /etc/ovirt-engine-metrics/config.yml.d/metrics-store-config.yml
```

3. On the Manager machine, copy **/etc/ovirt-engine-metrics/secure\_vars\_satellite.yml.example** to **/etc/ovirt-engine-metrics/secure\_vars.yml**.

```
# cp /etc/ovirt-engine-metrics/secure_vars_satellite.yml.example /etc/ovirt-engine-
metrics/secure_vars.yml
```

4. Update the values of **/etc/ovirt-engine-metrics/secure\_vars.yml** to match the details of your specific environment.

```
# vi /etc/ovirt-engine-metrics/secure_vars.yml
```

5. Encrypt the **secure\_vars.yml** file.

```
# ansible-vault encrypt /etc/ovirt-engine-metrics/secure_vars.yml
```

6. Go to the **ovirt-engine-metrics** repo.

```
# cd /usr/share/ovirt-engine-metrics
```

7. Run the metrics store installation playbook that creates the metrics store installer virtual machine.

```
# ANSIBLE_JINJA2_EXTENSIONS="jinja2.ext.do"
./configure_ovirt_machines_for_metrics.sh \
--playbook=ovirt-metrics-store-installation.yml --ask-vault-pass -vvv
```

8. Log in to the Administration Portal and review the Metrics Store installer virtual machine creation.

9. Log in to the Metrics Store installer virtual machine.

```
# ssh root@<metrics-store-installer ip or fqdn>
```

10. Run the Ansible playbook that deploys OpenShift on the virtual machines that were created.

```
# ANSIBLE_CONFIG="/usr/share/ansible/openshift-ansible/ansible.cfg" \
ANSIBLE_ROLES_PATH="/usr/share/ansible/roles:/usr/share/ansible/openshift-
ansible/roles" \
ansible-playbook -i integ.ini install_okd.yml -e @vars.yml -e @secure_vars.yml --ask-
vault-pass -vvv
```

## APPENDIX B. SHARING REPORTS WITH NON-ADMINISTRATORS

Users without administrator privileges can view collected logs and metrics as read-only users. The following example creates a user named *user name* with *view* (read-only) permissions.

### Procedure

1. Log in to the Metrics Store virtual machine.
2. Create a new user:

```
# oc create user username  
# oc create identity allow_all: username  
# oc create useridentitymapping allow_all: username username
```

3. Log in to the *openshift-logging* project:

```
# oc project openshift-logging
```

4. Assign a *view* role to the user:

```
# oc adm policy add-role-to-user view user name
```

5. Create a password for the user:

```
# oc login --username=user name --password=password
```

## APPENDIX C. REMOVING METRICS STORE

To remove the Metrics Store installation:

1. Stop and disable **collectd** and **rsyslog**:

```
# cd /usr/share/ovirt-engine-metrics/  
# ./configure_ovirt_machines_for_metrics.sh --playbook=cleanup-ovirt-metrics.yml -vvv
```

2. Delete the **Metrics Store** virtual machine.