



# Prometheus and Grafana

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## Introduction

CPS system, application statistics and Key Performance Indicators (KPI) are collected by the system and are displayed using a browser-based graphical metrics tool. This chapter provides a high-level overview of the tools CPS uses to collect and display these statistics.

## Prometheus

Prometheus is an application that is used to actively gather statistics and trigger alerts from the running virtual machines and application services. The CPS vDRA cluster deploys the following Prometheus services on each control node and on the master node:

- Prometheus Hi-Res – this instance of the Prometheus service is monitoring the system at 5 second intervals with 24-hour history
- Prometheus Trending – this instance of the Prometheus service is monitoring the system at 20 second intervals with 30-day history
- Prometheus Planning – this instance of the Prometheus service is monitoring the system at 120 second intervals with 365-day history

Internally, the Prometheus servers scrape statistics from target statistics sources on a regular basis. The following target data sources are included:

- Host Node Exporter for Host VM statistics.
- Mongo DB Exporter for Database statistics.
- Application Statistics.

In addition to scrapping, statistics in the Prometheus servers can be configured using the Management CLI alert rule command to trigger alerts on error conditions. In this scenario, a user defines the alert rule and the configuration for that rule is pushed into the Prometheus servers. It can generate SNMPv2 and SNMPv3 alarm based on the NMS destination configured in the system. You can configure multiple SNMP destination (SNMPv2, SNMPv3) to receive the alarms at multiple NMS.




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**Note** Currently, SNMP get and walk facility is not supported.

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For more information on Prometheus, refer <https://prometheus.io/>.

## Grafana

Grafana is a third-party metrics dashboard and graph editor provided with CPS 7.0 and higher. Grafana provides a graphical or text-based representation of statistics and counters collected in the Prometheus database.

## Additional Grafana Documentation

This chapter provides information about the CPS implementation of Grafana. For more information about Grafana, or access the general Grafana documentation, refer to: <http://docs.grafana.org>.

## Data Source Supported

The CPS implementation uses the Prometheus data source and does not use graphite for queries. This requires the definition of queries to use the Prometheus query format as defined in <https://prometheus.io/docs/querying/basics/>.




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**Note** If the control VM that hosts Grafana goes down, then the Prometheus data also not available during that downtime after the same control VM (hosting Grafana) is back. This results in some missing data. As a workaround, you can add the Prometheus datasource of other control VM in Grafana UI that was up during that downtime and view the missing statistics.

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## Manage Grafana Users




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**Note** In Grafana, admin users can invite new users by email or a link. However, this is not supported in CPS vDRA.

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Perform the following to add a new Grafana:

1. Enter config mode

```
scheduler# config
Entering configuration mode terminal
scheduler(config)#
```

2. Enter the **aaa authentication** command to create the user:

```
scheduler(config)# aaa authentication users user test2 gid 100 uid 9000 homedir / password
testpassword ssh_keydir /
scheduler(config-user-test2)# commit
scheduler(config-user-test2)# exit
```




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**Note** The **gid**, **uid**, **homedir** and **ssh\_keydir** are required but not used by the application.

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### Add User To A Viewer Operational Group

In config mode, add the user to the “oper” group and commit as follows:

```
scheduler(config)# nacm groups group oper user-name test2
scheduler(config-group-oper)# commit
```

### Add User To A Grafana Editor Group

In config mode, add the user to the “grafana-editor” group and commit as follows:

```
scheduler(config)# nacm groups group grafana-editor user-name test2
scheduler(config-group-grafana-editor)# commit
```

### Add User To A Grafana Admin Group

In config mode, add the user to the “grafana-admin” group and commit as follows:

```
scheduler(config)# nacm groups group grafana-admin user-name test2
scheduler(config-group-grafana-admin)# commit
```

### Change A Grafana Users Password

In the Management CLI, issue the **aaa authentication users user change-password** command as follows:

```
scheduler# aaa authentication users user test2 change-password
Value for 'old-password' (<string>): *****
Value for 'new-password' (<string>): *****
Value for 'confirm-password' (<string>): *****
scheduler#
System message at 2017-03-08 21:17:18...
Commit performed by system via system using system.
```

### Specify Access Restrictions for a Group

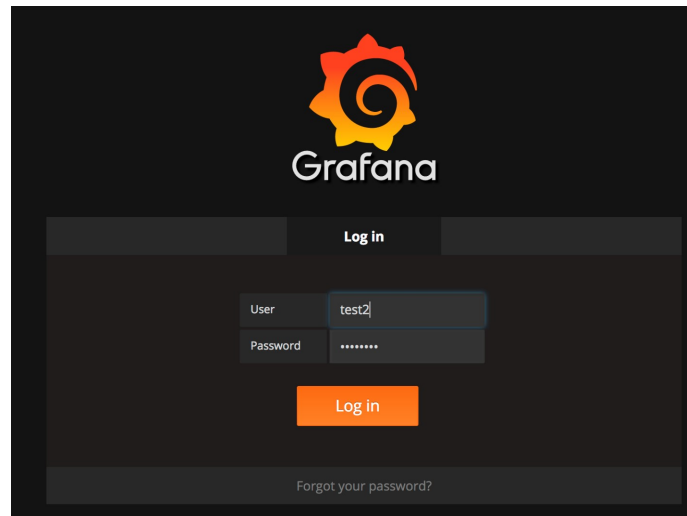
For more information, see the `nacm rule-list` command.

## Connect to Grafana

Use the following URL to access Grafana and enter the user name and password:

`https://<masterip>/grafana/`

Figure 1: Grafana Login



## Grafana Roles

The following types of user roles are supported:

- **Admin:** An admin user can view, update and create dashboards. Also, the admin can edit and add data sources and organization users.
- **Viewer:** A viewer can only view dashboards and cannot not save or create them.
- **Editor:** An editor can view, update and create dashboards.