

Understand Grafana Stack for Advanced Monitoring on ISE

Contents

[Introduction](#)

[Prerequisites](#)

[Requirements](#)

[Components Used](#)

[Background Information](#)

[Grafana and Prometheus Stack](#)

[Grafana Stack for Advanced ISE Monitoring](#)

[Enable or Disable Monitoring](#)

[Navigation Menu](#)

[Built-in Dashboards](#)

[Create Your Own Dashboard](#)

[Step 1. Enter the New Dashboard Menu](#)

[Step 2. Add a Panel](#)

[Step 3. Create Panels by Using Queries](#)

[Troubleshooting](#)

[Related Information](#)

Introduction

This document describes the Grafana Stack components built-in Identity Services Engine (ISE) 3.3 through System 360 Advanced Monitoring.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- Cisco Identity Service Engine
- Grafana Stack

Components Used

The information in this document is based on these software and hardware versions:

- ISE 3.3

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Background Information

System 360 includes Monitoring and Log Analytics features.

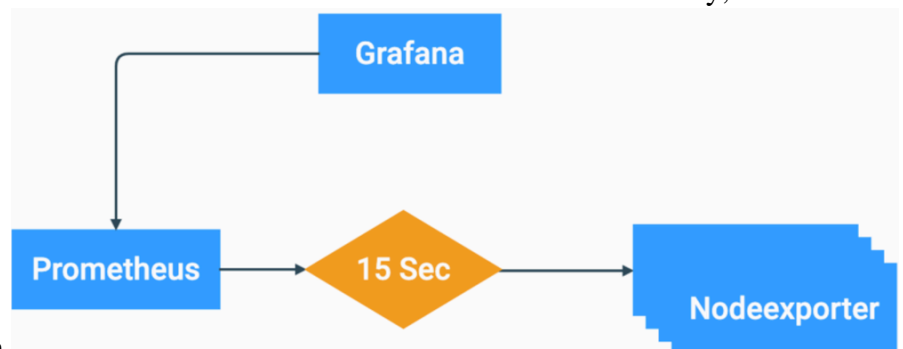
The **Monitoring** feature enables you to monitor a wide range of application and system statistics, and the key performance indicators (KPI) of all the nodes in a deployment from a centralized console. KPIs are useful to gain insight into the overall health of the node environment. Statistics offer a simplified representation of the system configurations and utilization-specific data.

Log Analytics provides a flexible analytics system for in-depth analysis of endpoint authentication, authorization, and accounting (AAA), and profiling syslog data. You can also analyze the Cisco ISE health summary and process statuses. You can generate reports that are similar to the Cisco ISE Counters and Health Summary report.

Grafana and Prometheus Stack

The Grafana stack is a third-party open-source software stack used to provide a graphical or text-based representation of statistics and counters collected within a given environment or software solution. It is conformed by Grafana, Prometheus and Node Exporter components:

- Grafana: Grafana is a visualization and analytics software that works with Prometheus. It allows you to query, visualize, alert on, and explore on a friendly way system metrics, logs, and traces stored in Prometheus database.
- Prometheus: Prometheus pulls, collects and stores time series data cached by Node Exporter.
- Node Exporter: Constantly measures various machine resources metrics such as memory, disk and



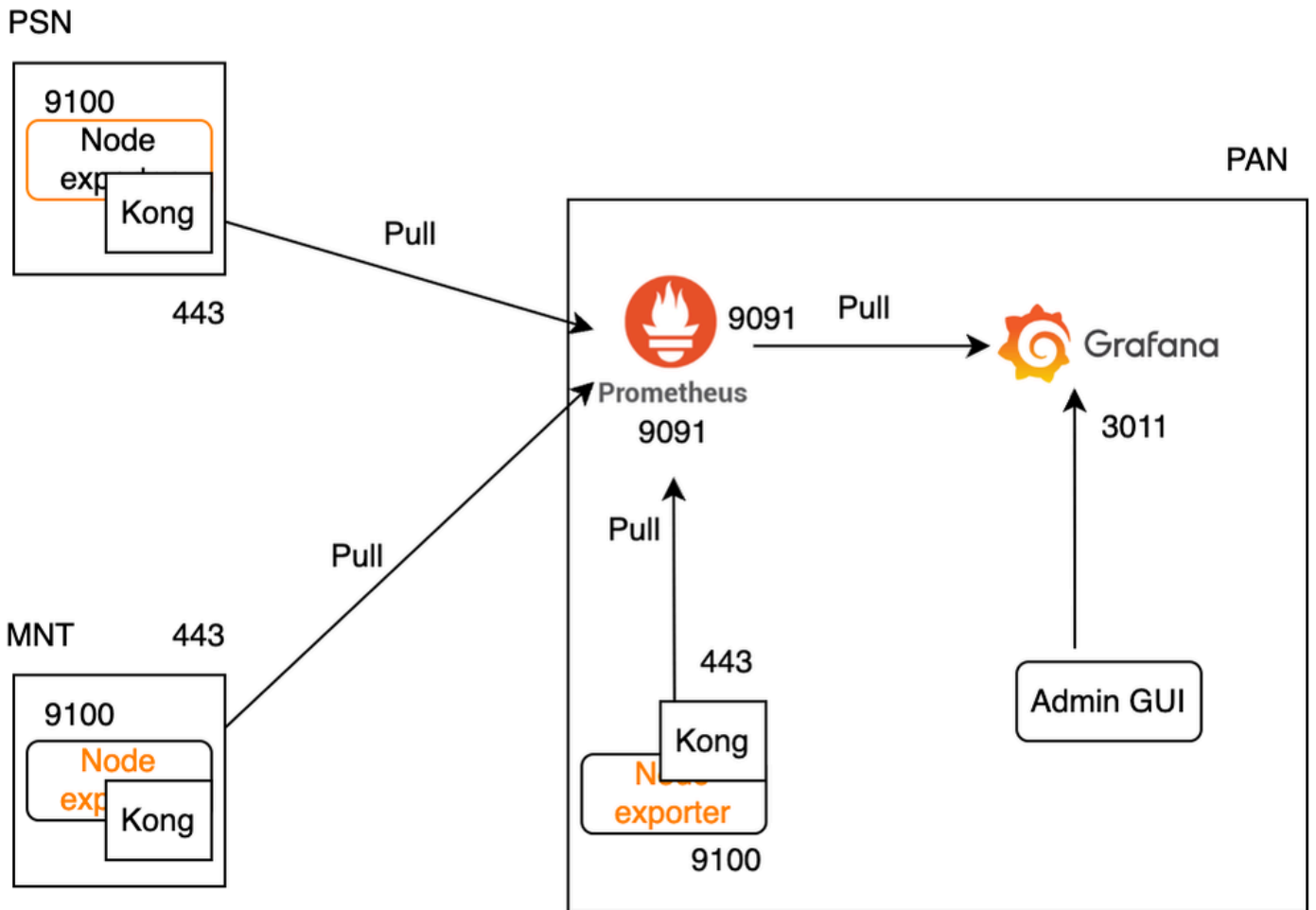
CPU utilization and caches them.

Grafana Stack Flow Chart

These components form a powerful stack for collecting, managing and analyzing diverse types of system metrics. This allows system administrators to have a real-time, and friendly visualization of the status and performance of their network solutions.

Grafana Stack for Advanced ISE Monitoring

- ISE do not require to have separate instances of Grafana stack on each node to monitor the whole deployment. The stack components running on each node depend on the roles that each ISE node has.
- Each ISE node in a deployment has its own Node exporter instance.
- Policy Administration Nodes (PAN) have independent Grafana and Prometheus instances.
- Prometheus can store up to 5GB or 7 day-old data. Once either of these thresholds is reached, the oldest data is purged first.
- The data collection, storage and processing is not handled by MnT collector. This means that enabling this feature does not have a significant impact on ISE Resource consumption.
- Monitoring feature is enabled by default.



Grafana Flow for ISE Monitoring

Enable or Disable Monitoring

Monitoring is a feature that is enabled by default on ISE. However, you can enable or disable this feature at any time.

Navigate to **Operations > System 360 > Settings** and click the **Monitoring** button to **Enable** or **Disable** the feature.

Finally, click the **Save** button.

Monitoring and Log Analytics Settings

Monitoring enables you to monitor a wide range of applications, system statistics, and key performance indicators (KPI) of all deployment nodes from a centralized console.

Monitoring

Go to [Monitoring](#)  View

Log Analytics provides a flexible analytics system for in-depth analysis of syslog data generated from different endpoints.

Log Analytics

Go to [Log Analytics](#)  View

Reset

Save

Enable or Disable Monitoring

ISE takes about a minute to initialize or shut down the Grafana stack, you can check the services status using **show app stat ise**.

<#root>

```
vimontes-ise-33-1/admin#show application status ise
```

ISE PROCESS NAME	STATE	PROCESS ID
Database Listener	running	81008
Database Server	running	134 PROCESSES
Application Server	running	518925
Profiler Database	running	86939
ISE Indexing Engine	running	486865
AD Connector	running	90383
M&T Session Database	running	486437
M&T Log Processor	running	2564857
Certificate Authority Service	running	245113
EST Service	running	583881
SXP Engine Service	disabled	
TC-NAC Service	disabled	
PassiveID WMI Service	disabled	
PassiveID Syslog Service	disabled	
PassiveID API Service	disabled	
PassiveID Agent Service	disabled	

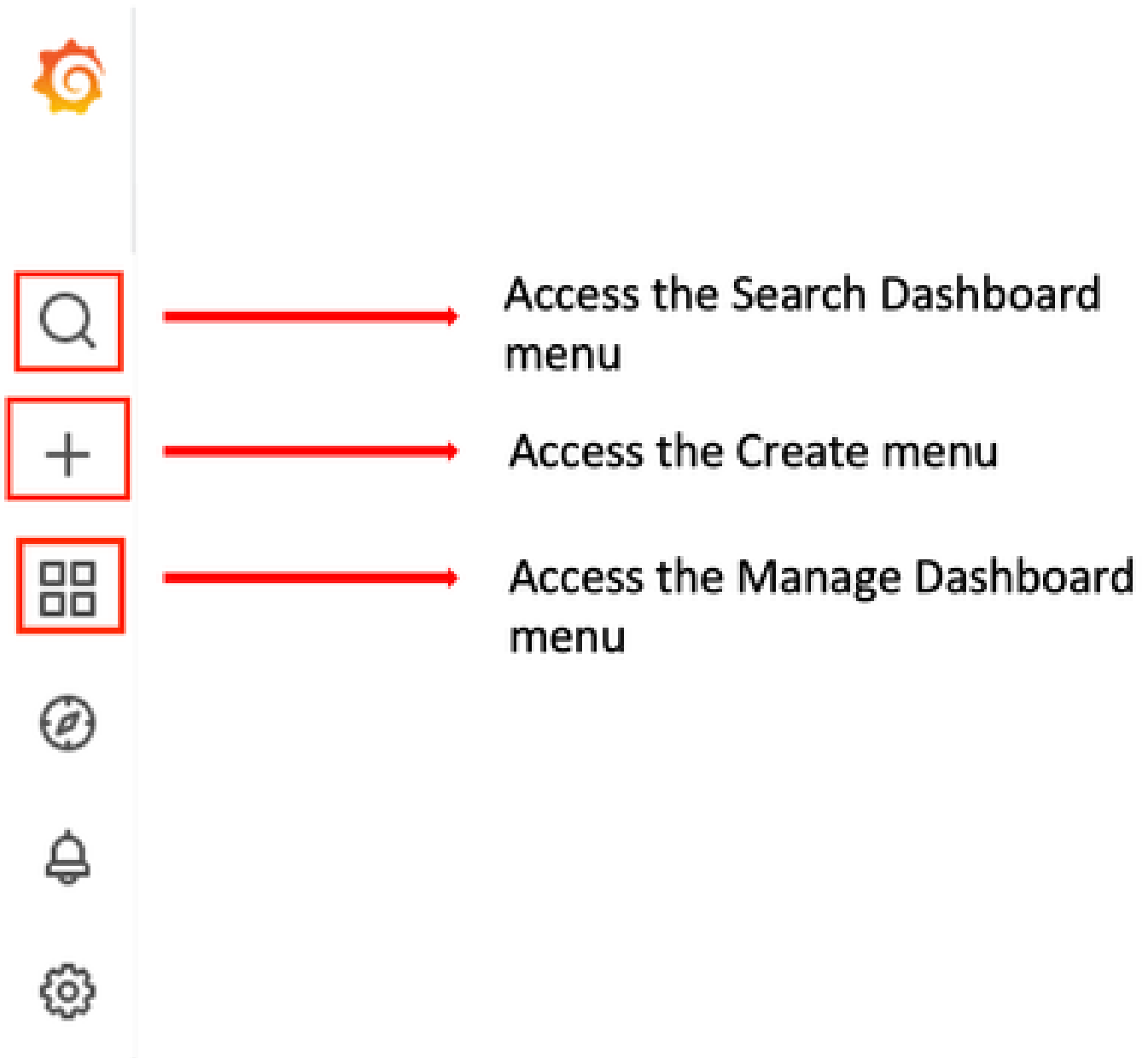
PassiveID Endpoint Service	disabled	
PassiveID SPAN Service	disabled	
DHCP Server (dhcpd)	disabled	
DNS Server (named)	disabled	
ISE Messaging Service	running	247148
ISE API Gateway Database Service	running	488895
ISE API Gateway Service	running	501344
ISE pxGrid Direct Service	running	559099
Segmentation Policy Service	disabled	
REST Auth Service	disabled	
SSE Connector	disabled	
Hermes (pxGrid Cloud Agent)	disabled	
McTrust (Meraki Sync Service)	disabled	
I		
SE Node Exporter	running	91058
ISE Prometheus Service	running	357191
ISE Grafana Service	running	504738
ISE MNT LogAnalytics Elasticsearch	running	359800
ISE Logstash Service	running	362762
ISE Kibana Service	running	365658
ISE Native IPSec Service	running	507795
MFC Profiler	running	574221



Note: Depending on the personas running on each ISE node, it can be expected to see some of the Grafana Stack services in **not running** status even when Monitoring is enabled.

Navigation Menu

Navigate to **Operations > System 360 > Monitoring** to have access to Grafana Navigation Menu. Navigation Menu is located to the left of the dashboard that ISE displays.



Grafana Navigation Menu

Built-in Dashboards

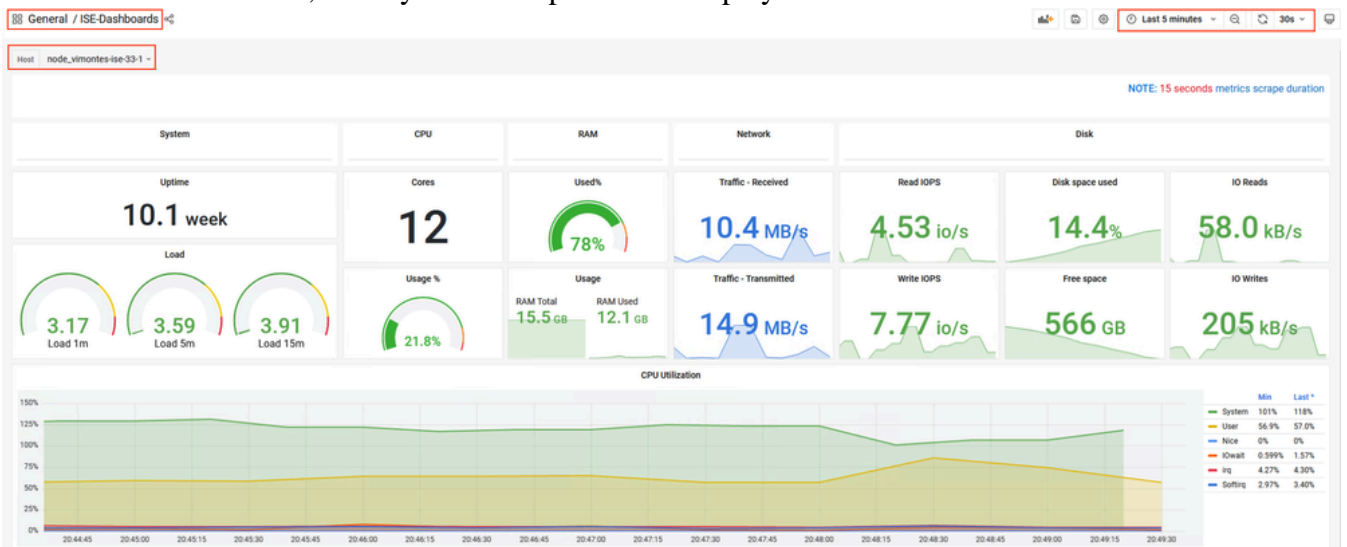
ISE by default has two built-in dashboard called **ISE-Dashboard** and **MFC Profiler**. These dashboard displays the most common Key Performance Indicators (KPIs), such as Memory, CPU and Disk statistics, separately for each ISE node in the deployment. These dashboards can also display process consumption metrics.

In order to access these dashboard, navigate to **Operations > System 360 > Monitoring** menu. By default, ISE displays ISE-Dashboard.



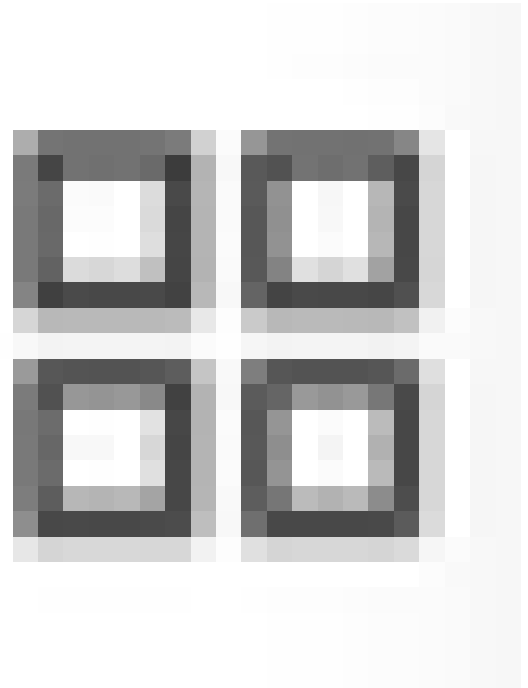
Note: Monitoring menu does not show in the GUI if the feature is not enabled.

You can select the ISE node, modify the time span of the displayed information and the dashboard refresh



rate.

Monitoring Built-in Dashboard



To switch between dashboards, click on the four-square icon . This opens the Manage Dashboard window. From this window, you can select between the different existing dashboards.



Switching Between Dashboards



Note: ISE server and client machine must have the same time to avoid data inconsistencies. If a time mismatch is detected, ISE shows this warning after accessing to the built-in dashboard: "A time mismatch is detected between ISE server and client machine which can lead to inconsistent Grafana behaviour, kindly sync time on both machines."

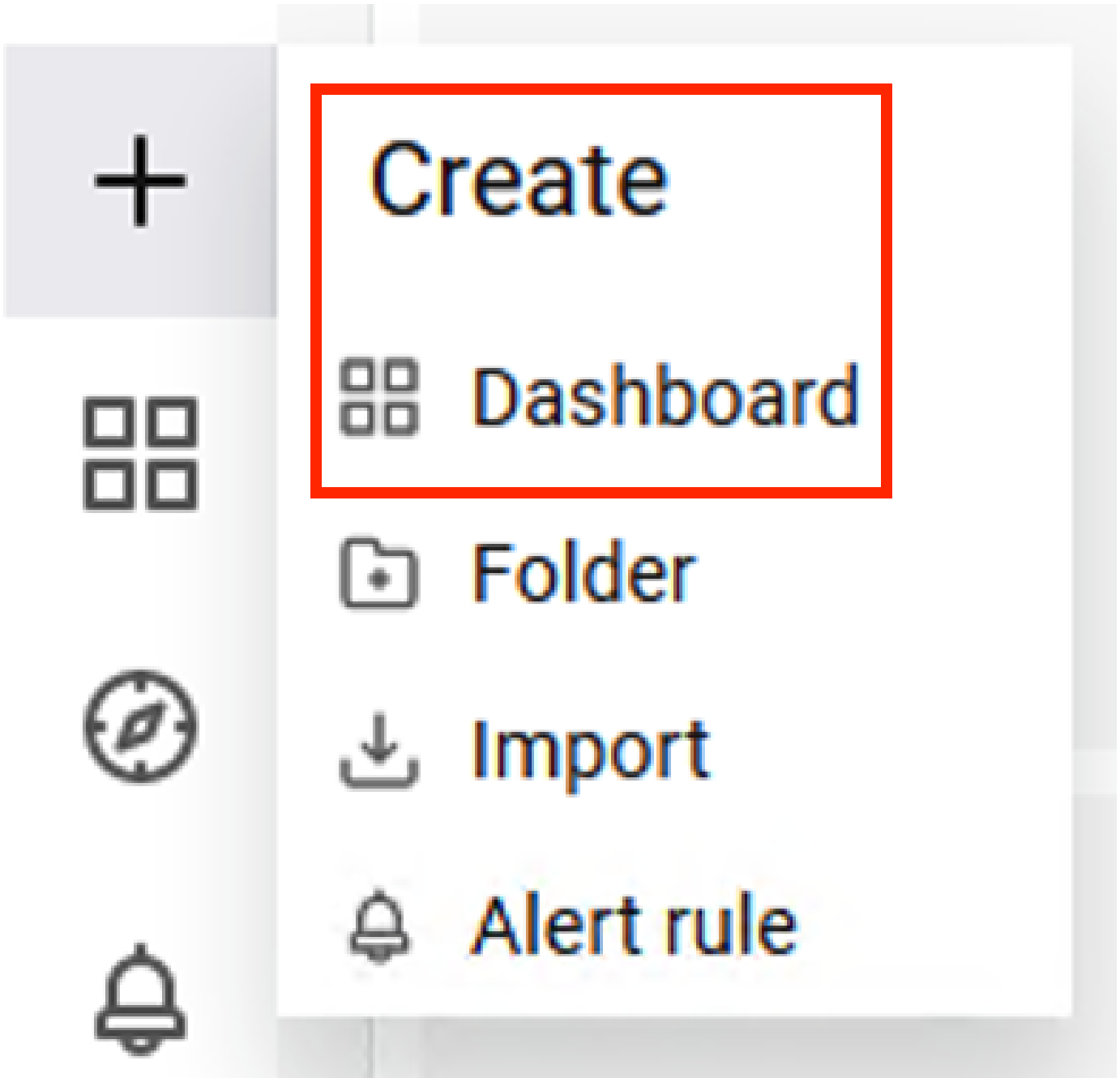
Create Your Own Dashboard

Additional to the built-in dashboards provided, you can create your own Dashboards from zero.

Step 1. Enter the New Dashboard Menu

Navigate under **Operations > System 360 > Monitoring**.

Click the **plus (+)** icon on the Grafana Navigation Menu and click **Dashboard**.



Create New Dashboard

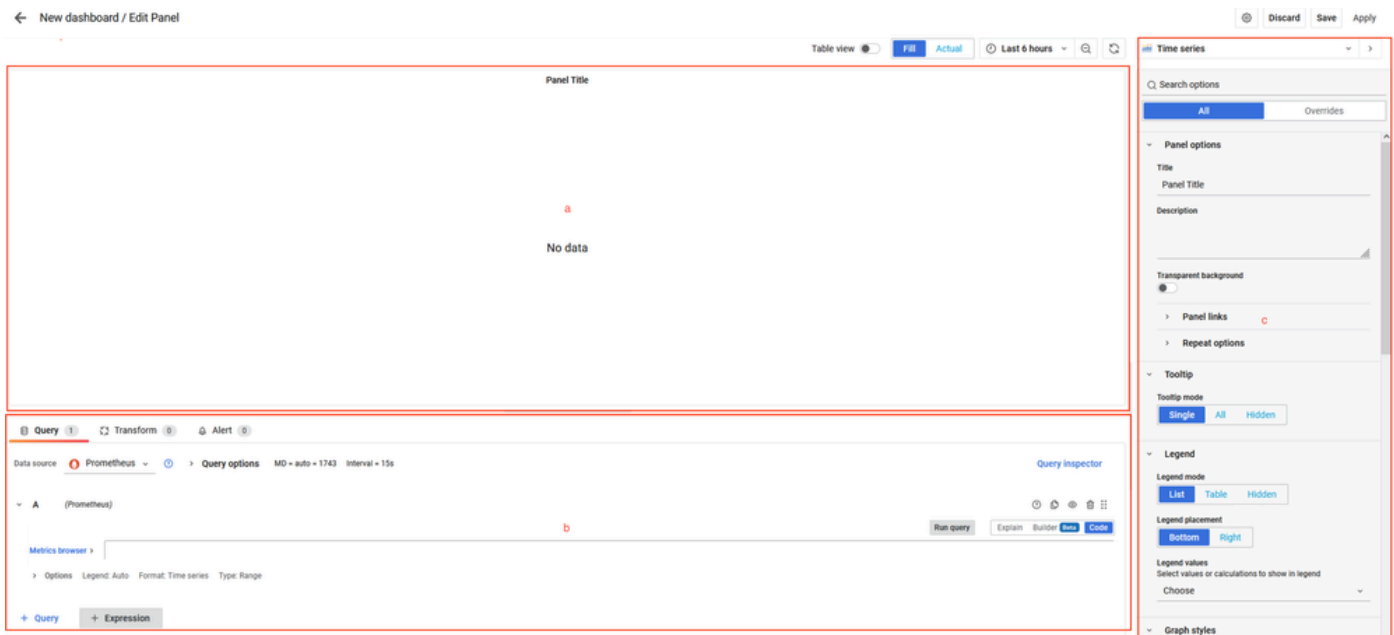
Step 2. Add a Panel

Select **Add a new panel** option. This displays the **Edit Panel** window.

Add a New Panel

This is how the **Edit Panel** window looks:





Dashboard Creation Area

- a. Visualization area: Shows the graphic representation of the data pulled from the Prometheus database.
- b. Data Queries area: You can select the queries to pull specific metrics and data stored in Prometheus database.
- c. Panel Options area: Provides an extensive amount of options to modify the graphic panel that displays the data.

Step 3. Create Panels by Using Queries

Troubleshooting

- Verify the **Monitoring** feature is enabled.
- Verify the Grafana stack services are running on the ISE nodes, depending on the enabled personas on each ISE node.
- Each Grafana stack component has a separate log, you can access these log files using these commands on ISE CLI:

```
vimontes-ise-33-1/admin#show logging application ise-prometheus/prometheus.log
vimontes-ise-33-1/admin#show logging application ise-node-exporter/node-exporter.log
vimontes-ise-33-1/admin#show logging application ise-grafana/grafana.log
```



Note: There are no specific components to set to debug level to troubleshoot this feature. Gathering these log files is enough.

Related Information

- [Release Notes for Cisco Identity Services Engine, Release 3.2](#)
- [Cisco Identity Services Engine Administrator Guide, Release 3.3](#)
- [Grafana Documentation](#)
- [Cisco Technical Support & Downloads](#)