

# HKOSCon 2024

Metrics, Logs, Traces and Profiles with Grafana LGTM

Wong Hoi Sing, Edison

2024-07-06

Introduction

What is Grafana LGTM Stack?

Demo with AlviStack Vagrant Box

Create a Grafana Dashboard

Q&A

# Introduction

# Get the Code

- ▶ [GitHub Repo](#): Source code
- ▶ [GitHub Page](#): Online [reveal.js](#), converted by [pandoc](#)
- ▶ [index.pdf](#): Offline PDF, converted by [pandoc](#)
- ▶ [Vagrantfile](#): For running demo



# About Me

- ▶ Wong Hoi Sing, Edison (hswong3i)
- ▶ 2005: [Drupal](#), Developer & Contributor
- ▶ 2008: [HKDUG](#), Founder
- ▶ 2010: [PantaRei Design](#), Founder
- ▶ 2020: [HKOSCON 2020](#), Speaker
- ▶ 2021: [AlviStack](#), Founder
- ▶ 2022: [HKOSCON 2022](#), Speaker
- ▶ 2024: [Most Active GitHub user in Hong Kong](#)









# AlviStack – Hong Kong Based Kubernetes Distribution



Time: 10:15 – 11:15

Language: English

Search

SEARCH



## Schedule



## Speakers

Mr. Edison Wong Hoi Sing

Mr. Eason Lai

Ms. Amanda Lam

Mr. Cyrus Wong

Mr. Davide Benvegna

Mr. Ivan Ma

Preview

Code Blame 11368 lines (11354 loc) · 329 KB Code 55% faster with GitHub Copilot

Raw Download Edit History

## Top GitHub Users By Total Contributions in Hong Kong 🇭🇰

Top GitHub Users passing Views 827278

The [public contributions](#) and [private contributions](#) by users in Hong Kong on [2024/6/11 12:56 AM UTC](#). This list contains users from [Hong Kong](#) and cities [Hong-kong](#) [KowLoon](#).

There are [138 countries](#) and [674 cities](#) can be found [here](#).

There are [930 users](#) in Hong Kong. You need at least [30 followers](#) to be on this list.

Don't forget to star ★ this repository

[Top Users By Public Contributions](#)[Top Users By Total Contributions](#)[Top Users By Followers](#)

Share on



#	Name	Company	Twitter Username	Location	Public Contributions	Total Contributions
1	<a href="#">hswong3i</a> Wong Hoi Sing Edison	<a href="http://pantarel-desi">Http://pantarel-desi</a>	<a href="#">hswong3i</a>	Hong Kong	42611	42611
2	<a href="#">BattlefieldDuck</a> TatLead	No Company	<a href="#">BattlefieldDuck</a>	Hong Kong	26207	30200
3	<a href="#">dirkarnez</a> Dirk Arnez	Freelance	No Twitter Username	Hong Kong	7944	15359
	<a href="#">HTCAzureY1212</a>	@reambartex L	No Twitter			



What is Grafana LGTM Stack?

# Prometheus + LGTM Stack + Pyroscope

- ▶ Monitoring: Collects and stores metrics as time series data
- ▶ Logs: What is happening?
- ▶ Metrics: Is something happening?
- ▶ Traces: Where is it happening?
- ▶ Profiles: How do I fix it?
- ▶ Dashboard: Data visualization and monitoring

Profiles: How do I fix it?

Metrics: Is something happening?



# Prometheus

- ▶ **Prometheus** is a systems monitoring and alerting toolkit
- ▶ Multi-dimensional data model
- ▶ PromQL, a flexible query language to leverage this dimensionality
- ▶ 2nd CNCF graduated project after Kubernetes
- ▶ Apache License 2.0

# From metrics to insight

Power your metrics and alerting with the leading open-source monitoring solution.

[GET STARTED](#)[DOWNLOAD](#)

## Dimensional data

Prometheus implements a highly dimensional data model. Time series are identified by a metric name and a set of key-value pairs.

## Powerful queries

PromQL allows slicing and dicing of collected time series data in order to generate ad-hoc graphs, tables, and alerts.

## Great visualization

Prometheus has multiple modes for visualizing data: a built-in expression browser, Grafana integration, and a console template language.

## Efficient storage

Prometheus stores time series in memory and on local disk in an efficient custom format. Scaling is achieved by functional sharding and federation.

## Simple operation

Each server is independent for reliability, relying only on local storage. Written in Go, all binaries are statically linked and easy to deploy.

## Precise alerting

Alerts are defined based on Prometheus's flexible PromQL and maintain dimensional information. An alertmanager handles notifications and silencing.

## Many client libraries

Client libraries allow easy instrumentation of services. Over ten languages are supported already and custom libraries are easy to implement.

## Many integrations

Existing exporters allow bridging of third-party data into Prometheus. Examples: system statistics, as well as Docker, HAProxy, StatsD, and JMX metrics.

- ▶ [Prometheus Operator](#) deploy with Kubernetes CRDs
- ▶ [kube-prometheus](#) provides example configurations for a complete cluster monitoring stack
- ▶ Here we are going to demo with [kube-prometheus-stack](#) with Helm chart style



# kube-prometheus-stack

Installs the [kube-prometheus stack](#), a collection of Kubernetes manifests, [Grafana](#) dashboards, and [Prometheus rules](#) combined with documentation and scripts to provide easy to operate end-to-end Kubernetes cluster monitoring with [Prometheus](#) using the [Prometheus Operator](#).

See the [kube-prometheus](#) README for details about components, dashboards, and alerts.

*Note: This chart was formerly named `prometheus-operator` chart, now renamed to more clearly reflect that it installs the `kube-prometheus` project stack, within which Prometheus Operator is only one component.*

## Prerequisites

- Kubernetes 1.19+
- Helm 3+

## Get Helm Repository Info

```
helm repo add prometheus-community https://prometheus-community.github.io/helm-charts
helm repo update
```



See [helm repo](#) for command documentation.

## Install Helm Chart

```
helm install [RELEASE_NAME] prometheus-community/kube-prometheus-stack
```



See [configuration](#) below.

See [helm install](#) for command documentation.

## Dependencies

# Grafana

- ▶ **Grafana** is a multi-platform open source analytics and interactive visualization web application
- ▶ It can produce charts, graphs, and alerts for the web when connected to supported data sources
- ▶ AGPLv3

Grafana OSS

# Visualize your data, optimize your performance

Easily collect, correlate, and visualize data with beautiful dashboards using Grafana — the open source data visualization and monitoring solution that drives informed decisions, enhances system performance, and streamlines troubleshooting.

The easiest way to get started with the latest version of Grafana is with [Grafana Cloud](#), our fully managed observability stack.

Download

Docs

GitHub



## Transform data into real-time insights

Grafana's growing suite of visualizations, ranging from time series graphs to heatmaps to cutting-edge 3D charts, help you decode complex datasets.



## Seamlessly build a single pane of glass

With 150+ Grafana plugins, you can unify all your data sources into a single dashboard to streamline data monitoring and troubleshooting.



## Resolve issues faster with Grafana Alerting

Alert on data from a wide variety of data sources to identify problems and fix them quickly.

## The evolution of Grafana

Inspired by the open source community and our growing number of users, Grafana introduces new innovations in every release to improve how you visualize, correlate, and share your data.

- ▶ Support multiple installation style, e.g. monolithic, microservice, or even manually
- ▶ Here we are going to demo with **distributed Helm chart style**

Grafana Labs documentation

Q Search docs

Product

Grafana

Viewing: v11.1 (latest)

Find another version

Grafana documentation

- > What's new
- > Breaking changes
- > Upgrade Grafana
- > About Grafana
- > Introduction
- > Get started with Grafana Open Source

Set up

Install Grafana

- Debian or Ubuntu
- RHEL or Fedora
- SUSE or openSUSE
- Grafana Docker image
- Grafana on Kubernetes
- Grafana on Helm Charts**
- macOS
- Windows

- > Configure Grafana
- Start Grafana
- Sign in to Grafana

[Documentation](#) > [Grafana documentation](#) > [Set up](#) > [Install Grafana](#) > Grafana on Helm Charts

Open source

## Deploy Grafana using Helm Charts

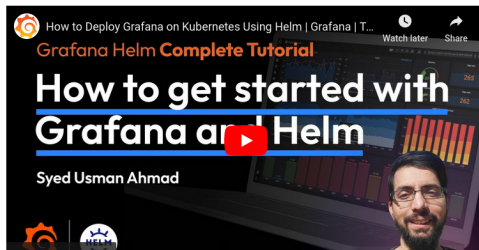
This topic includes instructions for installing and running Grafana on Kubernetes using Helm Charts.

[Helm](#) is an open-source command line tool used for managing Kubernetes applications. It is a graduate project in the [CNCF Landscape](#).

### NOTE

The Grafana open-source community offers Helm Charts for running it on Kubernetes. Please be aware that the code is provided without any warranties. If you encounter any problems, you can report them to the [Official GitHub repository](#).

Watch this video to learn more about installing Grafana using Helm Charts:



# Loki

- ▶ **Loki** is a backend store for long-term log retention
- ▶ Designed to be very cost effective and highly scalable
- ▶ AGPLv3

The screenshot shows the Grafana Labs website for Grafana Loki. The header includes the Grafana Labs logo and navigation links: Products, Open source, Solutions, Learn, Docs, and Company. On the right, there are links for Downloads, Contact us (highlighted in blue), and Sign in. Below the navigation, there is a search icon, a GitHub link with a star icon and the text 'Star us on GitHub', and a star icon with the number '22,741'. The main content area features the title 'Grafana Loki' and a description: 'Loki is a log aggregation system designed to store and query logs from all your applications and infrastructure.' Below this, it says 'The easiest way to get started is with Grafana Cloud, our fully composable observability stack.' and a blue button labeled 'Create a free account'. On the right side, there is a 'Quick links' box containing links for 'Loki on GitHub', 'Docs', 'Demo: Getting started with logging and Loki', and 'Demo: Scalable logging with Grafana Loki'. The background of the hero section is a dark image with a green and yellow line graph.



## Grafana Loki

Loki is a horizontally scalable, highly available, multi-tenant log aggregation system inspired by Prometheus. It is designed to be very cost effective and easy to operate. It does not index the contents of the logs, but rather a set of labels for each log stream.

The Loki project was started at Grafana Labs in 2018, and announced at [KubeCon Seattle](#). Loki is released under the [AGPLv3](#) license.

Grafana Labs is proud to lead the development of the Loki project, building first-class support for Loki into Grafana, and ensuring Grafana Labs customers receive Loki support and features they need.

---

### Why use Grafana Loki?

---

- ▶ Support multiple installation style, e.g. monolithic, microservice, or even manually
- ▶ Here we are going to demo with **distributed Helm chart style**

## Install the microservice Helm chart

This Helm Chart deploys Grafana Loki on Kubernetes.

This chart configures Loki to run Loki in [microservice / distributed mode](#). The microservices deployment mode runs components of Loki as distinct processes.

The default Helm chart deploys the following components:

- **Compactor component** (1 replica): Compacts and processes stored data.
- **Distributor component** (3 replicas, maxUnavailable: 2): Distributes incoming requests. Up to 2 replicas can be unavailable during updates.
- **IndexGateway component** (2 replicas, maxUnavailable: 1): Handles indexing. Up to 1 replica can be unavailable during updates.
- **Ingestor component** (3 replicas): Handles ingestion of data.
- **Querier component** (3 replicas, maxUnavailable: 2): Processes queries. Up to 2 replicas can be unavailable during updates.
- **QueryFrontend component** (2 replicas, maxUnavailable: 1): Manages frontend queries. Up to 1 replica can be unavailable during updates.
- **QueryScheduler component** (2 replicas): Schedules queries.

It is not recommended to run scalable mode with `filesystem` storage. For the purpose of this guide, we will use MinIO as the object storage to provide a complete example.

### Prerequisites

- Helm 3 or above. See [Installing Helm](#).
- A running Kubernetes cluster.
- (Optional) A Memcached deployment for better query performance. For information on configuring Memcached, refer to the [caching section](#).

**To deploy Loki in microservice mode (with MinIO):**

# Tempo

- ▶ **Tempo** is a distributed tracing backend
- ▶ Designed to be cost-efficient, requiring only object storage to operate
- ▶ Deeply integrated with Grafana, Prometheus, and Loki
- ▶ AGPLv3

Grafana Labs Products Open source Solutions Learn Docs Company

Star us on GitHub ★ 3,758

# About Grafana Tempo

Grafana Tempo lets you scale tracing as far as possible with minimal operational cost and less complexity than ever before.

The easiest way to get started is with Grafana Cloud, our fully composable observability stack.

[Create free account](#)

## Quick links

- [Demo](#)
- [GitHub Project](#)
- [Docs](#)
- [Demo: Get started with Grafana Tempo](#)

16.16ms

53.36ms



## Introduction to Grafana Tempo

Grafana Tempo is an open source, easy-to-use, and high-scale distributed tracing backend. Tempo is cost-efficient, requiring only object storage to operate, and is deeply integrated with Grafana, Prometheus, and Loki. Tempo can ingest common open source tracing protocols, including Jaeger, Zipkin, and OpenTelemetry.

The Tempo project was started at Grafana Labs and announced at Grafana ObservabilityCON in October 2020. It became generally available with the 1.0 release in June 2021. Tempo is released under the AGPLv3 license.

Grafana Labs is proud to lead the development of the Tempo project, building first-class support for Tempo into Grafana, and ensuring Grafana Labs customers receive Tempo support and features they need.

The Goal 

Sample 100% of our read path

- ▶ Support multiple installation style, e.g. monolithic, microservice, or even manually
- ▶ Here we are going to demo with **distributed Helm chart style**

Grafana Labs documentation

Product

Grafana Tempo

Viewing: v2.5.x (latest)

Find another version

Grafana Tempo

[Release notes](#)[Introduction](#)[Get started](#)[Set up](#)[Plan your deployment](#)[Upgrade](#)[Deploy with Helm](#)[Deploy with operator](#)[Deploy on Linux](#)[Deploy on Kubernetes with Tanka](#)[Set up a test application for a Tempo cluster](#)[Configure](#)[Manage](#)[Metrics-generator](#)[Query with TraceQL](#)[Troubleshoot](#)[API](#)[Community](#)[Documentation](#) > [Grafana Tempo](#) > [Set up](#) > [Deploy with Helm](#)[Open source](#)

## Deploy Tempo with Helm

The Helm charts for Grafana Tempo and Grafana Enterprise Traces allows you to configure, install, and upgrade Grafana Tempo or Grafana Enterprise Traces within a Kubernetes cluster.

To deploy Tempo using the `tempo-distributed` Helm chart, read the [Get started with Grafana Tempo using Helm](#).

### Example Helm chart

The Tempo repository has an [example Helm chart](#) that shows a complete microservice-based deployment.

### Helm charts for deployment

Tempo has two primary charts used for deployment:

- `tempo-distributed` [Helm chart](#) deploys Tempo in microservices mode ([read the documentation](#))
- `tempo` [Helm chart](#) deploys Tempo in monolithic (single binary) mode

### Was this page helpful?

[✎ Suggest an edit](#)[✉ Contribute to docs](#)[🔗 Report a problem](#)[👤 Community](#)[🔗 Support](#)

# Mimir

- ▶ **Mimir** is a TSDB for long-term storage for Prometheus
- ▶ Designed to be horizontally scalable, highly available, multi-tenant
- ▶ 100% Prometheus compatible
- ▶ AGPLv3

# What is Grafana Mimir?

Mimir is an open source, horizontally scalable, highly available, multi-tenant TSDB for long-term storage for Prometheus.

[Read the announcement blog post](#) →

Get Mimir up and running in 10 minutes:

[Tutorial](#)[Intro to metrics webinar](#)

## Mimir overview

Mimir lets you scale metrics to 1 billion active series and beyond, with high availability, multi-tenancy, durable storage, and blazing fast query performance over long periods of time.

Mimir was started at Grafana Labs and [announced in 2022](#). The mission for the project is to make it the most scalable, most performant open source time series database for metrics, by incorporating what Grafana Labs engineers have learned running Grafana Enterprise Metrics and Grafana Cloud Metrics at massive scale. Mimir is released under the AGPLv3 license.

Grafana Labs is proud to lead the development of the Mimir project, building first-class support for Mimir into Grafana, and ensuring Grafana Labs customers receive Mimir support and features they need.

- ▶ Support multiple installation style, e.g. monolithic, microservice, or even manually
- ▶ Here we are going to demo with [distributed Helm chart style](#)
- ▶ EXCLUDE: due to not enough VM memory

Grafana Labs documentation

Product

Grafana Mimir

Viewing: v2.12.x (latest)

Find another version

Grafana Mimir

[Release notes](#)[Get started](#)[Set up](#)[Deploy with Helm](#)[Deploy with Puppet](#)[Deploy with Jsonnet and Tanka](#)[Migrate](#)[Configure](#)[Send](#)[Manage](#)[Query](#)[Visualize](#)[References](#)[Copyright notice](#)[Documentation](#) > [Grafana Mimir](#) > [Set up](#) > [Deploy with Helm](#)[Open source](#)

## Deploy Mimir with Helm

The `mimir-distributed` [Helm chart](#) for Grafana Mimir and Grafana Enterprise Metrics allows you to configure, install, and upgrade Grafana Mimir or Grafana Enterprise Metrics within a Kubernetes cluster.

To deploy Mimir using the `mimir-distributed` Helm chart, see [Get started with Grafana Mimir using the Helm chart](#).

### Was this page helpful?

 Yes No[Suggest an edit](#)[Contribute to docs](#)[Report a problem](#)[Community](#)[Support](#)

### Related documentation

[Docs](#)

Deploying the Grafana Mimir monitoring mixin

[Docs](#)

Grafana mimir-distributed Helm chart documentation

[Docs](#)

Monitor Grafana Mimir

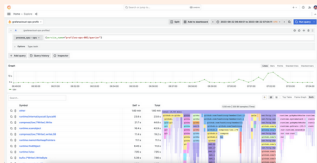
# Pyroscope

- ▶ **Pyroscope** is a continuous profiling database
- ▶ Designed to be fast, scalable, highly available, and efficient storage and querying
- ▶ AGPLv3

Continuous profiling

## What is Grafana Pyroscope?

Grafana Pyroscope is an open source continuous profiling database that provides fast, scalable, highly available, and efficient storage and querying. This helps you get a better understanding of resource usage in your applications down to the line number.

[GitHub project](#)[Blog announcement](#)[Documentation](#)

### Grafana Pyroscope overview

Grafana Pyroscope allows you to aggregate continuous profiling data with high availability, multi-tenancy, and durable storage.

Grafana Pyroscope was formed by the merger of two open source continuous profiling projects: Phiare, which was launched by Grafana Labs in 2022, and Pyroscope, which was founded by Ryan Perry and Dmitry Filimonov in 2021. The mission for the Grafana Pyroscope project is to enable continuous profiling at scale for the open source community, giving developers a better understanding of the resource usage of their code. By doing so, Pyroscope allows users to understand their application performance and optimize their infrastructure spend.

Grafana Labs is proud to lead the development of the Grafana Pyroscope project. The project

- ▶ Support multiple installation style, e.g. monolithic, microservice, or even manually
- ▶ Here we are going to demo with [distributed Helm chart style](#)
- ▶ EXCLUDE: due to not enough VM memory

Grafana Labs documentation

Q Search docs

Product

Grafana Pyroscope

Viewing: v1.6.x (latest)

Find another version

Grafana Pyroscope

&gt; Release notes

&gt; Introduction

Get started

&gt; Configure the client to send profiles

Upgrade

▼ Deploy on Kubernetes

Deploy with Helm

Deploy with Jsonnet and Tanka

&gt; Configure the server

&gt; View and analyze profile data

&gt; Reference: Pyroscope Architecture

Copyright notice

Documentation &gt; Grafana Pyroscope &gt; Deploy on Kubernetes &gt; Deploy with Helm

Open source

## Deploy Pyroscope using the Helm chart

The [Helm](#) chart allows you to configure, install, and upgrade Pyroscope within a Kubernetes cluster.

### Before you begin

These instructions are common across any flavor of Kubernetes and assume that you know how to install, configure, and operate a Kubernetes cluster as well as use [kubectL](#).

Hardware requirements:

- A single Kubernetes node with a minimum of 4 cores and 16GiB RAM

Software requirements:

- Kubernetes 1.20 or higher
- The [kubectL](#) command for your version of Kubernetes
- Helm 3 or higher

Verify that you have:

- Access to the Kubernetes cluster
- Persistent storage is enabled in the Kubernetes cluster, which has a default storage class set up. You can [change the default StorageClass](#).
- DNS service works in the Kubernetes cluster

### Install the Helm chart in a custom namespace

Use a custom namespace so that you don't have to overwrite the default namespace later in the procedure.

Demo with AlviStack Vagrant Box

# System Requirements

- ▶ Windows 10+
- ▶ 4 Core CPU (for running a 2 Core CPU VM)
- ▶ 16GB Memory (for running a 8GB VM)
- ▶ 50GB SSD

# Install VirtualBox

- ▶ Download and install VirtualBox
- ▶ Download and install Extension Pack
- ▶ Verify result
  - ▶ `vboxmanage --version`
- ▶ <https://www.virtualbox.org/wiki/Downloads>



# VirtualBox

[Login](#) [Preferences](#)  
[Start Page](#) | [Index](#) | [History](#)

↔

[About](#)  
[Screenshots](#)  
[Downloads](#)  
[Documentation](#)  
    [End-user docs](#)  
    [Technical docs](#)  
[Contribute](#)  
[Community](#)

## Download VirtualBox

---

Here you will find links to VirtualBox binaries and its source code.

### VirtualBox binaries

By downloading, you agree to the terms and conditions of the respective license.

#### VirtualBox 7.0.18 platform packages

- [Windows hosts](#)
- [macOS / Intel hosts](#)
- [Linux distributions](#)
- [Solaris hosts](#)
- [Solaris 11 IPS hosts](#)

The binaries are released under the terms of the GPL version 3.

See the [changelog](#) for what has changed.

You might want to compare the checksums to verify the integrity of downloaded packages. *The SHA256 checksums should be favored as the MD5 algorithm must be treated as insecure!*

- [SHA256 checksums, MD5 checksums](#)

**Note:** After upgrading VirtualBox it is recommended to upgrade the guest additions as well.

#### VirtualBox 7.0.18 Oracle VM VirtualBox Extension Pack

- [All supported platforms](#)

Support VirtualBox RDP, disk encryption, NVMe and PXE boot for Intel cards. See [this chapter from the User Manual](#) for an introduction to this Extension Pack. The Extension Pack binaries are released under the [VirtualBox Personal Use and Evaluation License \(PUEL\)](#). *Please install the same version extension pack as your installed version of VirtualBox.*

#### VirtualBox 7.0.18 Software Developer Kit (SDK)

- [All platforms](#)

### User Manual

The VirtualBox User Manual is included in the VirtualBox packages above. If, however, you would like to take a look at it without having to install the whole thing, you also access it here:

# Install Vagrant

- ▶ Download and install Vagrant
- ▶ Verify Result
  - ▶ `vagrant --version`
- ▶ <https://developer.hashicorp.com/vagrant/install>



[Vagrant Home](#)

[Install Vagrant](#)

#### Operating Systems

[macOS](#)

[Windows](#)

[Linux](#)

[Release Information](#)

#### Resources

[Tutorial Library](#)

[Community Forum](#)

[Support](#)

[GitHub](#)

Developer / [Vagrant](#) / [Install](#)



# Install Vagrant

2.4.1 (latest)

## macOS

### Package manager

```
brew tap hashicorp/tap  
brew install hashicorp/tap/hashicorp-vagrant
```

### Binary download

AMD64

Version: 2.4.1

[Download](#)

ARM64

Version: 2.4.1

[Download](#)

## Windows

### Binary download

AMD64

Version: 2.4.1

[Download](#)

i686

Version: 2.4.1

[Download](#)

## Linux

### About Vagrant

Vagrant is the command line utility for managing the lifecycle of virtual machines.

### Featured docs

[Install](#)

[Command-Line Interface](#)

[Boxes](#)

[Networking](#)

[Synced Folders](#)

[Providers](#)

### Vagrant Cloud

Virtual boxes for Linux, Laravel and any development environment

[Try Vagrant Cloud for free](#)

# Prepare Vagrantfile

- ▶ Describe the type of machine
- ▶ How to configure these machines
- ▶ How to provision these machines
- ▶ <https://developer.hashicorp.com/vagrant/docs/vagrantfile>



< Vagrant Home

Filter sidebar

Documentation

Installation

Commands (CLI)

Vagrant Share

Vagrantfile

Overview

Configuration Version

Minimum Vagrant Version

Tips & Tricks

config.vm

config.ssh

config.winrm

config.winssh

config.vagrant

Boxes

Provisioning

Networking

Synced Folders

Cloud-Init

Disks

Developer / Vagrant / Documentation / Vagrantfile

v2.4.1 (latest)

## Vagrantfile

The primary function of the Vagrantfile is to describe the type of machine required for a project, and how to configure and provision these machines. Vagrantfiles are called Vagrantfiles because the actual literal filename for the file is `Vagrantfile` (casing does not matter unless your file system is running in a strict case sensitive mode).

Vagrant is meant to run with one Vagrantfile per project, and the Vagrantfile is supposed to be committed to version control. This allows other developers involved in the project to check out the code, run `vagrant up`, and be on their way. Vagrantfiles are portable across every platform Vagrant supports.

The syntax of Vagrantfiles is [Ruby](#), but knowledge of the Ruby programming language is not necessary to make modifications to the Vagrantfile, since it is mostly simple variable assignment. In fact, Ruby is not even the most popular community Vagrant is used within, which should help show you that despite not having Ruby knowledge, people are very successful with Vagrant.

## Lookup Path

When you run any `vagrant` command, Vagrant climbs up the directory tree looking for the first Vagrantfile it can find, starting first in the current directory. So if you run `vagrant` in `/home/mitchellh/projects/foo`, it will search the following paths in order for a Vagrantfile, until it finds one:

On this page:

Vagrantfile

Lookup Path

Load Order and Merging

Available Configuration Options

## vagrant up

- ▶ `vagrant up --provider virtualbox`
- ▶ Running VM with VirtualBox
- ▶ Configure CPU/RAM/Disk
- ▶ Configure network port mapping
- ▶ Mount \$PWD into VM as /vagrant
- ▶ Provision after VM is up and running
- ▶ <https://developer.hashicorp.com/vagrant/docs/cli/up>



< Vagrant Home

Filter sidebar

Documentation

Installation

Commands (CLI)

Overview

box

cloud

connect

destroy

global-status

halt

init

login

package

plugin

port

powershell

provision

rdp

reload

resume

Developer / Vagrant / Documentation / Commands (CLI) / up

v2.4.1 (latest)

## Up

**Command:** `vagrant up [name|id]`

This command creates and configures guest machines according to your [Vagrantfile](#).

This is the single most important command in Vagrant, since it is how any Vagrant machine is created.

## Options

- `--name` - Name of machine defined in [Vagrantfile](#). Using `--name` to specify the Vagrant machine to act on must be done from within a Vagrant project (directory where the Vagrantfile exists).
- `--id` - Machine id found with `vagrant global-status`. Using `--id` allows you to call `vagrant up id` from any directory.
- `--[no-]destroy-on-error` - Destroy the newly created machine if a fatal, unexpected error occurs. This will only happen on the first `vagrant up`. By default this is set.
- `--[no-]install-provider` - If the requested provider is not installed, Vagrant will attempt to automatically install it if it can. By default this is enabled.
- `--[no-]parallel` - Bring multiple machines up in parallel if the provider supports it. Please consult the provider documentation to see if

On this page:

Up

Options

## vagrant provision

- ▶ `vagrant provision`
- ▶ Sometime you hope to R&D and debug the provision session
- ▶ After VM up and running you could re-run the provision steps
- ▶ <https://developer.hashicorp.com/vagrant/docs/cli/provision>



< Vagrant Home

Filter sidebar

Documentation

Installation

Commands (CLI)

Overview

box

cloud

connect

destroy

global-status

halt

init

login

package

plugin

port

powershell

provision

rdp

reload

resume

Developer / Vagrant / Documentation / Commands (CLI) / provision

v2.4.1 (latest)

# Provision

Command: `vagrant provision [vm-name]`

Runs any configured [provisioners](#) against the running Vagrant managed machine.

This command is a great way to quickly test any provisioners, and is especially useful for incremental development of shell scripts, Chef cookbooks, or Puppet modules. You can just make simple modifications to the provisioning scripts on your machine, run a `vagrant provision`, and check for the desired results. Rinse and repeat.

## Options

- `--provision-with x,y,z` - This will only run the given provisioners. For example, if you have a `:shell` and `:chef_solo` provisioner and run `vagrant provision --provision-with shell`, only the shell provisioner will be run.

[Edit this page on GitHub](#)

On this page:

Provision

Options

## vagrant ssh

- ▶ `vagrant ssh`
- ▶ SSH into VM with user `vagrant`
- ▶ Could switch as `root` with `sudo su -`
- ▶ Host `$PWD` already mount into VM as `/vagrant`
- ▶ <https://developer.hashicorp.com/vagrant/docs/cli/ssh>



< [Vagrant Home](#)

Filter sidebar

Documentation

Installation

Commands (CLI)

Overview

box

cloud

connect

destroy

global-status

halt

init

login

package

plugin

port

powershell

provision

rdp

reload

resume

Developer / Vagrant / Documentation / Commands (CLI) / ssh

v2.4.1 (latest)

## SSH

**Command:** `vagrant ssh [name|id] [-- extra_ssh_args]`

This will SSH into a running Vagrant machine and give you access to a shell.

On a simple vagrant project, the instance created will be named default.

Vagrant will ssh into this instance without the instance name:

```
$ vagrant ssh
Welcome to your Vagrant-built virtual machine.
Last login: Fri Sep 14 06:23:18 2012 from 10.0.2.2
$ logout
Connection to 127.0.0.1 closed.
```

Or you could use the name:

```
$ vagrant ssh default
Welcome to your Vagrant-built virtual machine.
Last login: Fri Jul 20 15:09:52 2018 from 10.0.2.2
$ logout
Connection to 127.0.0.1 closed.
$
```

On multi-machine setups, you can login to each VM using the name as displayed on `vagrant status`

On this page:

SSH

Options

SSH client usage

Background Execution

Pageant on Windows

```
kubectl get node
```

```
root@kubernetes-1:~# kubectl get node
```

NAME	STATUS	ROLES	AGE	VERSION
kubernetes-1	Ready	control-plane	9m18s	v1.29.2

## kubectl get pod

```
root@kubernetes-1:~# kubectl get pod --all-namespaces
```

NAMESPACE	NAME	READY
csi-hostpath	csi-hostpath-socat-0	1/1
csi-hostpath	csi-hostpathplugin-0	8/8
kube-system	coredns-76f75df574-2tdbp	1/1
kube-system	coredns-76f75df574-g687d	1/1
kube-system	kube-addon-manager-kubernetes-1	1/1
kube-system	kube-apiserver-kubernetes-1	1/1
kube-system	kube-controller-manager-kubernetes-1	1/1
kube-system	kube-flannel-ds-kmq79	1/1
kube-system	kube-proxy-vd4qj	1/1
kube-system	kube-scheduler-kubernetes-1	1/1
kube-system	snapshot-controller-7b6f9cf9b4-rj5v5	1/1

## Verify with Browser

- ▶ Check the result (from host, with VirtualBox port mapping enabled in Vagrantfile):
  - ▶ <http://localhost:8080>
  - ▶ INCLUDE: Prometheus, Grafana, Loki, Tempo
  - ▶ EXCLUDE: Mimir (long-term storage for Prometheus), pyroscope (continuous profiling)



Search or jump to...

ctrl+k



Home



# Welcome to Grafana

Need help? [Documentation](#) [Tutorials](#) [Community](#) [Public Slack](#)

[Remove this panel](#)

## Basic

The steps below will guide you to quickly finish setting up your Grafana installation.

### TUTORIAL DATA SOURCE AND DASHBOARDS

#### Grafana fundamentals

Set up and understand Grafana if you have no prior experience. This tutorial guides you through the entire process and covers the "Data source" and "Dashboards" steps to the right.

### DATA SOURCES

Add your first data source

[Learn how in the docs](#)

### DASHBOARDS

Create your first dashboard

[Learn how in the docs](#)



## Dashboards

Starred dashboards

Recently viewed dashboards

## Latest from the blog

### Grafana Ansible collection



Jul 05

Create a Grafana Dashboard

## Connect with Data Sources

- ▶ Before show some data with Grafana, we need some data source
- ▶ Let' s add the Prometheus endpoint for it
- ▶ Set the Prometheus server URL with `http://prometheus-operated.prometheus.svc.cluster.local`
- ▶ Don' t forget click the Save & test button



Search or jump to...

ctrl+k



Home > Connections > Data sources

## Data sources

View and manage your connected data source connections



No data sources defined

You can also define data sources through configuration files. [Learn more](#)

 Add data source



Search or jump to...

ctrl+k



Home > Connections > Data sources > Add data source

## Add data source

Choose a data source type

Filter by name or type

← Cancel

### Time series databases



#### Prometheus

Open source time series database & alerting

Core



#### Graphite

Open source time series database

Core



#### InfluxDB

Open source time series database

Core



#### OpenTSDB

Open source time series database

Core

### Logging & document databases



#### Loki

Like Prometheus but for logs. OSS logging solution from Grafana Labs

Core

#### Elasticsearch



Search or jump to...

ctrl+k



Home > Connections > Data sources > prometheus



# prometheus

Type  
Prometheus

Alerting  
Supported

Explore data

Build a dashboard

Type: Prometheus

Settings

Dashboards

Name

prometheus

Default



Before you can use the Prometheus data source, you must configure it below or in the config file. For detailed instructions, [view the documentation](#).

Fields marked with \* are required

## Connection

Prometheus server URL \*

prometheus-operated.prometheus.svc.cluster.local:9090

## Authentication

Authentication methods

Choose an authentication method to access the data source

No Authentication

# Create Dashboard

- ▶ Go to Home > Dashboards now we could create something new
- ▶ Let's Import dashboard from <https://grafana.com/grafana/dashboards>
- ▶ Here we try with <https://grafana.com/grafana/dashboards/315-kubernetes-cluster-monitoring-via-prometheus>
- ▶ So key the Dashboard ID with 315



Search or jump to...

ctrl+k



Home > Dashboards

# Dashboards

New

Create and manage dashboards to visualize your data

Search for dashboards and folders

Filter by tag

Starred



Sort



You haven't created any dashboards yet

+ Create dashboard



Search or jump to...

ctrl+k



Home > Dashboards > New dashboard



Add

Last 6 hours



## Start your new dashboard by adding a visualization

Select a data source and then query and visualize your data with charts, stats and tables or create lists, markdowns and other widgets.

+ Add visualization

### Import panel

Add visualizations that are shared with other dashboards.

+ Add library panel

### Import a dashboard

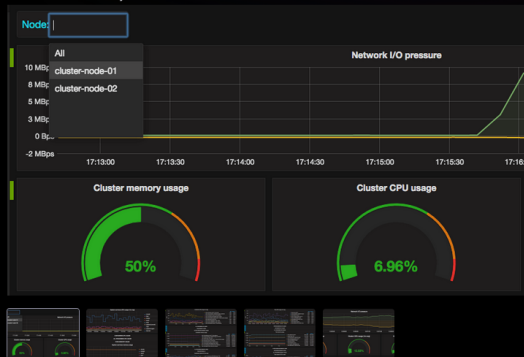
Import dashboards from files or [grafana.com](https://grafana.com).

↓ Import dashboard

[← All dashboards](#)

# Kubernetes cluster monitoring (via Prometheus)

Monitors Kubernetes cluster using Prometheus. Shows overall cluster CPU / Memory / Filesystem usage as well as individual pod, containers, systemd statistics. Uses cAdvisor metrics only.



## Kubernetes

Grafana Labs solution

Monitor your Kubernetes deployment with prebuilt dashboards that allow you to drill down from a high-level cluster overview to pod-specific details in minutes.

[Learn more](#)

## Get this dashboard

1

Sign up for Grafana Cloud

[Create free account](#)

2

Import the dashboard template

[Copy ID to clipboard](#)

or

[Download JSON](#)

Full K8 solution with dashboards, alerts and KPIs available in Grafana Cloud free tier (with 10K free Prometheus series metrics and more): <https://grafana.com/signup/cloud/connect->



Search or jump to...

ctrl+k



Home > Dashboards > Import dashboard

# Import dashboard

Import dashboard from file or Grafana.com



Upload dashboard JSON file

Drag and drop here or click to browse  
Accepted file types: .json, .txt

Find and import dashboards for common applications at [grafana.com/dashboards](https://grafana.com/dashboards)

Load

Import via dashboard JSON model

```
{
  "title": "Example - Repeating Dictionary variables",
  "uid": "_0HnEoN4z",
  "panels": [...]
  ...
}
```

Load

Cancel



Search or jump to...

ctrl+k



Home > Dashboards > Import dashboard

# Import dashboard

Import dashboard from file or Grafana.com

## Importing dashboard from Grafana.com

Published by bookchair  
Updated on 2017-11-23 17:57:06

### Options

Name

Kubernetes Cluster Autoscaler (via Prometheus)

Folder

Dashboards

#### Unique Identifier (UID)

The unique identifier (UID) of a dashboard can be used to uniquely identify a dashboard between multiple Grafana installs. The UID allows having consistent URLs for accessing dashboards so changing the title of a dashboard will not break any bookmarked links to that dashboard.

Change uid

prometheus

prometheus

Import

Cancel



Search or jump to... ctrl+k



Home > Dashboards > Kubernetes cluster monitoring (via Pro... ☆ Add Share Last 5 minutes 🔍 🔄 10s ⋮ ↑

▼ Total usage

Cluster memory usage

N/A

Cluster CPU usage (1m avg)

N/A

Cluster filesystem usage

N/A

Used

N/A

Total

7.76 GiB

Used

N/A

Total

2.00

Used

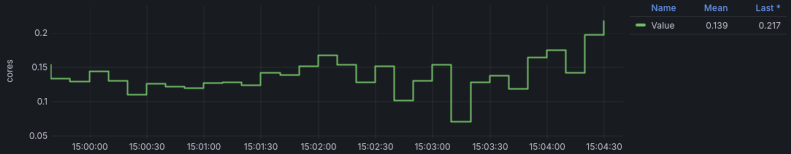
N/A

Total

N/A

▼ Pods CPU usage

Pods CPU usage (1m avg)



> System services CPU usage (1 panel) ⋮

> Containers CPU usage (1 panel) ⋮

> All processes CPU usage (1 panel) ⋮

▼ Pods memory usage

Pods memory usage

Q&A

# References

- ▶ [Getting started with managing your metrics, logs, and traces using Grafana](#)
- ▶ Official webinar from Grafana Labs
- ▶ For beginner with simple show case
- ▶ Around 60 mintues

English

# Getting started with managing your metrics, logs, and traces using Grafana

Share this: [in](#) [twitter](#)

The screenshot shows a web browser window displaying a Grafana dashboard. The browser's address bar shows the URL: `https://grafana.com/presentation/171LR9sCQG781V587g9b8f9N2Wu0H_e0N17?view=edit&side-id=g19077770130_0_62`. The dashboard title is "2024-05-08 AMER Getting started with Grafana LGTM stack". The dashboard content is organized into a grid of panels, each containing various data visualizations and icons. The panels are arranged in a grid with approximately 4 columns and 6 rows. The top row includes panels for "Application Metrics & Log PII", "Network", "Container Metrics & Log PII", and "Alerting & Monitoring". The second row includes "Infrastructure & Container", "Services", "Service Mesh", and "Service Provider". The third row includes "Network Flow", "API Gateway", and "Container & Service Discovery". The fourth row includes "Cloudwatch Usage", "Cloudwatch Metrics", and "Container Metrics". The fifth row includes "Security & Compliance", "Network & Configuration", "API Management", and "Container Registry". The sixth row includes "Logging", "Security", and "Event Reporting". The dashboard is titled "Grafana Labs" and "CloudNative Landscape". The browser window also shows several tabs, including "Data source" and "Grafana Proc".

- ▶ Introduction to Metrics, Logs, Traces and Profiles in Grafana
- ▶ Official complete demo for Grafana LGTM stack
- ▶ For advance user with Docker + Docker Compose experience
- ▶ Around 2 hours



- ▶ 可觀測性宇宙的第一天 - Grafana LGTM 全家桶的起點
- ▶ Detail explanation for Grafana LGTM + Kubernetes
- ▶ For advance user with daily Kubernetes experience
- ▶ AT LEAST 6 HOURS (reading doc only…)



# 可觀測性宇宙的第一天 - Grafana LGTM 全家桶的起點

15th 鐵人賽

kubernetes

grafana

observability

可觀測性



mikehsu0618

團隊 所以隊名要叫什麼

2023-09-16 00:36:13

6984 瀏覽

分享至  

## 前言

這是一個從異世界歸來後，一個不小心踏入 Kubernetes 可觀測性宇宙的故事，一切都要從一個非本科小白在黑昧山丘的頂端遇見 Grafana 開始說起。

- ▶ [AlviStack Vagrant Box Packaging for Kubernetes](#)
- ▶ CNCF Certified Kubernetes on Virtual Box or Libvirt
- ▶ Simply `vagrant up` and ready for use
- ▶ May customize for Dev/CI/CD
- ▶ Around 10 minutes

## alvistack/kubernetes-1.30 Vagrant box

How to use this box with [Vagrant](#):

Vagrantfile [New](#)

```
Vagrant.configure("2") do |config|
  config.vm.box = "alvistack/kubernetes-1.30"
end
```

### v20240629.1.1 currently released version

This version was created 6 days ago.

There isn't a description.

2 providers for this version.

#### libvirt

unknown \*

Hosted by Vagrant Cloud (1.75 GB)



#### virtualbox

unknown \*

Hosted by Vagrant Cloud (1.68 GB)



## Contact Me

- ▶ Address: Unit 326, 3/F, Building 16W, No.16 Science Park West Avenue, Hong Kong Science Park, Shatin, N.T.
- ▶ Phone: +852 3576 3812
- ▶ Fax: +852 3753 3663
- ▶ Email: [sales@pantarei-design.com](mailto:sales@pantarei-design.com)
- ▶ Web: <http://pantarei-design.com>