

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](#)





DMC-FZ18 F2.8 1/90s ISO100





AlviStack Vagrant Box Packaging for Kubernetes

PantaRei Design Limited

Platform

Certified Kubernetes - Installer



This Vagrant Box provides Libvirt and VirtualBox image for running Kubernetes in single node all-in-one mode.

Repositories

alvistack/vagrant-kubernetes (primary)

<https://github.com/alvistack/vagrant-kubernetes>

PRIMARY

Apache License 2.0

good first issues 0 open

24

Stars

1

Contributors

Oct '20

First commit

Jul '24

Latest commit

Jul '21

Latest release

Participation stats



Languages



Search

SEARCH



Schedule



Speakers

Mr. Edison Wong Hoi Sing

Mr. Eason Lai

Ms. Amanda Lam

Mr. Cyrus Wong

Mr. Davide Benvegnu

Mr. Ivan Ma



Time: 10:15 – 11:15

Language: English

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3	dirkarnez Dirk Arnez	Freelance	No Twitter Username	Hong Kong	7944	15359
	HTGFutureY1212	@teambarterx	No Twitter			

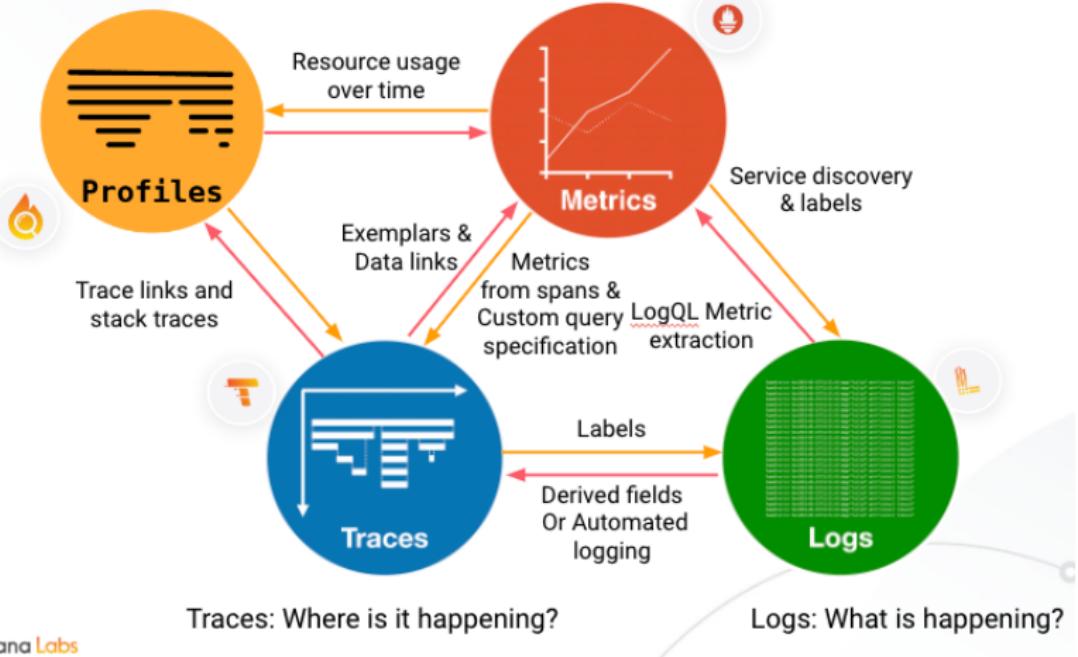
What is Grafana LGTM Stack?

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



main

helm-charts / charts / kube-prometheus-stack /

↑ Top

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

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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**

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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

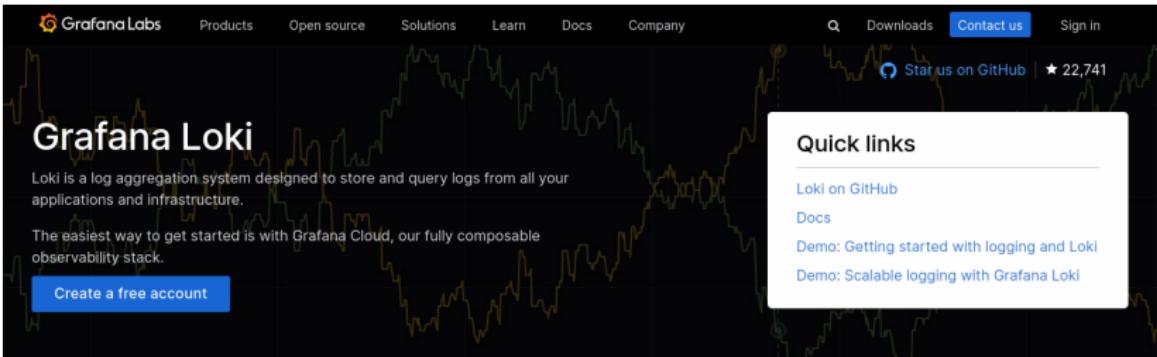
The Grafana open-source community offers Helm Charts for running it on Kubernetes. Please be aware that the code is provided without any warranties. If you encounter any problems, you can report them to the [Official GitHub repository](#).

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

How to Deploy Grafana on Kubernetes Using Helm | Grafana | T...
Grafana Helm Complete Tutorial
How to get started with Grafana and Helm
Syed Usman Ahmad

Loki

- ▶ [Loki](#) is a backend store for long-term log retention
- ▶ Designed to be very cost effective and highly scalable
- ▶ AGPLv3



Grafana Loki

Loki is a log aggregation system designed to store and query logs from all your applications and infrastructure.

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

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Quick links

[Loki on GitHub](#)

[Docs](#)

[Demo: Getting started with logging and Loki](#)

[Demo: Scalable logging with Grafana Loki](#)



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**

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Grafana Loki

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Grafana Loki

> Release notes

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> Install

> Install using Helm

Helm chart components

Install monolithic Loki

Install microservice Loki

Install scalable Loki

Configure storage

Helm chart values

> Monitoring

Install using Tanka

Install using Docker

Install locally

Install on Istio

Install from source

> Migrate

> Upgrade

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

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](#)

53.36ms

Quick links

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

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**

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Documentation > Grafana Tempo > Set up > Deploy with Helm

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Grafana Tempo

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Grafana Tempo

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- > 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

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

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Mimir

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

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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

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Grafana Mimir

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Grafana Mimir

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> Deploy with Jsonnet and Tanka

> Migrate

> Configure

> Send

> Manage

> Query

> Visualize

> References

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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](#).

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Related documentation



Deploying the Grafana Mimir monitoring mixin



Grafana mimir-distributed Helm chart documentation



Monitor Grafana Mimir

Pyroscope

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

ANNOUNCEMENT

Grafana Cloud Profiles, powered by Pyroscope, is now GA

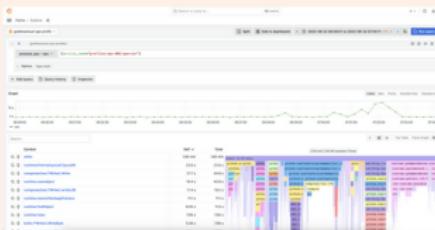
[Learn more →](#)

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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: Phlare, 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

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Grafana Pyroscope



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Grafana Pyroscope

- > Release notes
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- > Configure the client to send profiles

Upgrade

- ▼ Deploy on Kubernetes
 - Deploy with Helm
 - Deploy with Jsonnet and Tanka
- > Configure the server
- > View and analyze profile data
- > Reference: Pyroscope Architecture

Copyright notice

[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

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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**

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Windows

Linux

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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.

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Prepare Vagrantfile

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

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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](#)[V Documentation](#)

Installation

Commands (CLI)

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rdp

reload

resume

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v2.4.1 (latest)

On this page:

[Up](#)[Options](#)

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

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](#)[V Documentation](#)

Installation

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Overview

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

v2.4.1 (latest)

On this page:

Provision

Options

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](#)

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](#)[V Documentation](#)

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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

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](#)

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.

[Remove this panel](#)

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



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

The screenshot shows the Grafana interface for managing data sources. At the top, there's a navigation bar with a gear icon, a search bar, and various system icons. Below the header, the breadcrumb navigation shows: Home > Connections > Data sources > prometheus.

The main content area is titled "prometheus". It displays the following details:

- Type: Prometheus
- Alerting: Supported
- Explore data
- Build a dashboard

A sub-header "Type: Prometheus" is present. Below it, there are two tabs: "Settings" (which is active) and "Dashboards".

The "Settings" tab contains the following configuration fields:

- Name: prometheus
- Default: A toggle switch that is turned on (blue).

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

Below this note, a sub-note says: "Fields marked with * are required".

The "Connection" section is expanded, showing the "Prometheus server URL" field which contains the value "prometheus-operated.prometheus.svc.cluster.local:9090".

The "Authentication" section is also expanded, showing the "Authentication methods" dropdown which currently has the option "No Authentication" selected.

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



Q Search or jump to...

ctrl+k



≡ Home > Dashboards

Dashboards

New ▾

Create and manage dashboards to visualize your data

Q Search for dashboards and folders

Filter by tag ▾



Starred



Sort ▾



You haven't created any dashboards yet

+ Create dashboard



Q 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](#).

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 services statistics. Uses cAdvisor metrics only.



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->



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](#)



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

3831

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 for 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

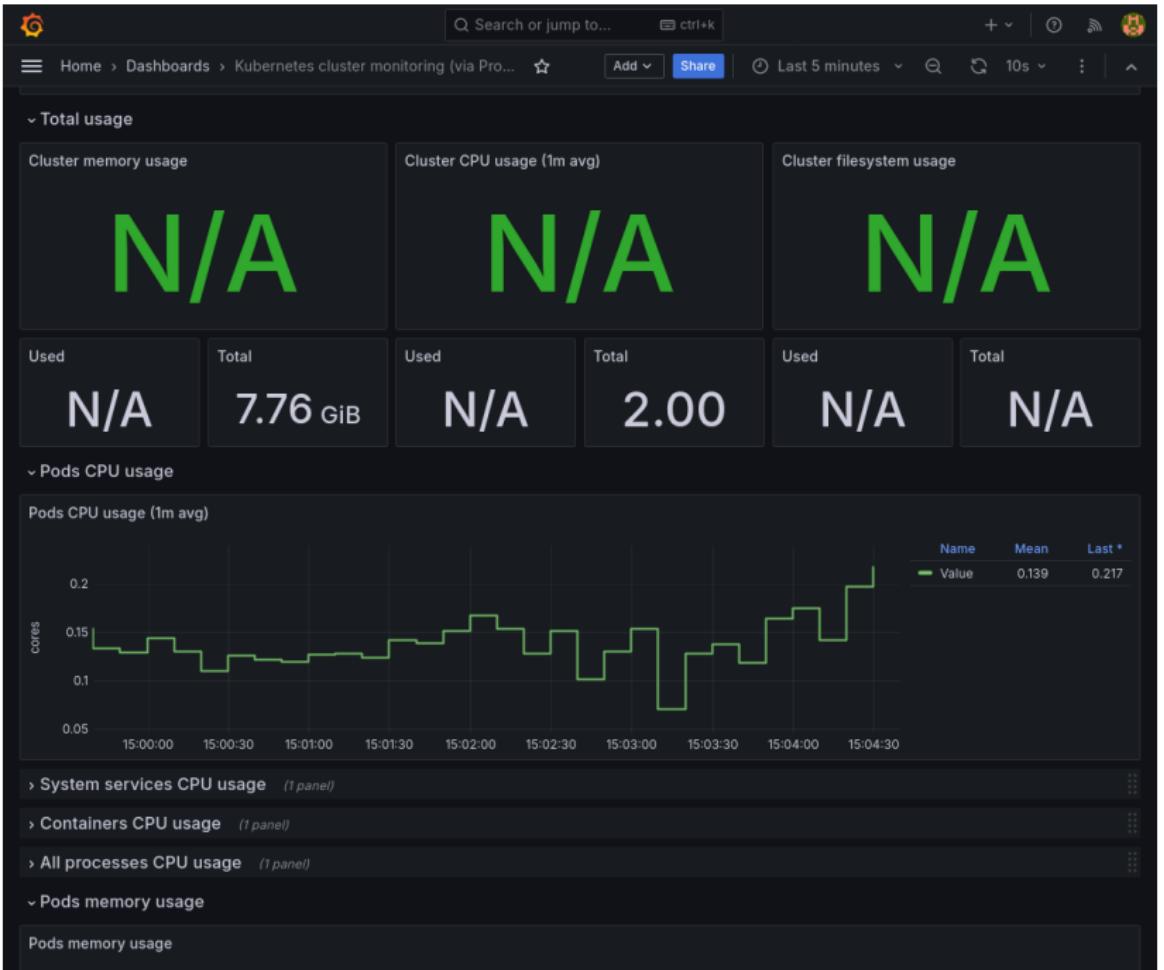
prometheus

prometheus



Import

Cancel



Q&A

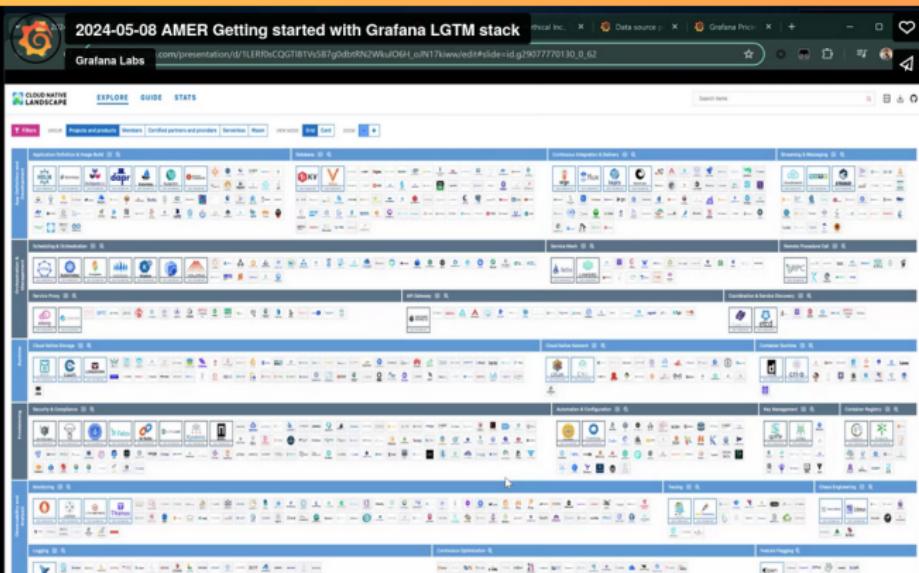
References

- ▶ 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

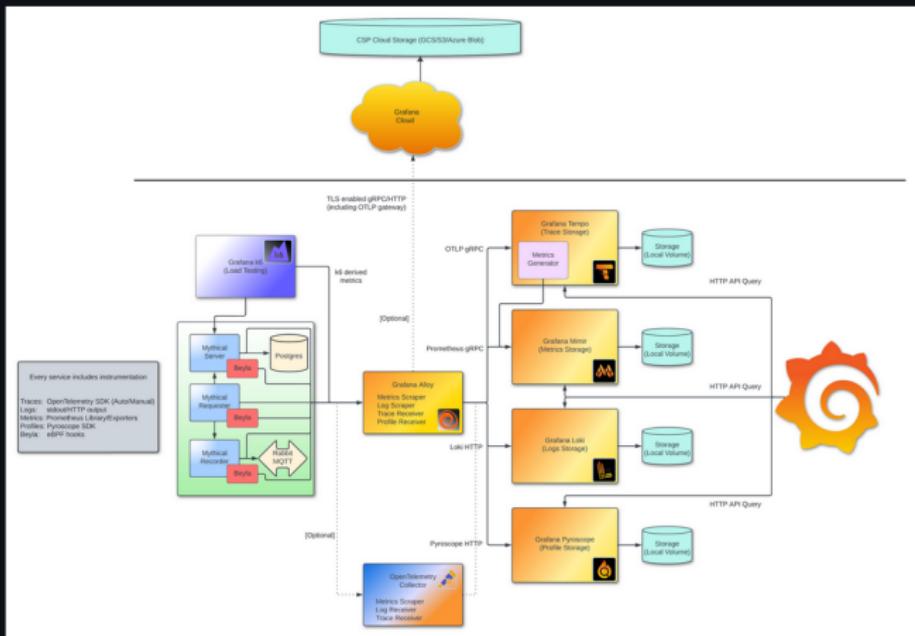
Getting started with managing your metrics, logs, and traces using Grafana

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



- ▶ 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

Introduction to Metrics, Logs, Traces and Profiles in Grafana



This readme has the following sections:

- ▶ 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 Libvrt
- ▶ 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)



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