Glossary

This glossary is intended to be a comprehensive, standardized list of Kubernetes terminology. It includes technical terms that are specific to Kubernetes, as well as more general terms that provide useful context.

Filter terms according to their tags

Relevant for a first-time user of Kubernetes.

Architecture Community Core Object Extension Fundamental Networking

Operation Security Storage Tool User Type Workload **Select all**

Deselect all

Click on the [+] indicators below to get a longer explanation for any particular term.

Add-ons

Resources that extend the functionality of Kubernetes.[+]

Admission Controller

A piece of code that intercepts requests to the Kubernetes API server prior to persistence of the object.[+]

Affinity

In Kubernetes, *affinity* is a set of rules that give hints to the scheduler about where to place pods.[+]

Aggregation Layer

The aggregation layer lets you install additional Kubernetes-style APIs in your cluster.[+]

Annotation

A key-value pair that is used to attach arbitrary non-identifying metadata to objects.[+]

API Group

A set of related paths in Kubernetes API.[+]

API resource

Also known as: *Resource*

An entity in the Kubernetes type system, corresponding to an endpoint on the Kubernetes API. A resource typically represents an object. Some resources represent an operation on other objects, such as a permission check.[+]

API server

Also known as: *kube-apiserver*

The API server is a component of the Kubernetes control plane that exposes the Kubernetes API. The API server is the front end for the Kubernetes control plane.[+]

API-initiated eviction

API-initiated eviction is the process by which you use the Eviction API to create an `Eviction` object that triggers graceful pod termination.[+]

App Container

Application containers (or app containers) are the containers in a pod that are started after any init containers have completed.[+]

Application Architect

A person responsible for the high-level design of an application.[+]

Application Developer

A person who writes an application that runs in a Kubernetes cluster.[+]

Applications

The layer where various containerized applications run. [+]

Approver

A person who can review and approve Kubernetes code contributions.[+]

cAdvisor

cAdvisor (Container Advisor) provides container users an understanding of the resource usage and performance characteristics of their running containers.[+]

Certificate

A cryptographically secure file used to validate access to the Kubernetes cluster.[+]

cgroup (control group)

A group of Linux processes with optional resource isolation, accounting and limits.[+]

CIDR

CIDR (Classless Inter-Domain Routing) is a notation for describing blocks of IP addresses and is used heavily in various networking configurations.[+]

CLA (Contributor License Agreement)

Terms under which a contributor grants a license to an open source project for their contributions.[+]

Cloud Controller Manager

A Kubernetes control plane component that embeds cloud-specific control logic. The cloud controller manager lets you link your cluster into your cloud provider's API, and separates out the components that interact with that cloud platform from components that only interact with your cluster.[+]

Cloud Native Computing Foundation (CNCF)

The Cloud Native Computing Foundation (CNCF) builds sustainable ecosystems and fosters a community around projects that orchestrate containers as part of a microservices architecture.Kubernetes is a CNCF project.[+]

Cloud Provider

Also known as: *Cloud Service Provider*

A business or other organization that offers a cloud computing platform.[+]

Cluster

A set of worker machines, called nodes, that run containerized applications. Every cluster has at least one worker node.[+]

Cluster Architect

A person who designs infrastructure that involves one or more Kubernetes clusters.[+]

Cluster Infrastructure

The infrastructure layer provides and maintains VMs, networking, security groups and others. [+]

Cluster Operations

The work involved in managing a Kubernetes cluster: managing day-to-day operations, and co-ordinating upgrades.[+]

Cluster Operator

A person who configures, controls, and monitors clusters.[+]

Code Contributor

A person who develops and contributes code to the Kubernetes open source codebase.[+]

ConfigMap

An API object used to store non-confidential data in key-value pairs. Pods can consume ConfigMaps as environment variables, command-line arguments, or as configuration files in a volume.[+]

Container

A lightweight and portable executable image that contains software and all of its dependencies.[+]

Container Environment Variables

Container environment variables are name=value pairs that provide useful information into containers running in a pod[+]

Container Lifecycle Hooks

The lifecycle hooks expose events in the Container management lifecycle and let the user run code when the events occur. [+]

Container network interface (CNI)

Container network interface (CNI) plugins are a type of Network plugin that adheres to the appc/CNI specification.[+]

Container Runtime

A fundamental component that empowers Kubernetes to run containers effectively. It is responsible for managing the execution and lifecycle of containers within the Kubernetes environment.[+]

Container Runtime Interface (CRI)

The main protocol for the communication between the kubelet and Container Runtime.[+]

Container Storage Interface (CSI)

The Container Storage Interface (CSI) defines a standard interface to expose storage systems to containers.[+]

containerd

A container runtime with an emphasis on simplicity, robustness and portability[+]

Contributor

Someone who donates code, documentation, or their time to help the Kubernetes project or community.[+]

Control Plane

The container orchestration layer that exposes the API and interfaces to define, deploy, and manage the lifecycle of containers.[+]

Controller

In Kubernetes, controllers are control loops that watch the state of your cluster, then make or request changes where needed. Each controller tries to move the current cluster state closer to the desired state.[+]

CRI-O

A tool that lets you use OCI container runtimes with Kubernetes CRI.[+]

CronJob

Manages a Job that runs on a periodic schedule.[+]

CustomResourceDefinition

Custom code that defines a resource to add to your Kubernetes API server without building a complete custom server.[+]

DaemonSet

Ensures a copy of a Pod is running across a set of nodes in a cluster.[+]

Data Plane

The layer that provides capacity such as CPU, memory, network, and storage so that the containers can run and connect to a network. [+]

Deployment

An API object that manages a replicated application, typically by running Pods with no local state.[+]

Developer (disambiguation)

May refer to: Application Developer, Code Contributor, or Platform Developer.[+]

Device Plugin

Device plugins run on worker Nodes and provide Pods with access to resources, such as local hardware, that require vendor-specific initialization or setup steps.[+]

Disruption

Disruptions are events that lead to one or more Pods going out of service. A disruption has consequences for workload resources, such as Deployment, that rely on the affected Pods.[+]

Docker

Docker (specifically, Docker Engine) is a software technology providing operating-system-level virtualization also known as containers.[+]

Dockershim

The dockershim is a component of Kubernetes version 1.23 and earlier. It allows the kubelet to communicate with Docker Engine.[+]

Downstream (disambiguation)

May refer to: code in the Kubernetes ecosystem that depends upon the core Kubernetes codebase or a forked repo.[+]

Downward API

Kubernetes' mechanism to expose Pod and container field values to code running in a container.[+]

Drain

The process of safely evicting Pods from a Node to prepare it for maintenance or removal from a cluster.[+]

Duration

A string value representing an amount of time.[+]

Dynamic Volume Provisioning

Allows users to request automatic creation of storage Volumes.[+]

Endpoints

An endpoint of a Service is one of the Pods (or external servers) that implements the Service.[+]

EndpointSlice

EndpointSlices track the IP addresses of Pods with matching selectors.[+]

Ephemeral Container

A Container type that you can temporarily run inside a Pod.[+]

etcd

Consistent and highly-available key value store used as Kubernetes' backing store for all cluster data.[+]

Event

Event is a Kubernetes object that describes state change/notable occurrences in the system.[+]

Eviction

Eviction is the process of terminating one or more Pods on Nodes.[+]

Extensions

Extensions are software components that extend and deeply integrate with Kubernetes to support new types of hardware. [+]

Feature gate

Feature gates are a set of keys (opaque string values) that you can use to control which Kubernetes features are enabled in your cluster.[+]

Finalizer

Finalizers are namespaced keys that tell Kubernetes to wait until specific conditions are met before it fully deletes resources marked for deletion. Finalizers alert controllers to clean up resources the deleted object owned.[+]

FlexVolume

FlexVolume is a deprecated interface for creating out-of-tree volume plugins. The Container Storage Interface is a newer interface that addresses several problems with FlexVolume.[+]

Garbage Collection

Garbage collection is a collective term for the various mechanisms Kubernetes uses to clean up cluster resources.[+]

Gateway API

A family of API kinds for modeling service networking in Kubernetes.[+]

Group Version Resource

Also known as: *GVR*

Means of representing unique Kubernetes API resource.[+]

Helm Chart

A package of pre-configured Kubernetes resources that can be managed with the Helm tool.[+]

Horizontal Pod Autoscaler

Also known as: *HPA*

An API resource that automatically scales the number of Pod replicas based on targeted CPU utilization or custom metric targets.[+]

HostAliases

A HostAliases is a mapping between the IP address and hostname to be injected into a Pod's hosts file.[+]

Image

Stored instance of a Container that holds a set of software needed to run an application.[+]

Immutable Infrastructure

Immutable Infrastructure refers to computer infrastructure (virtual machines, containers, network appliances) that cannot be changed once deployed.[+]

Ingress

An API object that manages external access to the services in a cluster, typically HTTP.[+]

Init Container

One or more initialization containers that must run to completion before any app containers run.[+]

Istio

An open platform (not Kubernetes-specific) that provides a uniform way to integrate microservices, manage traffic flow, enforce policies, and aggregate telemetry data.[+]

Job

A finite or batch task that runs to completion.[+]

JSON Web Token (JWT)

A means of representing claims to be transferred between two parties.[+]

kOps (Kubernetes Operations)

`kOps` will not only help you create, destroy, upgrade and maintain production-grade, highly available, Kubernetes cluster, but it will also provision the necessary cloud infrastructure.[+]

kube-controller-manager

Control plane component that runs controller processes.[+]

kube-proxy

kube-proxy is a network proxy that runs on each node in your cluster, implementing part of the Kubernetes Service concept.[+]

kube-scheduler

Control plane component that watches for newly created Pods with no assigned node, and selects a node for them to run on.[+]

Kubeadm

A tool for quickly installing Kubernetes and setting up a secure cluster.[+]

Kubectl

Also known as: *kubectl*

Command line tool for communicating with a Kubernetes cluster's control plane, using the Kubernetes API.[+]

Kubelet

An agent that runs on each node in the cluster. It makes sure that containers are running in a Pod.[+]

Kubernetes API

The application that serves Kubernetes functionality through a RESTful interface and stores the state of the cluster.[+]

Label

Tags objects with identifying attributes that are meaningful and relevant to users.[+]

LimitRange

Provides constraints to limit resource consumption per Containers or Pods in a namespace.[+]

Logging

Logs are the list of events that are logged by cluster or application.[+]

Managed Service

A software offering maintained by a third-party provider.[+]

Manifest

Specification of a Kubernetes API object in JSON or YAML format.[+]

Master

Legacy term, used as synonym for nodes hosting the control plane.[+]

Member

A continuously active contributor in the K8s community.[+]

Minikube

A tool for running Kubernetes locally.[+]

Mirror Pod

A pod object that a kubelet uses to represent a static pod[+]

Mixed Version Proxy (MVP)

Also known as: *MVP*

Feature to let a kube-apiserver proxy a resource request to a different peer API server.[+]

Name

A client-provided string that refers to an object in a resource URL, such as `/api/v1/pods/some-name`.[+]

Namespace

An abstraction used by Kubernetes to support isolation of groups of resources within a single cluster.[+]

Network Policy

A specification of how groups of Pods are allowed to communicate with each other and with other network endpoints.[+]

Node

A node is a worker machine in Kubernetes.[+]

Node-pressure eviction

Also known as: *kubelet eviction*

Node-pressure eviction is the process by which the kubelet proactively terminates pods to reclaim resources on nodes.[+]

Object

An entity in the Kubernetes system. An object is an API resource that the Kubernetes API uses to represent the state of your cluster.[+]

Operator pattern

The operator pattern is a system design that links a Controller to one or more custom resources.[+]

Persistent Volume

An API object that represents a piece of storage in the cluster. Available as a general, pluggable resource that persists beyond the lifecycle of any individual Pod.[+]

Persistent Volume Claim

Claims storage resources defined in a PersistentVolume so that it can be mounted as a volume in a container.[+]

Platform Developer

A person who customizes the Kubernetes platform to fit the needs of their project.[+]

Pod

The smallest and simplest Kubernetes object. A Pod represents a set of running containers on your cluster.[+]

Pod Disruption

Pod disruption is the process by which Pods on Nodes are terminated either voluntarily or involuntarily.[+]

Pod Disruption Budget

Also known as: *PDB*

A Pod Disruption Budget allows an application owner to create an object for a replicated application, that ensures a certain number or percentage of Pods with an assigned label will not be voluntarily evicted at any point in time.[+]

Pod Lifecycle

The sequence of states through which a Pod passes during its lifetime.[+]

Pod Priority

Pod Priority indicates the importance of a Pod relative to other Pods.[+]

Pod Security Policy

Enables fine-grained authorization of Pod creation and updates.[+]

PodTemplate

Also known as: *pod template*

An API object that defines a template for creating Pods. The PodTemplate API is also embedded in API definitions for workload management, such as Deployment or StatefulSets.[+]

Preemption

Preemption logic in Kubernetes helps a pending Pod to find a suitable Node by evicting low priority Pods existing on that Node.[+]

PriorityClass

A PriorityClass is a named class for the scheduling priority that should be assigned to a Pod in that class.[+]

Probe

A check that the kubelet periodically performs against a container that is running in a pod, that will define container's state and health and informing container's lifecycle.[+]

Proxy

In computing, a proxy is a server that acts as an intermediary for a remote service.[+]

QoS Class

QoS Class (Quality of Service Class) provides a way for Kubernetes to classify Pods within the cluster into several classes and make decisions about scheduling and eviction.[+]

Quantity

A whole-number representation of small or large numbers using SI suffixes.[+]

RBAC (Role-Based Access Control)
Manages authorization decisions, allowing admins to dynamically configure access policies through the Kubernetes API.[+]

Replica
A copy or duplicate of a Pod or a set of pods. Replicas ensure high availability, scalability, and fault tolerance by maintaining multiple identical instances of a pod.[+]

ReplicaSet
A ReplicaSet (aims to) maintain a set of replica Pods running at any given time.[+]

ReplicationController
A workload resource that manages a replicated application, ensuring that a specific number of instances of a Pod are running.[+]

Resource (infrastructure)
Capabilities provided to one or more nodes (CPU, memory, GPUs, etc), and made available for consumption by Pods running on those nodes.Kubernetes also uses the term *resource* to describe an API resource.[+]

Resource Quotas
Provides constraints that limit aggregate resource consumption per Namespace.[+]

Reviewer
A person who reviews code for quality and correctness on some part of the project.[+]

Secret
Stores sensitive information, such as passwords, OAuth tokens, and SSH keys.[+]

Security Context
The `securityContext` field defines privilege and access control settings for a Pod or container.[+]

Selector
Allows users to filter a list of resources based on labels.[+]

Service
A method for exposing a network application that is running as one or more Pods in your cluster.[+]

Service Catalog
A former extension API that enabled applications running in Kubernetes clusters to easily use external managed software offerings, such as a datastore service offered by a cloud provider.[+]

ServiceAccount
Provides an identity for processes that run in a Pod.[+]

Shuffle-sharding
A technique for assigning requests to queues that provides better isolation than hashing modulo the number of queues.[+]

Sidecar Container
One or more containers that are typically started before any app containers run.[+]

SIG (special interest group)
Community members who collectively manage an ongoing piece or aspect of the larger Kubernetes open source project.[+]

Spec

Defines how each object, like Pods or Services, should be configured and its desired state.[+]

StatefulSet

Manages the deployment and scaling of a set of Pods, *and provides guarantees about the ordering and uniqueness* of these Pods.[+]

Static Pod

A pod managed directly by the kubelet daemon on a specific node,[+]

Storage Class

A StorageClass provides a way for administrators to describe different available storage types.[+]

sysctl

`sysctl` is a semi-standardized interface for reading or changing the attributes of the running Unix kernel.[+]

Taint

A core object consisting of three required properties: key, value, and effect. Taints prevent the scheduling of Pods on nodes or node groups.[+]

Toleration

A core object consisting of three required properties: key, value, and effect. Tolerations enable the scheduling of pods on nodes or node groups that have matching taints.[+]

UID

A Kubernetes systems-generated string to uniquely identify objects.[+]

Upstream (disambiguation)

May refer to: core Kubernetes or the source repo from which a repo was forked.[+]

user namespace

A kernel feature to emulate root. Used for "rootless containers".[+]

Volume

A directory containing data, accessible to the containers in a Pod.[+]

Volume Plugin

A Volume Plugin enables integration of storage within a Pod.[+]

Watch

A verb that is used to track changes to an object in Kubernetes as a stream. It is used for the efficient detection of changes.[+]

WG (working group)

Facilitates the discussion and/or implementation of a short-lived, narrow, or decoupled project for a committee, SIG, or cross-SIG effort.[+]

Workload

A workload is an application running on Kubernetes.[+]

Feedback

Was this page helpful?

Yes No

Last modified April 20, 2024 at 7:09 PM PST: Ready glossary page for vanilla Docsy (2f3602cef0)