

Kubernetes Objects Reference

Workload Objects

Pod - The smallest deployable unit that encapsulates one or more containers.

ReplicaSet - Ensures a specified number of identical Pods are running.

Deployment - Manages ReplicaSets and provides declarative updates to Pods.

StatefulSet - Manages stateful applications with persistent identities.

DaemonSet - Ensures a Pod runs on all or specific Nodes.

Job - Runs Pods to completion for batch tasks.

CronJob - Runs Jobs on a scheduled time basis.

Service Discovery & Load Balancing

Service - Provides a stable network endpoint for accessing Pods.

Endpoints - Represents IPs of the Pods backing a Service.

EndpointSlice - Scalable alternative to Endpoints for large Services.

Ingress - Manages external HTTP(S) access to Services.

IngressClass - Specifies the controller handling Ingress resources.

Configuration & Secrets Management

ConfigMap - Stores non-confidential configuration data in key-value pairs.

Secret - Stores sensitive data like passwords and tokens.

ResourceQuota - Limits resource consumption in a namespace.

LimitRange - Sets minimum/maximum constraints on resources in a namespace.

Storage Objects

PersistentVolume - Represents a piece of storage in the cluster.

PersistentVolumeClaim - Requests storage resources from PersistentVolumes.

StorageClass - Defines storage types and dynamic provisioning.

VolumeAttachment - Tracks volume attachment status for CSI drivers.

Access Control & Policy

Namespace - Divides cluster resources between multiple users.

ServiceAccount - Provides an identity for Pods to interact with the API.

Role - Grants permissions within a namespace.

ClusterRole - Grants permissions across the entire cluster.

RoleBinding - Assigns a Role to users or service accounts within a namespace.

ClusterRoleBinding - Assigns ClusterRoles across all namespaces.

NetworkPolicy - Controls Pod communication at the IP level.

PodSecurityPolicy - Deprecated policy for controlling Pod security settings.

Custom & Extensible Objects

CustomResourceDefinition - Defines a custom object type in the Kubernetes API.

Custom Resource - Instance of a CRD, acts like a native object.

AdmissionReview - Used in validating and mutating admission webhooks.

Cluster-Level Objects

Node - Represents a worker machine in the cluster.

PodTemplate - Defines templates for creating Pods.

Binding - Binds a Pod to a Node.

Event - Logs events related to resource changes.

Lease - Used for leader election and component heartbeat.

Controller & Autoscaler Objects

HorizontalPodAutoscaler - Automatically scales Pods based on usage.

VerticalPodAutoscaler - Adjusts Pod resource requests automatically.

ClusterAutoscaler - Adjusts node count in the cluster based on workload.

ControllerRevision - Tracks history for rolling updates in StatefulSets.