**YAML in Kubernetes**

**YAML** is a **human-readable data format**, widely used in Kubernetes for writing **configuration files** that define:

* Pods
* Replication Controller, or ReplicaSet
* Deployments
* Services
* Secrets
* and many more Kubernetes resources

**📦 Basic Structure of a Kubernetes YAML File**

Contains **four top-level fields**:

| **Field** | **Purpose** | **Note** |
| --- | --- | --- |
| apiVersion | Specifies the API version of the Kubernetes object |  |
| kind | The type of Kubernetes object (e.g., Pod, Deployment) |  |
| metadata | Metadata like name, labels, namespace | Under labels we can have any kind of key or value pairs |
| spec | Specification of the object (what the object should do/be) |  |

🔍 Example: YAML for a Pod

A screen shot of a computer

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**Breakdown:**

* apiVersion: v1: This is the API version for Pods.
* kind: Pod: We're creating a Pod.
* metadata: Provides metadata like name and labels.
* spec: Contains the actual configuration.
  + containers: List of containers inside the pod.
  + Each container has a name, image, and optionally ports, env, volumeMounts, etc.

⚙️ Example: YAML for a Deployment

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**What's new here:**

* kind: Deployment: This is a higher-level abstraction to manage Pods.
* replicas: 3: Create 3 copies of the pod.
* selector: Tells the Deployment which Pods it manages.
* template: This is the Pod template (same structure as the earlier pod YAML).

🌐 Example: YAML for a Service

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* Services expose pods to other parts of the cluster or outside.
* selector: The service will send traffic to pods matching this label.
* type: ClusterIP: Default service type (internal only).

**🔑 Other Common Kubernetes Resources in YAML**

| **Resource** | **Description** |
| --- | --- |
| ConfigMap | Inject configuration data into pods |
| Secret | Store sensitive info (like passwords) |
| Ingress | Manage external access to services |
| PersistentVolume | Storage abstraction |
| PersistentVolumeClaim | Request for storage |
| Namespace | Group resources |

🔄 Applying and Managing YAML

Once you create a .yaml file, you can apply it with:



To see the object:

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