

Kubernetes Workload Types

Learn about the 7 primary workload types supported by Kubernetes.



1. Pod

- Smallest deployable unit in Kubernetes
- Runs a single container (or tightly coupled containers)
- Useful for testing or basic deployment

```
kind: Pod  
apiVersion: v1  
...
```



2. ReplicaSet

- Ensures a specified number of pod replicas are running
- Used primarily by Deployments
- Rarely created directly

```
kind: ReplicaSet  
apiVersion: apps/v1  
...
```



3. Deployment

- Manages ReplicaSets
- Supports rolling updates and rollbacks
- Ideal for stateless applications

```
kind: Deployment  
apiVersion: apps/v1  
...
```



4. StatefulSet

- Manages stateful applications
- Guarantees stable pod identity and storage
- Pods start in order and maintain unique names

```
kind: StatefulSet  
apiVersion: apps/v1  
...
```



5. DaemonSet

- Runs one pod per node
- Ideal for node-level services like log collectors or network agents

```
kind: DaemonSet  
apiVersion: apps/v1  
...
```

6. Job

- Runs a task to completion
- Suitable for batch processing or one-off tasks

```
kind: Job  
apiVersion: batch/v1  
...
```



7. CronJob

- Runs Jobs on a schedule
- Useful for recurring tasks (e.g., backups)

```
kind: CronJob  
apiVersion: batch/v1  
...
```


Summary Table

Workload	Replica Control	Restart	Use Case
Pod	✗	Manual	Basic, single use
ReplicaSet	✓	Yes	Scaling pods
Deployment	✓	Yes	Rolling updates
StatefulSet	✓	Yes	Stateful services
DaemonSet	1 per Node	Yes	Node-wide services
Job	✗	No	Batch/one-time tasks
CronJob	✗	No	Recurring tasks

Ready for Practice?

Next: Let's try out these workloads hands-on in the lab!