

# Container Orchestration Fundamentals

- **Need for Orchestration:**

- Scaling applications.
- Self-healing of workloads.
- Load balancing.
- Resource optimization.

- **Kubernetes as an Orchestration Tool:**

- Managing containerized workloads.
- Scheduling containers on nodes.
- Ensuring desired state (via Deployments, ReplicaSets).

- **Core Orchestration Features in Kubernetes:**

- Automatic scaling (Horizontal Pod Autoscaler).
- Rolling updates and rollbacks.
- Service discovery and networking.
- Persistent storage management.

- **Workload Orchestration Concepts:**

- Pods as the smallest deployable unit.
- Running multiple containers in a Pod (e.g., sidecar pattern).

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