

# Chapter 3 Kubernetes

- Container orchestration
  - Automatic bin packing
    - automatically schedules containers based on resource needs and constraints
      - maximizes utilization without sacrificing availability
  - Self healing
    - Failed nodes recovery via health check based on rules/policy
    - Prevents traffic from being routed to unresponsive containers
  - Horizontal scaling
    - Scaled manually/automatically based on CPU or custom metrics
  - Service discovery and load balancing
    - Unique IP per container
    - Single DNS name to a set of containers for LB
  - Automated rollouts and rollbacks
  - Secret and configuration management
    - Manages separately from the container image
  - Storage orchestration
    - Automatically mounts software-defined storage (SDS) solutions
  - Batch execution
- Modular and pluggable architecture
- Functionality can be extended by
  - custom resources
  - operators
  - custom APIs
  - scheduling rules
  - plugins