Kubernetes Architecture - Cheat Sheet

Control Plane

• API Server: Entry point, exposes REST API.
• etcd: Key-value store for cluster state.
• Scheduler: Assigns pods to nodes.
• Controller Manager: Runs control loops.
• Cloud Controller Manager: Cloud-specific integrations.

Worker Node

• kubelet: Node agent, manages pods.
• Container Runtime: Runs containers (containerd/CRI-O).
• kube-proxy: Service networking and load-balancing.

Core Objects

• Pod, ReplicaSet, Deployment, StatefulSet, DaemonSet.
• Service (ClusterIP, NodePort, LoadBalancer).
• Ingress: HTTP routing.
• ConfigMap, Secret.
• PV, PVC, StorageClass.

Networking & Security

• CNI Plugins: Calico, Flannel, Cilium.
• NetworkPolicy for pod traffic restrictions.
• RBAC for permissions.
• TLS + Admission Controllers.

Autoscaling & Health

• HPA: scale pods by metrics.
• VPA: adjust container resources.
• Cluster Autoscaler: adjust nodes.
• Liveness/Readiness/Startup probes.

Extensibility

• CRDs: new custom resources.
• Operators: domain-specific logic.