Kubernetes Core Components Visual Summary

Kubernetes Core Components Overview

1. **Pods**: The smallest deployable unit in Kubernetes. A Pod wraps one or more containers with shared storage and network resources.

2. **Services**: Abstracts and exposes a set of Pods as a network service, providing stable access and load balancing.

3. **ConfigMap**: Used for injecting non-sensitive configuration data (like environment variables) into your applications.

4. **Secrets**: Stores sensitive data like passwords and tokens securely (base64 encoded).

5. **etcd**: A distributed, consistent key-value store for storing all Kubernetes cluster data.

6. **NodePort**: Opens a specific port on all cluster nodes, allowing access to services from outside the cluster.

7. **LoadBalancer**: A Kubernetes service type that provisions an external load balancer (e.g., AWS ELB, GCP LB) to route external traffic to your cluster.

8. **IP & DNS**:
   - IP (Internet Protocol): Unique identifier for devices on a network.
   - DNS (Domain Name System): Resolves human-readable names (like myapp.com) to IP addresses.

Kubernetes Component Flow (Visual)

Client -> DNS -> LoadBalancer -> NodePort -> Service -> Pod -> Container

ConfigMaps and Secrets are mounted into Pods for configuration and secret management.
etcd keeps a consistent snapshot of the cluster state and configurations.