Kubernetes

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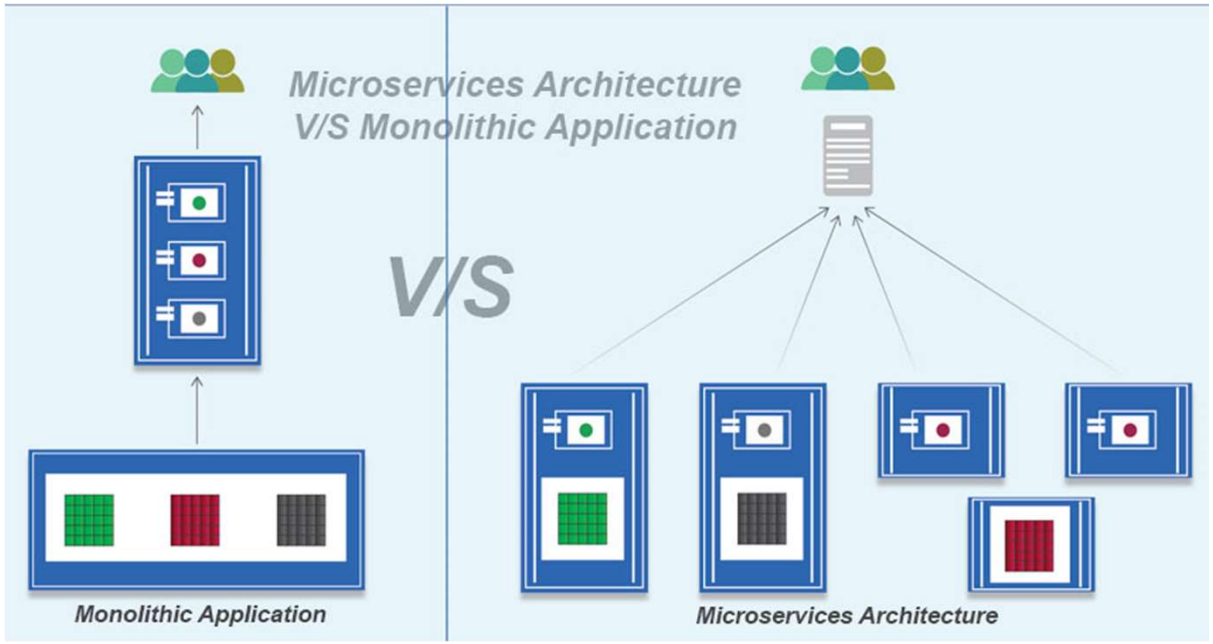
Monolithic and Microservice Application

Monolithic Software Application: all the features of applications are coded into a one code-base.

Limitations: dependency, making changes are difficult.

Micro-service Software Application: all the applications have different code-base and should be deployed separately.

Limitations: low resource utilization



Docker

Docker is an open source containerization platform. Docker enables developers to package applications into containers—standardized executable components that combine application source code with all the **operating system** (OS) libraries and dependencies required to run the code in any environment.

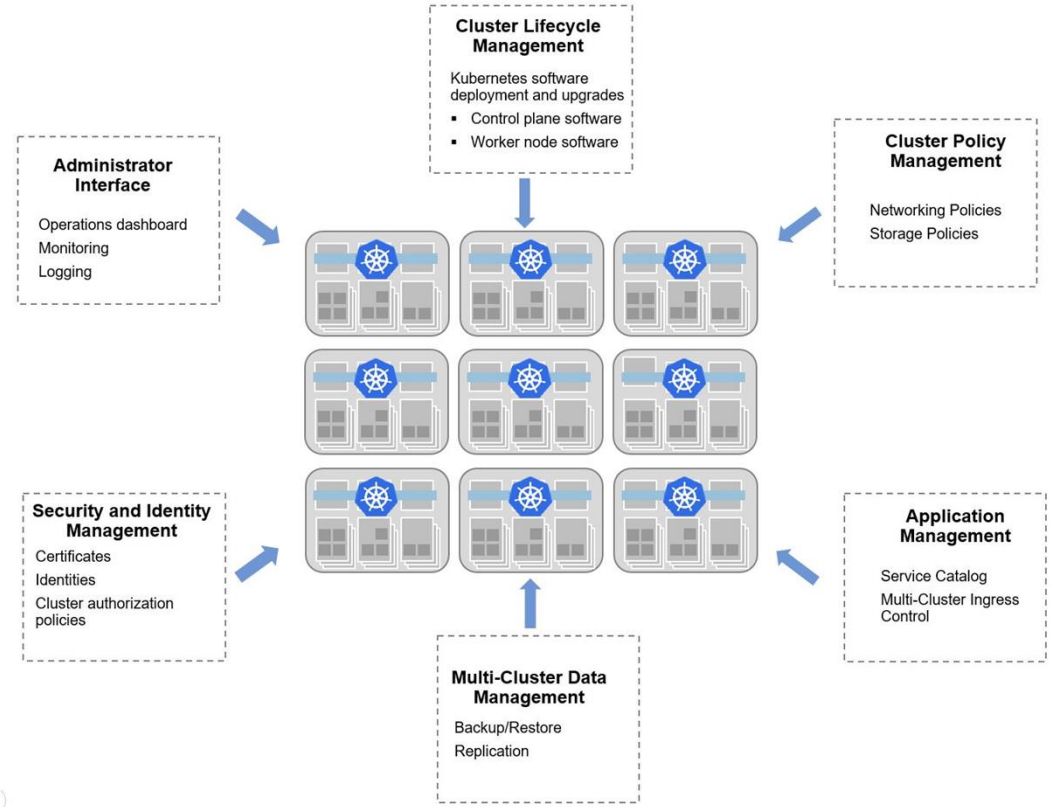
Why Kubernetes

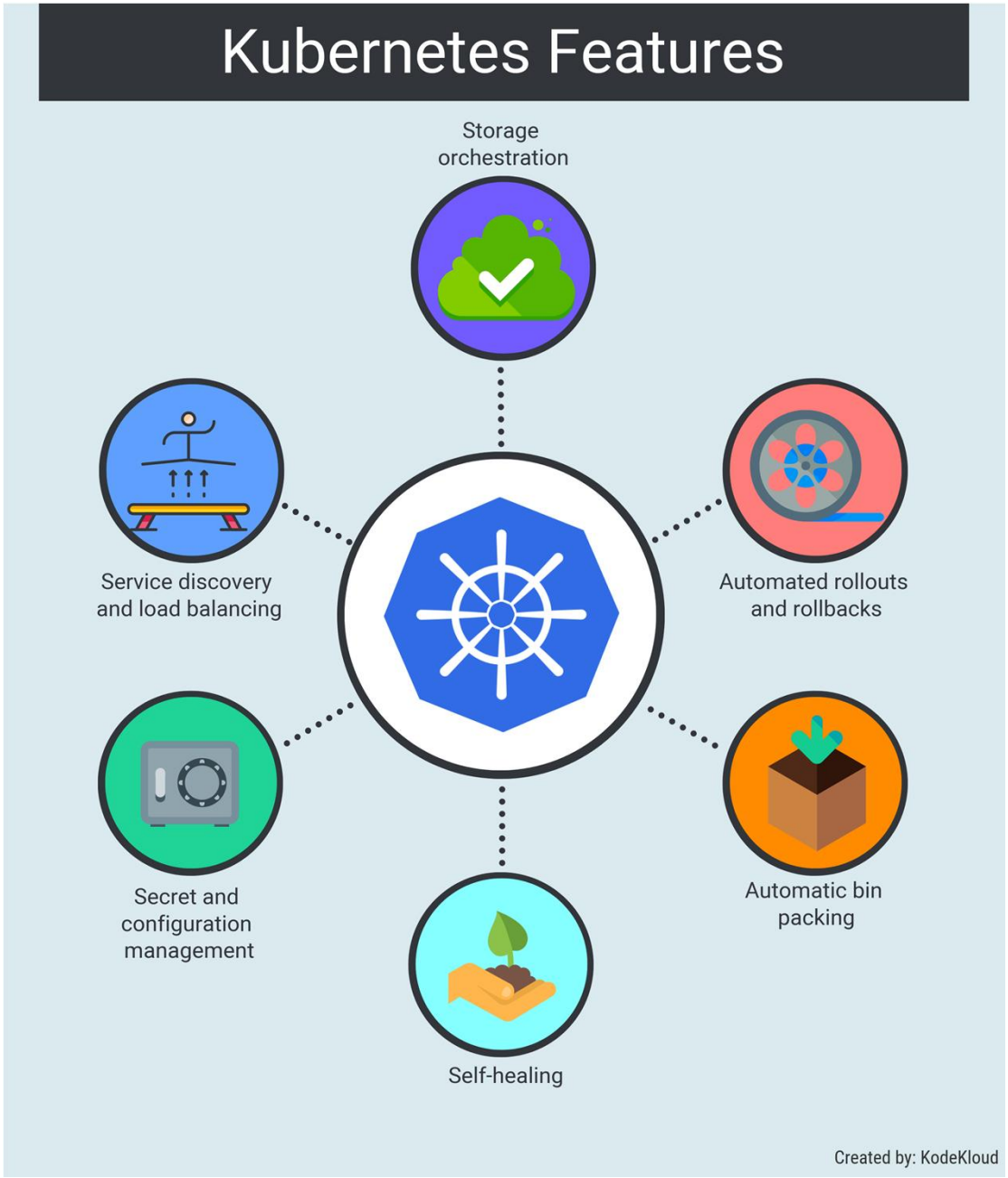
- Each service's monitoring is difficult
- Scaling a particular service based on load is not possible.
- Too much manual intervention is required for managing containers.
- Managing containers on multiple servers become difficult.

- **Kubernetes** is an orchestration tool for containerized applications. Starting with a collection of Docker containers, **Kubernetes** can control resource allocation and traffic management for cloud applications and microservices.

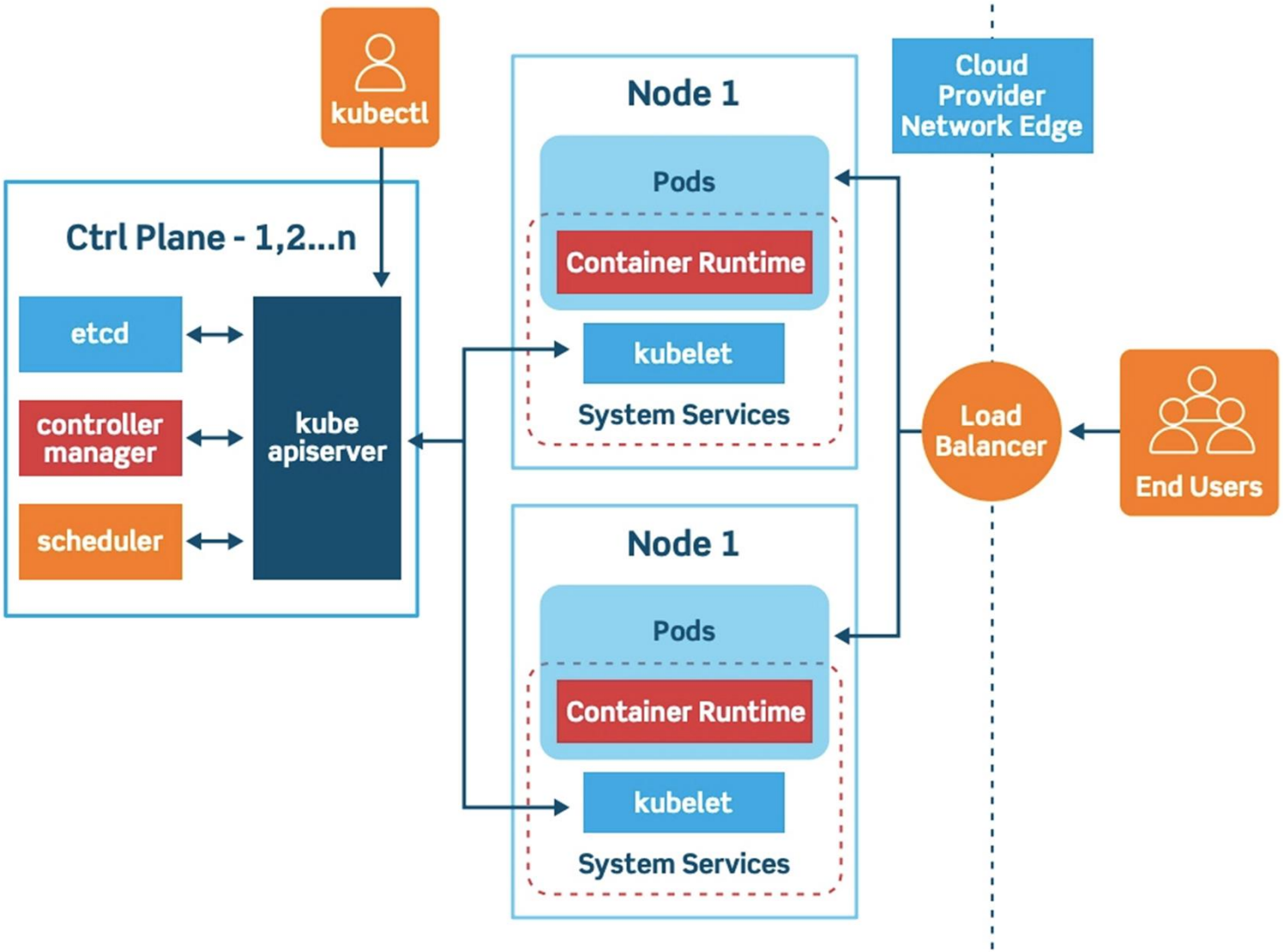
What is Kubernetes

- Kubernetes being a container orchestration tool, is used when our application is distributed in multiple containers. Its job is to monitor, scale, restart containers automatically even if they are spread across multiple nodes.




Kubernetes Features
Storage orchestration
Service discovery and load balancing
Automated rollouts and rollbacks
Secret and configuration management
Automatic bin packing
Self-healing
Created by: KodeKloud

Kubernetes Architecture



Kubernetes Intsllation

1. **Kubeadm**: bare-metal installation
2. **Minikube**: virtualized environment for kubernetes
3. **Kops**: Kubernetes on AWS
4. **Kubernetes on GCP**: Kubernetes running on google cloud platform.

What is EKS?

- Amazon Elastic Kubernetes Service (Amazon **EKS**) is a managed service that you can use to run Kubernetes on AWS without needing to install, operate, and maintain your own Kubernetes control plane or nodes.
- Runs and scales the Kubernetes control plane across multiple AWS Availability Zones to ensure high availability.

Amazon EKS

- IAM -> VPC -> Security Groups