Chapter1 Introduction to microservice

* Monolithic vs Microservice
* Condition to declare a service as microservice. (Must have db connection)
* How to microservices are communicated with each other. (By API Call http or curl)
* strangler pattern

Chapter2 Container networking Interface

* What is CNI(Container networking interface)
* Rule for creating container networking interface.
* NAT(Network address translator)>> Public to private communication
* CIDR(Classless inter domain routing) range
* Kubernetes network example>> calico, fannel

Chapter3 Container to container communication

* ARP(Address resolution protocal, and how it works)
* Ethernet(root ethernet and virtual ethernet)
* Localhost for communication between two container withing same host.
* Container bridge for communication between pod with host.

Chapter4: Container to container communication in different host

* How communication happen between two pods in different host
* container overlay
* ARP protocol

Chapter5: Container to service communication

How communication happen between service and pods

* userspace
* IVPS: it's Kubernates native load balancing with round robin algorithm(you can change algorithm)
* IPTABLES: it's linux feature for networking communication.
* Note: IVPS is the best, and we follow it.

IPTABLES: Based on user contion accept/reject traffic.

Table>> Filter(Default)- allow/deny packet >> NAT table -NAT related >> Mangle>>Modify IP Headers

RAW>> connection tracking security>> for Security purpose

chains>> Pre-routing>Input>forward>output>post-roting

Rules>> User defined command to modify networking rule.

Matching-component: condition, protocol, source, destination

Target component

Chapter6: Foundational Pattern – Predictable Demands

Compressible resouce – Which can be added dynamically.>> CPU

Incompressible – Which can't be added dynamically.>> Memory

QOS: 1) Best Effort, 2) Burstable and 3) Guaranteed.(Param: resource and limit)

Kill Criteria: Best then Burstable and then Guaranteed (Very less chances to kill)

Chapter7: Docker image revesion

Creating docker image.

running created docker image and validate it's utilization.

Chapter8: Health check probe

Liveness probe => ps -ef | grep java

readyness probe => HTTP 200 code

Chapter9: Managed Life Cycle

SIGTERM signal:

SIGKILL signal:

Chapter10: Setting up cluster

Node selector

Node affinity<Node selector with operator>

Chapter11: Container placement

Pod affinity: container in same pod.

anti affinity: opposity to pod affinity.

taints: not allowed pod to schedule if present in node.(K8 master)

tolerance: 1) effect=NoSchedule

2) effect=PreferNoSchedule)

Bare pods that are not managed by a replication controller will be not rescheduled upon node disruption.

Chapter12: K8s Database concept

Data, Database, CURD operation, DBMS, Need of volume, PV, PVC, storage class, configmap, secrates

Chapter13: stateful application

What is Stateful application

Example of stateful application? >> Splunk, ELK

Combination of stateful and stateless services

Chapter14: Deploymentset vs replica set

Comparison between deployment set and replica set.

Chapter15: Singleton services

Singleton services: Updating database. observing message from Q in serquential order.

Chapter16: Services in K8s

Services: Cluster-ip, nodeport, headless and loadbalancer.

Chapter17: Adpator patters

Init, sidecar and Adaptor(Multiple microservices generating multipe logs> making them in one format)

Chapter18: Ambassador patterns

Ambassador pattern > it's kind of proxy services.

Chapter19: Config map and secrate

Config map and secrets

Chapter20: Microservice application development

Concept of developing microservices application for inventory for e-commerce application.

Chapter21: Deep drive into microservice

Understanding components of microservices (Database and front-end)

Chapter22: Docker compose

Docker compose (introduction and depends on instruction)

Chapter23: RBAC- Authentication, authorization,

Namespace role and binding,

Cluster role and binding.

Chapter24: Aggregating Cluster Roles (combination of 2 role)

Deployer, Admin, monitor, ISA security admin

Chapter25: Helm, installation manager

Installing helm, installing my-sql by helm.

Chapter26: Helm2 vs Helm3 comparison