STUDENT VERSION (Week-13)

TEAMWORK

CLARUSWAY
WAY TO REINVENT YOURSELF

Meeting Agenda

▶ Icebreaking

▶ Questions

▶ Interview/Certification Questions

▶ Coding Challenge

▶ Video of the week

▶ Retro meeting

▶ Case study / project

Teamwork Schedule

Ice-breaking 10m

- Personal Questions (Stay at home & Corona, Study Environment, Kids etc.)
- Any challenges (Classes, Coding, AWS, studying, etc.)
- Ask how they're studying, give personal advice.
- Remind that practice makes perfect.

Team work 10m

- Ask what exactly each student does for the team, if they know each other, if they care for each other, if they follow and talk with each other etc.

Ask Questions 15m

1. Which one is used to help restricting the service within the cluster? (Kubernetes)

A. LoadBalancer
B. NodePort
C. ClusterIP
D. kubectl

Kubernetes `ServiceTypes` allow you to specify what kind of Service you want. The default is `ClusterIP`.

`Type` values and their behaviors are:

- `ClusterIP`: Exposes the Service on a cluster-internal IP. Choosing this value makes the Service only reachable from within the cluster. This is the default `ServiceType`.
- `NodePort`: Exposes the Service on each Node's IP at a static port (the `NodePort`). A `ClusterIP` Service, to which the `NodePort` Service routes, is automatically created. You'll be able to contact the `NodePort` Service, from outside the cluster, by requesting `<NodeIP>:<NodePort>`.
- `LoadBalancer`: Exposes the Service externally using a cloud provider's load balancer. `NodePort` and `ClusterIP` Services, to which the external load balancer routes, are automatically created.
- `ExternalName`: Maps the Service to the contents of the `externalName` field (e.g. `foo.bar.example.com`), by returning a `CNAME` record with its value. No proxying of any kind is set up.

2. _____ runs on each node and ensures containers are running in a pod. (Kubernetes)

A. Kubelet
B. Etcd
C. Scheduler
D. Pod

kubelet

An agent that runs on each node in the cluster. It makes sure that containers are running in a Pod.

The kubelet takes a set of PodSpecs that are provided through various mechanisms and ensures that the containers described in those PodSpecs are running and healthy. The kubelet doesn't manage containers which were not created by Kubernetes.

3. Which is the intended use for etcd? (Kubernetes)

A. To store all the cluster data, maintain its state and provide access to critical data
B. To link a unique identifier to a value
C. To encrypt cluster data and send it to a secrets manager
D. To authenticate cluster data

etcd

Consistent and highly-available key value store used as Kubernetes' backing store for all cluster data.

If your Kubernetes cluster uses etcd as its backing store, make sure you have a back up plan for those data.

You can find in-depth information about etcd in the official documentation.

4. Generally, what is a proxy service used for? (Kubernetes)

A. To supplant an authentic webpage in a search engine's index and search page results
B. To connect external parties and route data between internal and external containers
C. To act as an intermediary between an endpoint device and another server
D. To relay connection requests for inbound network traffic

Kubernetes makes use of several proxy services to manage containers. For example, kube-proxy, a networking and load balancing service, routes traffic to the appropriate container based on the IP address and incoming request's port number. The Kubernetes network proxy runs on each node. Other proxies in Kubernetes include the kubectl proxy and the apiserver proxy.

5. _____ manages the assigning nodes to pods depending on resource availability. (Kubernetes)

A. Etcd
B. Kubectl
C. Scheduler
D. Flannel

kube-scheduler

Control plane component that watches for newly created Pods with no assigned node, and selects a node for them to run on.

Factors taken into account for scheduling decisions include: individual and collective resource requirements, hardware/software/policy constraints, affinity and anti-affinity specifications, data locality, inter-workload interference, and deadlines.

Interview/Certification Questions 20m

1. Your company is planning on hosting an application that will be based on Docker containers. They need to setup an orchestration service that would automatically scale based on the load. As much as possible , the company does not want the burden of managing the underlying infrastructure. Which of the following can assist in this scenario?

A. AWS ECS with service Auto Scaling
B. Use an Elastic Load Balancer in front of an EC2 Instance. Use Docker containers on the EC2 Instance.
C. Use Auto Scaling with Spot Instances for the Orchestration Service.
D. Install and use Kubernetes on the EC2 Instance

2. You are launching the AWS ECS instance. You would like to set the ECS container agent configuration during the ECS instance launch. What should you do?

A. Set configuration in the ECS metadata parameter during cluster creation.
B. Set configuration in the user data parameter of ECS instance.
C. Define configuration in the task definition.
D. Define configuration in the service definition.

3. You work for a big company having multiple applications that are very different from each other. These applications are built using different programming languages. How could you deploy these applications as quickly as possible?

A. Develop all the apps in a single Docker container and deploy using Elastic Beanstalk.
B. Create a Lambda function deployment package consisting of code and any dependencies.
C. Develop each app in a separate Docker container and deploy using Elastic Beanstalk.
D. Develop each app in separate Docker containers and deploy using CloudFormation.

4. What is Kubectl? The kubectl command line tool lets you control Kubernetes clusters. For configuration, kubectl looks for a file named config in the $HOME/.kube directory. You can specify other kubeconfig files by setting the KUBECONFIG environment variable or by setting the --kubeconfig flag.

5. Explain the concept behind Infrastructure as Code (IaC).

Infrastructure as Code (IaC) is a process for managing and operating data servers, storage systems, system configurations, and network infrastructure.
In traditional configuration management practices, each minute configuration change required manual action by system administrators and the IT support team. But with IaC, all the configuration details are managed and stored in a standardized file system, wherein the system automatically manages infrastructure changes and deals with system configurations.

Therefore, we do not require most of the manual effort since everything is managed and automated by following the IaC approach. Tools such as Ansible can be used to implement IaC approach.

Video of the Week 5m

- Kubernetes in 5 mins

Retro Meeting on a personal and team level 10m

Ask the questions below:

- What went well?
- What could be improved?
- What will we commit to do better in the next week?

Coding Challenge 5m

- Compass

We assume that each group has two sub teams. Each week, one of the sub-teams will present their solution.

Case study/Project 10m

Case study should be explained to the students during the weekly meeting and has to be completed in one Sprint (2 weeks) by the students. Students should work in small teams to complete the case study.

- Project-203 : Microservice Architecture for Phonebook Web Application (Python Flask) with MySQL using Kubernetes.

Closing 5m

-Next week’s plan

-QA Session
