TEAM LEAD VERSION (Week-12)

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. How can we rename a branch ?

A. `git branch -m current-branch-name new-branch-name`
B. `git branch checkout current-branch-name new-branch-name`
C. `git checkout -b current-branch-name new-branch-name`
D. `git clone current-branch-name new-branch-name`

Answer: *A*

2. Which of the following has highest priority for Ansible configuration settings?

A. ansible.cfg *(in the current directory)*
B. .ansible.cfg *(in the home directory)*
C. ANSIBLE_CONFIG *(an environment variable)*
D. /etc/ansible/ansible.cfg

Answer: *C*

3. The command to create Kubernetes service is _____.

A. kubectl expose
B. kubectl set service
C. kubectl run
D. kubectl deploy

Answer: *A*

4. Can we run Junits as a part of Jenkins job?

A. True
B. False

Answer: *A*

5. Which command is used to create a new deployment in kubernetes?

A. `kubernetes set deployment`
B. `kubernetes get deployment`
C. `kubectl run`
D. `kubectl deploy`

Answer: *C*

Interview/Certification Questions   20m

1. A company requires an open-source system for automating the deployment, scaling, and management of containerized applications. Which of the following would be ideal for such a requirement?

A. Use the Amazon Elastic Container Service for Kubernetes.
B. Install a custom orchestration tool on EC2 Instances.
C. Use SQS to orchestrate the messages between docker containers.
D. Use AWS Lambda functions to embed the logic for container orchestration.

Answer: *A*

Amazon Elastic Container Service for Kubernetes (Amazon EKS) is a managed service that makes it easy for you to run Kubernetes on AWS without the requirement of installing and operating your own Kubernetes clusters. Kubernetes is an open-source system for automating the deployment, scaling, and management of containerized applications. Operating Kubernetes for production applications presents a number of challenges. You need to manage the scaling and availability of your Kubernetes masters and persistence layer by ensuring that you have chosen appropriate instance types, running them across multiple Availability Zones, monitoring their health, and replacing unhealthy nodes. You need to patch and upgrade your masters and worker nodes to ensure that you are running the latest version of Kubernetes. All this requires expertise and a lot of manual work. With Amazon EKS, upgrades and high availability are managed for you by AWS. Amazon EKS runs three Kubernetes masters across three Availability Zones in order to ensure high availability. Amazon EKS automatically detects and replaces unhealthy masters, and provides automated version upgrades and patching for the masters.

For more information on ECS instances, Link

2. Your company has a legacy application that uses the monolithic architecture. You need to design a new microservices architecture for the application and host it in AWS. The application should be dockerized so that it can be easily deployed.

Which of the following AWS services would you choose to host the application?

A. Elastic Kubernetes Engine

B. Amazon Lambda

C. Elastic Container Registry

D. Elastic Container Service

Answer: *D*

Option A is incorrect: Because the service name should be Elastic Kubernetes Service (EKS).

Option B is incorrect: Because Amazon Lambda cannot run a Docker container.

Option C is incorrect: Because Elastic Container Registry is the service to store Docker images and it cannot run Docker containers.

Option D is CORRECT: Because Elastic Container service (ECS) allows users to easily run applications in Docker containers. ECS is a suitable AWS compute service for microservices.

3. You have launched an ECS cluster with 5 EC2 instances with its task definitions. However, ECS is not getting any status information back from the container agent in each ECS instance. What could be the reason? (choose 3 options)

A. IAM role used to run ECS instance does not have ecs:Poll action in its policy

B. Key-pair information is missing in ECS cluster.

C. ECS Instance security groups' outbound rules are not allowing traffic to ECS service endpoint

D. Interface VPC endpoint is not configured for ECS service.

E. You are running ECS on t2.micro instance type which is not supported.

Answer: *A, C and D*

Option A is correct. The Amazon ECS container agent makes calls to the Amazon ECS API on your behalf. Container instances that run the agent require an IAM policy and role for the service to know that the agent belongs to you. Before you can launch container instances and register them into a cluster, you must create an IAM role for those container instances to use when they are launched. This requirement applies to container instances launched with the Amazon ECS-optimized AMI provided by Amazon, or with any other instances that you intend to run the agent on.

Option B is not correct. Amazon ECS container instance, has no password to use for SSH access; you use a key pair to log in to your instance securely. You specify the name of the key pair when you launch your container instance, then provide the private key when you log in using SSH.

Option C is correct. Security groups act as a firewall to ECS container instances. If outbound rules are not allowing any traffic to ECS service endpoints, container agent will not be able to report the status back to ECS.

Option D is correct.ECS supports interface VPC endpoints.

4. What is a pod in Kubernetes?

Answer:

Pod is a single or bunch of containers that is controlled as a single application

- *Containers inside the Pod operate closely together and share a common life cycle, but has to be scheduled on the same node.*
- *Pods are managed as a unit and share common environment wrt volume and IP address space.*
- *Every Pods consists of master container that satisfies of balancing the workload among the other containers that facilitate to orchestrate other related tasks.*
- *For example, a pod may have one container running the primary application server and a helper container pulling down files to the shared file system when changes are detected in an external repository.*
- *Users are recommended not to manage pods themselves, because they might miss few features specifically needed in applications.*
- *Users are advised to operate with the objects that use pod templates as base components and add additional functionality to them.*

5. Do all of the nodes have to be at the same size in your cluster? (kubernetes)

Answer:

No, they don't. The Kubernetes components, like kubelet, will take up resources on your nodes, and you'll still need more capacity for the node to do any work. In a larger cluster, it often makes sense to create a mix of different instance sizes. That way, pods that require a lot of memory with intensive compute workloads can be scheduled by Kubernetes on large nodes, and smaller nodes can handle smaller pods.

Video of the Week   5m

- A Guide to the DevOps Technical Interview

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

- Vote Count

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