PW SKILLS | DevOps and Cloud Computing

AWS Container Services & DevOps Certification Roadmap

Objective

- Understand the basics of Amazon ECS for containerized application management.
- Learn how Amazon EKS integrates Kubernetes into the ecosystem.
- Compare ECS and EKS for different deployment needs.
- Get an overview of AWS DevOps-related certifications, including career-aligned tracks and preparation tips

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Introducing Amazon ECS as AWS's native container orchestration service.

Let’s introduce

Amazon ECS (Elastic Container Service) is AWS’s native container orchestration service.

- It runs and manages Docker containers on a cluster of EC2 instances or with AWS Fargate (serverless).
- Handles scheduling, scaling, and networking of containers.
- Integrates with IAM, CloudWatch, ALB, and other AWS services for secure, scalable container workloads.

Pop Quiz

Q. What is Amazon ECS primarily used for?

A

Hosting relational databases

B

Orchestrating Docker containers on AWS

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Explaining key components: tasks, task definitions, containers, clusters, services.

Let’s see

Key components of Amazon ECS:

- **Task Definition:** Blueprint defining one or more containers (image, CPU, memory, ports).
- **Task:** Running instance of a task definition.
- **Container:** A lightweight, isolated environment specified in the task definition.
- **Cluster:** Logical grouping of resources (EC2 or Fargate) where tasks run.
- **Service:** Manages long-running tasks, handles scaling and auto-restarts.

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Describe how Fargate vs. EC2 launch types impact deployment and pricing.

Let’s see

Amazon ECS offers two launch types:

- **Fargate:** Serverless — AWS manages the infrastructure. You pay per vCPU and memory used. Ideal for simplicity and small teams.
- **EC2:** You manage EC2 instances. More control and potentially lower cost for high or predictable workloads.

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Hands-on walk-through: Show how to create a task definition, register it, and launch a service with ECS.

Let’s do it

1. Create Task Definition
   - Go to ECS Console → Task Definitions → Create new
   - Choose Fargate or EC2, add container details (image, CPU, memory, port)

2. Register Task Definition
   - Review and create → ECS registers the definition for use

3. Launch Service
   - Go to Clusters → Select/Create cluster
   - Click Create service, select task definition, set desired count
   - Configure load balancer (optional), networking, and launch

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Presenting EKS as a managed Kubernetes service that integrates with AWS.

Let’s see

Amazon EKS (Elastic Kubernetes Service) is a managed Kubernetes service by AWS.

- Runs upstream Kubernetes without needing to install or operate control planes.
- Integrates with AWS services like IAM, VPC, CloudWatch, ALB, and ECR.
- Supports auto-scaling, high availability, and secure workloads.

Pop Quiz

Q. What is Amazon EKS primarily used for?

A

Orchestrating Docker containers using Kubernetes

B

Managing EC2 Auto Scaling groups

Pop Quiz

Q. What is Amazon EKS primarily used for?

A

Orchestrating Docker containers using Kubernetes

B

Managing EC2 Auto Scaling groups

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Comparing EKS to ECS: flexibility and standardization vs. ease of use.

Let’s compare

EKS (Kubernetes):

- More flexible & portable (open standard)
- Better for hybrid/multi-cloud setups
- More complex to manage

ECS (AWS-native):

- Easier to use, tightly integrated with AWS
- Less setup, faster to deploy
- AWS-specific, less portable

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Showing EKS cluster setup basics, including node groups and networking considerations.

Let’s see

EKS Cluster Setup Basics:

1. Create EKS Cluster
- Use AWS Console or CLI
- Define cluster name, Kubernetes version, VPC/subnets (must span 2+ AZs)

2. Set Up Node Group
- Add managed EC2 or Fargate nodes
- Specify instance types, scaling, and IAM roles

3. Networking Considerations
- Use private subnets for nodes
- Attach security groups, IAM roles, and VPC CNI plugin for pod networking

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Discussing Kubernetes toolchain (kubectl, Helm) integration with EKS.

Let’s discuss

EKS integrates with Kubernetes tools like:

- **kubectl:** CLI to interact with the cluster (deploy apps, manage resources). Use aws eks update-kubeconfig to connect.
- **Helm:** Package manager for Kubernetes. Easily install apps (e.g., NGINX, Prometheus) using charts.

Take A 5-Minute Break!

- Stretch and relax
- Hydrate
- Clear your mind
- Be back in 5 minutes

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Facilitating a comparison of ECS and EKS:

Let’s compare

ECS:

- Best for teams wanting tight AWS integration
- Less overhead, easier to set up and manage
- AWS-specific, limited portability

EKS:

- Ideal for teams already using Kubernetes
- Supports multi-cloud/hybrid deployments
- More complex, higher learning curve

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Presenting a structured view of AWS certifications

Let’s see

Foundational

- AWS Certified Cloud Practitioner – Basic AWS knowledge for beginners and non-tech roles

Associate-Level

- Solutions Architect – Associate – Design distributed AWS systems
- Developer – Associate – Build and deploy AWS-based applications
- SysOps Administrator – Associate – Manage and operate AWS environments

Professional-Level

- Solutions Architect – Professional – Advanced architecture and design
- DevOps Engineer – Professional – Automate, monitor, and manage AWS DevOps workflows

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Examples of who should pursue what based on current roles or goals.

Let’s see

Beginners / Non-tech roles

- Cloud Practitioner – For sales, marketing, or new to cloud

Developers / Programmers

- Developer – Associate – To build and deploy AWS apps

System Admins / IT Ops

- SysOps Admin – Associate – For managing AWS infrastructure

Solution Designers / Architects

- Solutions Architect – Associate/Professional – To design scalable systems

DevOps / Automation Engineers

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Sharing high-level prep tips

Let’s see

High-Level AWS Certification Prep Tips:

- Study AWS whitepapers & FAQs – Great for exam strategy and deep understanding
- Take practice exams – Get familiar with question style and time management
- Do hands-on labs – Crucial for Developer and DevOps certs (use AWS Free Tier or sandbox
- Master core services – EC2, S3, IAM, VPC, Lambda, RDS, CloudWatch
- Practice troubleshooting – Especially for SysOps and Pro-level exams

Time for case study!

Important

- Complete the post-class assessment
- Complete assignments (if any)
- Practice the concepts and techniques taught in this session
- Review your lecture notes
- Note down questions and queries regarding this session and consult the teaching assistants

Thanks !