AWS ECS (Elastic Container Service) Mastery Course

From Basics to Advanced – Learn to Deploy, Manage, and Scale Containerized Applications

Course Overview

This course covers **Amazon ECS** in depth, teaching you how to deploy, manage, and scale containerized applications using AWS's fully managed container orchestration service. You'll learn core concepts, best practices, and real-world architectures, including integrations with other AWS services.

Prerequisites

- Basic understanding of **Docker & containers**
- Familiarity with **AWS fundamentals** (EC2, IAM, VPC)
- Willingness to work with **hands-on labs**

Course Outline

Module 1: Introduction to AWS ECS

✅ What is ECS?

- Overview of container orchestration
- Comparison with **EKS (Kubernetes) & Fargate**
- Key benefits (serverless, scalability, AWS integration)

✅ ECS Core Components

- **Clusters** (logical grouping of resources)
- **Task Definitions** (blueprint for containers)
- **Tasks & Services** (running and managing containers)

✅ **ECS Launch Types**

- **EC2 Launch Type** (manual scaling)
- **Fargate Launch Type** (serverless)
- Choosing the right launch type

Module 2: Setting Up Your First ECS Cluster

✅ **Creating an ECS Cluster**

- Using AWS Management Console & AWS CLI
- Configuring VPC, Subnets, and Security Groups

✅ **Task Definitions & Containers**

- Defining containers in JSON/YAML
- Setting CPU, memory, and environment variables

✅ **Running Tasks & Services**

- One-off tasks vs. long-running services
- Service Auto Scaling (CPU/Memory-based)

Module 3: Advanced ECS Features

✅ **Load Balancing with ECS**

- Integrating with **ALB (Application Load Balancer)** & **NLB (Network Load Balancer)**
- Dynamic port mapping

✅ **Service Discovery**

- Using **Cloud Map** for internal service discovery

✅ **IAM Roles & Security Best Practices**

- Task roles vs. execution roles
- Securing ECS with IAM policies

✅ **Storage & Volumes**

- **EFS for persistent storage**
- **Bind mounts & Docker volumes**

Module 4: Monitoring & Logging

✅ **CloudWatch Logs for ECS**

- Streaming container logs to CloudWatch

✅ **CloudWatch Metrics & Alarms**

- Monitoring CPU, memory, and task health

✅ **AWS X-Ray for Tracing**

- Distributed tracing in microservices

✅ **Troubleshooting Common Issues**

- Task failures, networking errors, and resource limits

Module 5: CI/CD & Automation

✅ **Deploying with AWS CodePipeline & CodeBuild**

- Automated ECS deployments

✅ **Blue/Green & Canary Deployments**

- Using **AWS CodeDeploy** for zero-downtime updates

✅ **Infrastructure as Code (IaC)**

- Deploying ECS with **AWS CDK & Terraform**

Module 6: Real-World Architectures & Best Practices

✅ **Microservices on ECS**

- Designing scalable microservices

✅ **Serverless Containers with Fargate**

- Cost optimization & auto-scaling

✅ **Hybrid ECS + EKS Strategies**

- When to use ECS vs. Kubernetes

✅ **Disaster Recovery & Multi-Region Setup**

- Cross-region replication & failover

Hands-On Labs & Projects

🔹 **Lab 1:** Deploy a Dockerized Web App on ECS Fargate

🔹 **Lab 2:** Set Up Load Balancing & Auto Scaling

🔹 **Lab 3:** CI/CD Pipeline for ECS with CodePipeline

🔹 **Lab 4:** Multi-Container App with Service Discovery

🔹 **Final Project:** Build a Scalable Microservice Using ECS

Who Should Take This Course?

✔ **DevOps Engineers** automating container deployments

✔ **Cloud Architects** designing scalable systems

✔ **Developers** moving to serverless containers

✔ **SysAdmins** managing AWS workloads

Certification & Next Steps

After completing this course, you'll be ready for:

- **AWS Certified DevOps Engineer - Professional**
- **AWS Certified Solutions Architect - Professional**
- **Real-world ECS deployments in production**

Would you like me to add **more advanced topics** (e.g., spot instances, cost optimization)? 🚀