[Skip to main content](https://lms.alnafi.com/xblock/block-v1:alnafi+alnafi07+2025_02+type@vertical+block@9a099b6290134509aa99c3ae279b2099?exam_access=&recheck_access=1&show_bookmark=0&show_title=0&view=student_view" \l "main)

*RQF Level 5*

**Objective:**

The objective of this lab is to provide participants with hands-on experience in deploying and managing scalable, high-availability applications on AWS using Amazon EC2. Participants will learn to launch EC2 instances within a Virtual Private Cloud (VPC), set up Elastic Load Balancing (ELB) for distributing incoming traffic, and configure Auto Scaling to automatically adjust the number of EC2 instances based on demand.

**Prerequisites:**

* SysOps Advancement Track

**Lab Steps:**

**Step 1: Introduction to High Availability and Elasticity**

- Briefly discuss the concepts of high availability and elasticity in the context of AWS.

- Explain how deploying applications across multiple availability zones enhances availability.

**Step 2: Setting Up a VPC**

- In the AWS Management Console, navigate to Amazon VPC.

- Create a new VPC with multiple subnets across different availability zones.

- Configure route tables and security groups.

**Step 3: Launching EC2 Instances**

- Launch EC2 instances within the created VPC:

- Choose an Amazon Machine Image (AMI).

- Configure instance type, key pair, and storage.

- Select the created VPC and subnets.

- Configure security groups.

**Step 4: Setting Up Elastic Load Balancing (ELB)**

- In the AWS Management Console, navigate to Elastic Load Balancing.

- Create a new load balancer:

- Configure listeners, such as HTTP or HTTPS.

- Add EC2 instances to the load balancer.

- Configure health checks for instance.

**Step 5: Configuring Auto Scaling**

- In the AWS Management Console, navigate to Auto Scaling.

- Create an Auto Scaling group:

- Configure launch settings, including the AMI, instance type, and key pair.

- Set up Auto Scaling policies based on demand metrics.

- Configure desired and minimum capacity.

**Step 6: Testing High Availability and Elasticity**

- Simulate a surge in demand:

- Monitor the Auto Scaling group scaling out by launching new instances.

- Observe the Elastic Load Balancer distributing traffic among instances.

- Monitor the Auto Scaling group scaling in when demand decreases.

**Step 7: Cleanup**

- Guide learners through proper cleanup procedures to avoid unnecessary costs.

- Terminate EC2 instances, delete the Auto Scaling group, and remove the Elastic Load Balancer.

*Conclusion:*

*By completing this lab, participants have gained practical experience in deploying and managing high-availability, scalable applications using Amazon EC2, Virtual Private Cloud, Elastic Load Balancing, and Auto Scaling on AWS. This lab provides a foundation for designing and implementing resilient architectures for applications that require both high availability and elasticity.*