Lomba Kompetensi Siswa
Sekolah Menengah Kejuruan
Tingkat Provinsi Jawa Barat
Tahun 2021

Modul 1 – Web Apache With AWS EC2

August 3, 2021

Bidang Lomba Cloud Computing

1. Overview

A company planning to deploy their website using AWS (Amazon Web Services) services. This PT has a vision to increase their online presence, improve website performance, and provide a better user experience. In order to achieve this goal, PT will take advantage of the various services offered by AWS. They will use a service like Amazon EC2 to host their website with the flexibility to scale and handle high traffic.

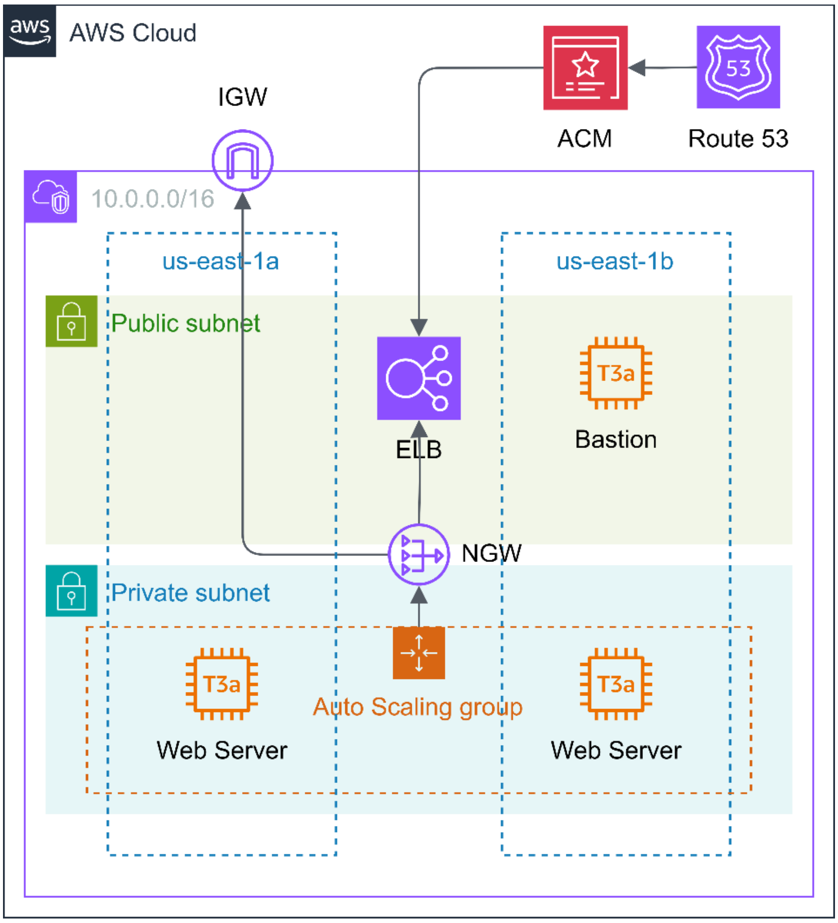
2. General Rules

1. Failure to comply with the rules will result in immediate disqualification.
2. You have 6 hours to finish the tasks.
3. This is an open book test.
4. You may use AWS Console and AWS CLI to deploy the solutions. You may not use CloudFormation or CDK.
5. Between and after the event, you may not access your account. Any activity on AWS during this period is not allowed.
6. During the event, multiple login is not permitted.
7. If you have any question, do not hesitate to ask..

3. Information

1. The repository URL for the project is https://github.com/lksjabar2021/modul-1
2. This solution must be deployed in **us-east-1 (N. Virginia)** region. Deploying in another region will result in a major point reduction.

4 Architecture



5 Task

1. Create VPC with the following specifications:
   - IPv4 CIDRs: 10.0.0.0/16
   - Number of NAT Gateways: 1
     a) Name: modul1, Subnet: public1
   - Subnets:
     a) - Subnet Name: public1
        - IPv4 CIDR block: 10.0.0.0/24
        - 0.0.0.0/0 is routed to: Internet Gateway (modul1)
     b) - Subnet Name: public2
        - IPv4 CIDR block: 10.0.1.0/24
        - 0.0.0.0/0 is routed to: Internet Gateway (modul1)
     c) - Subnet Name: private1
        - IPv4 CIDR block: 10.0.2.0/24
        - 0.0.0.0/0 is routed to: NAT Gateway (modul1)
     d) - Subnet Name: private2
        - IPv4 CIDR block: 10.0.3.0/24
        - 0.0.0.0/0 is routed to: NAT Gateway (modul1)

2. Create an EC2 key pair.
   - Name: modul1
   - Key pair type: RSA
   - Private key file format: .pem
3. Create a bastion host (EC2 instance) to access resources in private subnet remotely.
   - Name: modul1-Bastion
   - Subnet: public1
   - Instance Type: t3a.micro
   - Public IP Address: Enabled
   - Security Group Rule: Allow SSH traffic from anywhere
   - Key pair: modul1
4. Create an EC2 instance
   - Name: modul1
   - Key pair: modul1
   - Instance Type: t3a.micro
   - Storage: 8 GIB of GP2
   - Connect to the instance and finish the following instructions inside the instance:
     a) Install httpd for create Web Server from EC2
     b) Clone the application repository from section 3.
     c) Restart the VM, make sure the application starts on startup.
5. Create an EC2 Launch Template from Instance modul1 with the following specifications:
   - Launch template name: modul1
   - Key pair: modul1
   - Instance Type: t3a.micro
6. Create Auto Scaling Group (ASG) with the following specifications:
   - Network Subnet: private1 and private2
   - Load balancing: Attach to a new load balancer
     a) Load balancer name: modul1
     b) Load balancer type: Application Load Balancer
     c) Load balancer scheme: Internet-facing
   - Minimum Capacity: 2
   - Desired Capacity: 2
   - Max Capacity: 4
   - Scaling policies: Target tracking scaling policy
     a) Metric type: Average CPU utilization
     b) Target value: 70
7. Configure modul1 to redirect HTTP request to HTTPS and forward HTTPS request to the ASG's target group.
8. Create a certificate in ACM
   - Domain Name: modul1.[YOUR DOMAIN]
   - Validation Method: DNS validation
9. Add custom domain to the Application Load Balancer

10. Open http://modul1.[YOUR DOMAIN] on your browser to check if HTTP request is redirected to HTTPS and make sure the web works correctly.

6 References

- Application Load Balancer documentation
- Certificate Manager documentation
- EC2 documentation
- EC2 Auto Scaling documentation
- Route 53 documentation
- VPC documentation
- HTML documentation
- CSS documentation
- Apache documentation

Good luck!