

AWS Project: Deploying a static website with AWS.

##AWS Services for the project

- VPC
- EC2
- Security group
- NAT gateway
- Classic Load Balancer
- Bastion Host instance
- Keypairs

VPC Network Design:

- VPC IP Range:
 - 4 subnets: 2 public subnets, 2 private subnets
 - 2 zones: us-east-1a and us-east-1b
 - 172.18.1.0/24 public-sub 1:us-east-1a
 - 172.18.2.0/24 public-sub 2:us-east-1b
 - 172.18.3.0/24 private-sub 1:us-east-1a
 - 172.18.4.0/24 private-sub 2:us-east-1b
- 1 Internet gateway
- 1 NAT gateway
- 1 EIP
- 2 Route Tables: 1 Public subnet Route Table, 1 Private subnet Route Table
- 1 Bastion host in Pub subnet

Deploying the website

- Let's login into our AWS account and for security reason, we can use an IAM user who have full administration privilege. If you don't have one and don't know how to create one, just follow this document: https://docs.aws.amazon.com/IAM/latest/UserGuide/id_users_create.html.

-Now, let get started with the project:

-Let's create the VPC first before other service. Navigate to the VPC console by searching VPC or using the service list option. I am going to create my VPC in the N.Virginia (us-east-1) region because I am closer to this region.

Creating a VPC

The screenshot shows the AWS VPC console home page. At the top, there are buttons for 'Create VPC' and 'Launch EC2 Instances'. A note states: 'Note: Your Instances will launch in the US East region.' Below this, the 'Resources by Region' section shows a grid of resource counts for US East 1: 1 VPC, 6 Subnets, 1 Route Table, 1 Internet Gateway, 0 Egress-only Internet Gateways, 0 NAT Gateways, 0 VPC Peering Connections, 1 Network ACL, 1 Security Group, and 0 Customer Gateways. To the right, the 'Service Health' section shows 'Amazon EC2 - US East' with a status of 'Service is operating normally'. Below that, the 'Settings' section includes links for 'Zones' and 'Console Experiments'. The 'Additional Information' section has links for 'VPC Documentation', 'All VPC Resources', 'Forums', and 'Report an Issue'. At the bottom, the 'AWS Network Manager' section is partially visible.

-If you look at the VPC home page, we can see that I have 1 VPC, 6 subnets, 1 security group, etc. AWS always have default services in your account for security reasons because if we do not define a security option, then AWS would apply the default option for us.

Creating a VPC with more than one subnets with my IP range: 172.18.0.0/16

The screenshot shows the 'Create VPC' wizard in the AWS console. The 'VPC settings' section on the left includes: 'Resources to create' with 'VPC and more' selected; 'Name tag auto-generation' with 'Auto-generate' checked and 'Website-VPC' as the name; 'IPv4 CIDR block' set to '172.18.0.0/16' (65,536 IPs); and 'IPv6 CIDR block' left empty. The 'Preview' section on the right shows a diagram of the VPC structure: 'Website-VPC-vpc' is connected to four subnets: 'us-east-1a' (containing 'Website-VPC-subnet-public1-us-east-1a' and 'Website-VPC-subnet-private1-us-east-1a') and 'us-east-1b' (containing 'Website-VPC-subnet-public2-us-east-1b' and another unnamed subnet).

Setting up my public and private subnets for my VPC

▼ **Customize subnets CIDR blocks**

Public subnet CIDR block in us-east-1a

172.18.1.0/24256 IPs

Public subnet CIDR block in us-east-1b

172.18.2.0/24256 IPs

Private subnet CIDR block in us-east-1a

172.18.3.0/24256 IPs

Private subnet CIDR block in us-east-1b

172.18.4.0/24256 IPs

Creating a NAT gateway in the public subnet and allocate an Elastic IP

NAT gateway settings

Name - optional
Create a tag with a key of 'Name' and a value that you specify.

Website-NAT

The name can be up to 256 characters long.

Subnet
Select a subnet in which to create the NAT gateway.

subnet-0eb74ed560101515e (website-subnet-public1-us-east-1a) ▼

Connectivity type
Select a connectivity type for the NAT gateway.

☒ Public

☐ Private

Elastic IP allocation ID [Info](#)
Assign an Elastic IP address to the NAT gateway.

eipalloc-07c1a7fed1c6bc1bf ▼

Allocate Elastic IP

► **Additional settings**

Launching a Centos7 instance for website

Launch an instance [Info](#)

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

Name and tags [Info](#)

Name

[Add additional tags](#)

▼ Application and OS Images (Amazon Machine Image) [Info](#)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

[AMI from catalog](#) | [Recents](#) | [Quick Start](#)

Amazon Machine Image (AMI)

CentOS-7-2111-20220825_1.x86_64-

Verified provider

➤

▼ Summary

Number of instances [Info](#)

Software Image (AMI)

CentOS 7 (x86_64) - with Updat...[read more](#)

ami-002070d43b0a4f171

Virtual server type (instance type)

t2.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 10 GiB

Free tier: In your first year includes 750 hours of t2.micro for t2.micro in the

Cancel

Launch instance

Creating a bastion host instances in a public subnet

Launch an instance [Info](#)

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

Name and tags [Info](#)

Name

[Add additional tags](#)

▼ Application and OS Images (Amazon Machine Image) [Info](#)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

[Recents](#) | [Quick Start](#)

Amazon Machine Image (AMI)

Amazon Linux 2 Kernel 5.10 AMI...[read more](#)

ami-0b5eea76982371e91

Verified provider

➤

▼ Summary

Number of instances [Info](#)

Software Image (AMI)

Amazon Linux 2 Kernel 5.10 AMI...[read more](#)

ami-0b5eea76982371e91

Virtual server type (instance type)

t2.micro

Firewall (security group)

New security group

Storage (volumes)

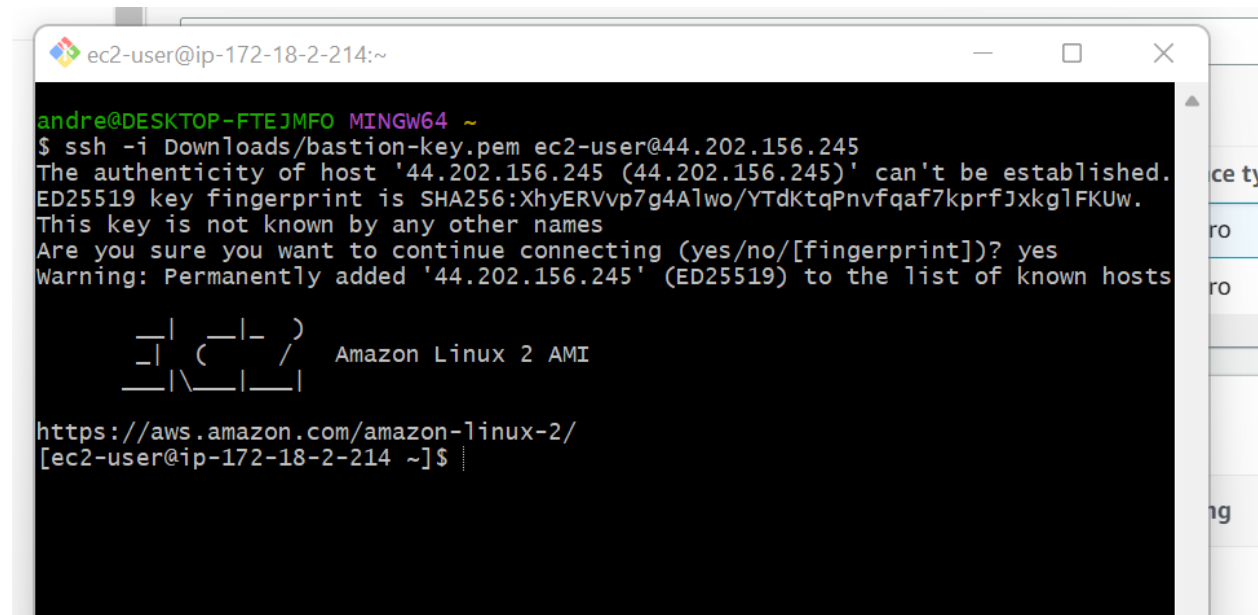
1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro for t2.micro in the

Cancel

Launch instance

Login into my bastion host instance from my computer



A terminal window titled 'ec2-user@ip-172-18-2-214:~' showing an SSH session. The user 'andre@DESKTOP-FTEJMF0' is running 'ssh -i Downloads/bastion-key.pem ec2-user@44.202.156.245'. The terminal displays the SSH warning about host authenticity, the user confirms 'yes', and the host is added to the known hosts list. The terminal then shows the Amazon Linux 2 AMI logo and the URL 'https://aws.amazon.com/amazon-linux-2/'.

```
ec2-user@ip-172-18-2-214:~  
andre@DESKTOP-FTEJMF0 MINGW64 ~  
$ ssh -i Downloads/bastion-key.pem ec2-user@44.202.156.245  
The authenticity of host '44.202.156.245 (44.202.156.245)' can't be established.  
ED25519 key fingerprint is SHA256:XhyERVvp7g4A1wo/YTdKtqPnvfqaf7kprfJxkg1FKUw.  
This key is not known by any other names  
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes  
Warning: Permanently added '44.202.156.245' (ED25519) to the list of known hosts  
  
  _ | _ | _ )  
  _ | ( _ | /  Amazon Linux 2 AMI  
  _ | \ _ | _ |  
  
https://aws.amazon.com/amazon-linux-2/  
[ec2-user@ip-172-18-2-214 ~]$
```

Creating a load balancer

Step 1: Define Load Balancer

Basic Configuration

This wizard will walk you through setting up a new load balancer. Begin by giving your new load balancer a unique name so that you can identify ports and protocols for your load balancer. Traffic from your clients can be routed from any load balancer port to any port on your EC2 instance port 80.

Load Balancer name:	<input type="text" value="web-elb"/>	
Create LB Inside:	<input type="text" value="vpc-0d9fb87ae9405c567 (172.18.0.0/16) website-vpc"/> ▼	
Create an internal load balancer:	<input type="checkbox"/> (what's this?)	
Enable advanced VPC configuration:	<input checked="" type="checkbox"/>	
Listener Configuration:		
Load Balancer Protocol	Load Balancer Port	Instance Protocol
<input type="text" value="HTTP"/> ▼	<input type="text" value="80"/>	<input type="text" value="HTTP"/> ▼
<input type="button" value="Add"/>		

The website is load balancer

Load balancers (1)
Elastic Load Balancing scales your load balancer capacity automatically in response to changes in incoming traffic.

[Refresh](#) [Actions](#) [Create load balancer](#)

<input type="checkbox"/>	Name	DNS name	State	VPC ID
<input type="checkbox"/>	web-elb	web-elb-209538748.us-east-1.elb.amazonaws.com	–	vpc-0d9fb87ae9405c567

My two instances running

Instances (2) [Info](#) [Refresh](#) [Connect](#) [Instance state](#) [Actions](#) [Launch](#)


[Instance state = running](#) [Clear filters](#)

<input type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status check	Alarm status
<input type="checkbox"/>	Bastion-Server	i-0cee0ee13bf2187fe	Running	t2.micro	2/2 checks passed	No alarms +
<input type="checkbox"/>	webserver01	i-0d35f5df4703ee9f5	Running	t2.micro	2/2 checks passed	No alarms +

Accessing my website using the load balancer DNS name

Load balancers | EC2 Management | Instances | EC2 Management | Venue - Responsive Web Template

Not secure | web-elb-209538748.us-east-1.elb.amazonaws.com

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