

# Assignment 3 – Working with VPC

## (AWS Cloud Computing ZERO TO HERO - August 2021)

### 1. Create a VPC

The image consists of three vertically stacked screenshots of the AWS VPC Management console, illustrating the process of creating a new VPC.

**Screenshot 1: Initial Search Results**

The search bar at the top contains "vpc". The results section shows:

- VPC**: Isolated Cloud Resources
- AWS Network Firewall**: AWS Network Firewall
- AWS Firewall Manager**: Central management of firewall rules
- Detective**: Investigate and analyze potential security issues

**Screenshot 2: Existing VPC List**

The search bar at the top contains "vpc". The results section shows:

Name	VPC ID	State	IPv4 CIDR	IPv6 CIDR
-	vpc-23452c48	Available	172.31.0.0/16	-

**Screenshot 3: Create VPC Form**

The form fields are as follows:

- VPC settings**
  - Name tag - optional**: mynewvpc123
  - IPv4 CIDR block**: 40.0.0.0/16
  - IPv6 CIDR block**:
    - No IPv6 CIDR block
    - Amazon-provided IPv6 CIDR block
    - IPv6 CIDR owned by me
  - Tenancy**: Default

VPC Management Console x i-0743f4298713a703d (MyNewVPC) IRCTC Next Generation eTicket x + https://us-east-2.console.aws.amazon.com/vpc/home?region=us-east-2#VpcDetails?VpcId=vpc-0f27b0172843be950 x

aws Services vpc

New VPC Experience Tell us what you think.

VPC Dashboard Filter by VPC: Select a VPC

VIRTUAL PRIVATE CLOUD Your VPCs

Subnets Route Tables new Internet Gateways Egress Only Internet Gateways DHCP Options Sets Elastic IPs Managed Prefix Lists Endpoints Endpoint Services new NAT Gateways

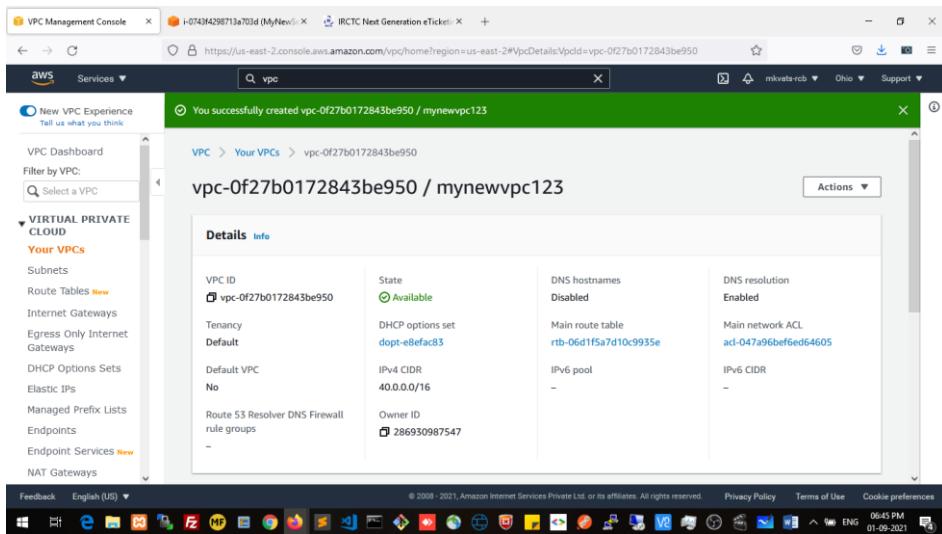
You successfully created vpc-0f27b0172843be950 / mynewvpc123

vpc-0f27b0172843be950 / mynewvpc123 Actions

Details Info

VPC ID	State	DNS hostnames	DNS resolution
vpc-0f27b0172843be950	Available	Disabled	Enabled
Tenancy	DHCP options set	Main route table	Main network ACL
Default	dopt-e8efac83	rtb-06d1f5a7d10c935e	ad-047a96bef6ed64605
Default VPC	IPv4 CIDR	IPv6 pool	IPv6 CIDR
No	40.0.0.0/16	—	—
Route 53 Resolver DNS Firewall rule groups	Owner ID		
—	286930987547		

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## 2. Create a internet gateway and attach to VPC

The screenshots illustrate the process of creating and managing an Internet Gateway in the AWS VPC Management Console.

**Screenshot 1: Internet gateways (1/1) - Details View**

- The top window shows the list of existing Internet Gateways. One gateway, **igw-2aeee542**, is listed with the status **Attached** to VPC **vpc-23452c48**.
- The bottom window shows the detailed view for the gateway **igw-2aeee542**. It includes tabs for **Details** and **Tags**.

**Screenshot 2: Create internet gateway - Internet gateway settings**

- The top window shows the creation wizard step **Internet gateway settings**.
- The **Name tag** field contains the value **mynewigw123**.
- The **Tags - optional** section shows a single tag **Name: mynewigw123**.

**Screenshot 3: Internet gateway created - igw-0b47e87def10fb402 / mynewigw123**

- The top window shows a confirmation message: **The following internet gateway was created: igw-0b47e87def10fb402. You can now attach to a VPC to enable the VPC to communicate with the internet.**
- The bottom window shows the details for the newly created gateway **igw-0b47e87def10fb402 / mynewigw123**. It lists the **Internet gateway ID** (**igw-0b47e87def10fb402**), **State** (**Detached**), and **VPC ID** (**-**).
- The **Tags** section shows the tag **Name: mynewigw123**.

Screenshot of the AWS VPC Management Console showing the process of attaching an Internet Gateway to a VPC.

**Step 1: Attach internet gateway | VPC**

The screenshot shows the "Attach internet gateway" dialog box. It lists "Available VPCs" and shows one entry: "vpc-0f27b0172843be950 - mynewvpc123". A search bar at the top of the list says "Select a VPC".

**Step 2: Attach to VPC (igw-0b47e87def10fb402)**

The screenshot shows the "Attach to VPC" dialog box. It displays the selected VPC "vpc-0f27b0172843be950 - mynewvpc123". At the bottom right is a prominent orange "Attach internet gateway" button.

**Step 3: Internet gateway igw-0b47e87def10fb402 successfully attached to vpc-0f27b0172843be950**

The screenshot shows the successful attachment confirmation. The main pane displays the Internet Gateway details:

Internet gateway ID	igw-0b47e87def10fb402	State	Attached
VPC ID	vpc-0f27b0172843be950   mynewvpc123	Owner	286930987547

Below the details, there is a "Tags" section with a single tag: "Name: mynewigw123".

### 3. Create a route table and add rule to igw

The screenshots illustrate the process of creating a new route table in an AWS VPC:

- Screenshot 1: Route tables (2) Info**  
Shows the list of existing route tables. One table, "rtb-daddebb1", is associated with the VPC "vpc-23452c48".
- Screenshot 2: Create route table**  
Shows the "Create route table" wizard. In the "Route table settings" step, a new route table is being created with the name "mynewroutetable123". The VPC dropdown shows "Select a VPC" and lists "vpc-0f27b0172843be950 (mynewvpc123)".
- Screenshot 3: Route table rtb-0eeb60342e657adad / mynewroutetable123**  
Shows the details of the newly created route table. Key information includes:
 

Route table ID	rtb-0eeb60342e657adad	Main	No
VPC	vpc-0f27b0172843be950   mynewvpc123	Owner ID	286930987547
Explicit subnet associations		Edge associations	
-		-	

VPC Management Console | i-0743f4298713a703d (MyNewVPC) | +

Services | vpc | https://us-east-2.console.aws.amazon.com/vpc/home?region=us-east-2#RouteTableDetails(RouteTableId=rtb-Oeeb60342e657adad)

You successfully set the route table rtb-Oeeb60342e657adad / mynewroutetable123 as main.

VPC > Route tables > rtb-Oeeb60342e657adad

**rtb-Oeeb60342e657adad / mynewroutetable123**

Actions ▾

- Set main route table
- Edit subnet associations
- Edit edge associations
- Edit route propagation
- Edit routes**
- Manage tags
- Delete

Details Info

Route table ID	Main	Explicit subnet associations	Edge
rtb-Oeeb60342e657adad	Yes	-	-
VPC	Owner ID	-	
vpc-0f27b0172843be950   mynewvpc123	286930987547		

Routes Subnet associations Edge associations Route propagation Tags

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VPC Management Console | i-0743f4298713a703d (MyNewVPC) | +

Services | vpc | https://us-east-2.console.aws.amazon.com/vpc/home?region=us-east-2#EditRoutes(RouteTableId=rtb-Oeeb60342e657adad)

VPC > Route tables > rtb-Oeeb60342e657adad > Edit routes

**Edit routes**

Destination	Target	Status	Propagated
40.0.0.0/16	local	Active	No
0.0.0.0/0	igw-0b47e87def10fb402 (mynewigw123)	-	No

Add route Remove

Cancel Preview Save changes

VPC Management Console | i-0743f4298713a703d (MyNewVPC) | +

Services | vpc | https://us-east-2.console.aws.amazon.com/vpc/home?region=us-east-2#RouteTableDetails(RouteTableId=rtb-Oeeb60342e657adad)

Updated routes for rtb-Oeeb60342e657adad / mynewroutetable123 successfully

VPC > Route tables > rtb-Oeeb60342e657adad

**rtb-Oeeb60342e657adad / mynewroutetable123**

Actions ▾

You can now check network connectivity with Reachability Analyzer Run Reachability Analyzer

Details Info

Route table ID	Main	Explicit subnet associations	Edge associations
rtb-Oeeb60342e657adad	Yes	-	-
VPC	Owner ID	-	
vpc-0f27b0172843be950   mynewvpc123	286930987547		

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#### 4. Make the custom route table the main route table

The image consists of three vertically stacked screenshots of the AWS VPC Management Console. Each screenshot shows a different step in the process of setting a custom route table as the main route table.

**Screenshot 1:** The first screenshot shows the 'Route Tables' page for a specific VPC. A context menu is open over the route table 'rtb-0eef60342e657adad / mynewroutetable123'. The 'Actions' menu is expanded, and the 'Set main route table' option is highlighted.

**Screenshot 2:** The second screenshot shows the 'Set main route table' dialog box. It contains a confirmation message: 'Main route table controls the routing for all subnets that are not explicitly associated with any other route table. Are you sure you want to set this route table as the main route table?'. Below this is a list of route tables: 'rtb-0eef60342e657adad / mynewroutetable123'. A text input field labeled 'set' is present, and an 'OK' button is at the bottom right.

**Screenshot 3:** The third screenshot shows the 'Route Tables' page again, but now the status bar at the bottom indicates 'You successfully set the route table rtb-0eef60342e657adad / mynewroutetable123 as main.' The route table details page is visible below.

## 5. Create the subnet

The screenshot shows three sequential steps in the AWS VPC Management Console:

- Subnets (Step 1):** Shows a list of existing subnets (subnet-b455c4df, subnet-edd8d290, subnet-9d685ed1) under the VPC named "mynewvpc123".
- Create subnet (Step 2):** A modal dialog titled "Create subnet" is open. It asks to "Select a VPC" from a dropdown menu. The dropdown shows two options: "vpc-0f27b0172843be950 (mynewvpc123)" and "vpc-23452c48".
- Subnet settings (Step 3):** The "Create subnet" dialog has been completed. The "Subnet 1 of 1" section shows the following configuration:
  - Subnet name:** mynews subnet123
  - Availability Zone:** No preference
  - IPv4 CIDR block:** 40.0.0.0/24
  - Tags:** One tag is present: Name = mynews subnet123

Screenshots of the AWS VPC Management Console showing the creation and listing of a subnet.

**Subnets | VPC Management Console**

You have successfully created 1 subnet: subnet-0cdc41d9ecf975384

**Subnets (1) Info**

Name	Subnet ID	State	VPC	IPv4 CIDR
mynews subnet123	subnet-0cdc41d9ecf975384	Available	vpc-0f27b0172843be950   my...	40.0.0.0/24

Select a subnet

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## 6. Modify auto assign IP settings for the subnet.

The screenshots illustrate the process of creating and modifying a subnet's auto-assign IP settings in the AWS VPC Management Console.

**Screenshot 1: Subnet Creation Confirmation**

A screenshot of the AWS VPC Management Console showing the successful creation of a subnet. The subnet details are:

- Name:** mynewssubnet123
- Subnet ID:** subnet-0cdc41d9ecf975384
- VPC:** vpc-0f27b0172843be950
- State:** Available
- IPv4 CIDR:** 40.0.0.0/24

The right-hand sidebar shows the subnet's actions, including "Modify auto-assign IP settings".

**Screenshot 2: Modify Auto-Assign IP Settings**

A screenshot of the "Modify auto-assign IP settings" dialog box. It contains the following settings:

- Subnet ID:** subnet-0cdc41d9ecf975384
- Auto-assign IPv4:**  Enable auto-assign public IPv4 address
- Auto-assign customer-owned IPv4 address:**  Enable auto-assign customer-owned IPv4 address

The "Save" button is visible at the bottom right.

**Screenshot 3: Subnet Details After Modification**

A screenshot of the AWS VPC Management Console showing the subnet details after modification. The subnet now includes the following additional information:

- IPv4 CIDR:** 40.0.0.0/24
- Public IPv4 address:** (indicated by a green checkmark)

## 7. Launch a ec2 instance in custom vpc

**Step 1: Choose an Amazon Machine Image (AMI)**

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. You can select an AMI provided by AWS, our user community, or the AWS Marketplace; or you can select one of your own AMIs.

Search for an AMI by entering a search term e.g. "Windows"

**Quick Start**

- My AMIs
- AWS Marketplace
- Community AMIs
- Free tier only

**Amazon Linux 2 AMI (HVM), SSD Volume Type - ami-0443305dabd4be2bc (64-bit x86) / ami-0806cc3ac66515671 (64-bit Arm)**

Amazon Linux 2 comes with five years support. It provides Linux kernel 4.14 tuned for optimal performance on Amazon EC2, systemd 219, GCC 7.3, Glibc 2.26, Binutils 2.29.1, and the latest software packages through extras. This AMI is the successor of the Amazon Linux AMI that is approaching end of life on December 31, 2020 and has been removed from this wizard.

Root device type: ebs | Virtualization type: hvm | ENA Enabled: Yes

**macOS Big Sur 11.5.1 - ami-023e2c495779a6b1e**

The macOS Big Sur AMI is an EBS-backed, AWS-supported image. This AMI includes the AWS Command Line Interface, Command Line Tools for Xcode, Amazon SSM Agent, and Homebrew. The AWS Homebrew Tap includes the latest versions of multiple AWS packages included in Homebrew.

**Step 3: Configure Instance Details**

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

**Number of instances:** 1 | [Launch into Auto Scaling Group](#)

**Purchasing option:**  Request Spot instances

**Network:** vpc-02f2b0172843be950 | mynewvpc123 | Create new VPC

**Subnet:** subnet-0dec41d9ecf975384 | mynews subnet123 | Create new subnet

**Auto-assign Public IP:** Use subnet setting (Enable)

**Placement group:**  Add instance to placement group

**Capacity Reservation:** Open

**Domain join directory:** No directory | Create new directory

**IAM role:** [Create new IAM role](#)

**Review and Launch**

**Step 3: Configure Instance Details**

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

**Number of instances:** 1 | [Launch into Auto Scaling Group](#)

**Purchasing option:**  Request Spot instances

**Network:** vpc-02f2b0172843be950 | mynewvpc123 | Create new VPC

**Subnet:** subnet-0dec41d9ecf975384 | mynews subnet123 | Create new subnet

**Auto-assign Public IP:** Enable

**Placement group:**  Add instance to placement group

**Capacity Reservation:** Open

**Domain join directory:** No directory | Create new directory

**IAM role:** [Create new IAM role](#)

**Review and Launch**

**Step 3: Configure Instance Details**

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

**Number of instances:** 1 | [Launch into Auto Scaling Group](#)

**Purchasing option:**  Request Spot instances

**Network:** vpc-02f2b0172843be950 | mynewvpc123 | Create new VPC

**Subnet:** subnet-0dec41d9ecf975384 | mynews subnet123 | Create new subnet

**Auto-assign Public IP:** Enable

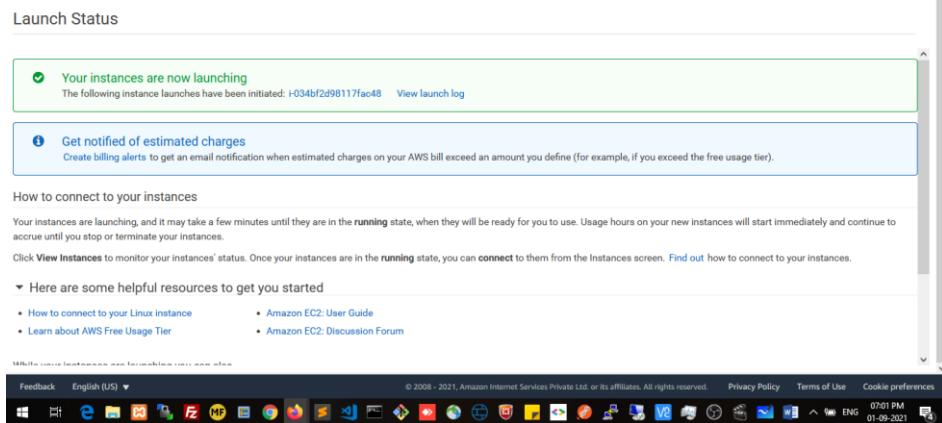
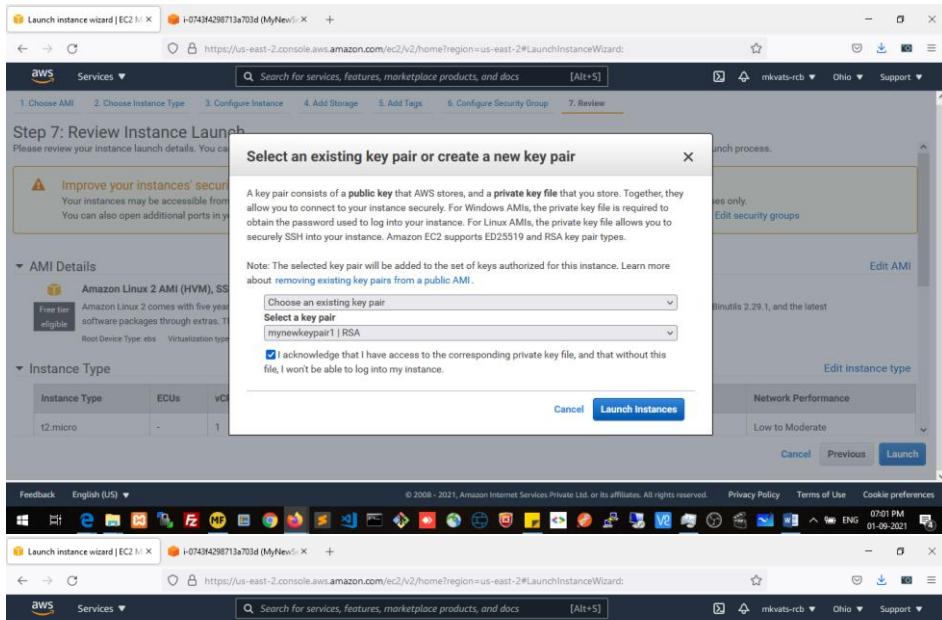
**Placement group:**  Add instance to placement group

**Capacity Reservation:** Open

**Domain join directory:** No directory | Create new directory

**IAM role:** [Create new IAM role](#)

**Review and Launch**



Instances | EC2 Management

i-0743f4298713a703d (MyNewServer)

https://us-east-2.console.aws.amazon.com/ec2/v2/home?region=us-east-2#instances

New EC2 Experience

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Services

Instances (1) Info

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Connect Instance state Actions Launch instances

EC2 Dashboard Events Tags Limits

Instances Instances New Instance Types Launch Templates Spot Requests Savings Plans Reserved Instances New Dedicated Hosts Capacity Reservations

Images AMIs

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Instances | EC2 Management

i-0743f4298713a703d (MyNewServer)

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Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
MyNewServer	i-0743f4298713a703d	Terminated	t2.micro	-	No alarms	+ us-east-2a
-	i-054bf2d98117fac48	Pending	t2.micro	-	No alarms	+ us-east-2c

Select an instance above