

**A Practical Activity Report For
Cloud Computing**

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Experiment 8

Aim: To Build Amazon Virtual Private Cloud (Amazon VPC) Using the VPC Wizard.

Introduction:

Amazon VPC and Its Types:

AWS provides a lot of services; these services are sufficient to run your architecture. The backbone for the security of this architecture is VPC (Virtual Private Cloud). VPC is basically a private cloud in the AWS environment that helps you to use all the services by AWS in your defined private space. You have control over the virtual network and you can also restrict the incoming traffic using security groups.

Overall, VPC helps you to secure your environment and give you a complete authority of incoming traffic. There are two types of VPCs, Default VPC that is by default created by Amazon and Non-Default VPC that is created by you to suffice your security needs.

Route Tables:

Route table can be understood as a table that contains rules for routing traffic within and outside a subnet. The route table is also used to add Internet Gateway to the subnet. There can be multiple route tables in a VPC.

Internet Gateway:

Internet Gateway is a very important component that allows your instance to connect to the internet. It allows the user to make the subnet public by providing a route to the internet. With the help of Internet Gateway, an instance can access the internet and the resources outside instance can access the instance.

STEPS TO BUILD VPC:

1 Navigate to the VPC Dashboard. Here you will see a “**Launch VPC Wizard**” click on it.

The screenshot displays the AWS VPC Dashboard. At the top, there's a navigation bar with the AWS logo, 'Services' dropdown, and user information. Below this, the 'VPC Dashboard' section is visible, featuring a 'Launch VPC Wizard' button and a 'Launch EC2 Instances' button. A note states: 'Note: Your Instances will launch in the US East (N. Virginia) region.' The main area is titled 'Resources by Region' and shows a grid of VPC resources for the 'N. Virginia' region. The resources include:

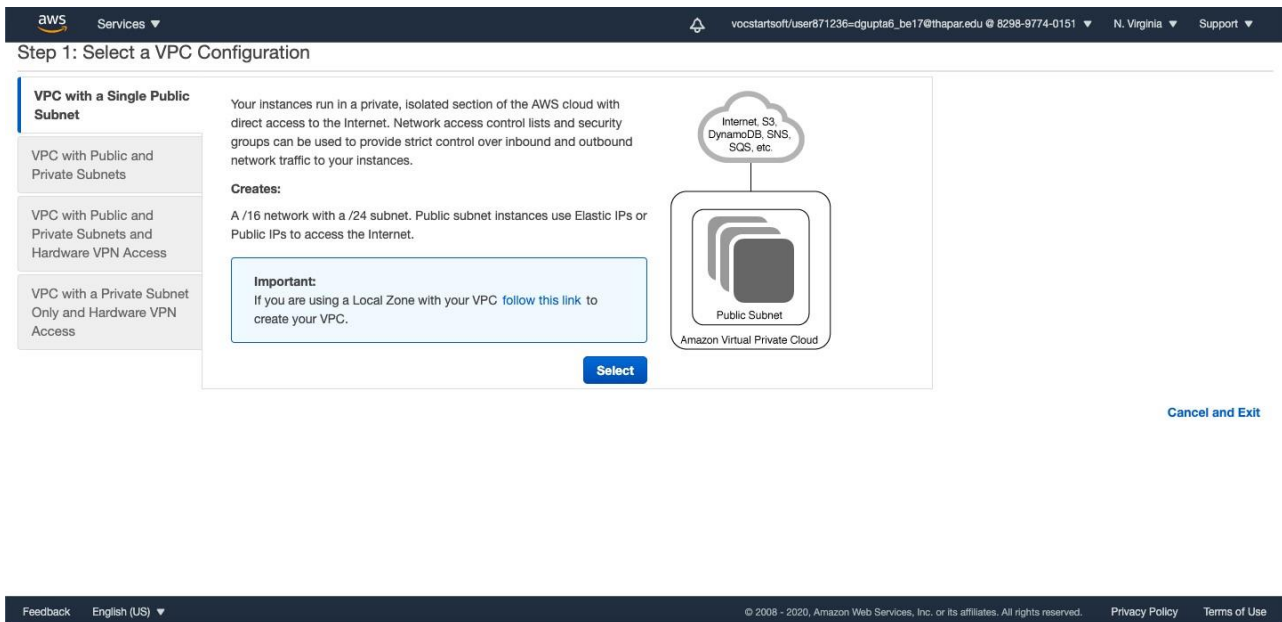
- VPCs: 1 (See all regions)
- NAT Gateways: 0 (See all regions)
- Subnets: 6 (See all regions)
- VPC Peering Connections: 0 (See all regions)
- Route Tables: 1 (See all regions)
- Network ACLs: 1 (See all regions)
- Internet Gateways: 1 (See all regions)
- Security Groups: 6 (See all regions)
- Egress-only Internet Gateways: 0 (See all regions)
- Customer Gateways: 0 (See all regions)
- DHCP options sets: 1 (See all regions)
- Virtual Private Gateways: 0 (See all regions)

On the right side, there's a 'Service Health' section showing 'Amazon EC2 - US East (N. Virginia)' with a status of 'Service is operating normally'. Below this is a 'Settings' section with links for 'Zones' and 'Console Experiments'. Further down is an 'Additional Information' section with links for 'VPC Documentation', 'All VPC Resources', 'Forums', and 'Report an Issue'. At the bottom, there's a 'Transit Gateway Network Manager' section with a brief description and a 'Learn more' link. The footer contains 'Feedback', 'English (US)' dropdown, and copyright information for Amazon Web Services, Inc.

2 Navigate to the VPC Dashboard. Here you will see a “**Launch VPC Wizard**” click on it. This is the “*VPC creation*” wizard. Here you can find 4 different options:

1. VPC with Single Public Subnet, the one we are going to choose.
2. VPC with Public and Private Subnets.
3. VPC with Public and Private Subnets and Hardware VPN Access.
4. VPC with a Private Subnet only and Hardware VPN Access.

So, let’s start by creating a VPC with a single public subnet. Click on “*Select* “.



3 Here you will have to mention a few details for creating your VPC.

- The IPv4 CIDR block □ VPC Name
- Public Subnet’s IPv4 CIDR
- Availability Zone where you want your VPC to be created
- Subnet name
- Hardware tenancy

After mentioning all the details, click on “*Create VPC*“.

aws Services

vocstartsoft/user671236=dgupta6_be17@thapar.edu @ 8298-9774-0151 N. Virginia Support

Step 2: VPC with a Single Public Subnet

IPv4 CIDR block: 10.0.0.0/16 (65531 IP addresses available)

IPv6 CIDR block: ☒ No IPv6 CIDR Block
☐ Amazon provided IPv6 CIDR block
☐ IPv6 CIDR block owned by me

VPC name: Exp-8

Public subnet's IPv4 CIDR: 10.0.0.0/24 (251 IP addresses available)

Availability Zone: us-east-1a

Subnet name: Public subnet

You can add more subnets after AWS creates the VPC.

Service endpoints
Add Endpoint

Enable DNS hostnames: ☒ Yes ☐ No

Hardware tenancy: Default

Cancel and Exit Back Create VPC

Feedback English (US)

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4 You will get a message saying “Your VPC has been successfully created “. Click on “OK “.

aws Services

vocstartsoft/user671236=dgupta6_be17@thapar.edu @ 8298-9774-0151 N. Virginia Support

New VPC Experience Learn more

VPC Dashboard

Filter by VPC:
Select a VPC

VPC Successfully Created

Your VPC has been successfully created.

You can launch instances into the subnets of your VPC. For more information, see [Launching an Instance into Your Subnet](#).

OK

5 In the “Your VPC” section, you can see that there is a new VPC named “Exp-8” created.

aws Services

vocstartsoft/user671236=dgupta6_be17@thapar.edu @ 8298-9774-0151 N. Virginia Support

New VPC Experience Learn more

VPC Dashboard

Filter by VPC:
Select a VPC

VIRTUAL PRIVATE CLOUD

Your VPCs

Subnets

Route Tables

Internet Gateways

Your VPCs (2) Info

Filter VPCs

1

	Name	VPC ID	State	IPv4 CIDR	IPv6 CIDR (Netwo
<input type="checkbox"/>	-	vpc-35748c48	Available	172.31.0.0/16	-
<input type="checkbox"/>	Exp-8	vpc-0850f37af17635e98	Available	10.0.0.0/16	-

Create VPC

6 Now let's verify the public subnet. You can see that a subnet named "Public Subnet" is created. This subnet has a route table attached which consists of local and public access with an Internet Gateway.

The screenshot displays the AWS Management Console interface. On the left, the navigation pane shows the 'Subnets' section under 'VIRTUAL PRIVATE CLOUD'. The main content area is divided into two panels. The top panel, titled 'Subnets (1/7)', shows a table of subnets. The first subnet, 'Public subnet', is selected and highlighted. The bottom panel, titled 'Routes (2)', shows a table of routes. The first route has a destination of '10.0.0.0/16' and a target of 'local'. The second route has a destination of '0.0.0.0/0' and a target of 'igw-0dc970411b2a9287c'.

Name	Subnet ID	State	VPC	IPv4 CIDR
Public subnet	subnet-035bf100e56d08447	Available	vpc-0850f37af17635e98 Exp-8	10.0.0.0/24
-	subnet-a71574a9	Available	vpc-35748c48	172.31.64.0/20
-	subnet-4aae0615	Available	vpc-35748c48	172.31.32.0/20
-	subnet-e79339c6	Available	vpc-35748c48	172.31.80.0/20
-	subnet-d35c239e	Available	vpc-35748c48	172.31.16.0/20
-	subnet-2b26d51a	Available	vpc-35748c48	172.31.48.0/20

Destination	Target
10.0.0.0/16	local
0.0.0.0/0	igw-0dc970411b2a9287c

Experiment 9

Aim: To Create a DynamoDB table and perform both query and scan searches of the table

Introduction:

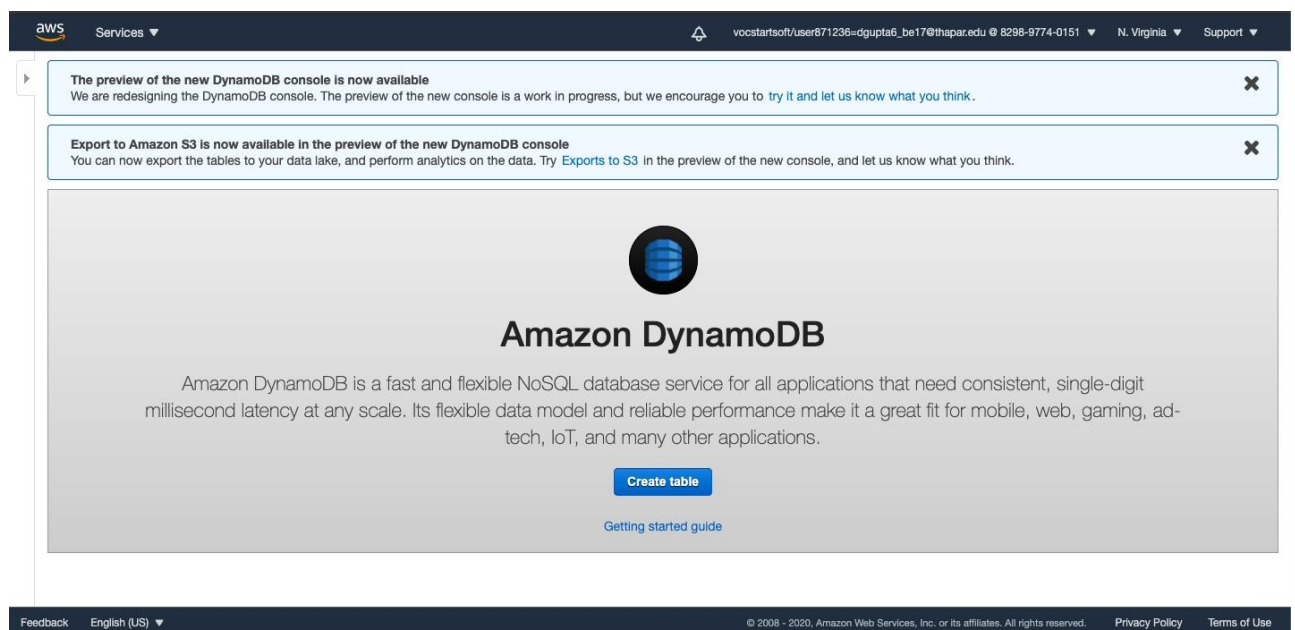
Amazon DynamoDB is a fully managed NoSQL database service that provides fast and predictable performance with seamless scalability. DynamoDB lets you offload the administrative burdens of operating and scaling a distributed database so that you don't have to worry about hardware provisioning, setup and configuration, replication, software patching, or cluster scaling.

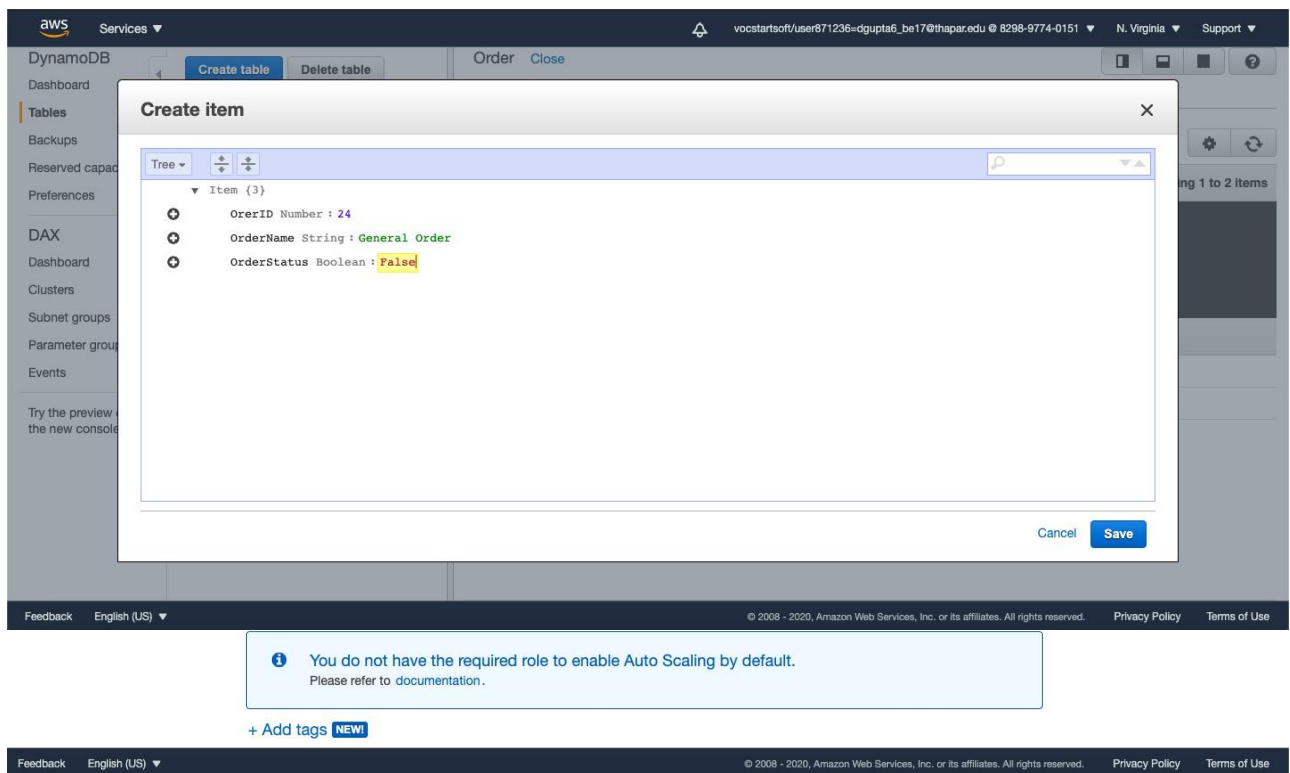
DynamoDB also offers encryption at rest, which eliminates the operational burden and complexity involved in protecting sensitive data. For more information, see [DynamoDB Encryption at Rest](#).

With DynamoDB, you can create database tables that can store and retrieve any amount of data and serve any level of request traffic. You can scale up or scale down your tables' throughput capacity without downtime or performance degradation. You can use the AWS Management Console to monitor resource utilization and performance metrics.

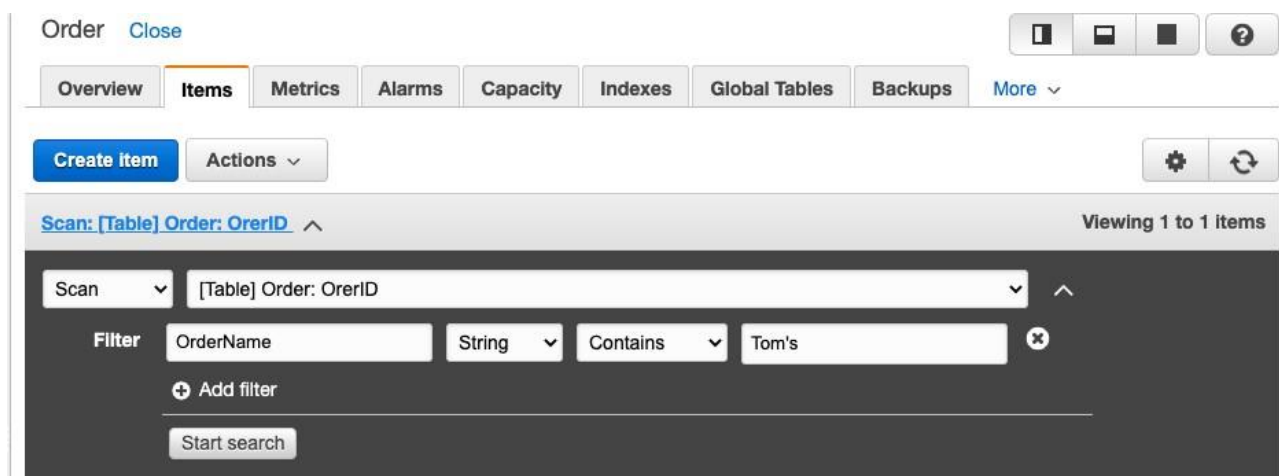
Steps to Create a Dynamo DB Table:

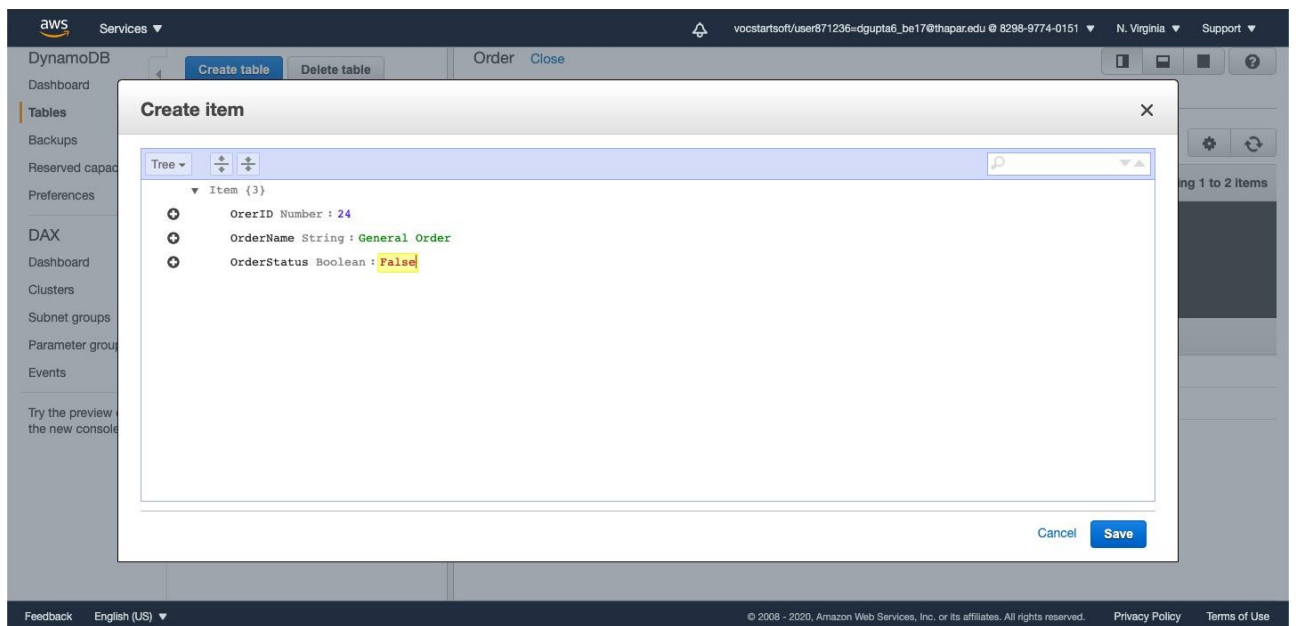
- 1 Go to Amazon Dynamo DB
- 2 Click on CREATE TABLE



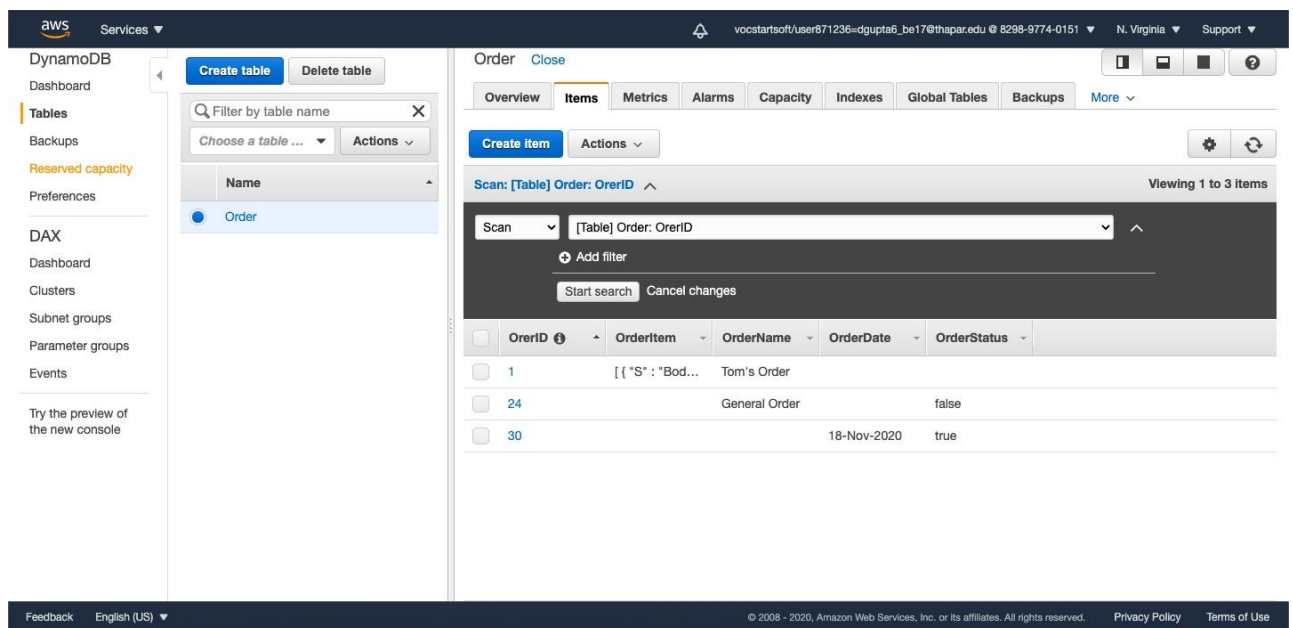


3 Click on CREATE ITEM to add items in the table that we have created.





4 The Table is created and ITEMS are added into the Table.



5 Perform SCAN and QUERY operation on the Table we created.

a. SCAN

Order

Close

Overview

Items

Metrics

Alarms

Capacity

Indexes

Global Tables

Backups

More

Create Item

Actions

Scan: [Table] Order: OrerID

Viewing 1 to 1 items

Scan

[Table] Order: OrerID

Filter

OrderName

String

Contains

Tom's

Add filter

Start search

OrerID

OrderItem

OrderName

1

[{"S": "Bodywash"}, {"S": "Toilet\npaper\n"}]

Tom's Order

b. QUERY

Order

Close

Overview

Items

Metrics

Alarms

Capacity

Indexes

Global Tables

Backups

More

Create Item

Actions

Query: [Table] Order: OrerID

Viewing 1 to 1 items

Query

[Table] Order: OrerID

Partition key

OrerID

Number

=

30

Filter

OrderStatus

Boolean

=

True

Add filter

Sort

Ascending

Descending

Attributes

All

Projected

Start search

OrerID

OrderDate

OrderStatus

30

18-Nov-2020

true