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Amazon Web Service – Service Implementation

Session Objective

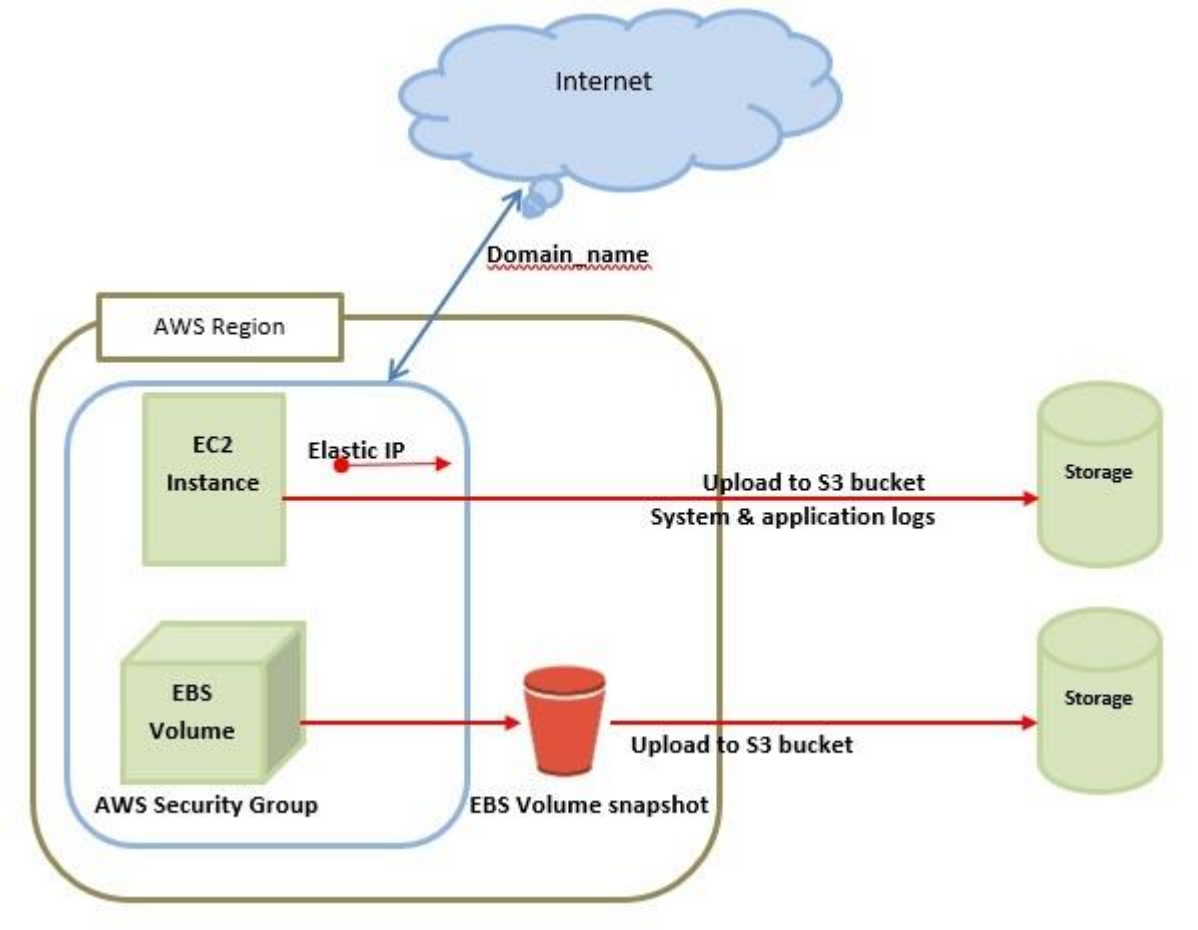
- AWS – Introduction
- AWS - Services
- AWS – Account Creation
- AWS – EC2

Amazon Web Service

What is AWS?

- **Amazon Web Services(AWS)** is a cloud service from Amazon, which provides services in the form of building blocks, these building blocks can be used to create and deploy any type of application in the cloud.
- These services or building blocks are designed to work with each other and result in applications which are sophisticated and highly scalable.

AWS — Basic Architecture



AWS Introduction

- Cloud computing is the on-demand delivery of compute power, database storage, applications, and other IT resources through a cloud services platform.
- Cloud computing provides a simple way to access servers, storage, databases and a broad set of application services over the Internet.
- A cloud services platform such as Amazon Web Services owns and maintains the network-connected hardware required for these application services.

AWS – Example -contd

- Back in 2006-2007, companies were using their own private servers to create services like for storage, computing, etc. But now with internet speeds becoming better, companies big or small have started understanding the power of the cloud, therefore they are shifting their data to the cloud for improved performance, so that they can focus on core-competency.

AWS - Example

- *For example,* Netflix is a popular video streaming service which the whole world uses today, back in 2008 Netflix suffered a major database corruption, and for three days there operations were halted. The problem was scaling, that is when they realized the need for a highly reliable, horizontally scalable, distributed systems in the cloud. Came in AWS, and since then their growth has been off the charts.

AWS Services

AWS product categories

AWS offers a wide range of services that can be categorized in following categories –

- ✓ Compute and Networking Services
- ✓ Storage and Content Delivery Services
- ✓ Security and Identity Services
- ✓ Database Services
- ✓ Analytics Services
- ✓ Application Services
- ✓ Management Tools

AWS – Compute Service

- The **Compute** domain includes services related to compute workloads, it includes the following services:
  - EC2 (Elastic Compute Cloud)
  - Lambda
  - Elastic Beanstalk
  - Amazon LightSail

AWS – Storage Service

- The **Storage** domain includes services related data storage, it includes the following services:
  - S3 (Simple Storage Service)
  - Elastic Block Store
  - Amazon Glacier
  - AWS Snowball

AWS – Database Service

- The **Database** domain is used for database related workloads, it includes the following services:
  - Amazon Aurora
  - Amazon RDS
  - Amazon DynamoDB
  - Amazon RedShift

AWS – Migration Service

- The **Migration** domain is used for transferring data to or from the AWS Infrastructure, it includes the following services:
  - AWS database Migration Service
  - AWS SnowBall

AWS – Networking & Content Delivery Service

- The **Networking and Content Delivery** domain is used for isolating your network infrastructure, and content delivery is used for faster delivery of content. It includes the following services:
  - Amazon Route 53
  - AWS CloudFront

AWS – Management Tools

- The **Management Tools** domain consists of services which are used to manage other services in AWS, it includes the following services:
  - AWS CloudWatch
  - AWS CloudFomation
  - AWS CloudTrail

AWS - Security & Identity, Compliance

- The **Security & Identity, Compliance** domain consist of services which are used to manage to authenticate and provide security to your AWS resources. It consists of the following services:
  - AWS IAM
  - AWS KMS
  - AWS Shield

AWS – Messaging Service

- The **Messaging** domain consists of services which are used for queuing, notifying or emailing messages. It consists of the following domains:
  - Amazon SQS
  - Amazon SNS
  - Amazon SES
  - Amazon Pinpoint

Advantages of AWS -contd

- Flexibility
  - AWS provides effortless hosting of legacy applications. AWS does not require learning new technologies and migration of applications to the AWS provides the advanced computing and efficient storage.

- Cost-effectiveness
  - AWS requires no upfront investment, long-term commitment, and minimum expense when compared to traditional IT infrastructure that requires a huge investment.

Advantages of AWS

- Scalability/Elasticity
  - Through AWS, autoscaling and elastic load balancing techniques are automatically scaled up or down, when demand increases or decreases respectively. AWS techniques are ideal for handling unpredictable or very high loads. Due to this reason, organizations enjoy the benefits of reduced cost and increased user satisfaction.
- Security
  - AWS provides end-to-end security and privacy to customers.
  - AWS has a virtual infrastructure that offers optimum availability while managing full privacy and isolation of their operations.
  - Customers can expect high-level of physical security because of Amazon's several years of experience in designing, developing and maintaining large-scale IT operation centers.

Pay-As-You-Go

- AWS provides services to customers when required without any prior commitment or upfront investment. Pay-As-You-Go enables the customers to procure services from AWS.
  - Computing
  - Programming models
  - Database storage
  - Networking

AWS – Account Creation

Amazon Web Services – Account -contd

- Following are the steps to access AWS services
  - ❖ Create an AWS account.
  - ❖ Sign-up for AWS services.
  - ❖ Create your password and access your account credentials.
  - ❖ Activate your services in credits section.

AWS - IAM

Amazon Web Services – Account -contd

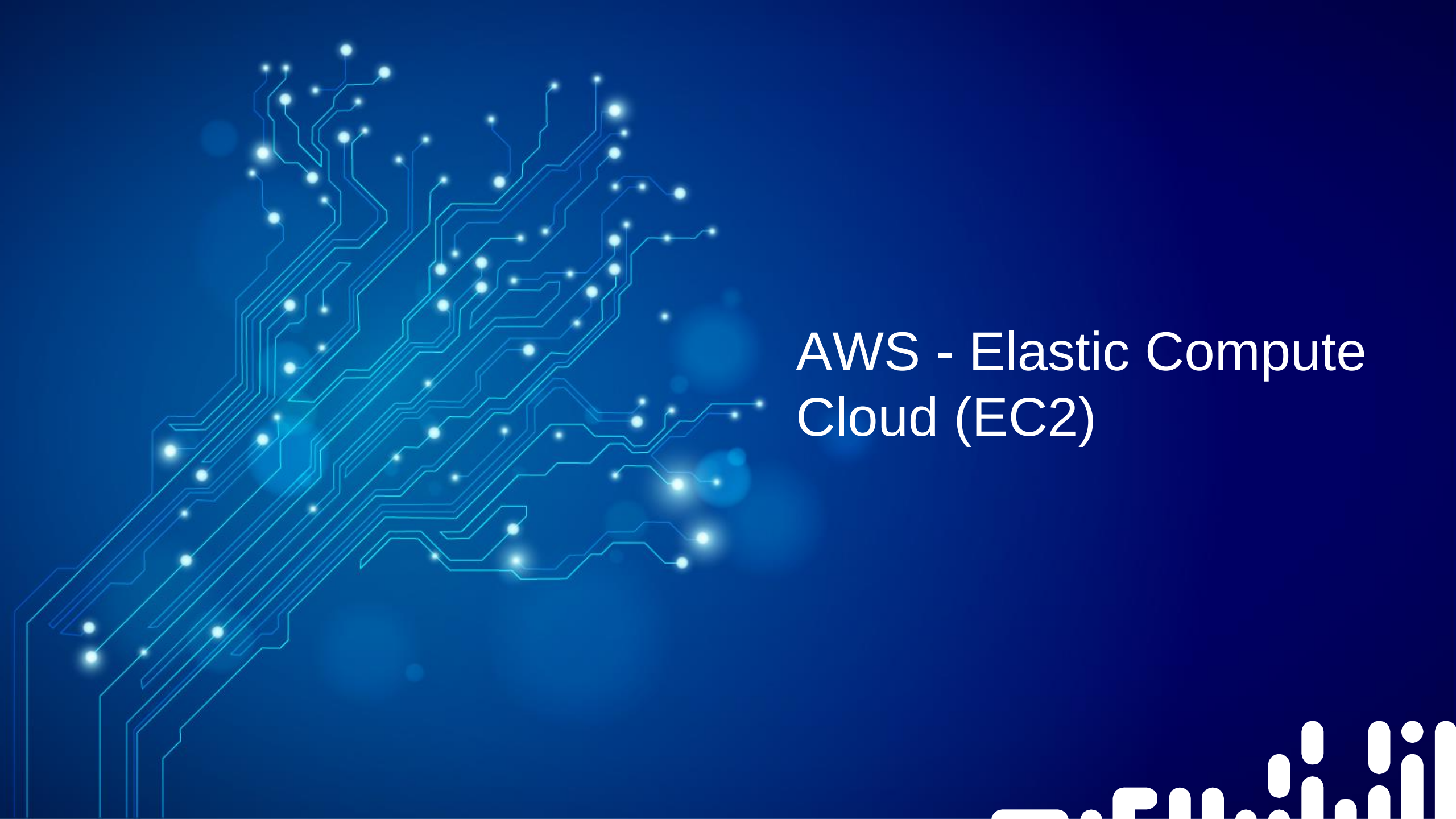
- Amazon provides a fully functional free account for one year for users to use and learn the different components of AWS. Get access to AWS services like EC2, S3, DynamoDB, etc. for free. However, there are certain limitations based on the resources consumed.

Amazon Web Services – Account -contd

- **Step 1** − To create an AWS account, open this link https://aws.amazon.com and sign-up for new account and enter the required details.
- **Step 2** − After providing an email-address, complete this form. Amazon uses this information for billing, invoicing and identifying the account. After creating the account, sign-up for the services needed.
- **Step 3** − To sign-up for the services, enter the payment information. Amazon executes a minimal amount transaction against the card on the file to check that it is valid. This charge varies with the region.

Amazon Web Services – Account

- **Step 4** − Next, is the identity verification. Amazon does a call back to verify the provided contact number.
- **Step 5** − Choose a support plan. Subscribe to one of the plans like Basic, Developer, Business, or Enterprise. The basic plan costs nothing and has limited resources, which is good to get familiar with AWS.
- **Step 6** − The final step is confirmation. Click the link to login again and it redirects to AWS management console.



AWS - Elastic Compute Cloud (EC2)

AWS - Elastic Compute Cloud

- **Amazon EC2 (Elastic Compute Cloud)** is a web service interface that provides resizable compute capacity in the AWS cloud.
- Amazon EC2 eliminates need to invest in hardware up front.
- EC2 instances can be resized, and the number of instances scaled up or down as per our requirement.
- These instances can be launched in one or more geographical locations or regions, and **Availability Zones (AZs)**.
- Each region comprises of several AZs at distinct locations, connected by low latency networks in the same region.

Features of EC2 -contd

- Virtual computing environments, known as *instances*
- Preconfigured templates for instances, known as *Amazon Machine Images (AMIs* including the operating system and additional software)
- Various configurations of CPU, memory, storage, and networking capacity for the instances, known as *instance types*
- Secure login information for instances using *key pairs*,AWS stores the public key, and you store the private key in a secure place

AWS EC2

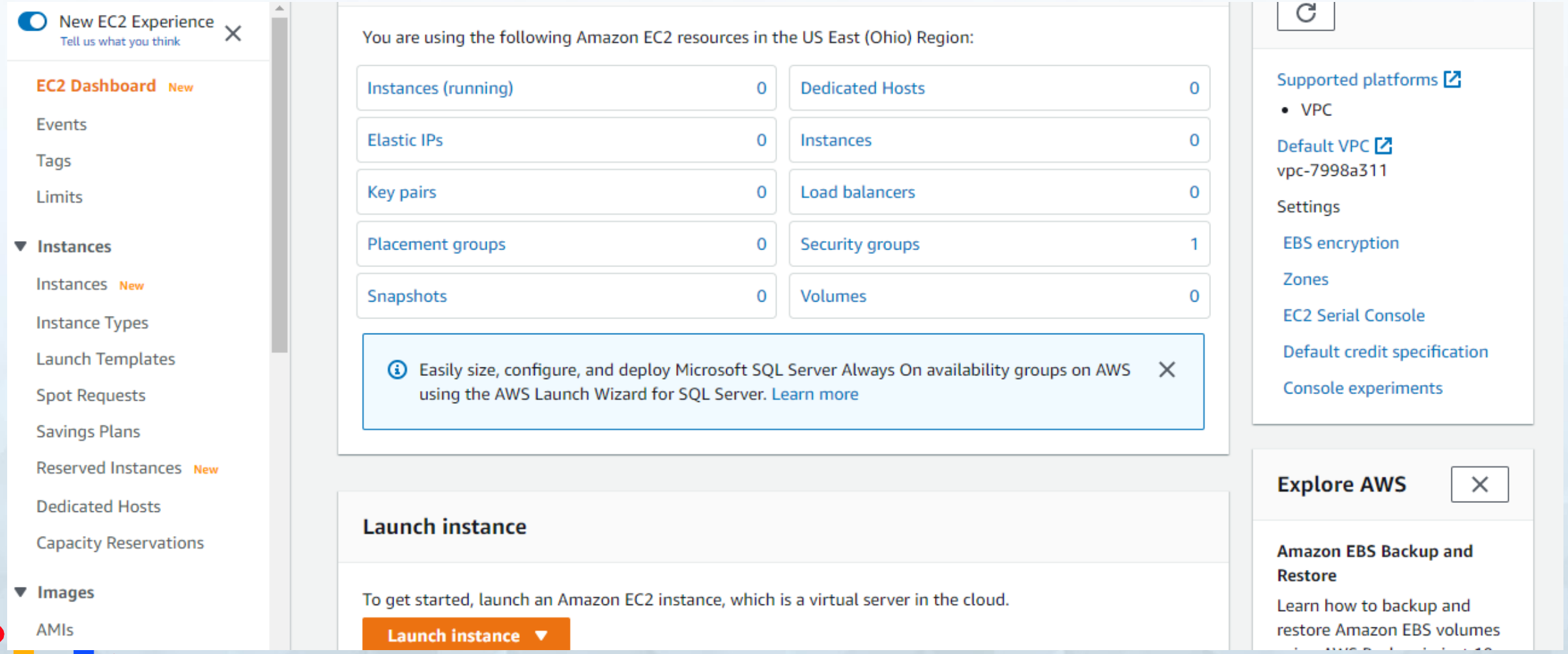
Features of EC2 -Contd

- Storage volumes for temporary data that's deleted when it is stop, hibernate, or terminate your instance, known as *instance store volumes*
- Persistent storage volumes for data using Amazon Elastic Block Store (Amazon EBS), known as *Amazon EBS volumes*
- Multiple physical locations for resources, such as instances and Amazon EBS volumes, known as *Regions* and *Availability Zones*

Features of EC2

- A firewall that enables to specify the protocols, ports, and source IP ranges that can reach instances using *security groups*
- Static IPv4 addresses for dynamic cloud computing, known as *Elastic IP addresses*
- Metadata, known as *tags*, that can be created and assigned to Amazon EC2 resources
- Virtual networks can create that are logically isolated from the rest of the AWS Cloud, and that can optionally connect to own network, known as *virtual private clouds* (VPCs)

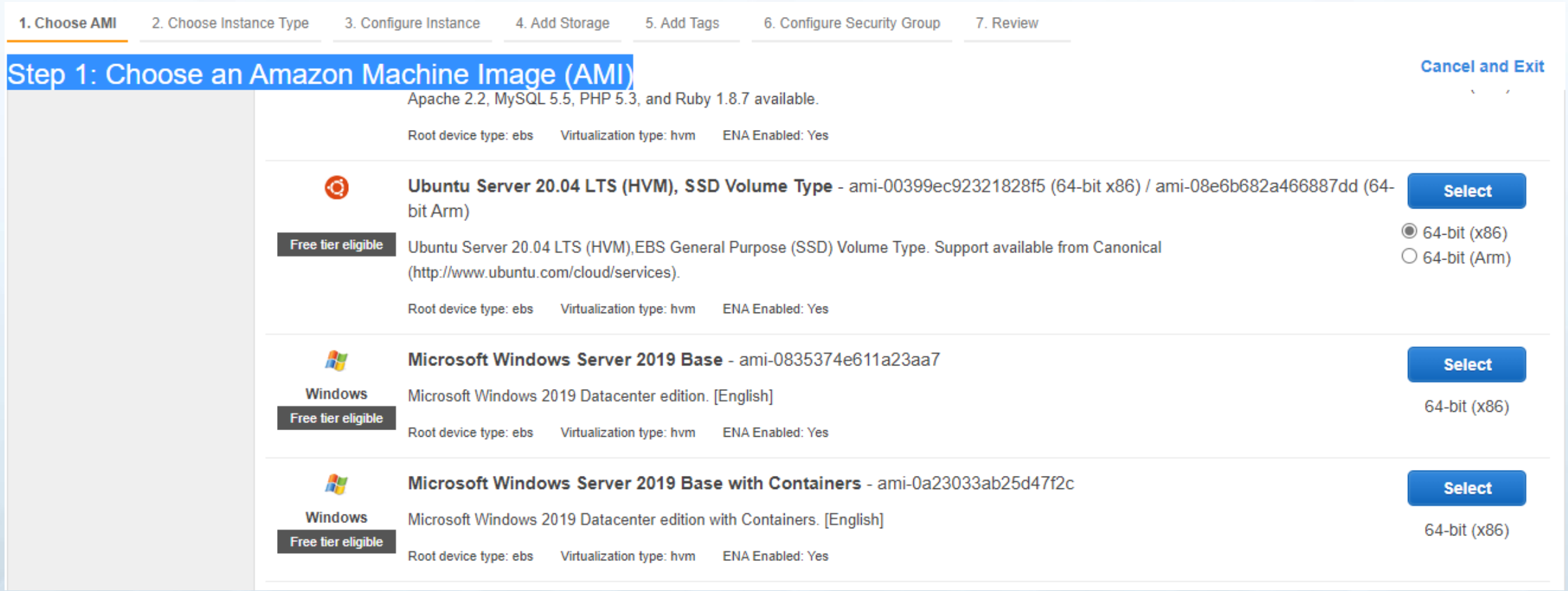
Steps to use EC2 -contd



Steps to use EC2 -contd

- Select EC2 from Services
- Click Launch Instance button to launch the instances
- Step 1: Choose an Amazon Machine Image (AMI)
- Step 2: Choose an Instance Type
  - Select t2 Micro, free tier
  - Click Next:Configure Instance Details
- Step 3: Configure Instance Details
  - Select the VPN network to keep it under the security policies of Cloud
  - Let it be basic here
  - Click Next: Add Storage

Steps to use EC2 -contd



Steps to use EC2 -contd

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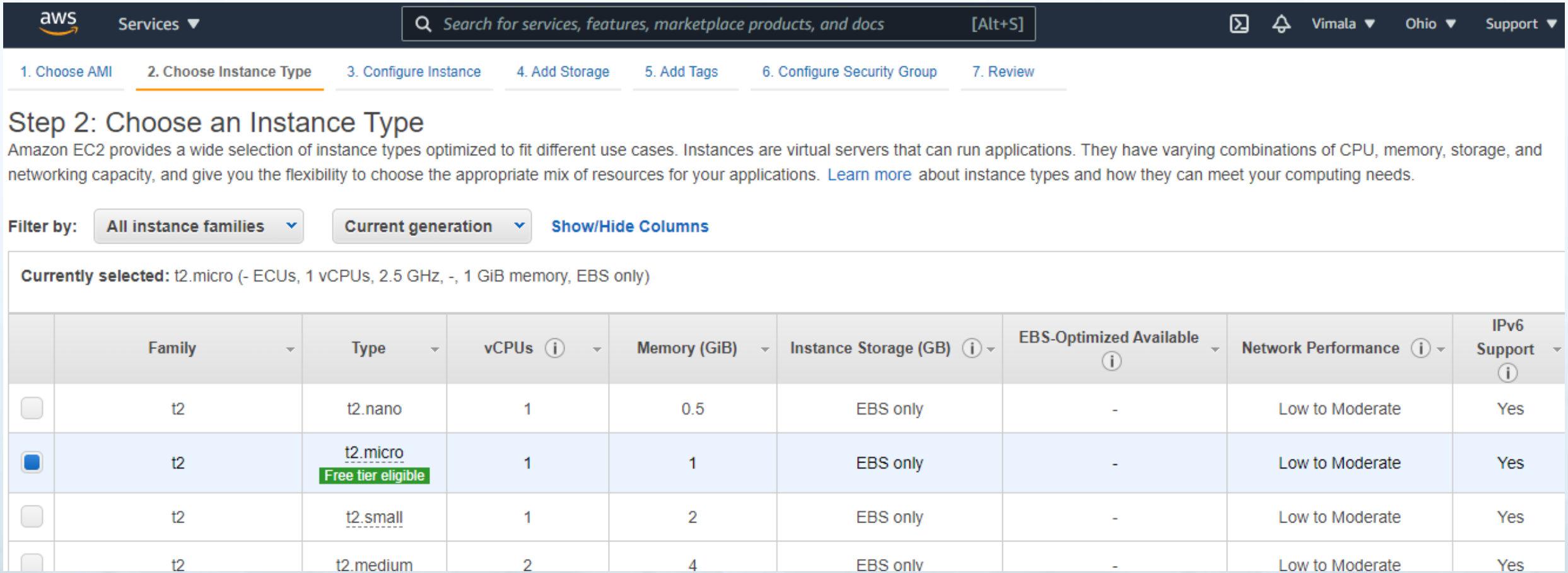


Steps to use EC2 -contd

- **Step 4** − Create a Virtual Private Cloud using the following instructions.
  - Open the Amazon VPC console by using the following link − https://console.aws.amazon.com/vpc/
  - Select VPC from the navigation panel. Then select the same region in which we have created key-pair.
  - Select start VPC wizard on VPC dashboard.
  - Select VPC configuration page and make sure that VPC with single subnet is selected. The choose Select.
  - VPC with a single public subnet page will open. Enter the VPC name in the name field and leave other configurations as default.
  - Select create VPC, then select Ok.

Steps to use EC2 -contd

- **Step 5 –** Create WebServerSG security groups and add rules using the following instructions.
  - On the VPC console, select Security groups in the navigation panel.
  - Select create security group and fill the required details like group name, name tag, etc.
  - Select your VPC ID from the menu. Then select yes, create button.
  - Now a group is created. Select the edit option in the inbound rules tab to create rules.

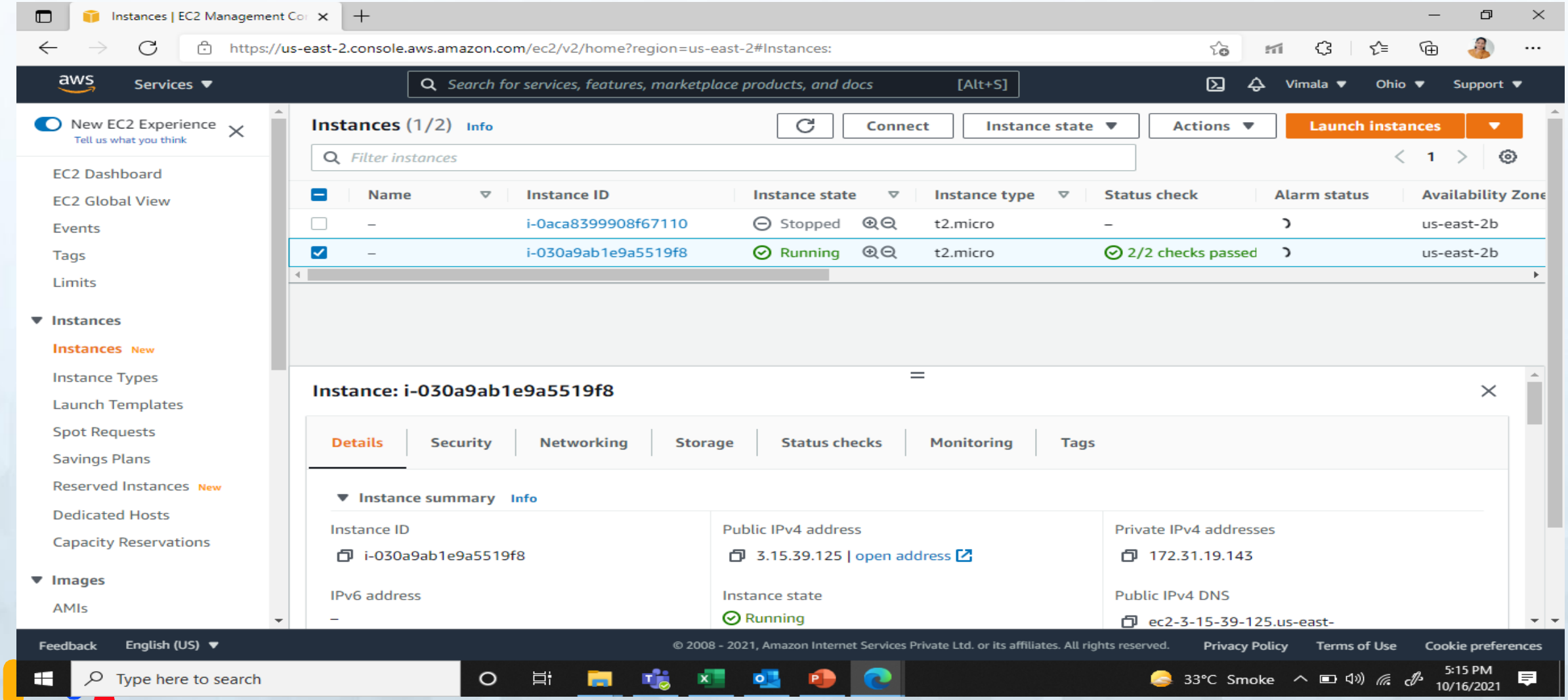
Steps to use EC2 -contd

- **Step 6** − Launch EC2 instance into VPC using the following instructions.
  - Open EC2 console by using the following link − https://console.aws.amazon.com/ec2/
  - Select launch instance option in the dashboard.
  - A new page will open. Choose Instance Type and provide the configuration. Then select Next: Configure Instance Details.
  - A new page will open. Select VPC from the network list. Select subnet from the subnet list and leave the other settings as default.
  - Click Next until the Tag Instances page appears.

Steps to use EC2 Contd…

- **Step 7** − On the Tag Instances page, provide a tag with a name to the instances. Select Next: Configure Security Group.
- **Step 8** − On the Configure Security Group page, choose the Select an existing security group option. Select the WebServerSG group that we created previously, and then choose Review and Launch.
- **Step 9** − Check Instance details on Review Instance Launch page then click the Launch button.
- **Step 10** − A pop up dialog box will open. Select an existing key pair or create a new key pair. Then select the acknowledgement check box and click the Launch Instances button.

Steps to use EC2



Pricing for Amazon EC2

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On-Demand Instances

- Pay for the instances that is used by hour, with no long-term commitments or upfront payments.

Savings Plans

- Make commitment to a consistent amount of usage, in USD per hour, for a term of 1 or 3 years.

Reserved Instances

- Specific instance configuration, including instance type and Region, for a term of 1 or 3 years.

Spot Instances

- Request unused EC2 instances, which can reduce your Amazon EC2 costs significantly.

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Innovative Services

Passionate Employees

Delighted Customers

Thank you

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