



Ch-7

Amazon Elastic Compute Cloud (EC2)



This chapter will cover following topics...

- Introduction of EC2 service
- Payment models for EC2
- EC2 instance life cycle
- Amazon Machine Image(AMI)
- Creating EC2 Linux machine
- Connecting to EC2 Linux machine
- Creating EC2 Windows machine
- Connecting to EC2 Windows machine
- Placement group
- Introduction of Elastic Block Storage (EBS)
- Types of EBS
- Root device types
- Snapshot
- Create AMI from existing EC2 instance

EC2 Introduction

Introduction:

Amazon's EC2 is a compute service that provides an on-demand and scalable computing service on the cloud.

With such flexibility in provisioning computing resources, it makes it possible to develop and deploy applications faster.

You can provision as many EC2 instances as you want

If you do not require the provisioned instances, you can terminate them at will.

You can configure security, manage networking, add or remove storage as your business demands.

EC2 Introduction(Conti...)

Few important points:

Provisioned EC2 resource - Instance

AMI = Base OS + Software packages

You can login into instance using key pair (Private key and Public key)

- Private key – Provisioned to user

- Public key – Resides on EC2 machine

Amazon provides temporary and permanent storage for EC2

- Temporary – Instance store

- Permanent – EBS

Security group – Firewall to your instance

Payment models for EC2

There are 4 ways to pay for an EC2 instance:

1. On demand

- Hourly charges

- Compute capacity can be increased or decreased

- Costliest pricing option

- Your partial usage hours will be rounded up and need to pay

2. Spot instance

- 90% cheaper than on-demand instance

- You bid and specify the max price, it will allocate to you accordingly

- If current spot instance price increases than your bid price, your instance will be terminated

Payment models for EC2(Conti...)

3. Reserved instance

You can reserve the instance for 1 year or 3 years

You are reserving the instance type, not specific instance

You can reserve the instance on region and AZ

4. Dedicated host

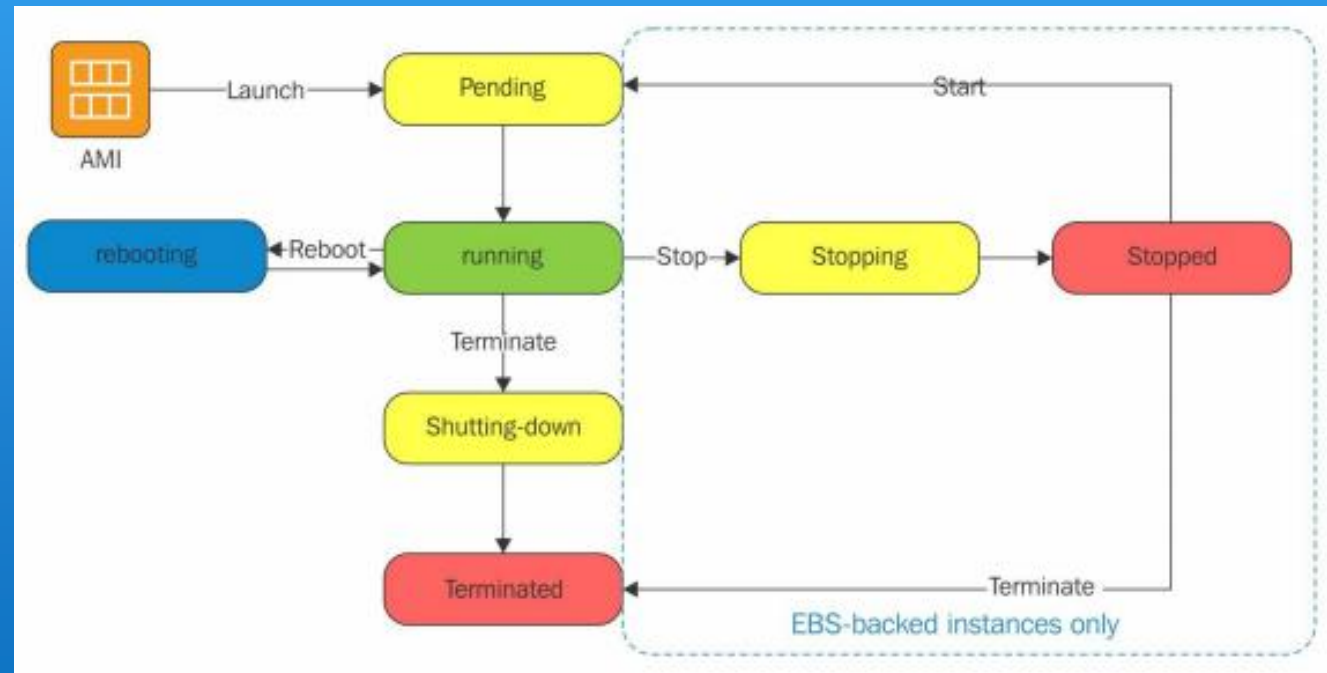
EC2 machines are physically isolated on dedicated host

3 pricing models – On demand, reserved and spot instance

EC2 instance life cycle

An EC2 instance passes through various statuses throughout its lifecycle.

It all starts with launching an EC2 instance using a specific AMI.



Amazon Machine Image (AMI)

AMI stands for Amazon machine Image.

AMI is collection of Operating system + Application server + Application software

Also the block devices that describe volume information needs to be attached to the instance while launching

AMI internally stored in S3 but it is not visible in S3 bucket

You can launch multiple instances from one AMI. Also, multiple instances can be launched from multiple AMIs as well

Creating EC2 Linux machine

Create Instance



To start using Amazon EC2 you will want to launch a virtual server, known as an Amazon EC2 instance.

Launch Instance



Note: Your instances will launch in the EU West (Ireland) region

Creating EC2 Linux machine(Conti...)

 **Services** ▾ **Resource Groups** ▾ **EC2** **S3** **IAM** **VPC** 

1. **Choose AMI** 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 1: Choose an Amazon Machine Image (AMI)

[Cancel and Exit](#)


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.


Quick Start

My AMIs

AWS Marketplace

Community AMIs

☒ Free tier only 


**Amazon Linux**
Free tier eligible

Amazon Linux 2 AMI (HVM), SSD Volume Type - ami-0bdb1d6c15a40392c

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.

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

Select
64-bit


**Amazon Linux**
Free tier eligible

Amazon Linux AMI 2018.03.0 (HVM), SSD Volume Type - ami-047bb4163c506cd98

The Amazon Linux AMI is an EBS-backed, AWS-supported image. The default image includes AWS command line tools, Python, Ruby, Perl, and Java. The repositories include Docker, PHP, MySQL, PostgreSQL, and other packages.

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

Select
64-bit

**Red Hat**
Free tier eligible








Red Hat Enterprise Linux 7.5 (HVM), SSD Volume Type - ami-7c491f05

Red Hat Enterprise Linux version 7.5 (HVM), EBS General Purpose (SSD) Volume Type

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

Select
64-bit

Creating EC2 Linux machine(Conti...)

 **Services** ▾ **Resource Groups** ▾  **EC2**  **S3**  **IAM**  **VPC**   **rajan13** ▾ **Ireland** ▾ **Support** ▾

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. [Learn more](#) about instance types and how they can meet your computing needs.








Filter by: **All instance types** ▾ **Current generation** ▾ [Show/Hide Columns](#)

Currently selected: t2.micro (Variable ECUs, 1 vCPUs, 2.5 GHz, Intel Xeon Family, 1 GiB memory, EBS only)

	Family ▾	Type ▾	vCPUs ⓘ ▾	Memory (GiB) ▾	Instance Storage (GB) ⓘ ▾	EBS-Optimized Available ⓘ ▾	Network Performance ⓘ ▾	IPv6 Support ⓘ ▾
<input type="checkbox"/>	General purpose	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
<input checked="" type="checkbox"/>	General purpose	t2.micro Free tier eligible	1	1	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.small	1	2	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.medium	2	4	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.large	2	8	EBS only	-	Low to Moderate	Yes

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Configure Instance Details](#)

Creating EC2 Linux machine(Conti...)

 **Services** ▾ **Resource Groups** ▾  **EC2**  **S3**  **IAM**  **VPC**   rajan13 ▾ Ireland ▾ Support ▾

1. Choose AMI

2. Choose Instance Type

3. Configure Instance

4. Add Storage

5. Add Tags

6. Configure Security Group

7. Review

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 ⓘ

[Launch into Auto Scaling Group](#) ⓘ

Purchasing option ⓘ

☐ Request Spot instances

Network ⓘ

 [Create new VPC](#)

Subnet ⓘ


[Create new subnet](#)

Auto-assign Public IP ⓘ

Placement group ⓘ

☐ Add instance to placement group.

IAM role ⓘ

 [Create new IAM role](#)

Shutdown behavior ⓘ

Enable termination protection ⓘ

☐ Protect against accidental termination

Monitoring ⓘ

☐ Enable CloudWatch detailed monitoring








Cancel

Previous

Review and Launch

Next: Add Storage










Creating EC2 Linux machine(Conti...)

 **Services** ▾ **Resource Groups** ▾  **EC2**  **S3**  **IAM**  **VPC**   rajan13 ▾ Ireland ▾ Support ▾

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. [Learn more](#) about storage options in Amazon EC2.







Volume Type 	Device 	Snapshot 	Size (GiB) 	Volume Type 	IOPS 	Throughput (MB/s) 	Delete on Termination 	Encrypted 
Root	/dev/xvda	snap-0a1cd41e685344f94	<input type="text" value="8"/>	General Purpose SSD (GP2) ▾	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypted

Add New Volume

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. [Learn more](#) about free usage tier eligibility and usage restrictions.

Cancel Previous **Review and Launch** Next: Add Tags

Creating EC2 Linux machine(Conti...)

 **Services** ▾ **Resource Groups** ▾  **EC2**  **S3**  **IAM**  **VPC** 

🔔 rajan13 ▾ Ireland ▾ Support ▾

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 5: Add Tags

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver.


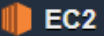





A copy of a tag can be applied to volumes, instances or both.

Tags will be applied to all instances and volumes. [Learn more](#) about tagging your Amazon EC2 resources.

Key (127 characters maximum)	Value (255 characters maximum)	Instances ⓘ	Volumes ⓘ	
<input type="text" value="Name"/>	<input type="text" value="Ec2Linux"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="button" value="X"/>

(Up to 50 tags maximum)

Creating EC2 Linux machine(Conti...)

 **Services** ▾ **Resource Groups** ▾  **EC2**  **S3**  **IAM**  **VPC**   **rajan13** ▾ **Ireland** ▾ **Support** ▾

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review







Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.


Assign a security group: ☒ Create a **new** security group
☐ Select an **existing** security group

Security group name:

Description:







Type 	Protocol 	Port Range 	Source 	Description 
SSH ▾	TCP	22	Custom ▾ 0.0.0.0/0	e.g. SSH for Admin Desktop 

Add Rule

 **Warning**
Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

Cancel **Previous** **Review and Launch**

Creating EC2 Linux machine(Conti...)


 **Services** ▾ **Resource Groups** ▾  **EC2**  **S3**  **IAM**  **VPC** 

🔔 rajan13 ▾ Ireland ▾ Support ▾


1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 7: Review Instance Launch

Please review your instance launch details. You can go back to edit changes for each section. Click **Launch** to assign a key pair to your instance and complete the launch process.

 **Improve your instances' security. Your security group, LinuxEc2, is open to the world.**
Your instances may be accessible from any IP address. We recommend that you update your security group rules to allow access from known IP addresses only.
You can also open additional ports in your security group to facilitate access to the application or service you're running, e.g., HTTP (80) for web servers. [Edit security groups](#)

▼ AMI Details

 **Amazon Linux AMI 2018.03.0 (HVM), SSD Volume Type - ami-047bb4163c506cd98**

Free tier eligible

The Amazon Linux AMI is an EBS-backed, AWS-supported image. The default image includes AWS command line tools, Python, Ruby, Perl, and Java. The repositories include Docker, PHP, MySQL, PostgreSQL, and other packages.
Root Device Type: ebs Virtualization type: hvm

[Edit AMI](#)

▼ Instance Type







Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
t2.micro	Variable	1	1	EBS only	-	Low to Moderate

[Cancel](#)

[Previous](#)

[Launch](#)

Creating EC2 Linux machine(Conti...)


 **Services** ▾ **Resource Groups** ▾  **EC2**  **S3**  **IAM**  **VPC** 

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1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

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[Edit AMI](#)

▼ Instance Type

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t2.micro	Variable	1	1	EBS only	-	Low to Moderate

[Edit instance type](#)

Cancel

Previous

Launch

Creating EC2 Linux machine(Conti...)

Select an existing key pair or create a new key pair

A key pair consists of a **public key** that AWS stores, and a **private key file** that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance.

Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about [removing existing key pairs from a public AMI](#).

Create a new key pair

Key pair name

Ec2LinuxIrelandKey

Download Key Pair

You have to download the **private key file** (*.pem file) before you can continue. **Store it in a secure and accessible location.** You will not be able to download the file again after it's created.

Cancel

Launch Instances

Creating EC2 Linux machine(Conti...)

aws Services ▾ Resource Groups ▾ EC2 S3 IAM VPC 🔔 rajan13 ▾ N. Virginia ▾ Support ▾

Launch Status

✓ **Your instances are now launching**
The following instance launches have been initiated: `i-09565e07f7a91478a` [View launch log](#)

i **Get notified of estimated charges**
[Create billing alerts](#) to get an email notification when estimated charges on your AWS bill exceed an amount you define (for example, if you exceed the free usage tier).

Connecting to EC2 Linux machine

We will require below 2 utilities to connect with EC2 instance. Download them using below link and install in your machine.

Putty:

<https://www.ssh.com/ssh/putty/download>

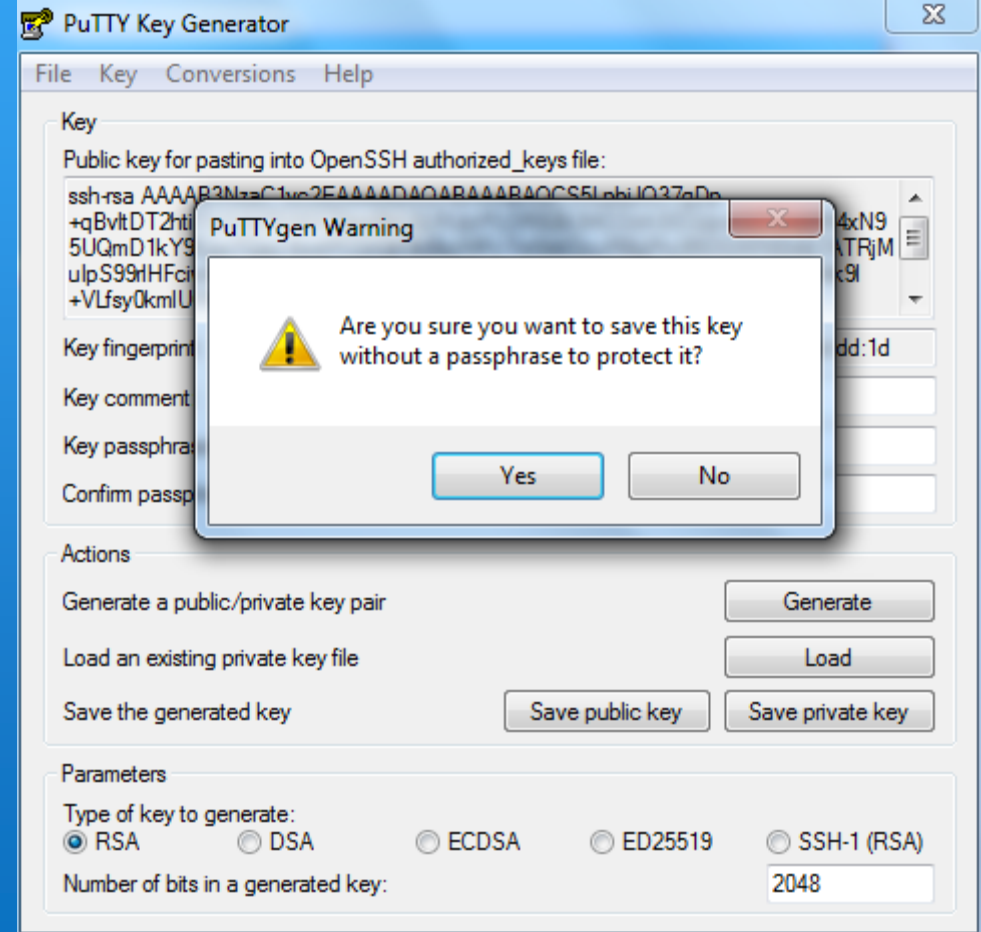
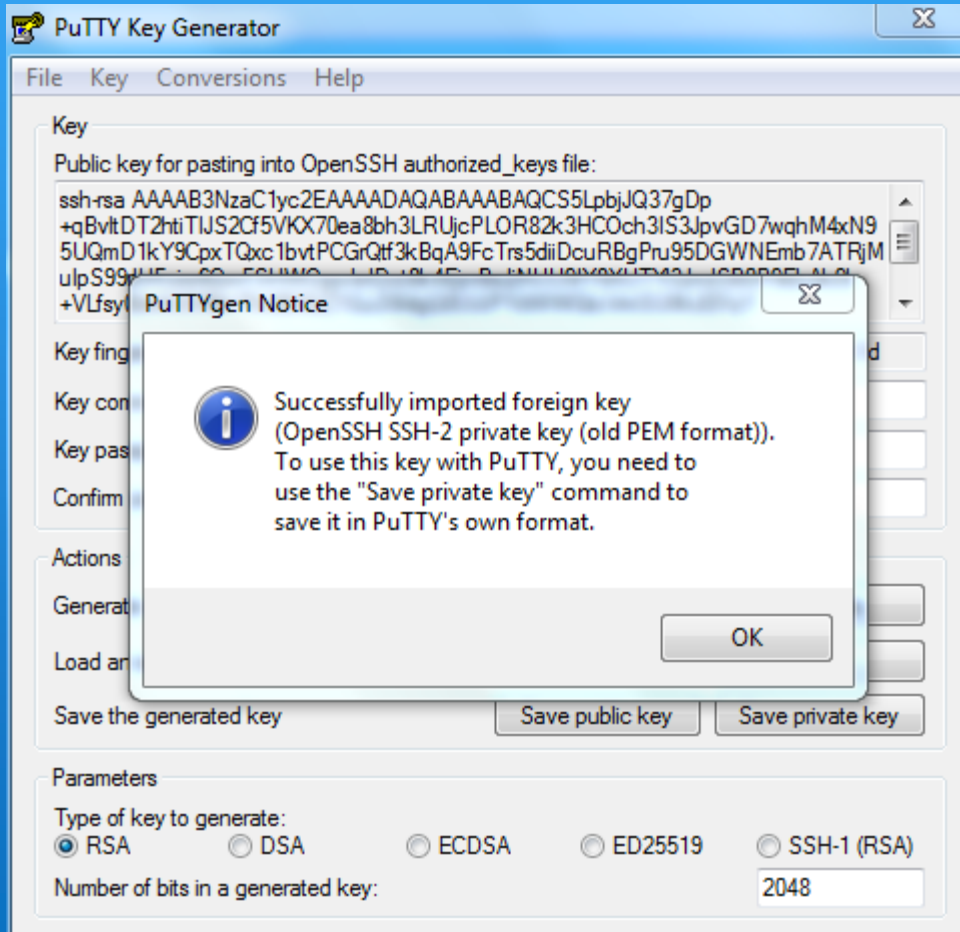
PuttyGen:

Once you download Putty, you no need to install puttyGen separately.

Just Go to Windows -> Start Menu -> All Programs -> PuTTY -> PuTTYgen.
You will see a window for PuTTY Key Generator on your screen.

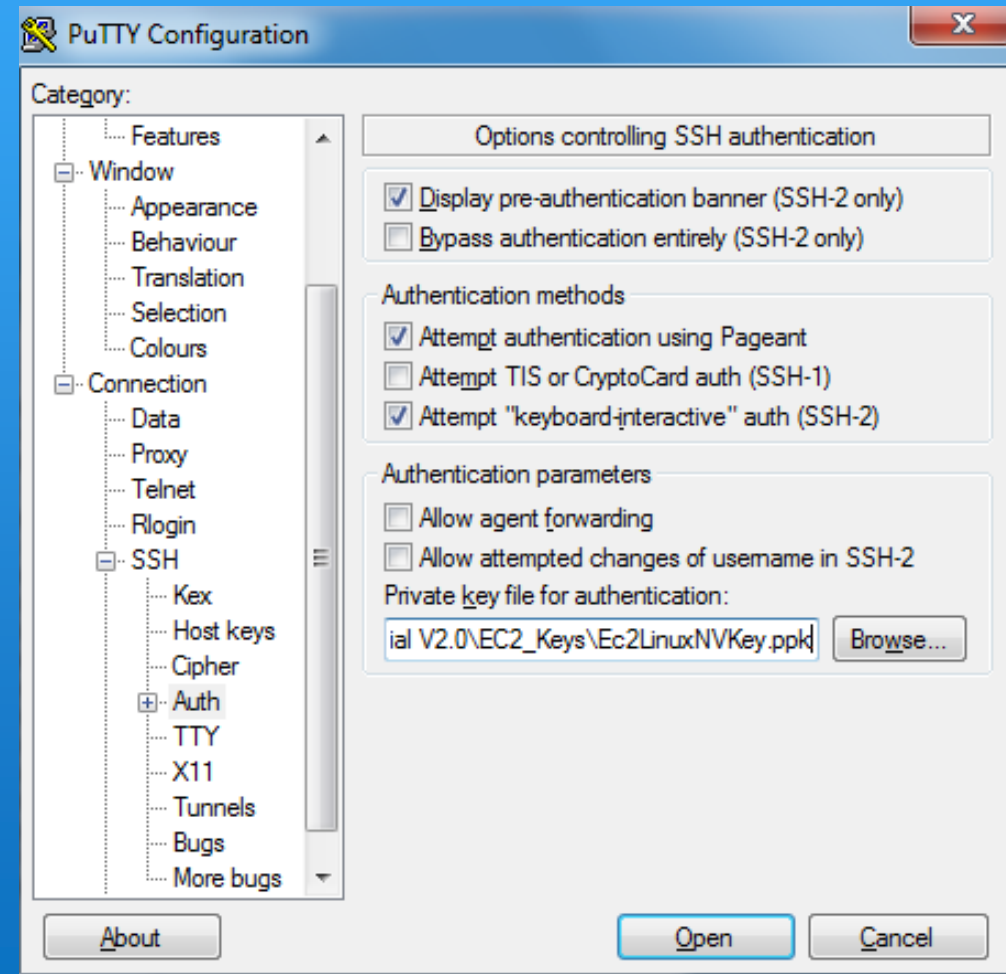
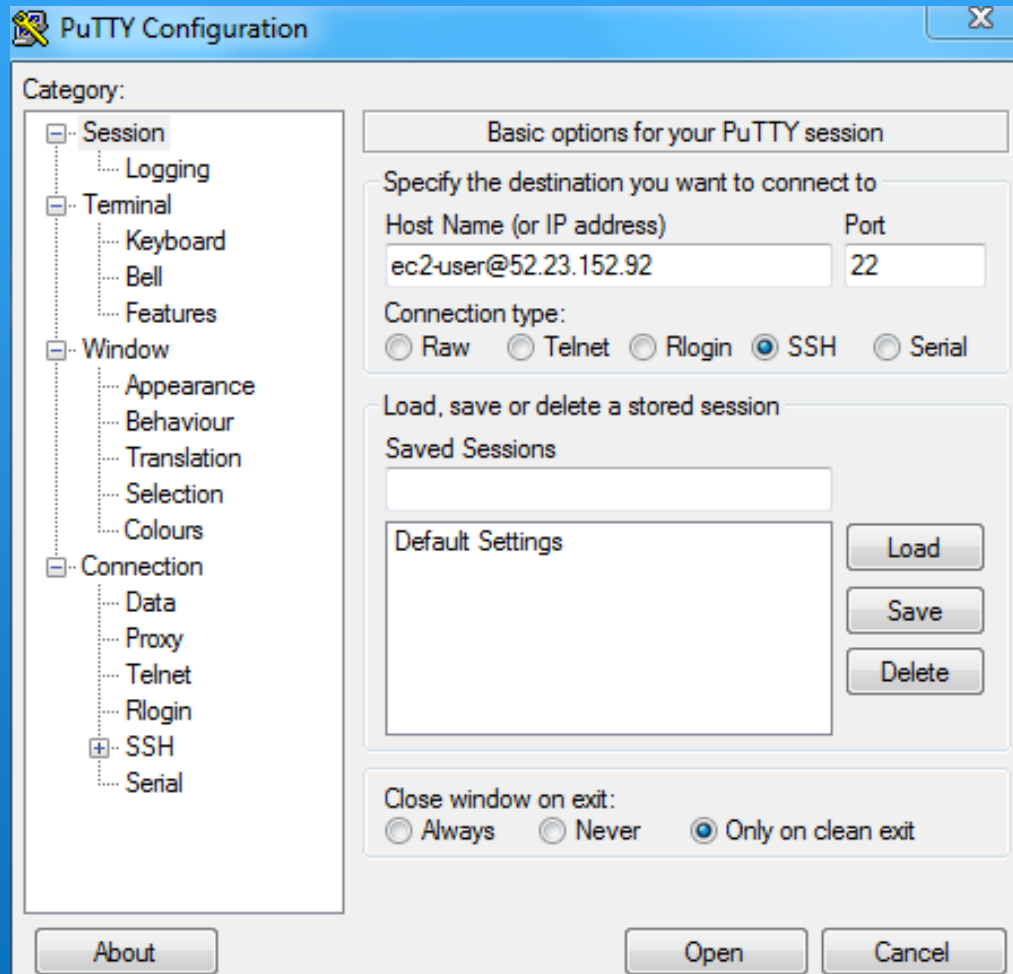
Connecting to EC2 Linux machine

Generating .ppk file from .pem file using PuttyGen

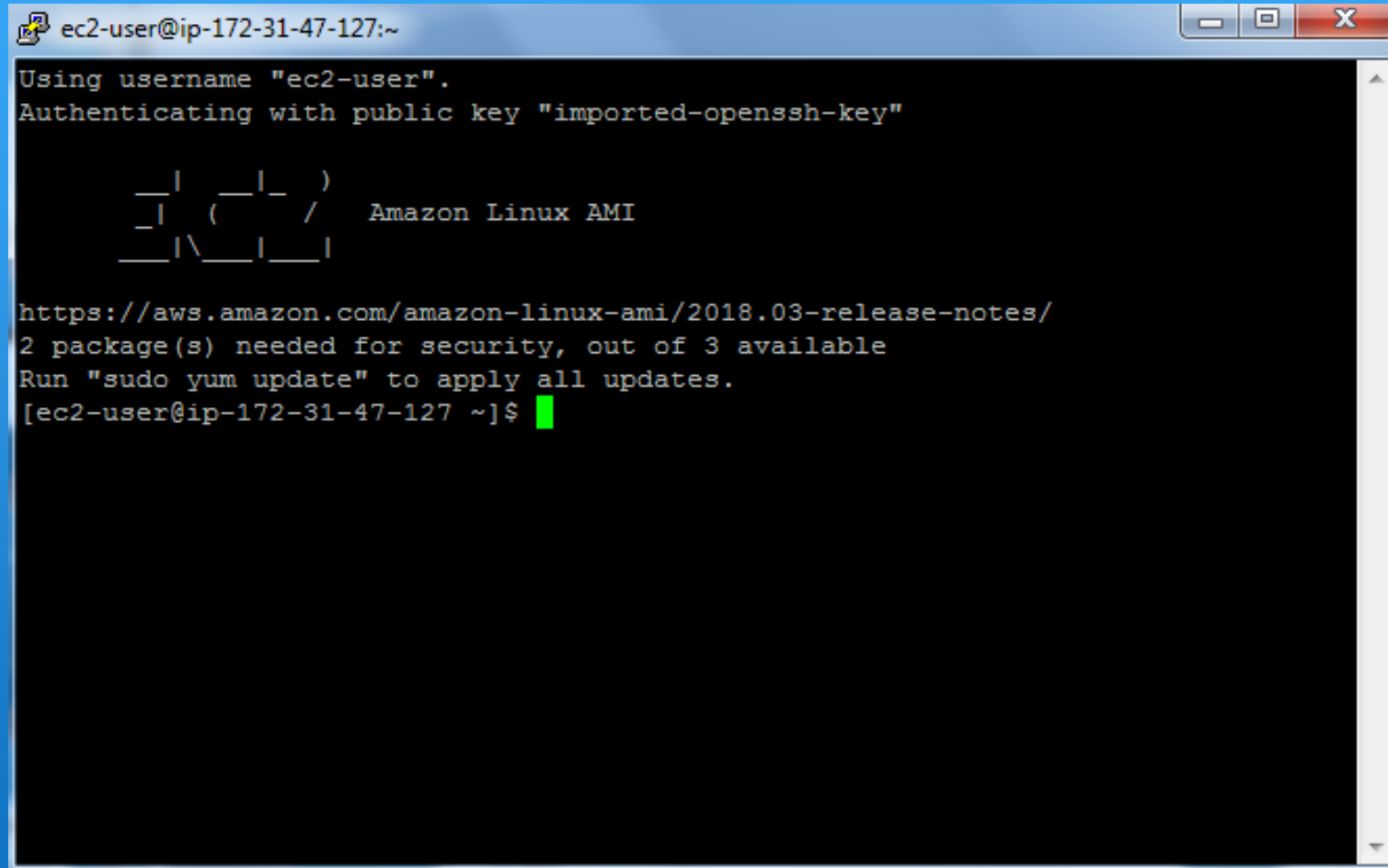


Connecting to EC2 Linux machine

Login into Ec2 machine using generated .ppk file









Connecting to EC2 Linux machine



```
ec2-user@ip-172-31-47-127:~  
Using username "ec2-user".  
Authenticating with public key "imported-openssh-key"  
  
  ____|  _||_  )  
  _|| (  _||_ /   Amazon Linux AMI  
  ____| \_||_  |  
  
https://aws.amazon.com/amazon-linux-ami/2018.03-release-notes/  
2 package(s) needed for security, out of 3 available  
Run "sudo yum update" to apply all updates.  
[ec2-user@ip-172-31-47-127 ~]$
```

Creating EC2 windows machine

 **Services** ▾ **Resource Groups** ▾  **EC2**  **S3**  **IAM**  **VPC**  **rajan13** ▾ **N. Virginia** ▾ **Support** ▾

1. Choose AMI

2. Choose Instance Type

3. Configure Instance

4. Add Storage





5. Add Tags

6. Configure Security Group

7. Review

Step 1: Choose an Amazon Machine Image (AMI)

Cancel and Exit

 Windows Free tier eligible	Microsoft Windows Server 2012 R2 Base - ami-07355e1e938a6b6cb Microsoft Windows 2012 R2 Standard edition with 64-bit architecture. [English] Root device type: ebs Virtualization type: hvm ENA Enabled: Yes	<div>Select</div> <div>64-bit</div>
 Windows Free tier eligible	Microsoft Windows Server 2012 Base - ami-059ad621a0d2eb0d1 Microsoft Windows 2012 Standard edition with 64-bit architecture. [English] Root device type: ebs Virtualization type: hvm ENA Enabled: Yes	<div>Select</div> <div>64-bit</div>
 Windows Free tier eligible	Microsoft Windows Server 2008 R2 Base - ami-098be1db577d54f7e Microsoft Windows 2008 R2 SP1 Datacenter edition, 64-bit architecture. [English] Root device type: ebs Virtualization type: hvm ENA Enabled: Yes	<div>Select</div> <div>64-bit</div>
 Windows	Microsoft Windows Server 2008 SP2 Base - ami-04275ff0a1fcf5c5e (64-bit) / ami-0f9b286b4c1344f7b (32-bit) Microsoft Windows 2008 SP2 Datacenter edition. [English] Root device type: ebs Virtualization type: hvm ENA Enabled: No	<div>Select</div> <div><input checked="" type="radio"/> 64-bit <input type="radio"/> 32-bit</div>

Creating EC2 windows machine

The screenshot displays the AWS Management Console interface for an EC2 instance. The top navigation bar includes the AWS logo, service categories (Services, Resource Groups), and specific services (EC2, S3, IAM, VPC). The user's profile (rajan13) and region (N. Virginia) are shown on the right. The left sidebar contains navigation links for EC2 Dashboard, Events, Tags, Reports, Limits, INSTANCES, Instances, Launch Templates, and Spot Requests.

The main content area shows the 'Launch Instance' button, a search bar with the instance ID 'i-035401cb9bc157542', and an 'Actions' dropdown menu. The menu options are:

- Connect
- Get Windows Password
- Launch More Like This
- Instance State
- Instance Settings
- Image
- Networking
- CloudWatch Monitoring

The instance details table below the menu shows the following information:

Name	Instance ID	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IPv4)
Windows Ec2	i-035401cb9bc157542	us-east-1a	running	Initializing	None	ec2-34-229-197-253.compute-1.amazonaws.com

The instance name is 'Windows Ec2', the ID is 'i-035401cb9bc157542', and it is currently in the 'running' state. The public DNS address is 'ec2-34-229-197-253.compute-1.amazonaws.com'.

Creating EC2 windows machine

Retrieve Default Windows Administrator Password



To access this instance remotely (e.g. Remote Desktop Connection), you will need your Windows Administrator password. A default password was created when the instance was launched and is available encrypted in the system log.

To decrypt your password, you will need your key pair for this instance. Browse to your key pair, or copy and paste the contents of your private key file into the text area below, then click Decrypt Password.

The following Key Pair was associated with this instance when it was created.

Key Name WindowsEc2NV

In order to retrieve your password you will need to specify the path of this Key Pair on your local machine:

Key Pair Path WindowsEc2NV.pem

Or you can copy and paste the contents of the Key Pair below:


```
3Kri7eEjLz0047APRxB5I30CgYB6VHOcWEXP+fKNBjfti75gu463kLXZpISinmOJWkfxnv3RyKS
oh8zxuv7z4/tgZaGAF6keFppEhdL9cc1QPHnvdYnJo4aHA507Qag63nxxxd1ku2ICBcaYImdoy/j
qYI2+QASQ0CAhPkJWICRUfdvFdcLgdQvhsFVXEGgbM9SuQKBgQCHyQoNbznXBmf9/yaFRRa4eiQ8
cKjK6x2YHWR0Wbx26IB6U4z0dEKTgMS01s7Et3sNHPcAd1MKmgITkOv1/Z6HDSnGoHusvcjCilCR
KEqkj33X5Ha1t2uEQJbwgt/GEPghQidBucD6hQY5AkjD2YqoLQUj6jc/dM0wQnix/Xwa/A==
-----END RSA PRIVATE KEY-----
```


Cancel

Decrypt Password


Creating EC2 windows machine

Retrieve Default Windows Administrator Password ×

 **Password Decryption Successful**
The password for instance i-035401cb9bc157542 (Windows Ec2) was successfully decrypted.

 **Password change recommended**
We recommend that you change your default password. Note: If a default password is changed, it cannot be retrieved through this tool. It's important that you change your password to one that you will remember.

You can connect remotely using this information:

Public DNS	ec2-34-229-197-253.compute-1.amazonaws.com
User name	Administrator
Password	

Close

Placement group

A Placement group is a logical grouping of EC2 instances within a single AZ.

Placement group provides a possible lowest network latency across all the EC2 instances that are part of the same placement group.

All EC2 instances do not support high network throughput (that is, placement group).

Before launching an instance in a placement group, you need to ensure that the instance type supports a placement group.

It is best practice to create all the EC2 instances required in a placement group, and ensure they are created in a single launch request and have the same instance type.

In case multiple instance types are mixed in a placement group then the lowest bandwidth among the EC2 instances is considered as the highest network throughput of the placement group.

There is no additional charge for creating an instance group.

Placement group(Conti...)

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Introduction to EBS

Currently, AWS provides the following types of EBS volumes.

These EBS types have different performance and prices per GB:

Solid State Drive (SSD):

- General Purpose SSD (gp2)

- Provisioned IOPS SSD (io1)

Hard Disk Drive (HDD):

- Throughput optimized HDD (st1)

- Cold HDD (sc1)

Previous generation volume:

- Magnetic (Standard)

Types of EBS

General Purpose SSD(gp2):

Ideal for a number of workloads.

gp2 volumes are very efficient and provide single-digit millisecond latencies

A gp2 volume is capable of bursting up to 3,000 IOPS for a significant amount of time.

You can provision a minimum of 1 GB size of gp2 volume and a maximum of up to 16 TB of a gp2 volume.

gp2 volume provides 3 IOPS per GB of volume size. However, if a volume size is 33.33 GB or less, it provides a minimum of 100 IOPS.

However, a gp2 volume can provide a maximum of 10,000 IOPS.

Types of EBS(Conti...)

Provisioned IOPS SSD(io1):

They are intended to address the needs of I/O intensive application workloads.

io1 volumes are specifically used for database workloads that require high performance storage and consistent throughput

Unlike gp2 volumes, io1 volume provides a consistent performance.

You can specify a consistent IOPS rate while creating the volume.

An io1 volume size can range between 4 GB to 16 TB. An io1 volume can have a minimum of 100 IOPS and a maximum of up to 20,000 IOPS.

If you use multiple io1 volumes in an instance, AWS imposes a limit of a maximum of 65000 IOPS per instance.

Types of EBS(Conti...)

Throughput Optimized HDD (st1)

st1 volumes are architected to measure the performance in terms of throughput and not on IOPS

st1 volume type is recommended for a large and linear workload such as data warehouse, log processing, Amazon Elastic MapReduce (EMR), and ETL workloads.

It cannot be used as a bootable volume.

An st1 volume size can range between 500 GB to 16 TB

An st1 volume can have a maximum of 500 IOPS per volumes.

If you use multiple st1 volumes in an instance, AWS imposes a limit of a maximum of 65000 IOPS per instance.

Types of EBS(Conti...)

Cold HDD (sc1)

Cold HDD (sc1) volumes are designed to provide a cost effective magnetic storage option.

sc1 volumes are designed to measure the performance in terms of throughput and not on IOPS.

It's a good low-cost alternative to st1 if you require infrequent access to your data.

sc1 volumes cannot be used as bootable root volume.

An sc1 volume size can range between 500 GB to 16 TB.

An sc1 volume can have a maximum of 250 IOPS per volumes.

If you use multiple sc1 volumes in an instance, AWS imposes a limit of a maximum of 65000 IOPS per instance.

Root Device Types

While choosing an AMI, it is essential to understand the root device type associated with the AMI

A bootable block device of the EC2 instance is called *root device*

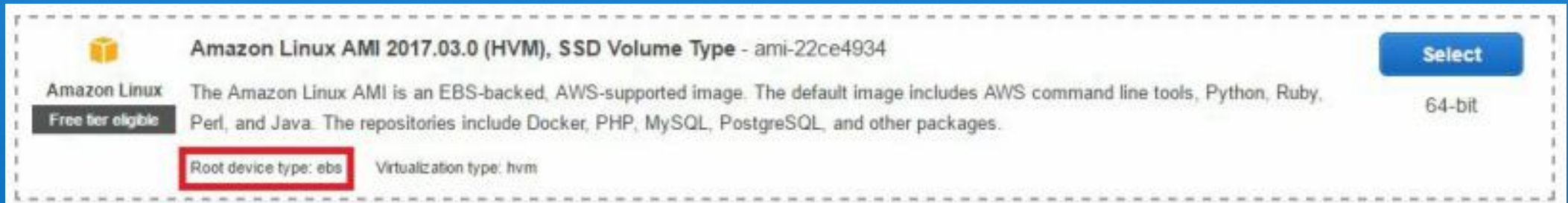
As EC2 instances are created from an AMI, it is very important to observe the root device type at the AMI

An AMI can have either of two root device types:

- Amazon EBS-backed AMI (uses permanent block storage to store data)

- Instance store-backed AMI (which uses ephemeral block storage to store data)

While creating an EC2 instance using a web console we can see whether an AMI is EBS or instance-backed



Root Device Types(Conti...)

Amazon EBS-backed AMIs launch faster than instance-stored AMIs as you only need to create the volume from the snapshot, for booting the instance.

While AMIs with ephemeral storage take longer time to boot, as you need to load all the software on the ephemeral storage before booting the instance.

Ephemeral storage devices are directly attached to the host computer, which makes it faster in accessing the data, however, stored data gets wiped out on restarting or shutting down the EC2 instance.

It is very important to remember that EBS-backed instances can be stopped; If ephemeral-based instances are stopped or terminated, the data stored on the ephemeral storage gets wiped out from the storage.

Snapshots

Amazon Elastic Block Storage (or EBS for short) is a service for providing block storage to your EC2 instances. In other words, it provides reliable volumes (hard drives) to your cloud servers.

One very useful function of Amazon EBS is creating EBS snapshot of your EBS volume. They are nothing but backup of your EBS volume.

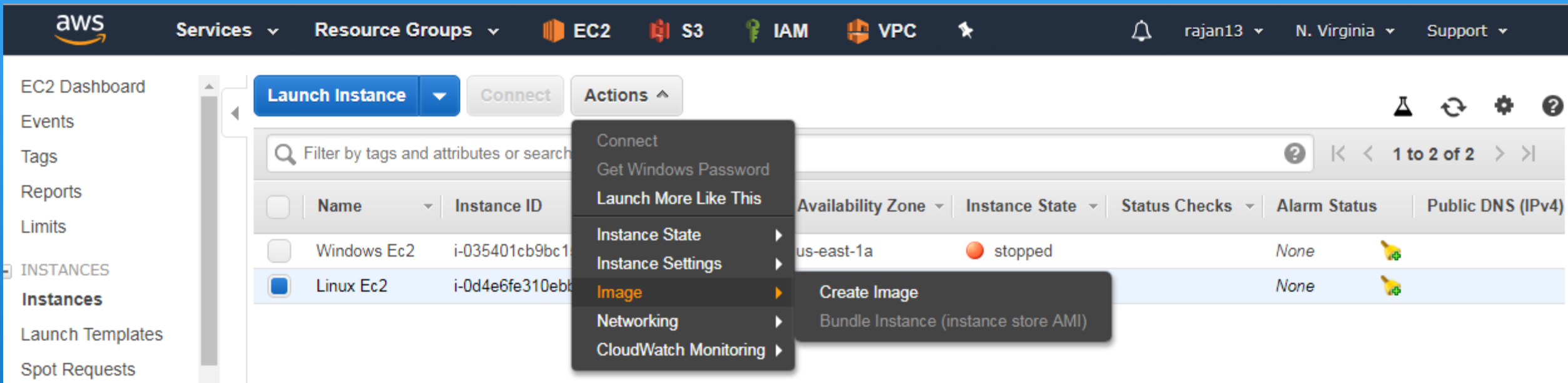
An EBS snapshot is a point-in-time backup of your EBS volume. It is a “copy” of the data on your EBS volume.

If you are looking for a disaster-recovery solution for your EBS volume, this is the solution.

If you want to “backup” your EC2 instance, then you want to create EBS snapshots of the EBS volumes attached to the instance.

EBS snapshots are stored in Amazon S3. However, you are not going to find your snapshots in any of your S3 buckets.

Create AMI from existing instance



The screenshot displays the AWS Management Console interface for the EC2 service. The top navigation bar includes the AWS logo, a 'Services' dropdown, and links to 'Resource Groups', 'EC2', 'S3', 'IAM', and 'VPC'. The user's profile 'rajan13' and the region 'N. Virginia' are shown on the right. The left sidebar contains navigation links for 'EC2 Dashboard', 'Events', 'Tags', 'Reports', 'Limits', and 'INSTANCES', with 'Instances' currently selected. The main content area shows a table of EC2 instances. Two instances are listed: 'Windows Ec2' (ID: i-035401cb9bc1) and 'Linux Ec2' (ID: i-0d4e6fe310ebb). The 'Linux Ec2' instance is selected, and the 'Actions' menu is open, showing options like 'Connect', 'Get Windows Password', 'Launch More Like This', 'Instance State', 'Instance Settings', 'Image', 'Networking', and 'CloudWatch Monitoring'. The 'Image' option is highlighted, and a sub-menu is visible with 'Create Image' and 'Bundle Instance (instance store AMI)'. The table columns include 'Name', 'Instance ID', 'Availability Zone', 'Instance State', 'Status Checks', 'Alarm Status', and 'Public DNS (IPv4)'. The 'Linux Ec2' instance is in the 'stopped' state, and its 'Alarm Status' is 'None'.

Name	Instance ID	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IPv4)
Windows Ec2	i-035401cb9bc1	us-east-1a	stopped		None	
Linux Ec2	i-0d4e6fe310ebb				None	

Create AMI from existing instance(Conti...)

Create Image

Instance ID ⓘ

i-0d4e6fe310ebb7b6f

Image name ⓘ

LinuxEc2Image

Image description ⓘ

LinuxEc2Image

No reboot ⓘ

☐

Instance Volumes

Volume Type ⓘ	Device ⓘ	Snapshot ⓘ	Size (GiB) ⓘ	Volume Type ⓘ	IOPS ⓘ	Throughput (MB/s) ⓘ	Delete on Termination ⓘ	Encrypted ⓘ
Root	/dev/xvda	snap-09ccbc8bc8ae7e4e9	8	General Purpose SSD (GP2) ▼	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypted

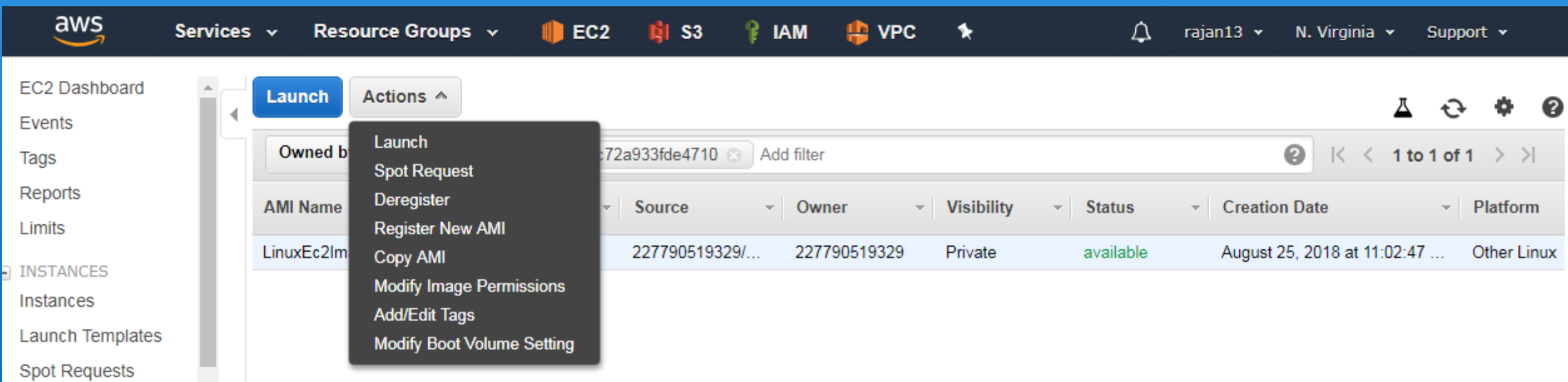
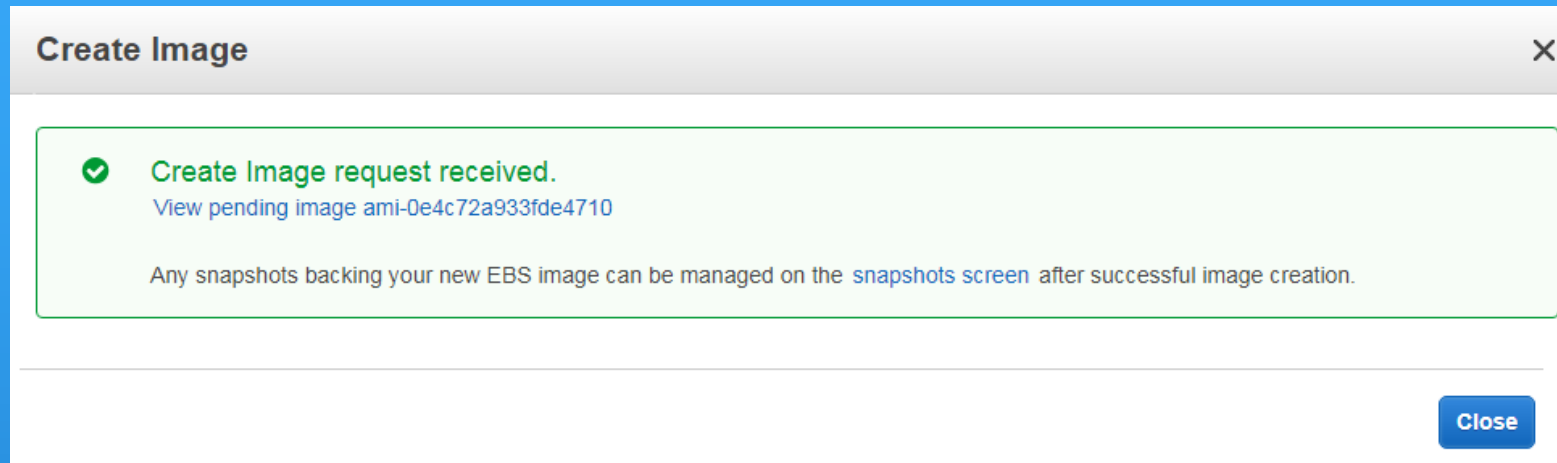
Add New Volume

Total size of EBS Volumes: 8 GiB
When you create an EBS image, an EBS snapshot will also be created for each of the above volumes.

Cancel

Create Image

Create AMI from existing instance(Conti...)



Summary

In this chapter, we have gone through following topics:

- Introduction of EC2 service
- Payment models for EC2
- EC2 instance life cycle
- Amazon Machine Image(AMI)
- Creating EC2 Linux machine
- Connecting to EC2 Linux machine
- Creating EC2 Windows machine
- Connecting to EC2 Windows machine
- Placement group
- Introduction of Elastic Block Storage (EBS)
- Types of EBS
- Root device types
- Snapshot
- Create AMI from existing EC2 instance

See you soon...

Thank You!