

Day-2

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Today, the main target is to understand an instance and the process from launching to terminating an instance. Also, details of an instance, its network and storage settings, instance state, Instance template, AMI etc.

EC2 Dashboard:

The screenshot shows the AWS Management Console EC2 Dashboard. The left sidebar contains navigation links for Dashboard, EC2 Global View, Events, Instances, Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations, Images, AMIs, AMI Catalog, Elastic Block Store, Volumes, Snapshots, Lifecycle Manager, Network & Security, Security Groups, and Elastic IPs. The main content area is divided into several sections: Resources (listing various EC2 resources like Instances, Auto Scaling Groups, Capacity Reservations, etc.), Launch instance (with a 'Launch instance' button and a 'Migrate a server' button), Service health (showing the status of the EC2 service in the US East (N. Virginia) region), Instance alarms (showing 0 in alarm, 0 OK, and 0 insufficient data), and Account attributes (showing Default VPC, Settings, and Explore AWS). The bottom of the dashboard shows the CloudShell and Feedback links.

Launching an Instance:

The screenshot shows the 'Launch an instance' page in the AWS Management Console. The page is divided into several sections: Name and tags (with a text input field for the instance name and a button to add additional tags), Application and OS Images (Amazon Machine Image) (with a search bar and a grid of AMIs), Summary (with a 'Launch instance' button and a 'Preview code' button), and a 'Free tier' notification. The 'Name and tags' section has a text input field with the value 'Dwij's Test Server'. The 'Application and OS Images' section has a search bar with the text 'Search our full catalog including 1000s of application and OS images'. The 'Summary' section shows the 'Number of instances' as 1, the 'virtual server type (instance type)' as t2.micro, the 'Firewall (security group)' as New security group, and the 'Storage (volumes)' as 2 volume(s) - 18 GiB. The 'Free tier' notification states: 'Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.' The bottom of the page shows the CloudShell and Feedback links.

Instance type finder: EC2 Instance Type Explorer, you can more easily navigate and discover the instances that are right for your workloads and business needs. Using filters, you can quickly narrow the search for the right instance family based on instance category, or by hardware configuration.

The screenshot shows the AWS Instance type finder interface. At the top, there's a navigation bar with the AWS logo, a search bar, and user information. Below the navigation bar, the page title is "Instance type finder". The main content area is titled "Instance type requirements" and includes a sub-header "Tell us about your instance type requirements and we'll provide suggestions for you." There are four dropdown menus: "Workload type" (set to "Web/App Server"), "Use case" (set to "Web Hosting"), "Priority" (set to "Price/Performance"), and "CPU manufacturer" (set to "No preference"). Below these is a link for "Advanced parameters". At the bottom right, there are two buttons: "Cancel" and "Get instance type advice".

Network Setting:

The screenshot shows the AWS Network settings configuration panel. It has a title "Network settings" with an "Info" link and an "Edit" button. The panel is divided into several sections: "Network" (vpc-0739a109723f23ccd), "Subnet" (No preference), "Auto-assign public IP" (Enabled), and "Firewall (security groups)". Under "Firewall", there are two radio buttons: "Create security group" (selected) and "Select existing security group". Below this, it says "We'll create a new security group called 'launch-wizard-1' with the following rules:". There are three checkboxes: "Allow SSH traffic from" (checked), "Allow HTTPS traffic from the internet" (unchecked), and "Allow HTTP traffic from the internet" (unchecked). Each checkbox has a description and a "My IP" dropdown menu.

Storage Configuration:

The screenshot shows the AWS Configure storage configuration panel. It has a title "Configure storage" with an "Info" link and an "Advanced" link. The panel is divided into two main sections: "Root volume" and "EBS volume". The "Root volume" section shows a size of "10" GIB, a type of "gp3", and a note "Root volume (Not encrypted)". The "EBS volume" section shows a size of "8" GIB, a type of "gp3", and a note "EBS volume (Not encrypted)". There is a "Remove" button next to the EBS volume. Below these sections, there is a blue box with a message: "Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage". Below this is an "Add new volume" button. At the bottom, there is a section for "Click refresh to view backup information" with a refresh icon and a note "The tags that you assign determine whether the instance will be backed up by any Data Lifecycle Manager policies." Below this is a section for "0 x File systems" with an "Edit" link.

Launching Process:

Launching Instance

Launch initiation

77%

Details

Please wait while we launch your instance.

Do not close your browser while this is loading.

Instance Dashboard:

Dashboard

EC2 Global View

Events

Instances

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances

Dedicated Hosts

Capacity Reservations

Images

AMIs

AMI Catalog

Elastic Block Store

Volumes

Snapshots

Lifecycle Manager

Network & Security

Security Groups

Elastic IPs

Instances (1/1) Info

Last updated less than a minute ago

Connect

Instance state

Actions

Launch instances

Find Instance by attribute or tag (case-sensitive)

All states

| <input checked="" type="checkbox"/> | Name | Instance ID | Instance state | Instance type | Status check | Alarm status | Availability Zone | Public IPv4 DNS | Public |
|-------------------------------------|--------------------|---------------------|----------------|---------------|-------------------|---------------|-------------------|-------------------------|-----------|
| <input checked="" type="checkbox"/> | Dwij's Test Ser... | i-05540583dbedb0578 | Running | t2.micro | 2/2 checks passed | View alarms + | us-east-1a | ec2-54-163-30-146.co... | 54.163... |

i-05540583dbedb0578 (Dwij's Test Server)

Details | Status and alarms | Monitoring | Security | Networking | Storage | Tags

Instance summary Info

Instance ID

i-05540583dbedb0578

IPv6 address

-

Hostname type

IP name: ip-10-0-0-240.ec2.internal

Answer private resource DNS name

-

Public IPv4 address

54.163.30.146 | open address

Instance state

Running

Private IP DNS name (IPv4 only)

ip-10-0-0-240.ec2.internal

Instance type

t2.micro

Private IPv4 addresses

10.0.0.240

Public IPv4 DNS

ec2-54-163-30-146.compute-1.amazonaws.com | open address

Elastic IP addresses

EBS Volume Dashboard:

Volumes (1) Info

Actions

Create volume

Saved filter sets

Choose filter set

Search

| <input type="checkbox"/> | Name | Volume ID | Type | Size | IOPS | Throughput | Snapshot ID | Created | Availability Zone |
|--------------------------|------|-----------------------|------|-------|------|------------|-----------------|---------------------------|-------------------|
| <input type="checkbox"/> | - | vol-04468468908a619ea | gp3 | 8 GiB | 3000 | 125 | snap-01818e2... | 2024/12/17 11:00 GMT+5... | us-east-1a |

Fault tolerance for all volumes in this Region

Snapshot summary

Recently backed up volumes / Total # volumes

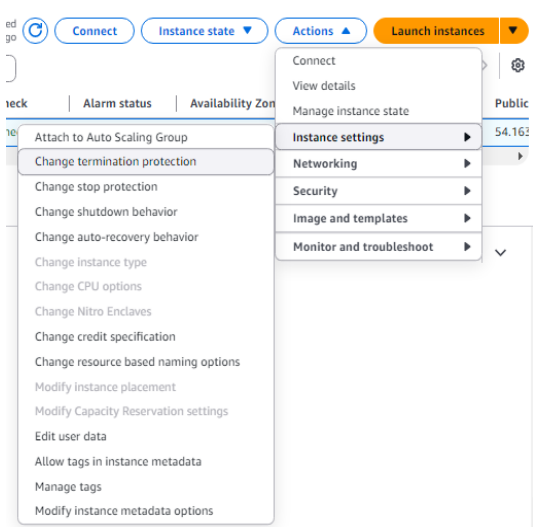
0 / 1

Last updated on Tue, Dec 17, 2024, 11:23:33 AM (GMT+05:30)

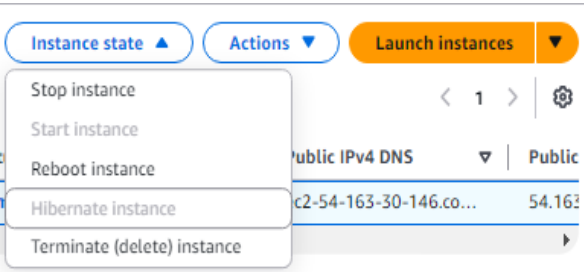
Data Lifecycle Manager default policy for EBS Snapshots status

No default policy set up | Create policy

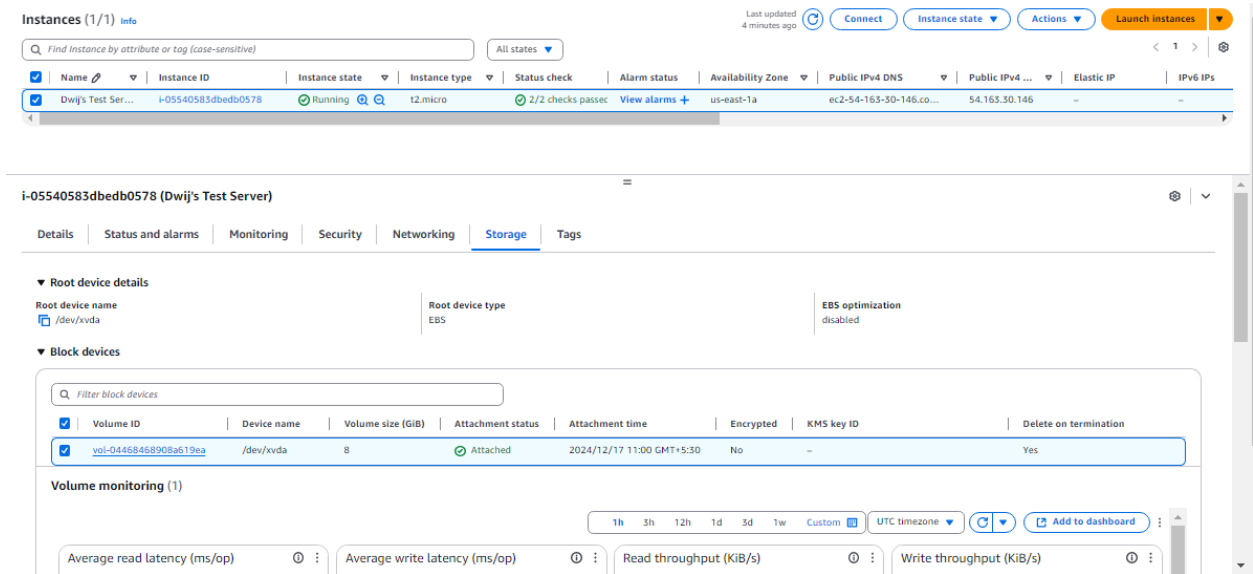
Instance Action Menu:



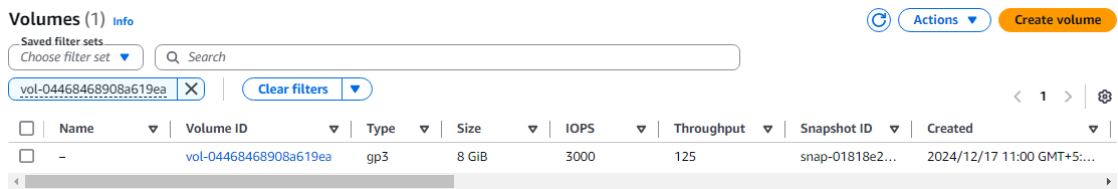
Instance State:



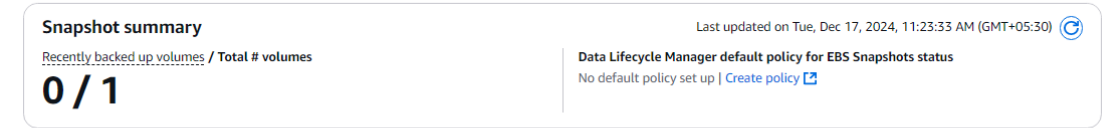
Instance Storage Details:



Filtered Volume Search: (by Volume ID)



Fault tolerance for all volumes in this Region



Create launch template

Creating a launch template allows you to create a saved instance configuration that can be reused, shared and launched at a later time. Templates can have multiple versions.

Launch template name and description

Launch template name - *required*

Must be unique to this account. Max 128 chars. No spaces or special characters like '&', '!', '@'.

Template version description

Max 255 chars

Auto Scaling guidance | [Info](#)

Select this if you intend to use this template with EC2 Auto Scaling

☐ Provide guidance to help me set up a template that I can use with EC2 Auto Scaling

► Template tags

► Source template

Launch template contents

Specify the details of your launch template below. Leaving a field blank will result in the field not being included in the launch template.

▼ Summary

Software Image (AMI)

-

Virtual server type (instance type)

-

Firewall (security group)

-

Storage (volumes)

-

❗ Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

✕

Cancel

Create launch template

✔ Successfully initiated termination (deletion) of i-05540583dbedb0578 ✕

Instances (1/1) Info

Last updated less than a minute ago ↺ Connect Instance state ▾ Actions ▾ Launch instances ▾

All states ▾

| <input checked="" type="checkbox"/> | Name 🔗 | Instance ID | Instance state | Instance type | Status check | Alarm status | Availability Zone | Public IP |
|-------------------------------------|---|---------------------|---|---------------|--|--|-------------------|-----------|
| <input checked="" type="checkbox"/> | Dwij's Test Ser... | i-05540583dbedb0578 | ⌛ Shutting-d... | t2.micro | ✔ 2/2 checks passed | View alarms + | us-east-1a | ec2-54- |

i-05540583dbedb0578 (Dwij's Test Server)

Details
Status and alarms
Monitoring
Security
Networking
Storage
Tags

▼ Root device details

| | | |
|--|-------------------------|------------------------------|
| Root device name /dev/xvda | Root device type EBS | EBS optimization disabled |
|--|-------------------------|------------------------------|

▼ Block devices

It is a template that contains the software and data required to launch an EC2 instance. You can create your own AMI to your specific requirements. The AMI must be compatible with the instance type that you chose for your instance. You can use an AMI provided by AWS, a public AMI, an AMI that someone else shared with you, or an AMI that you purchased from the AWS Marketplace.

-
- The diagram illustrates the workflow for building and distributing EC2 images using AWS CloudFormation. It starts with a 'Base image' (represented by two rows of three squares) which is processed by the 'EC2 Image Builder' (represented by a gear and a code icon). The output is a 'Customize software installed on the image' (represented by a laptop with a gear icon). This is followed by 'Secure image with AWS-provided and/or custom templates' (represented by a shield with a checkmark icon). The final step is 'Distribute "golden" image to selected AWS regions' (represented by a globe with squares). The workflow is shown as a sequence of steps connected by arrows, with a central box for 'EC2 Image Builder' and a final box for 'Distribute "golden" image to selected AWS regions'.

AMI Catalog: There are Free Tier & Quick Start AMIs along with AWS own created AMIs with trusted third party AMI. It also provides templates that are published by anyone but they are not recommended.

AMI Catalog

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.

The screenshot shows the AWS AMI Catalog interface. At the top, there are buttons for "Create Template with AMI" and "Launch Instance with AMI". Below these is a search bar with the placeholder text "Search for an AMI by entering a search term e.g. 'Windows'". The interface is divided into four tabs: "Quick Start AMIs (45)", "My AMIs (0)", "AWS Marketplace AMIs (10145)", and "Community AMIs (500)". The "Quick Start AMIs" tab is selected. On the left, there is a "Refine results" section with a "Clear all filters" button and a list of filters: "Free tier only info", "OS category" (with sub-options "All Linux/Unix" and "All Windows"), and "Architecture". The main content area shows "All products (45 filtered, 45 unfiltered)". The first product listed is "Amazon Linux 2023 AMI" with the ID "ami-01816d07b1128cd2d (64-bit (x86), uefi-preferred) / ami-02dcfe5d1d39baa4e (64-bit (Arm), uefi)". It includes an AWS logo, the text "Amazon Linux", and a "Free tier eligible" badge. A description states: "Amazon Linux 2023 is a modern, general purpose Linux-based OS that comes with 5 years of long term support. It is optimized for AWS and designed to provide a secure, stable and high-performance execution environment to develop and run your cloud applications." Below the description are details: "Platform: amazon", "Root device type: ebs", "Virtualization: hvm", and "ENA enabled: Yes". On the right, there is a "Select" button and two radio button options: "64-bit (x86), uefi-preferred" (selected) and "64-bit (Arm), uefi".

EC2 Image Builder to create your own AMI:

The screenshot shows the AWS EC2 Image Builder console. The breadcrumb navigation is "EC2 Image Builder > Image pipelines > Create image pipeline". The left sidebar shows a progress bar with six steps: "Step 1: Specify pipeline details" (selected), "Step 2: Choose recipe", "Step 3: Define image creation process", "Step 4 - optional: Define infrastructure configuration", "Step 5 - optional: Define distribution settings", and "Step 6: Review". The main content area is titled "Specify pipeline details" and contains a "General" section. It has two text input fields: "Pipeline name" (with a placeholder "Enter pipeline name" and a note "Enter a name that has not been used. Maximum 70 characters. Letters, numbers, spaces, -, and _ are allowed") and "Description - optional" (with a placeholder "Enter description" and a note "Maximum 1024 characters."). Below these is a section for "Enhanced metadata collection (for AMI only)" with a note: "EC2 Image Builder uses AWS Systems Manager Inventory to collect additional information about the images you create. This information is verified before the creation of an image to ensure compatibility between components and images." There is a checkbox labeled "Enable enhanced metadata collection" which is checked. Below this is a note: "If you deselect this box, the collection of additional information from images created for this pipeline will be disabled." At the bottom, there is a blue box with a warning icon and text: "Enable security scanning settings to enable enhanced scanning for this image pipeline." The footer of the console shows "CloudShell", "Feedback", and copyright information: "© 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences".

Reviewing AMI Properties:

aws

Search

[Alt+S]

EC2 Image Builder

Image pipelines

Create image pipeline

More

Step 1

Specify pipeline details

Step 2

Choose recipe

Step 3

Define image creation process

Step 4 - optional

Define infrastructure configuration

Step 5 - optional

Define distribution settings

Step 6

Review

Review

Step 1: Pipeline details

Edit

General

| | | | |
|----------------------------------|---|--|---------------------------------|
| Pipeline name AMI Test | Description - | Enhanced metadata collection Enabled | Build schedule Manual |
| Tags - | Dependency update settings Run pipeline based on schedule | Security scanning - | |

Step 2: Recipe

Edit

Recipe details

Summary

| | | | |
|-------------------------------|----------------------------------|-------------------------|---|
| Name Recipe of Dwij | Type Image recipe | Version 1.0.0 | Base image amr:aws:imagebuilder:us-east-1:aws:image/amazon-linux-2023-x86/x.x.x |
| Platform Linux | Working directory /tmp | Tags - | |

Build components (1)

| Name | Version | Source |
|-------------------------------|------------------------------|----------------|
| amazon-cloudwatch-agent-linux | Use latest version available | Amazon managed |

Step 3: Image creation process

Edit

Summary

| | |
|--------------------------------|----------------------|
| Type Default process | IAM role - |
|--------------------------------|----------------------|

Step 4: Infrastructure configuration

Edit

Infrastructure details

Summary

| | | |
|---|--|---|
| Instance type Use service default | IAM role EC2InstanceProfileForImageBuilder | Terminate instance on failure Enabled |
| VPC ID - | Security groups None selected | Key pair None selected |

Step 5: Distribution settings

Edit

Distribution details

Summary

| | | |
|---------------------------|-------------------------|---------------------------|
| Name Hero Honda | Description - | Creation time - |
| AMI tags - | Tags - | |

Region settings (1)

| Region | Output AMI name | Encryption (KMS key) | Target accounts for distribution | Principals with shared permission | Target accounts for faster launch configuration | Associated license configuration |
|-----------|-----------------|-------------------------------|----------------------------------|-----------------------------------|---|----------------------------------|
| us-east-1 | - | Configured in storage options | - | - | - | - |

Cancel

Previous

Create pipeline

CloudShell

Feedback

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Practical Task: I was provided with two sets of data, **Type of Instances** and **Reserved Instances** information region wise. My task was to compare these datasets and identify any difference. I was instructed to highlight any data that did not match between the two sets. (The highlighted instance shows that the Instance type does not have a Reserved Instance, so usage cost will be high)

Types of Instances

| Name | Instance ID | Instance state | Instance type | Availability Zone | Platform details | Remarks |
|-----------|----------------------|----------------|---------------|-------------------|------------------|----------------------------|
| Server 7 | i-0de0bd6c8d7c8bcd | Stopped | c4.large | ap-south-1a | Linux/UNIX | No reserve instance active |
| Server 1 | i-0fe257b0a224a6a98 | Running | c4.xlarge | ap-south-1a | Windows | |
| Server 21 | i-0dd1befcccd10fcc5b | Stopped | c4.xlarge | ap-south-1a | Windows | No reserve instance active |
| Server 9 | i-00f3319c979b721e0 | Running | c5.2xlarge | ap-south-1a | Windows BYOL | No reserve instance active |
| Server 16 | i-0e79e26d17ddb443a | Running | c5.xlarge | ap-south-1a | Windows | |
| Server 14 | i-06ac07a42bd06b560 | Stopped | c5a.large | ap-south-1a | Windows | No reserve instance |
| Server 8 | i-00fa0318587e773cc | Running | m5.large | ap-south-1a | Windows | |
| Server 10 | i-0927c6e5fe2efa8a1 | Running | m5.large | ap-south-1a | Windows | No reserve instance |
| Server 4 | i-090651ced9faa9cc8 | Running | m5.xlarge | ap-south-1a | Windows | |
| Server 11 | i-031437958bd165095 | Running | t2.large | ap-south-1a | Linux/UNIX | |
| Server 15 | i-0e6c4a1302a52cef6 | Running | t2.large | ap-south-1a | Linux/UNIX | |
| Server 17 | i-0c9df6a2563752345 | Stopped | t2.large | ap-south-1a | Linux/UNIX | No reserve instance |
| Server 2 | i-02865b996e33d0b66 | Running | t2.medium | ap-south-1a | Linux/UNIX | No reserve instance |
| Server 13 | i-08753ed649c06fda7 | Running | t2.medium | ap-south-1a | Linux/UNIX | |
| Server 20 | i-0e0ec8c943c72e12b | Running | t2.medium | ap-south-1a | Linux/UNIX | |
| Server 3 | i-0158b3ad1511ccb23 | Running | t2.xlarge | ap-south-1a | Windows | |
| Server 5 | i-0bf322914d8f28d41 | Running | t3.large | ap-south-1a | Windows | |
| Server 6 | i-056ad03bfdaa1cf3b | Running | t3.medium | ap-south-1a | Windows | |
| Server 19 | i-0931e06c09bf2c7e3 | Stopped | t3a.large | ap-south-1a | Windows | No reserve instance |
| Server 18 | i-09c8b82a1dc8d15de | Running | t3a.medium | ap-south-1a | Linux/UNIX | No reserve instance |
| Server 22 | i-06e526c7fa29304f4 | Running | t3a.medium | ap-south-1a | Linux/UNIX | No reserve instance |
| Server 12 | i-0d4fc5afc9226f987 | Running | t3a.xlarge | ap-south-1a | Windows | |

Facts:

- 1) To create an instance, you can use the Amazon EC2 console, command line interface, or API.
- 2) You can enable termination protection to prevent your instance from being accidentally terminated.
- 3) By default, every menu selects a free tier of storage. (Only if you are eligible for the free tier)
- 4) Types of Instance State are as follows:-
 - i. Pending
 - ii. Running
 - iii. Stopped
 - iv. Terminated
 - v. Rebooting
- 5) EC2 instances can be complex to set up and manage, especially for non-technical users.
- 6) You can use the EC2 Instance Type Explorer to find the right instances for your workloads and business needs.