

# POC for Virtual Machine Migration from AZ to AWS via Application Migration Service

This is a documentation for migrating windows virtual machines from azure to aws.

Here we are using AWS service named [Application Migration Service](#) which is used for migrating virtual machines to AWS.

Initially we want setup the settings of Application Migration Service

Mainly there are three settings Replication Templates, [Launch template](#) and [Post-launch template](#)

## Replication Templates :

The replication template determines how your servers will be replicated to AWS through a variety of settings, including Replication Server instance type, Amazon EBS volume type, Amazon EBS encryption, security groups, data routing, and tags. Please verify the attached screenshot for Replication Templates,

[Application Migration Service](#) > [Replication template](#) > Edit replication template

## Edit replication template [Info](#)

Source servers added to this console have replication settings that control how data is sent from the source server to AWS. These settings are created automatically based on this template, and can be modified at any time for any source server or group of source servers. The defaults can be modified at any time. Changes made to defaults will only affect newly added servers.

### Replication server configuration [Info](#)

Replication servers are lightweight EC2 instances launched by Application Migration Service to facilitate the transfer of blocks of data from the disks on your source servers to AWS.

#### Staging area subnet

The staging area subnet is the subnet within which replication servers and conversion servers are launched. By default, Application Migration Service will use the default subnet on your AWS Account.

T6-Devops-Migration-subnet-private1-us-east-1a  
vpc-0dc9dc9dcbf253012078

#### Replication Server instance type

The replication server instance type is the default EC2 instance type to use for replication servers. The recommended best practice is to not change the replication server instance type unless there is a business need to do so.

m5.xlarge

### Volumes [Info](#)

For each disk on an added source server there is an identically-sized EBS volume attached to a replication server, and each replication server can handle replication of disks from multiple source servers.

#### EBS volume type (for replicating disks over 500GiB)

The default EBS Volume type to be used by the replication servers.

Faster, General Purpose SSD (gp3)

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#### EBS encryption

This option will encrypt your replicated data at rest on the staging area subnet disks and the replicated disks.

Default ▼

### Security groups [Info](#)

A security group acts as a virtual firewall, which controls the inbound and outbound traffic of the staging area. The best practice is to have Application Migration Service automatically attach and monitor the default Application Migration Service security group. This group opens inbound TCP Port 1500 for receiving the transferred replicated data.

☒ Always use Application Migration Service security group

Additional security groups

Select additional security groups ▼

T6-Devops-Migration-AZ-AWS ✕  
sg-06da1c4d104818b4d

### Data routing and throttling [Info](#)

This setting controls how data flows from the external server to the replication servers. If you choose not to use a private IP, your replication servers will be automatically assigned a public IP and data will flow over the public internet.

- ☐ Create public IP
- ☒ Use private IP for data replication (VPN, DirectConnect, VPC peering, etc.)
- ☐ Create public IP, and use Private IP for data replication (VPN, DirectConnect, VPC peering, etc.)
- ☐ Throttle network bandwidth (per server - in Mbps)

Please make sure that the security group mentioned above have 1500 port is open

#### Launch Templates:

Allows you to control the way AWS Application Migration Service launches instances in AWS.

Please go through the below screenshot for the configurations of Launch Template

# Edit launch template [Info](#)

Every source server added to this service has an EC2 launch template that controls its launch settings. The EC2 launch template is created automatically based on the launch template. Once a server is added to MGN, you can modify its EC2 template at any time.

## General launch settings [Info](#)

Configure the default settings that will be used when launching target servers.

☒ **Activate instance type right-sizing**

The service will determine the best match instance type. The default instance type defined in the EC2 template will be ignored.

☒ **Start instance upon launch**

The service will launch instances automatically. If this option is not selected, launched instance will need to be manually started after launch.

☐ **Copy private IP**

Enable this setting to copy the private IP of your source server to the target.

☒ **Transfer server tags**

Transfer the tags from the source server to the launched instances.

### Operating system licensing

Specify whether to continue to use the license of the source server or use an AWS provided license.

☐ Bring your own license (BYOL)

☒ Use AWS provided license

Its always best practice to keep activate the instance type right sizing

## Default EC2 Launch Template [Info](#)

Configure the default settings that will be applied to the EC2 launch template of every target server.

### Default target subnet

This is the target subnet to be associated with any instance launched by this service.

T6-Devops-Migration-subnet-private1-us-east-1a  
vpc-0dc9dcbf253012078

### Additional security groups

These are the security groups to associate with all instances launched by this service.

Select additional security groups

T6-Devops-Migration-AZ-AWS X  
sg-06da1c4d104818b4d

### Default instance type

This is the default instance type to be used for all instances launched by this service. This value is ignored if instance type right-sizing is active.

Choose an instance type

### EBS volume type

This is the default volume type used for EBS volumes. You can overwrite this value for small volumes, using API.

General Purpose SSD (gp3)

### IOPS

General Purpose SSD (gp3) volumes support a baseline of 3,000 IOPS. Additionally, you can provision up to 500 IOPS per GiB up to a maximum of 16,000 IOPS.

3000

Min: 3000 IOPS, max: 16,000 IOPS (up to 500 IOPS per GiB).

### Throughput

General Purpose SSD (gp3) volumes have a baseline performance of 125 MiB/s. You can provision additional throughput of 0.25 MiB/s per provisioned IOPS up to a maximum of 1,000 MiB/s (at 4,000 IOPS or higher).

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Choose an instance type ▼

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125

Min: 125 MiB/s, max: 1000 MiB/s.

## MAP program tagging [Info](#)

Configure MAP resource tags to be applied to all instances launched by this service.

Select this option to automatically add the MAP program tag when launching this server.

☐ Add MAP tag to launched instances

### MAP tag value

Migrated resources will be automatically tagged with the "map migrated" key. Provide the tag value to use for your MAP migrated resources.

Cancel

Save template

### Post Launch Template :

Post-launch settings allow you to control and automate actions performed after the server has been launched in AWS. These settings are created automatically based on the **Post-launch template**.

Please go through the below screenshot for post-launch-template

## Post-launch template Info

Configure actions to be executed on every server, upon server launch

### Post-launch actions Info

The service can execute actions on your servers, after they are launched, using AWS Systems Manager (AWS SSM). The service will install the AWS SSM agent, and execute the actions you select.

☒ Install the Systems Manager agent and allow executing actions on launched servers

**i** By continuing, you are allowing AWS Application Migration Service to install the SSM agent and create the IAM roles required to execute automation on launched servers.

### Deployment Info

Choose whether to execute the post-launch actions on your cutover instances only, your test instances only or on both your test and cutover instances.

☐ Test and cutover instances (recommended)  
All post-launch actions will be executed on test and cutover instances.

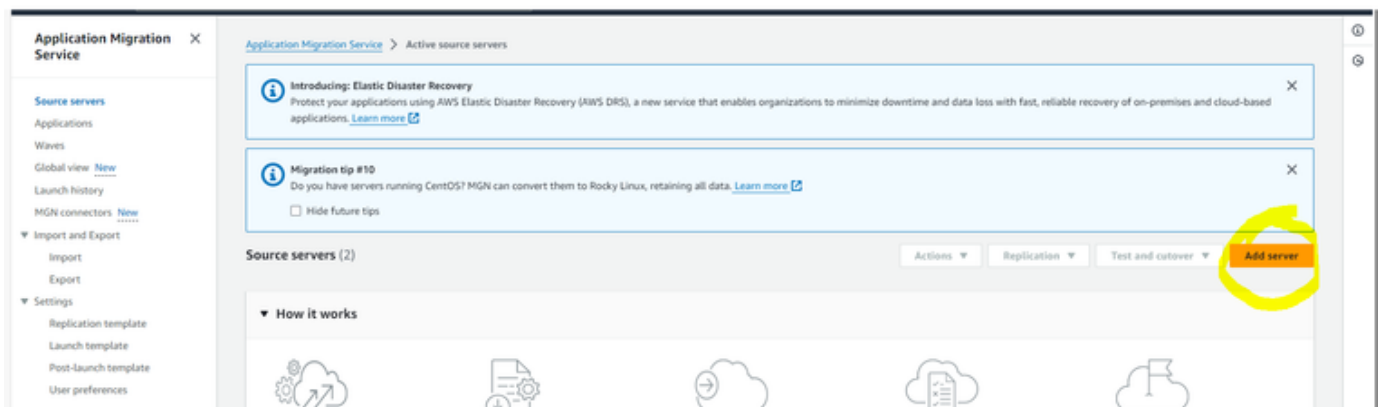
☒ Cutover instances only  
All post-launch actions will only be executed on the cutover instances.

☐ Test instances only  
All post-launch actions will only be executed on the test instances.

Cancel

Save template

After setting up all the above settings configuration we can add the server from azure like below screenshot



While adding the server please make sure the credentials of IAM user that we are using have the enough permission ([AWSApplicationMigrationAgentPolicy](#))

Also please make sure it also have endpoints for the VPC .

Needed endpoints :  
com.amazonaws.us-east-1.mgn  
com.amazonaws.us-east-1.ec2

Also make sure these endpoints are attached to the security group which is used by the migrated virtual machine(ec2)

[Application Migration Service](#) > [Active source servers](#) > Add server

## Add server

To add your source server to this console, you need to install the AWS Replication Agent on it. Use the options below to construct the installation command, then copy the command and download the installer. [Learn more](#)

Agentless replication is available. [Learn more](#)

### AWS Replication Agent installation

#### 1. Select your operating system

- ☐ Linux
- ☒ Windows
- ☐ Legacy OS: Windows Server 2003 or Windows Server 2008

#### 2. Select your replication preferences [Info](#)

Replicate all disks ▼

#### 3. Provide the required credentials [Info](#)

Create an IAM role or user with the `AWSApplicationMigrationAgentInstallationPolicy` policy.

IAM access key ID

rgtbsfqtwyngghfs

IAM secret access key

This form does not send the secret – it only adds it to the installation command you can copy

.....

Show

Session token

Session token is only required when using temporary credentials

#### 4. User provided resource id - optional [Info](#)

5. Download the [installer](#) onto your source server (or copy it there after downloading)



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If you need to validate the installer hash, the correct hash can be found here:

<https://aws-application-migration-service-hashes-us-east-1.s3.us-east-1.amazonaws.com/latest/windows/AwsReplicationWindowsInstaller.exe.sha512>

6. Copy and input the command below into the PowerShell command-line on your source server

```
.\AwsReplicationWindowsInstaller.exe --region us-east-1 --aws-access-i
```

 Copy

Copy the input command and run the this command on the server we want to migrate.

Requirements for the Server that we want to migrate

1. Please make sure the system is upto date.
2. Install AWS CLI
3. Please make sure the date and time is updated. (Check the below commands)

```
Set-TimeZone -Id "Eastern Standard Time"
```

```
Get-TimeZone
```

```
w32tm /resync
```

If you face below error :



The installation of the AWS Replication Agent has started.  
Downloading of <https://aws-application-migration-service-us-east-1.s3.us-east-1.amazonaws.com/latest/windows/AwsReplicationInstaller.exe> failed.

This is usually caused by lack of routing to AWS, firewall configuration that block the connection (local or in a firewall appliance) or an incorrect web proxy configuration on this server.

Resolve the connectivity issue and run the installer again.

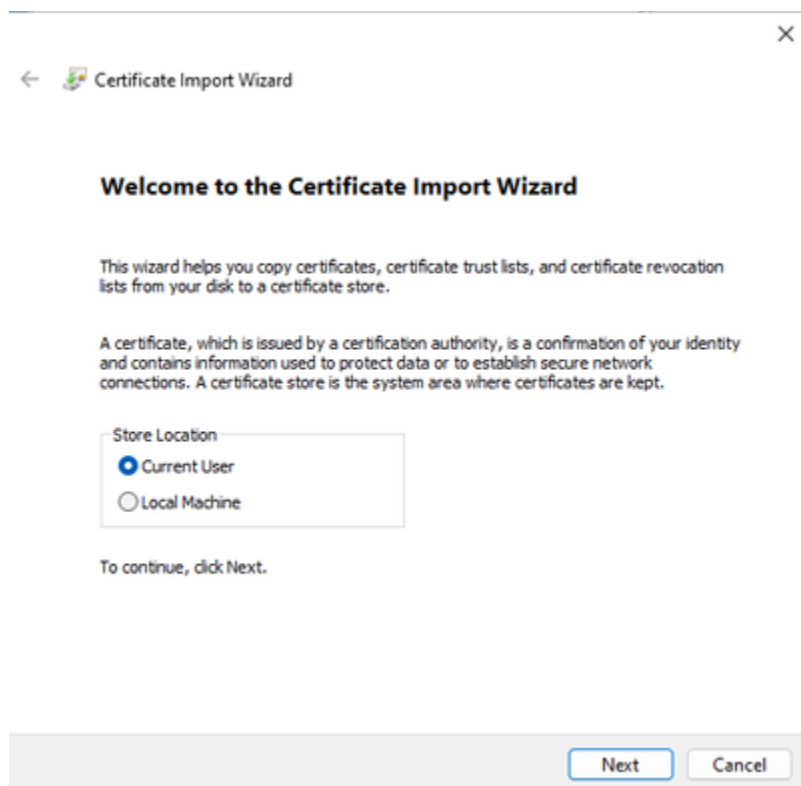
Learn more about connectivity issues in our documentation at <https://docs.aws.amazon.com/mgn/latest/ug/Troubleshooting-Agent-Issues.html#Error-Installation-Failed>  
Error details: <urlopen error [SSL: CERTIFICATE\_VERIFY\_FAILED] certificate verify failed: unable to get local issuer certificate (\_ssl.c:1131)>

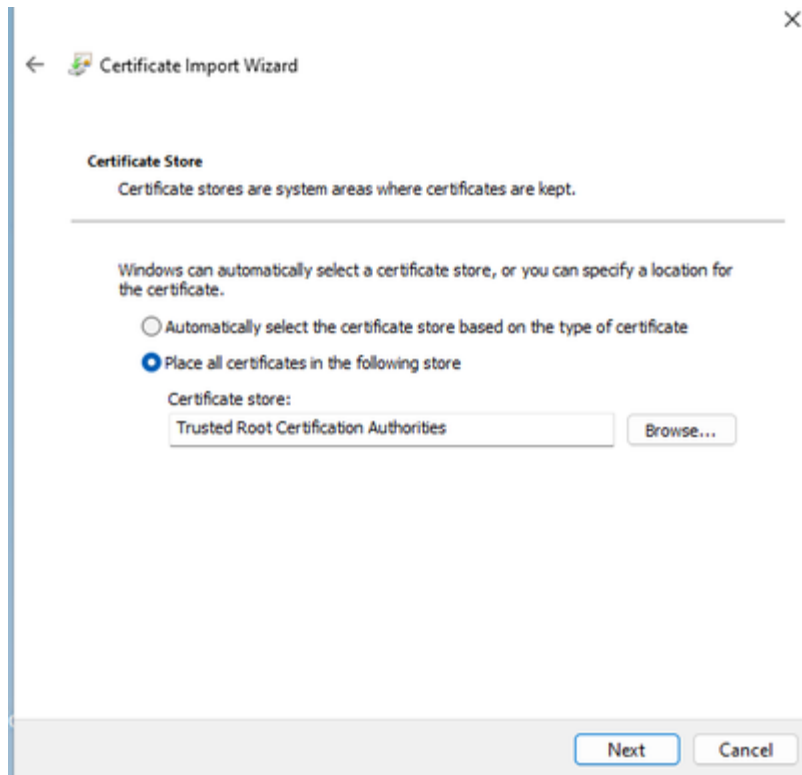
Download the certificate using below link

<https://www.amazontrust.com/repository/>

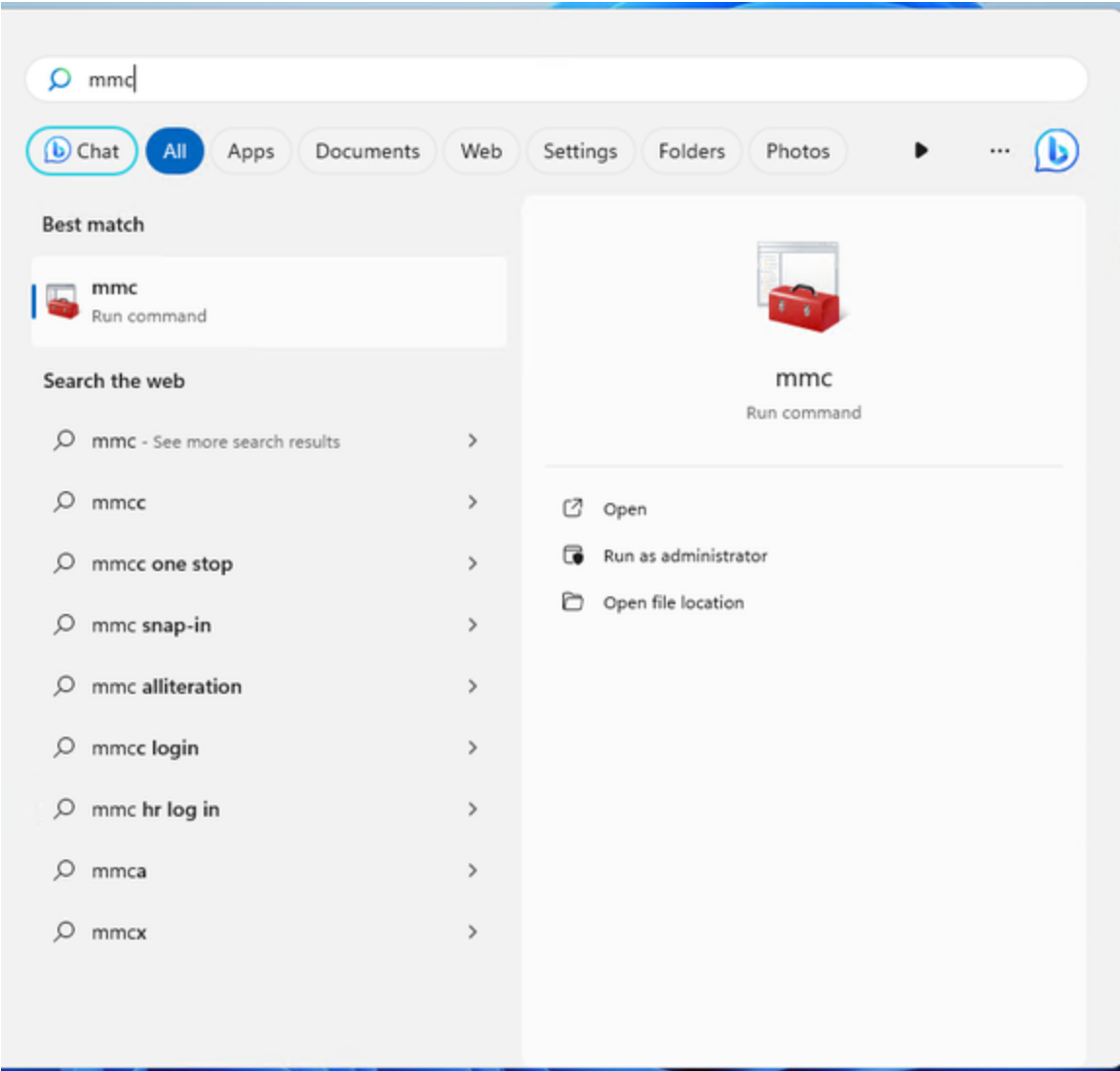
Before downloading the certificate please make sure it is valid.

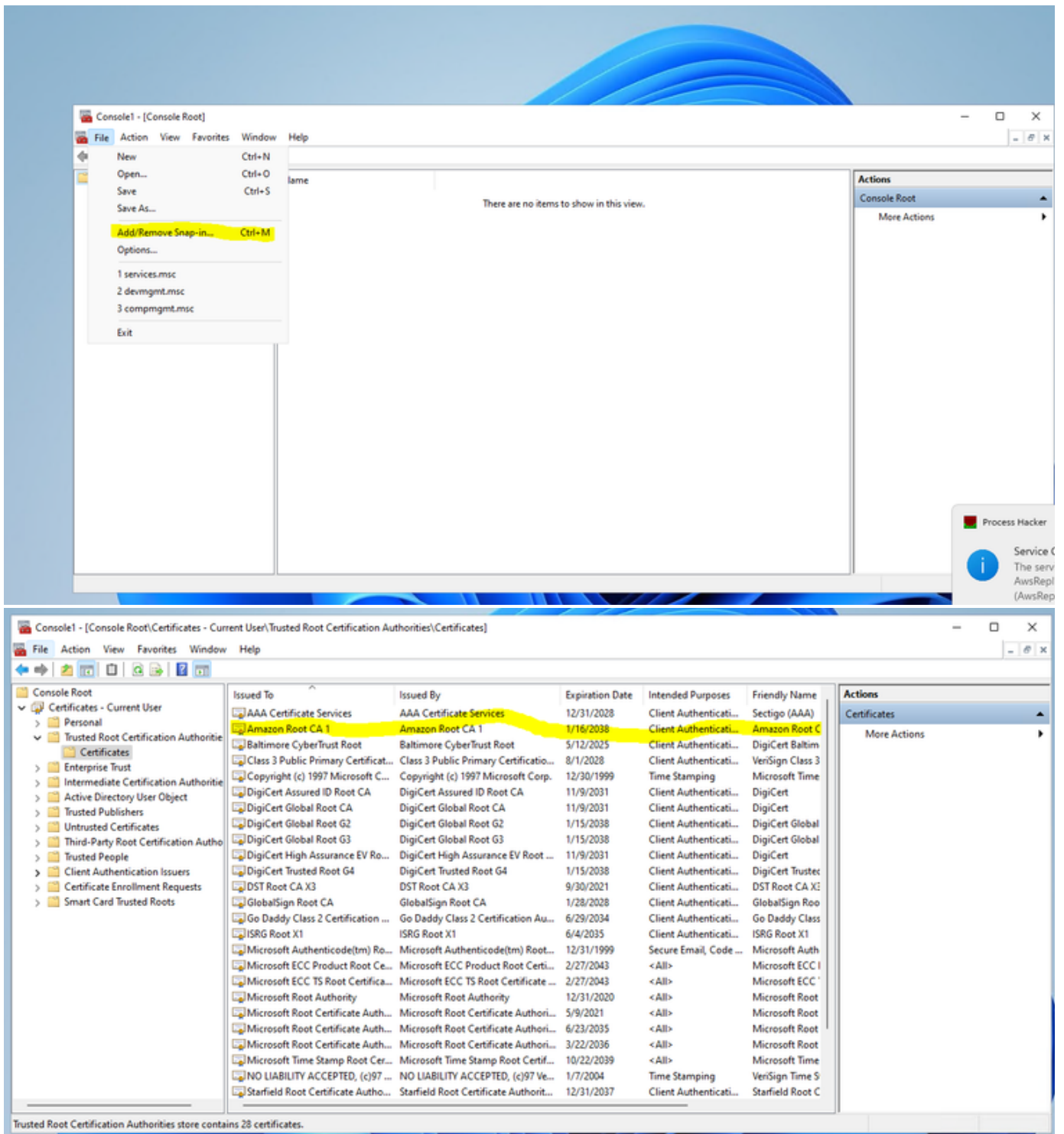
Please follow the below screenshot for adding certificate to your machine if it is windows





To verify the certificate is added please got through below screenshots





Steps to follow in the Migration Server is

1. Download the [installer](#) onto your source server (or copy it there after downloading)
2. Run the command that is 6th step mentioned in the above screenshot

```
Administrator: Windows PowerShell
PS C:\Users\jenkins-user\Downloads>
PS C:\Users\jenkins-user\Downloads>
PS C:\Users\jenkins-user\Downloads> ls

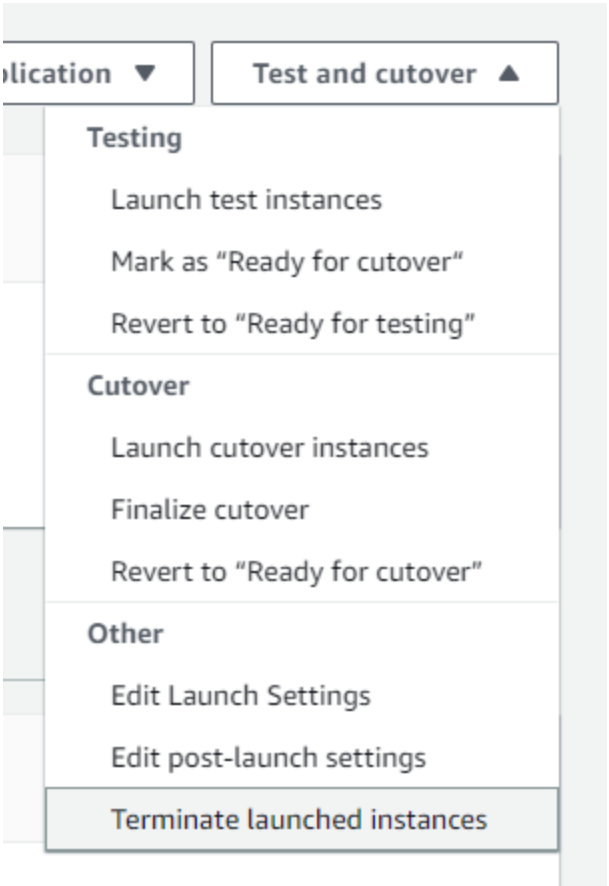
Directory: C:\Users\jenkins-user\Downloads

Mode                LastWriteTime         Length Name
----                -
-a----            1/2/2024 12:00 PM        40353792 AWSCLIV2.msi
-a----            1/2/2024  1:41 PM        7085240 AwsReplicationWindowsInstaller.exe
-a----            1/2/2024  4:13 PM         211810 aws_replication_agent_installer.log

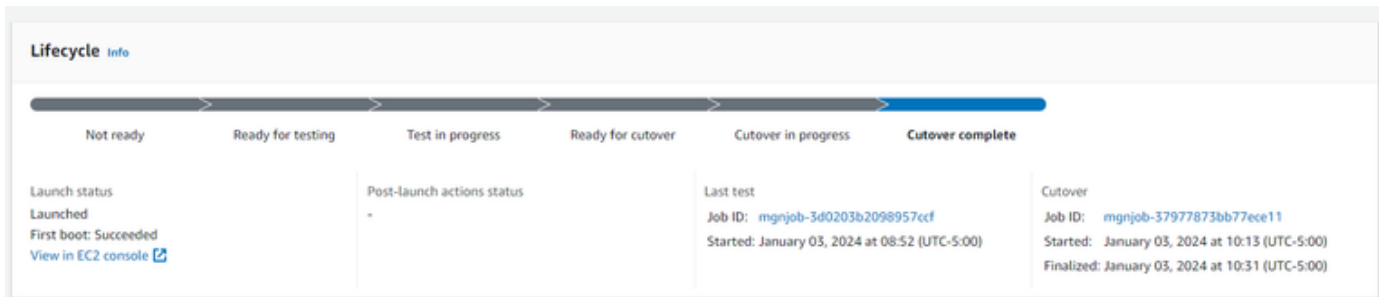
PS C:\Users\jenkins-user\Downloads> .\AwsReplicationWindowsInstaller.exe --region us-east-1 --aws-access-key-id AKIAV40F
2HBMUKXDQTON --aws-secret-access-key PWiejSlvDJo9PmLU923c+T955QBvUHQXmxYBVAWF --no-prompt
The installation of the AWS Replication Agent has started.
Verifying that the source server has enough free disk space to install the AWS Replication Agent (a minimum of 2 GB of f
ree disk space is required).
Identifying volumes for replication.
Disk to replicate identified: c:\ of size 128 GiB
Disk to replicate identified: d:\ of size 56 GiB
All volumes for replication were successfully identified.
Downloading the AWS Replication Agent onto the source server...
Finished.
Installing the AWS Replication Agent onto the source server...
```

After running above commands successfully we will see the servers in the source servers

After that run each command by selecting the server



The below screenshot is the lifecycle of migrations



Here in the life cycle upto ready for cutover will take lot of time according to the size of the Migrated VM.

Once you finish the lifecycle you can see the virtual machines in the EC2 console.