

Ex No 9

Install and configure Jenkins on Azure Linux VM

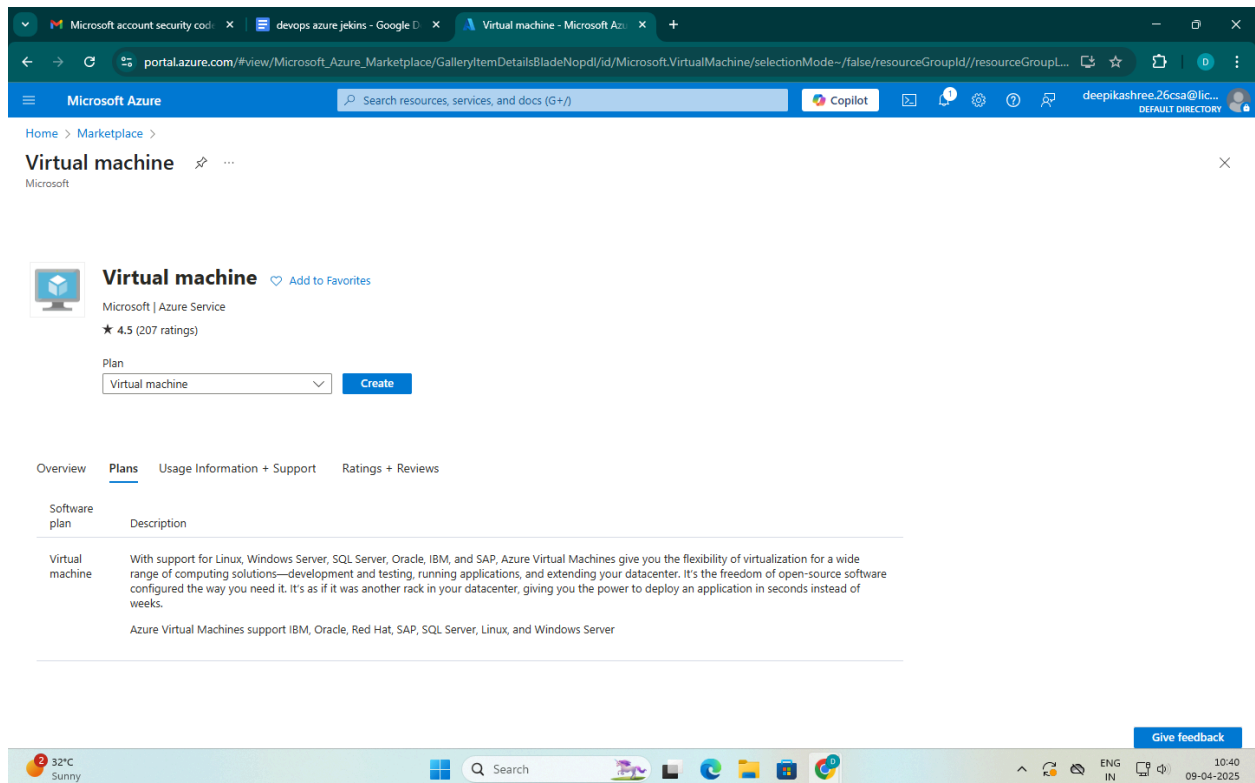
AIM:

To install and configure Jenkins on Azure Linux VM.

PROCEDURE:

Step 1: To launch a virtual machine (VM) instance on Microsoft Azure, follow these steps:

1. Sign in to the Azure portal: Go to <https://portal.azure.com> and sign in with your Azure account.
2. Create a new virtual machine:
3. In the Azure portal's left-hand menu, click on "Create a resource".
4. In the search box, type "Virtual Machine" and press Enter.
5. Select "Virtual machine" from the search results.



Microsoft account security cod... x devops azure jenkins - Google D... x B2026.DevOps - Google Drive... x Create a virtual machine - Micr... x +

portal.azure.com/#create/Microsoft.VirtualMachine-ARM

Microsoft Azure Search resources, services, and docs (G+/)

Home > Create a resource > Marketplace > Virtual machine >

Create a virtual machine

Help me create a low cost VM Help me create a VM optimized for high availability Help me choose the right VM size for my workload

Zone options ☒ Self-selected zone
Choose up to 3 availability zones, one VM per zone
☐ Azure-selected zone (Preview)
Let Azure assign the best zone for your needs
i Using an Azure-selected zone is not supported in region 'Japan East'.

Availability zone *
☒ You can now select multiple zones. Selecting multiple zones will create one VM per zone. [Learn more](#)

Security type
[Configure security features](#)
i Trusted launch virtual machine is required when using 1P Gallery images.

Image *
[See all images](#) | [Configure VM generation](#)

VM architecture ☐ Arm64 ☒ x64

Run with Azure Spot discount ☐

Size *
[See all sizes](#)

< Previous Next : Disks > Review + create Give feedback

32°C Sunny

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portal.azure.com/#create/Microsoft.VirtualMachine-ARM

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Create a virtual machine

Help me create a low cost VM Help me create a VM optimized for high availability Help me choose the right VM size for my workload

i Azure does not currently support trusted launch and confidential virtual machines for Linux images. [Learn more](#)

Administrator account

Authentication type ☒ SSH public key ☐ Password
i Azure now automatically generates an SSH key pair for you and allows you to store it for future use. It is a fast, simple, and secure way to connect to your virtual machine.

Username *

SSH public key source

SSH Key Type ☒ RSA SSH Format ☐ Ed25519 SSH Format
i Ed25519 provides a fixed security level of no more than 128 bits for 256-bit key, while RSA could offer better security with keys longer than 3072 bits.

Key pair name *

Inbound port rules
Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

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portal.azure.com/#create/Microsoft.VirtualMachine-ARM

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Copilot

deepikashree.26csa@lic...DEFAULT DIRECTORY

Home > Create a resource > Marketplace > Virtual machine >

Create a virtual machine

×

Help me create a low cost VMHelp me create a VM optimized for high availabilityHelp me choose the right VM size for my workload

Username *

azureuser

SSH public key source

Generate new key pair

SSH Key Type

☒ RSA SSH Format

☐ Ed25519 SSH Format

Ed25519 provides a fixed security level of no more than 128 bits for 256-bit key, while RSA could offer better security with keys longer than 3072 bits.

Key pair name *

jenkin_keypair

Inbound port rules

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

Public inbound ports *

☐ None

☒ Allow selected ports

Select inbound ports *

SSH (22)

This will allow all IP addresses to access your virtual machine. This is only recommended for testing. Use the Advanced controls in the Networking tab to create rules to limit inbound traffic to known IP addresses.

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Search

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portal.azure.com/#create/Microsoft.VirtualMachine-ARM

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deepikashree.26csa@lic...DEFAULT DIRECTORY

Home > Create a resource > Marketplace > Virtual machine >

Create a virtual machine

×

Validation passed

Help me create a low cost VMHelp me create a VM optimized for high availabilityHelp me choose the right VM size for my workload

Region

Japan East

Availability options

No infrastructure redundancy required

Zone options

Self-selected zone

Security type

Trusted launch virtual machines

Enable secure boot

Yes

Enable vTPM

Yes

Integrity monitoring

No

Image

Ubuntu Server 22.04 LTS - Gen2

VM architecture

x64

Size

Standard B1s (1 vcpu, 1 GiB memory)

Enable Hibernation

No

Authentication type

SSH public key

Username

azureuser

SSH Key format

RSA

Key pair name

jenkin_keypair

Public inbound ports

SSH

Azure Spot

No

Disks

< PreviousNext >Create

Download a template for automationGive feedback

Sports headline Priyansh Arya an...

Search

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Generate new key pair

An SSH key pair contains both a public key and a private key. Azure doesn't store the private key. After the SSH key resource is created, you won't be able to download the private key again. [Learn more](#)

Download private key and create resource

Return to create a virtual machine

Microsoft account security cod... B2026_DevOps - Google Drive... devops azure jenkins - Google D... CreateVm-canonical.0001-com-... +

portal.azure.com/#view/HubsExtension/DeploymentDetailsBlade/-/overview/id/%2Fsubscriptions%2Ffe4a6f73-8c95-4bf4-8d07-0790463ee6a3%2FresourceGroups%2F... Search resources, services, and docs (G+)

Microsoft Azure

Home > CreateVm-canonical.0001-com-ubuntu-server-jammy-2-20250409104539 | Overview

Deployment

Search

Overview

Inputs

Outputs

Template

Deployment is in progress

Deployment name: CreateVm-canonical.0001-com-ubuntu-server-j... Start time: 9/4/2025, 10:56:38 am

Subscription: Azure for Students

Resource group: AL_group

Correlation ID: 2efecdb3-1f34-48d1-8f28-a272b76f34ed

Deployment details

Resource	Type	Status	Operation details
jenins	Microsoft.Compute/virtualMa...	Created	Operation details
jenins891	Microsoft.Network/networkin...	Created	Operation details
jenins-nsg	Microsoft.Network/networkSe...	OK	Operation details
jenins-ip	Microsoft.Network/publicA...	OK	Operation details

Give feedback

Tell us about your experience with deployment

Deployment succeeded

Deployment 'CreateVm-canonical.0001-com-ubuntu-server-jammy-2-20250409104539' to resource group 'AL_group' was successful.

Go to resource

Pin to dashboard

Microsoft Defender for Cloud

Secure your apps and infrastructure

Go to Microsoft Defender for Cloud >

Free Microsoft tutorials

Start learning today >

Work with an expert

Azure experts are service provider partners who can help manage your assets on Azure and be your first line of support.

Find an Azure expert >

Finance headline

Government wel...

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10:56

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portal.azure.com/#@deepikashree26csa@licetac.onmicrosoft.com/resource/subscriptions/fe4a6f73-8c95-4bf4-8d07-0790463ee6a3/resourcegroups/AL_group/provider... Search resources, services, and docs (G+)

Microsoft Azure

Home > CreateVm-canonical.0001-com-ubuntu-server-jammy-2-20250409104539 | Overview

jenins | Connect

Virtual machine

Search

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Resource visualizer

Connect

Connect

Bastion

Networking

Settings

Availability + scale

Security

Backup + disaster recovery

Operations

Monitoring

Automation

Help

SSH using Azure CLI

Connect from the Azure portal

Refresh

Connect from Azure portal

Connect from local machine

Connection settings

Source IP address

Any IP

VM IP address

Public IP | 172.207.116.196

VM port

22

Configurations

VM administrator login role

Ready to configure

Microsoft Entra ID SSH extension

Ready to configure

System assigned managed identity

Ready to configure

Inbound NSG rules

Ready to check NSG rules

Configure

Validation passed. Click configure to connect.

Connect using Cloud Shell

Close

Troubleshooting

Give feedback

Finance headline

Government wel...

Search

ENG IN

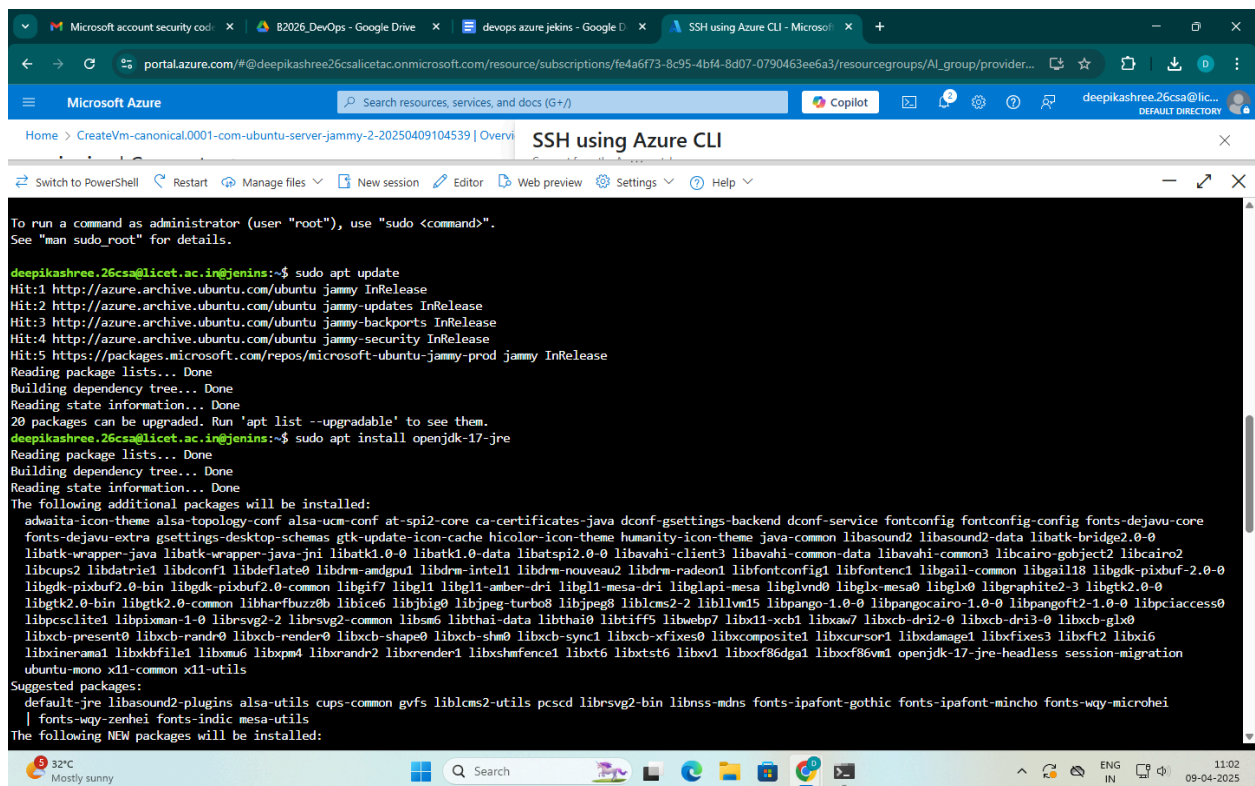
10:57

09-04-2025

Step 2: Connect to the VM using SSH using Azure CLI and Install Jenkins.

Pre-Requisites: Java (JDK)

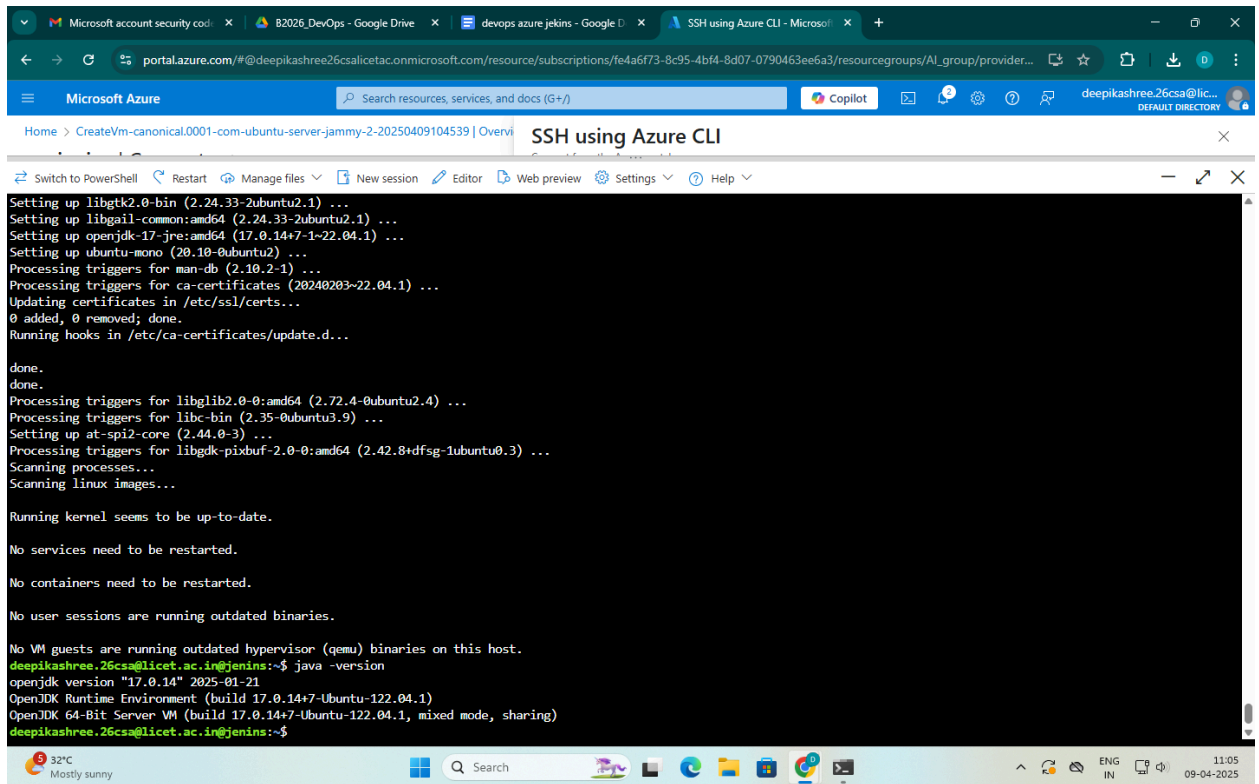
1. Run the below commands to install Java and Jenkins
2. Install Java
3. `sudo apt update`
4. `sudo apt install openjdk-17-jre`



The screenshot shows a terminal window titled "SSH using Azure CLI" with a dark background. The user is logged in as 'deepikashree.26c5a@licet.ac.in' in the 'jenkins' directory. The terminal displays the output of the following commands:

```
deepikashree.26c5a@licet.ac.in~$ sudo apt update
Hit:1 http://azure.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://azure.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://azure.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:4 http://azure.archive.ubuntu.com/ubuntu jammy-security InRelease
Hit:5 https://packages.microsoft.com/repos/microsoft-ubuntu-jammy-prod jammy InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
20 packages can be upgraded. Run 'apt list --upgradable' to see them.
deepikashree.26c5a@licet.ac.in~$ sudo apt install openjdk-17-jre
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  adwaita-icon-theme alsa-topology-conf alsa-ucm-conf at-spi2-core ca-certificates-java dconf-gsettings-backend dconf-service fontconfig fontconfig-config fonts-dejavu-core
  fonts-dejavu-extra gsettings-desktop-schemas gtk-update-icon-cache hicolor-icon-theme humanity-icon-theme java-common libasound2 libasound2-data libatk-bridge2.0-0
  libatk-wrapper-java libatk-wrapper-java-jni libatk1.0-0 libatk1.0-data libatspi2.0-0 libavahi-client3 libavahi-common-data libavahi-common3 libcairo-gobject2 libcairo2
  libcups2 libdata1.0 libdconf1 libdeflate0 libdrm-amdgpu1 libdrm-intel1 libdrm-nouveau2 libdrm-radeon1 libfontconfig1 libfontenc1 libgail-common libgail18 libgdk-pixbuf-2.0-0
  libgdk-pixbuf2.0-bin libgdk-pixbuf2.0-common libgif7 libgl1 libgl1-amd-dri libgl1-mesa-dri libglapi-mesa libglvnd0 libglx-mesa0 libglx0 libgraphite2-3 libgtk2.0-0
  libgtk2.0-bin libgtk2.0-common libharfbuzz0b libice6 libjbig0 libjpeg-turbo8 libjpeg8 liblcms2-2 libllvm15 libpango-1.0-0 libpangocairo-1.0-0 libpangoft2-1.0-0 libpciaccess0
  libpcsc-lite1 libpixmap-1-0 librsvg2-2 librsvg2-common libsm6 libthai-data libthai0 libtiff5 libwebp7 libx11-xcb1 libxaw7 libxcb-dri2-0 libxcb-dri3-0 libxcb-glx0
  libxcb-present0 libxcb-randr0 libxcb-render0 libxcb-shape0 libxcb-shm0 libxcb-sync1 libxcb-xfixes0 libxcomposite1 libxcursor1 libxdamage1 libxfixes3 libxft2 libxi6
  libxinerama1 libxkbfile1 libxmu6 libxpm4 libxrandr2 libxrender1 libxshmfence1 libxt6 libxtst6 libxv1 libxv86dgal libxv86vml openjdk-17-jre-headless session-migration
  ubuntu-mono x11-common x11-utils
Suggested packages:
  default-jre libasound2-plugins alsa-utils cups-common gvfs liblcms2-utils pcsd librsvg2-bin libnss-mdns fonts-ipafont-gothic fonts-ipafont-mincho fonts-wqy-microhei
  | fonts-wqy-zenhei fonts-indic mesa-utils
The following NEW packages will be installed:
```

The terminal window is part of a web browser interface, with the address bar showing a URL from portal.azure.com. The browser's address bar and tabs are visible at the top of the image.



Microsoft account security cod... B2026_DevOps - Google Drive... devops azure jenkins - Google D... SSH using Azure CLI - Microsoft...

portal.azure.com/#@deepikashree26csalicetac.onmicrosoft.com/resource/subscriptions/fe4a6f73-8c95-4bf4-8d07-0790463ee6a3/resourcegroups/AI_group/provider...

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Home > CreateVm-canonical.0001-com-ubuntu-server-jammy-2-20250409104539 | Overview SSH using Azure CLI

Switch to PowerShell Restart Manage files New session Editor Web preview Settings Help

```
Setting up libgtk2.0-bin (2.24.33-2ubuntu2.1) ...
Setting up libgail-common:amd64 (2.24.33-2ubuntu2.1) ...
Setting up openjdk-17-jre:amd64 (17.0.14+7-1-22.04.1) ...
Setting up ubuntu-mono (20.10-0ubuntu2) ...
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for ca-certificates (20240203-22.04.1) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...
done.
done.
Processing triggers for liblib2.0-0:amd64 (2.72.4-0ubuntu2.4) ...
Processing triggers for libc-bin (2.35-0ubuntu3.9) ...
Setting up at-spi2-core (2.44.0-3) ...
Processing triggers for libgdk-pixbuf-2.0-0:amd64 (2.42.8+dfsg-1ubuntu0.3) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
deepikashree.26csa@licet.ac.in@jenins:~$ java -version
openjdk version "17.0.14" 2025-01-21
OpenJDK Runtime Environment (build 17.0.14+7-Ubuntu-122.04.1)
OpenJDK 64-Bit Server VM (build 17.0.14+7-Ubuntu-122.04.1, mixed mode, sharing)
deepikashree.26csa@licet.ac.in@jenins:~$
```

32°C Mostly sunny 11:05 09-04-2025

Step 3: Install Jenkins

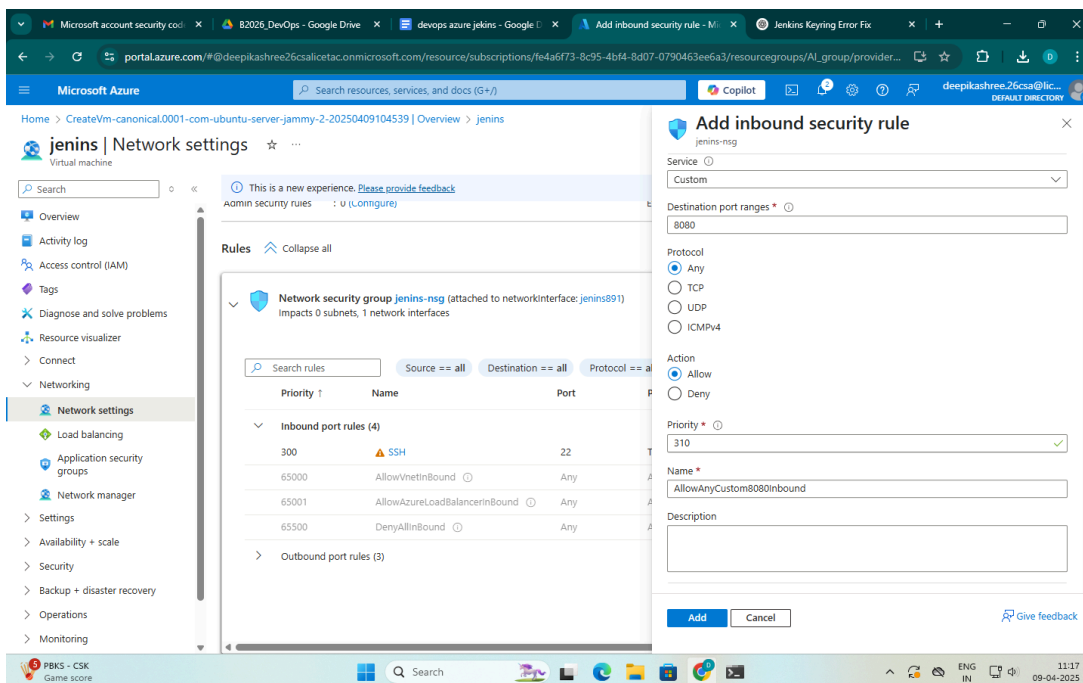
1. `curl -fsSLhttps://pkg.jenkins.io/debian/jenkins.io-2023.key | sudo tee/usr/share/keyrings/jenkins-keyring.asc >/dev/null`
2. `echo deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc] \https://pkg.jenkins.io/debian binary/ | sudo tee /etc/apt/sources.list.d/jenkins.list >/dev/null`
3. `sudo apt-get update`
4. `sudo apt-get install Jenkins`

The screenshot shows a terminal window titled "SSH using Azure CLI" connected to a VM named "jenins". The user is "deepikashree.26csa@licet.ac.in". The terminal output shows the installation of Jenkins using apt. It starts with updating the package lists and then installing Jenkins. The output includes the following commands and their results:

```
deepikashree.26csa@licet.ac.in:~$ sudo apt-get update
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
curl is already the newest version (7.81.0-1ubuntu1.20).
curl set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 20 not upgraded.
deepikashree.26csa@licet.ac.in:~$ curl -fsSL https://pkg.jenkins.io/debian/jenkins.io-2023.key | sudo tee /usr/share/keyrings/jenkins-keyrings.asc > /dev/null
deepikashree.26csa@licet.ac.in:~$ echo deb [signed-by=/usr/share/keyrings/jenkins-keyrings.asc] https://pkg.jenkins.io/debian binary/ | sudo tee /etc/apt/sources
.list.d/jenkins.list > /dev/null
echo: command not found
deepikashree.26csa@licet.ac.in:~$ echo "deb [signed-by=/usr/share/keyrings/jenkins-keyrings.asc] https://pkg.jenkins.io/debian binary/" | sudo tee /etc/apt/sources
.list.d/jenkins.list > /dev/null
echo: command not found
deepikashree.26csa@licet.ac.in:~$ echo "deb [signed-by=/usr/share/keyrings/jenkins-keyrings.asc] https://pkg.jenkins.io/debian binary/" | sudo tee /etc/apt/sources
.list.d/jenkins.list > /dev/null
deepikashree.26csa@licet.ac.in:~$ sudo apt-get install Jenkins
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
E: Unable to locate package Jenkins
deepikashree.26csa@licet.ac.in:~$
```

Step 4: By default, Jenkins will not be accessible to the external world due to the inbound traffic restriction by Azure. Open port 8080 in the inbound traffic rules as shown below.

- Add inbound security rule
- Add inbound traffic rules as shown in the image (you can just allow 8080 as well, in my case, I allowed All traffic).



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portal.azure.com/#@deepikashree26csalicetac.onmicrosoft.com/resource/subscriptions/fe4a6f73-8c95-4bf4-8d07-0790463ee6a3/resourcegroups/AI_group/provider... Microsoft Azure Search resources, services, and docs (G+/) Copilot deepikashree.26csa@lic... DEFAULT DIRECTORY

Home > CreateVm-canonical.0001-com-ubuntu-server-jammy-2-20250409104539 | Overview > jenkins

jenins | Network settings

Virtual machine

Search

Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Resource visualizer
Connect
Networking
Network settings
Load balancing
Application security groups
Network manager
Settings
Availability + scale
Security
Backup + disaster recovery
Operations
Monitoring

This is a new experience. Please provide feedback

List all my network interfaces for jenkins. What are the requirements for attaching or detaching a network interface? How can I make my virtual machine secure?

Attach network interface Detach network interface View topology Troubleshoot Refresh Give feedback

Network interface / IP configuration
jenins891 (primary) / ipconfig1 (primary)

Essentials

Network interface	: jenkins891	Load balancers	: 0 (Configure)
Virtual network / subnet	: Al-vnet / default	Application security gr...	: 0 (Configure)
Public IP address	: 172.207.116.196	Network security group	: jenkins-nsg
Private IP address	: 10.1.1.5	Accelerated networking	: Disabled
Admin security rules	: 0 (Configure)	Effective security rules	: 0

Rules Collapse all

Network security group jenkins-nsg (attached to networkInterface: jenkins891)
Impacts 0 subnets, 1 network interfaces

Create port rule

Search rules Source == all Destination == all Protocol == all Action == all

Priority	Name	Port	Protocol	Source	Destination	Action
----------	------	------	----------	--------	-------------	--------

5 PBKS - CSK Game score

11:17 09-04-2025

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portal.azure.com/#@deepikashree26csalicetac.onmicrosoft.com/resource/subscriptions/fe4a6f73-8c95-4bf4-8d07-0790463ee6a3/resourcegroups/AI_group/provider... Microsoft Azure Search resources, services, and docs (G+/) Copilot deepikashree.26csa@lic... DEFAULT DIRECTORY

Home > CreateVm-canonical.0001-com-ubuntu-server-jammy-2-20250409104539 | Overview SSH using Azure CLI

Switch to PowerShell Restart Manage files New session Editor Web preview Settings Help

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.

```
deepikashree.26csa@licet.ac.in@jenins:~$ sudo systemctl start jenkins
sudo systemctl enable jenkins
Synchronizing state of jenkins.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable jenkins
deepikashree.26csa@licet.ac.in@jenins:~$ sudo systemctl status jenkins
jenkins.service - Jenkins Continuous Integration Server
Loaded: loaded (/lib/systemd/system/jenkins.service; enabled; vendor preset: enabled)
Active: active (running) since Wed 2025-04-09 05:56:49 UTC; 35s ago
Main PID: 8170 (java)
Tasks: 42 (limit: 1004)
Memory: 289.0M
CPU: 16.546s
CGroup: /system.slice/jenkins.service
└─8170 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --webroot=/var/cache/jenkins/war --httpPort=8880

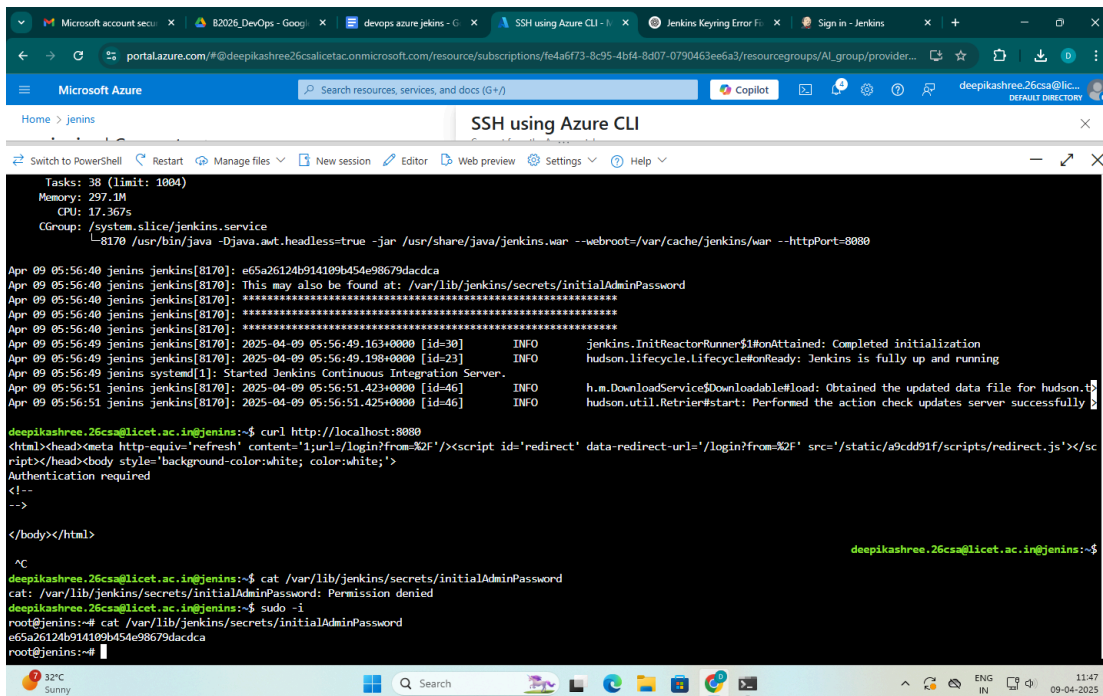
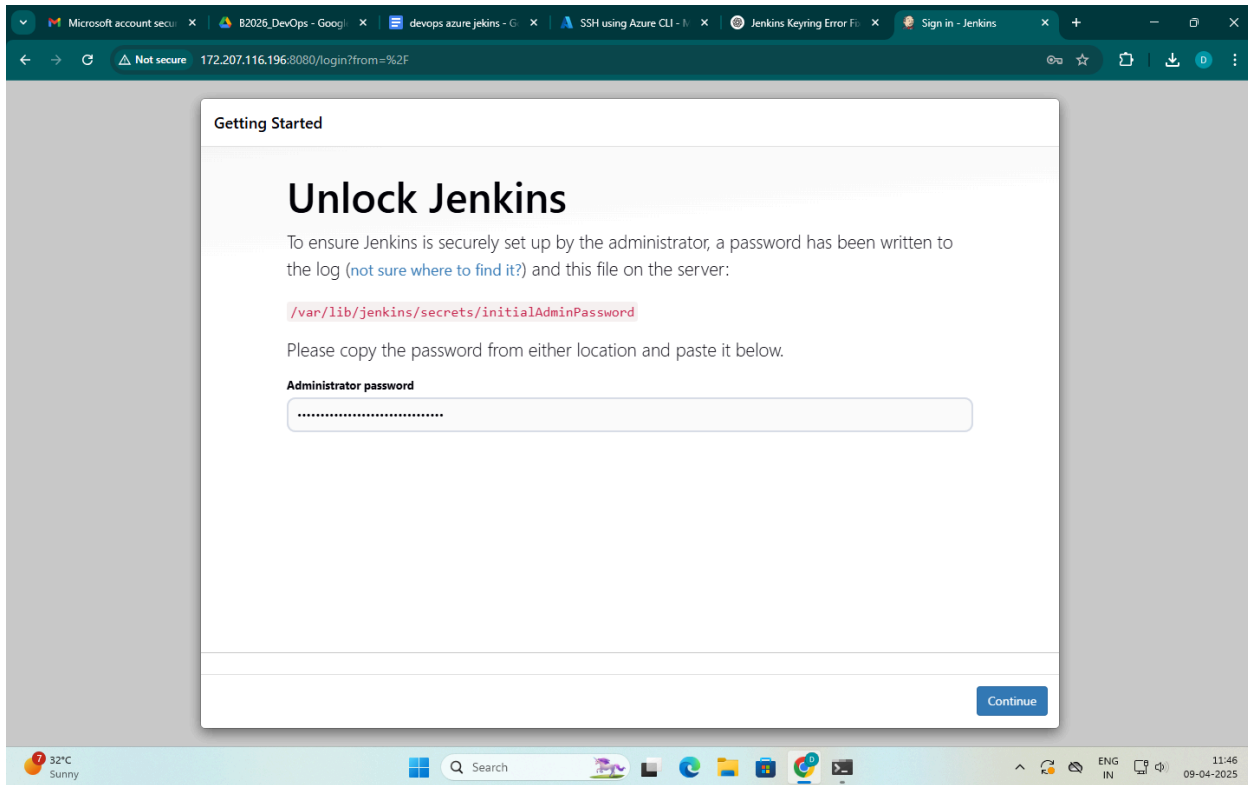
Apr 09 05:56:40 jenkins jenkins[8170]: e65a26124b914109b454e98679dacdca
Apr 09 05:56:40 jenkins jenkins[8170]: This may also be found at: /var/lib/jenkins/secrets/initialAdminPassword
Apr 09 05:56:40 jenkins jenkins[8170]: 
Apr 09 05:56:40 jenkins jenkins[8170]: 
Apr 09 05:56:40 jenkins jenkins[8170]: 
Apr 09 05:56:49 jenkins jenkins[8170]: 2025-04-09 05:56:49.163+0000 [id=30] INFO jenkins.InitReactorRunner$1#onAttained: Completed initialization
Apr 09 05:56:49 jenkins jenkins[8170]: 2025-04-09 05:56:49.198+0000 [id=23] INFO hudson.lifecycle.Lifecycle#onReady: Jenkins is fully up and running
Apr 09 05:56:49 jenkins systemd[1]: Started Jenkins Continuous Integration Server.
Apr 09 05:56:51 jenkins jenkins[8170]: 2025-04-09 05:56:51.423+0000 [id=46] INFO h.m.DownloadService$Downloadable#load: Obtained the updated data file for hudson.t
Apr 09 05:56:51 jenkins jenkins[8170]: 2025-04-09 05:56:51.425+0000 [id=46] INFO hudson.util.Retrier#start: Performed the action check updates server successfully
lines 1-20/20 (END)
```

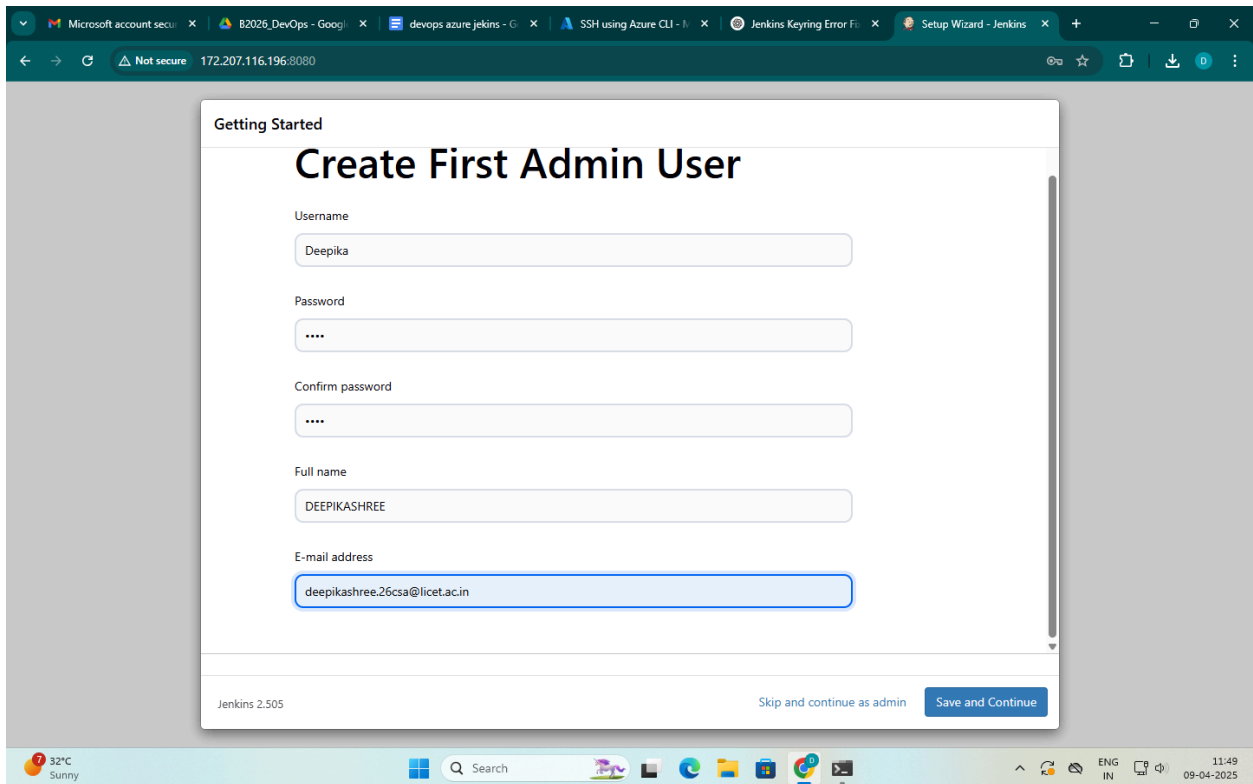
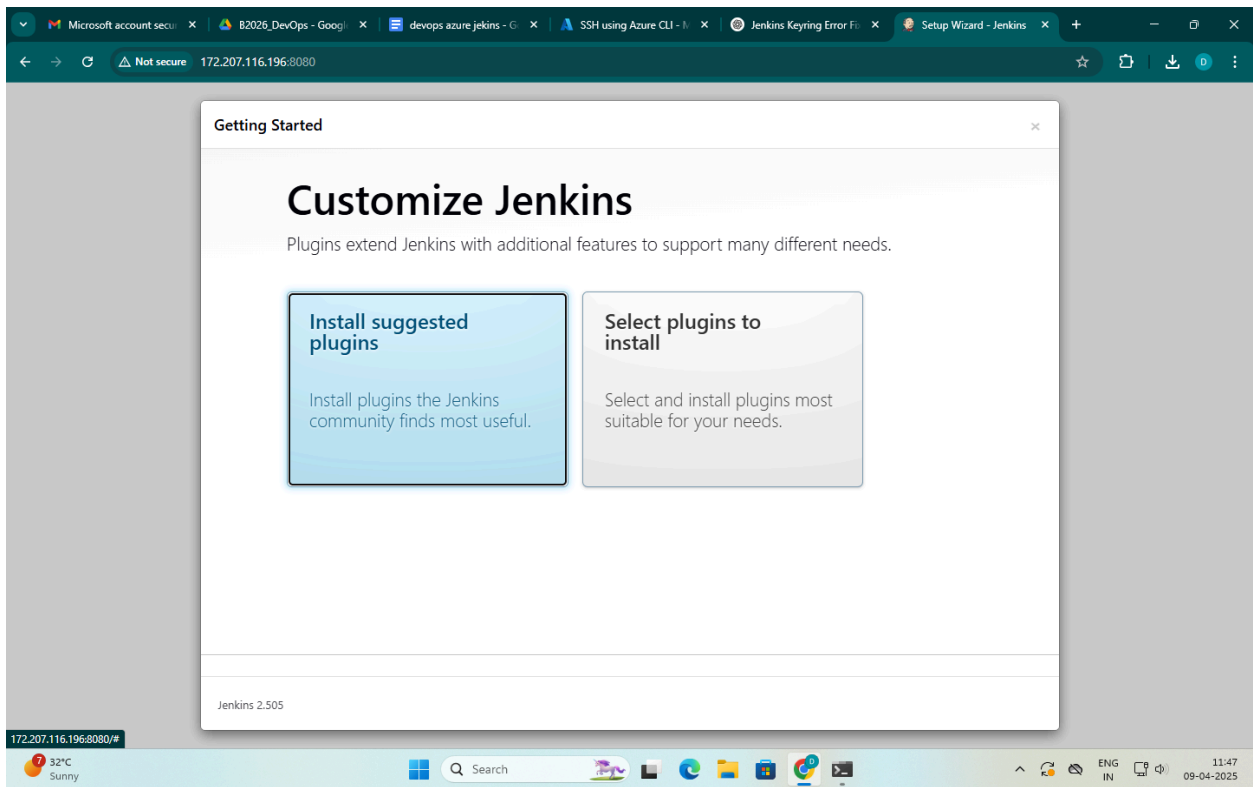
Today's moment
It's Unicorn Day

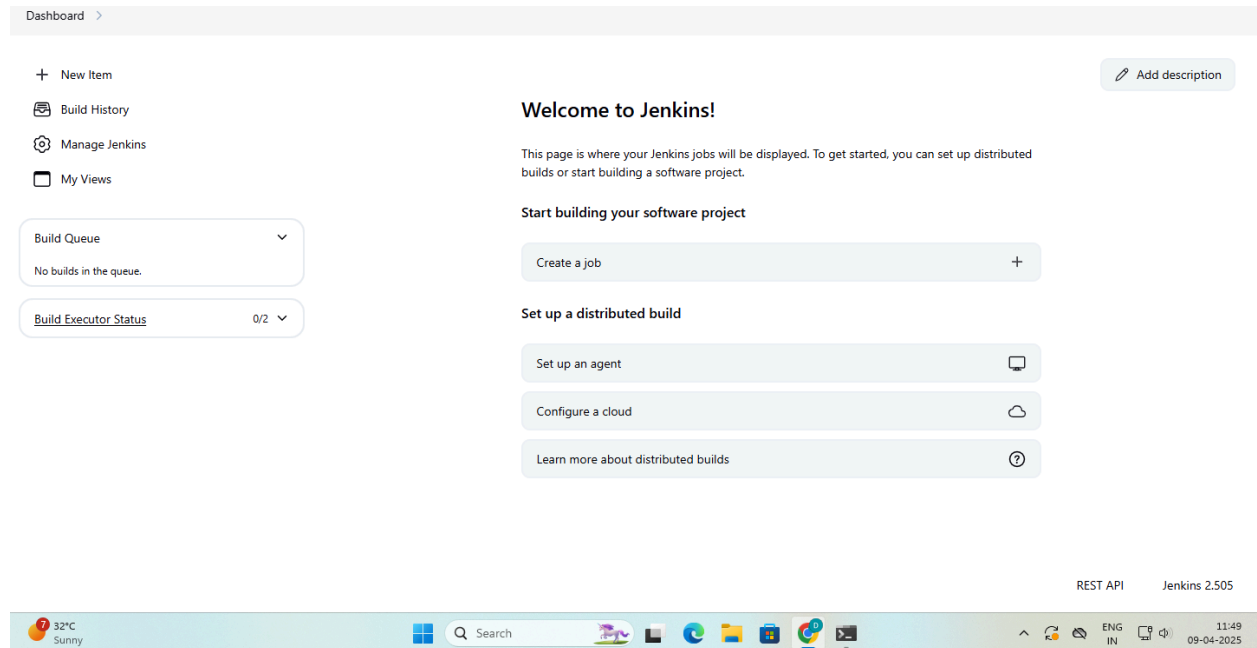
11:26 09-04-2025

Step 5: Login to Jenkins using the below URL and configure Jenkins

1. <http://VM-public-ip/:8080> [You can get the VM-public-ip-address from your Azure console page]







Result:

Thus to install and configure Jenkins on Azure Linux VM is done.