Azure Virtual Machine Scale Sets - Flexible Orchestration Mode

## Create a Virtual Machine Scale Set (VMSS) ...

✅ Validation passed

Basics  Spot  Disks  Networking  Management  Health  Advanced  Tags  **Review + create**

**Basics**

| | |
|---|---|
| Subscription | Azure subscription 1 |
| Resource group | app-rg |
| Virtual machine scale set name | appvmss03 |
| Region | North Europe |
| Orchestration mode | Flexible |
| Availability zone | None |
| Image | Windows Server 2022 Datacenter - Gen2 |
| Size | Standard B1s (1 vcpu, 1 GiB memory) |
| Scaling mode | Manually update the capacity |
| Instance count | 1 |
| Security type | Trusted launch virtual machines |
| Enable secure boot | Yes |

[ < Previous ]  [ Next > ]  [ **Create** ]

Now create vm -> vailability options " vmss" and Virtual machine scale set

"vmss name"

# Create a virtual machine

··· [icon] | Help me create a VM optimized for high availability | Help me create a low cost VM | Help me choose the right V

✅ Validation passed

Basics    Disks    Networking    Management    Monitoring    Advanced    Tags    **Review + create**

## Price

1 X Standard B1s
by Microsoft
Terms of use | Privacy policy

Subscription credits apply ⓘ

**0.0153 USD/hr**
Pricing for other VM sizes

## TERMS

By clicking "Create", I (a) agree to the legal terms and privacy statement(s) associated with the Marketplace offering(s) listed above; (b) authorize Microsoft to bill my current payment method for the fees associated with the offering(s), with the same billing frequency as my Azure subscription; and (c) agree that Microsoft may share my contact, usage and transactional information with the provider(s) of the offering(s) for support, billing and other transactional activities. Microsoft does not provide rights for third-party offerings. See the Azure Marketplace Terms for additional details.

[< Previous]    [Next >]    [Create]

Under vmss -> instance (vm is added)

Lab - Virtual Machine Scale Sets - Custom Script Extensions

Add script on storage account

->>

import-module servermanager

add-windowsfeature web-server -includeallsubfeature

set-content -path "C:\inetpub\wwwroot\Default.html" -Value "This is the server $($env:computername) !"

## IIS.ps1
Blob

💾 Save   ✕ Discard   ↓ Download   ⟳ Refresh   |   🗑 Delete

Overview    Versions    Snapshots    **Edit**    Generate SAS

```
1  import-module servermanager
2  add-windowsfeature web-server -includeallsubfeature
3  set-content -path "C:\inetpub\wwwroot\Default.html" -Value "This is the server $($env:computername) !"
```
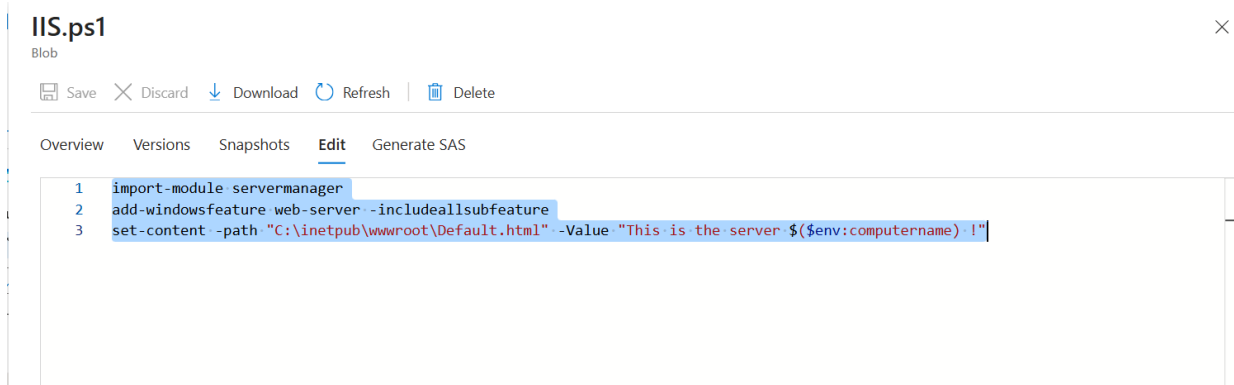
Create vmss

Networking -> allowing traffic from port 80 and enabled public ip

# Edit network interface ···

snet-northeurope-1 (172.16.0.0/24)

NIC network security group ⓘ

○ None
● Basic
○ Advanced

Public inbound ports * ⓘ

○ None
● Allow selected ports

Select inbound ports *

HTTP (80)

Public IP address ⓘ

[ Disabled ] [ Enabled ]

ⓘ Public IP addresses have a nominal charge. Estimate price ⎘

Accelerated networking ⓘ

[ Disabled ] [ Enabled ]

[ OK ]  [ Cancel ]

# Create a Virtual Machine Scale Set (VMSS) ...

✅ Validation passed

Basics    Spot    Disks    Networking    Management    Health    Advanced    Tags    **Review + create**

## Basics

| | |
|---|---|
| Subscription | Azure subscription 1 |
| Resource group | app-rg |
| Virtual machine scale set name | vmssapp01 |
| Region | North Europe |
| Orchestration mode | Uniform |
| Availability zone | None |
| Image | Windows Server 2022 Datacenter - Gen2 |
| Size | Standard B1s (1 vcpu, 1 GiB memory) |
| Scaling mode | Manually update the capacity |
| Instance count | 2 |
| Security type | Trusted launch virtual machines |
| Enable secure boot | Yes |

< Previous    Next >    **Create**

Add extension

1.custom extension script -> select

**scripts** ...
Container      ✕

⬆ Upload    🔄 Refresh   |   🗨 Give feedback

**Authentication method:** Access key (Switch to Microsoft Entra user account)
**Location:** scripts

Search blobs by prefix (case-sensitive)      ⬤ Show deleted blobs

+ Add filter

| Name | Modified | Access tier | Archive status | Blob type | Size | Lease state |
|---|---|---|---|---|---|---|
| 📄 IIS.ps1 | 9/1/2025, 10:42:29 AM | Hot (Inferred) | | Block blob | 184 B | Available |
| 📄 install_web.sh | 8/25/2025, 2:03:48 PM | Hot (Inferred) | | Block blob | 65 B | Available |

**Select**

**vmssapp01 | Instances** ☆ ⋯
Virtual machine scale set

▷ Start  ↻ Restart  ☐ Stop  ⏱ Hibernate  ⟲ Reimage  🗑 Delete  ↑ Upgrade  ↻ Refresh  |  🔗 Protection

| Instance | ↑↓ | Computer name | ↑↓ | Status | ↑↓ | Protection policy | ↑↓ | Provisioning state | ↑↓ | Health state | ↑↓ | Latest model | ↑↓ |
|----------|----|---------------|----|--------|----|-------------------|----|--------------------|----|--------------|----|--------------|----|
| ☐ vmssapp01_0 | | vmssapp01000000 | | 🟢 Running | | | | Succeeded | | | | ⚠ No | |
| ☐ vmssapp01_1 | | vmssapp01000001 | | 🟢 Running | | | | Succeeded | | | | ⚠ No | |

# Upgrade

**vmssapp01 | Instances** ☆ ⋯
Virtual machine scale set

▷ Start  ↻ Restart  ☐ Stop  ⏱ Hibernate  ⟲ Reimage  🗑 Delete  ↑ Upgrade  ↻ Refresh  |  🔗 Protection

**Upgrade virtual machine instance(s)**

This action will manually upgrade the selected instances to the latest model. While upgrading, the instances may be restarted. Do you want to upgrade the selected instances?

[ Yes ]  [ No ]

| | | | | ↑↓ | Health state | ↑↓ | Latest model | ↑↓ |
|--|--|--|--|----|--------------|----|--------------|----|
| | | | | | | | ⚠ No | |
| | | | | | | | ⚠ No | |

virtual machine images



## Lab - Creating a specialized image

Goto vm ->capture imge



Target Azure compute gallery -> create new-> companygallery

# Create a VM image definition

| | |
|---|---|
| VM image definition name * ⓘ | webimage |
| OS type ⓘ | ○ Linux<br>◉ Windows |
| VM generation ⓘ | ○ Gen 1<br>◉ Gen 2 |
| Security type ⓘ | Trusted launch |
| VM architecture ⓘ | ◉ x64<br>○ Arm64 |
| Higher storage performance with NVMe ⓘ | ☐ |
| Hibernation supported ⓘ | ☐ |
| Accelerated networking ⓘ | ☐ |
| Publisher * ⓘ | MicrosoftWindowsServer |

**Ok**    Cancel

Version number – 0.0.1

# Create an image ...

✅ Validation passed

Basics  Tags  **Review + create**

## Basics

| | |
|---|---|
| Subscription | Azure subscription 1 |
| Resource group | app-rg |
| Region | North Europe |
| Share image to Azure compute gallery | Yes |
| Automatically delete this virtual machine after creating the image | No |
| Azure compute gallery | (new) companygallery |
| Operating system state | Generalized |
| Target VM image definition | (new) webimage |
| Version number | 0.0.1 |
| Source virtual machine | appvm |
| Exclude from latest | No |

Create     < Previous    Next >    Download a template for automation

Its created ->

Azure compute gallery

VM image definition

VM image version

# Lab - Using the Specialized image

Create new vm -> Image (select webimage which we created ) -> ports(80,3389)

## Create a virtual machine   ···

Help me create a low cost VM     Help me choose the right VM siz

✅ Validation passed

companygallery/webimage/latest          Standard B1s
Image                                    1 vcpu, 1 GiB memory

### Basics

| | |
|---|---|
| Subscription | Azure subscription 1 |
| Resource group | app-rg |
| Virtual machine name | webvm |
| Region | North Europe |
| 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 | companygallery/webimage/latest - Gen2 |
| VM architecture | x64 |

< Previous     Next >     Create

Lab - Generalized VM Image

[Deprovision or generalize a VM before creating an image - Azure Virtual Machines | Microsoft Learn](#)

1. Sign in to your Windows VM.

2. Open a Command Prompt window as an administrator.
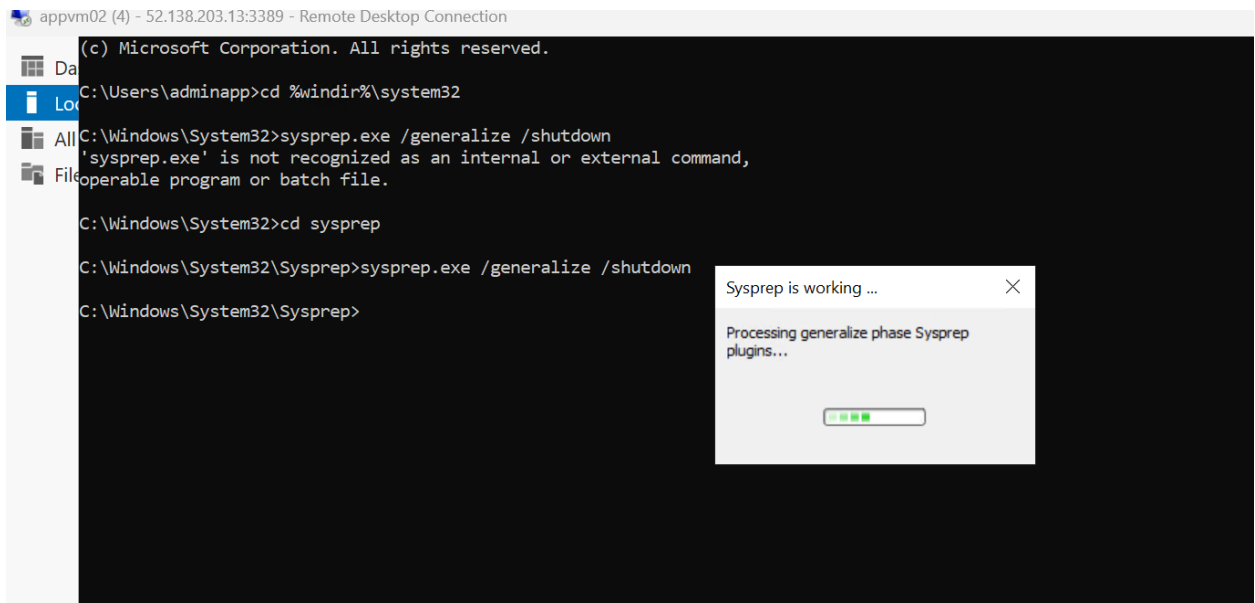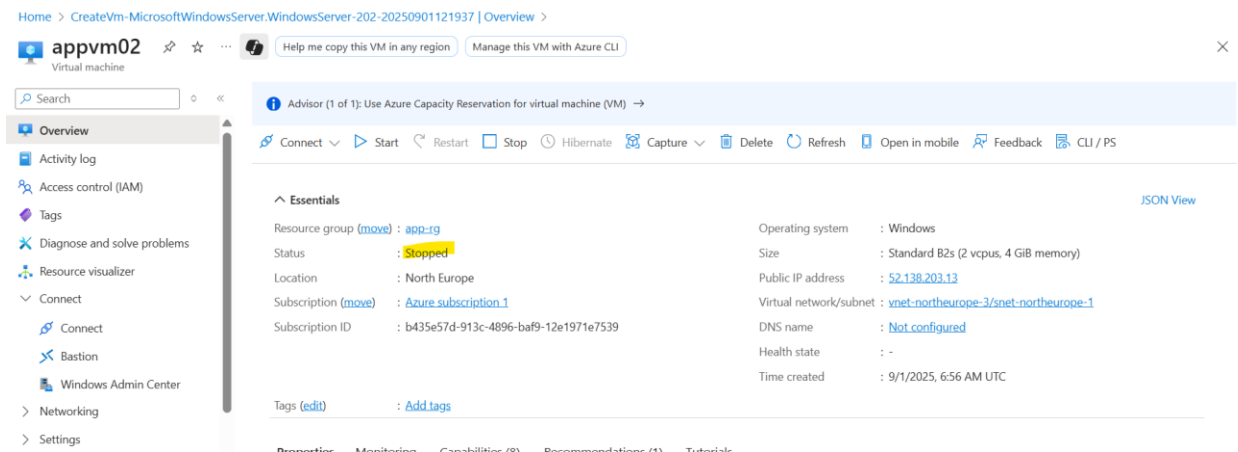
3. Delete the panther directory (C:\Windows\Panther).
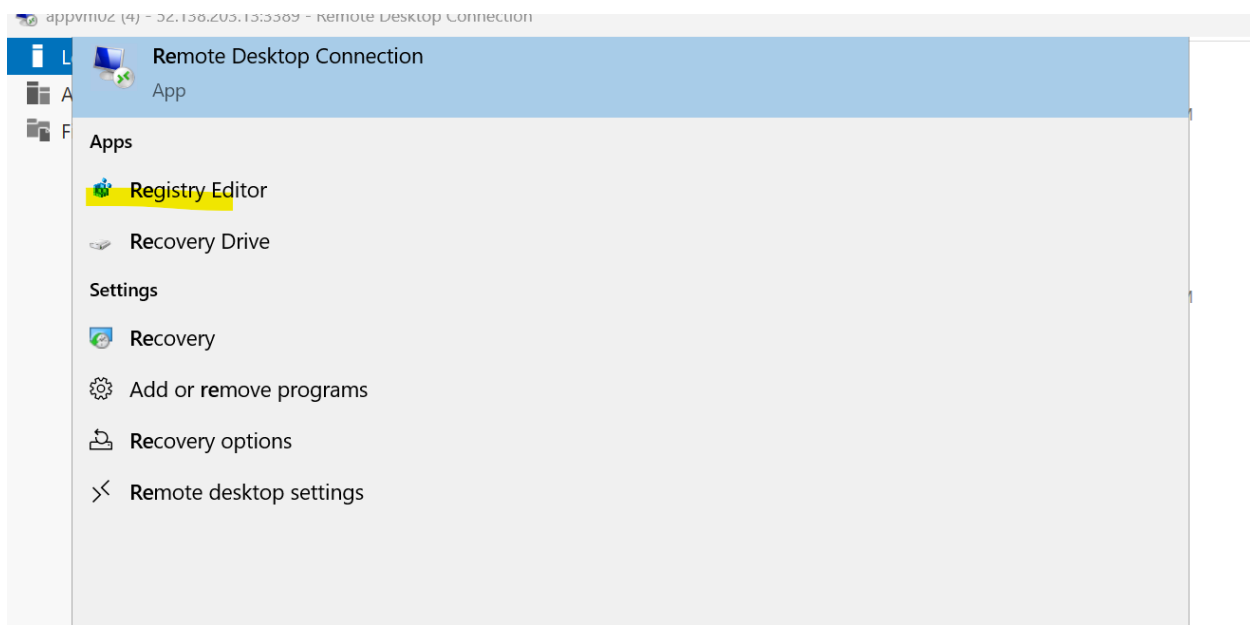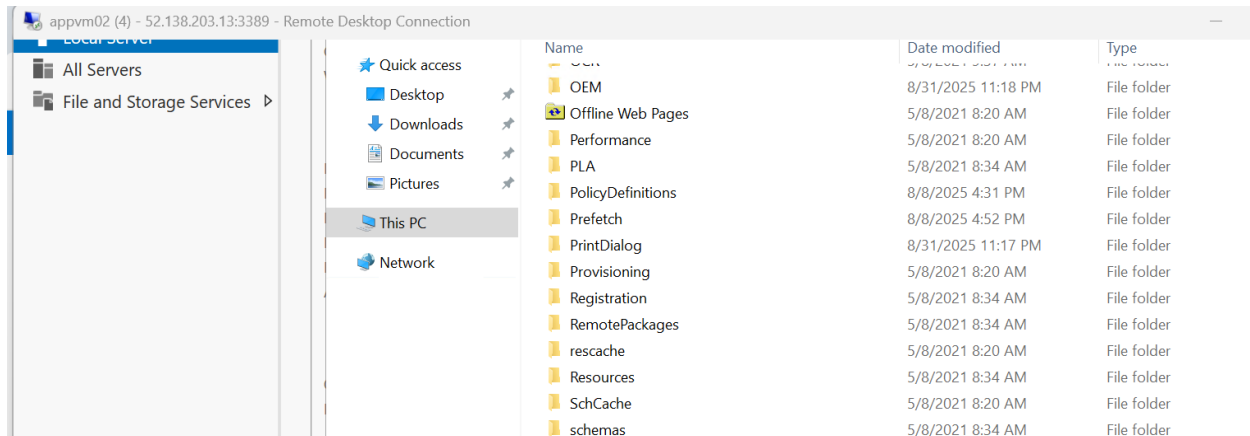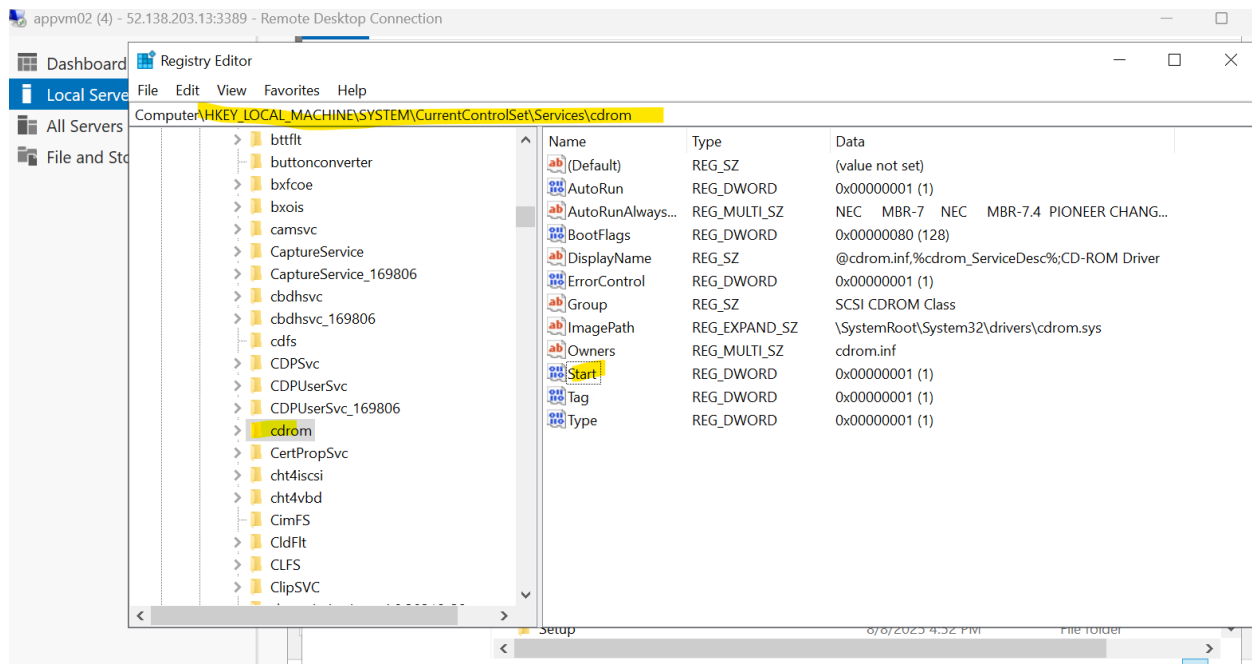
Execute cmd

1. sysprep.exe /generalize /shutdown
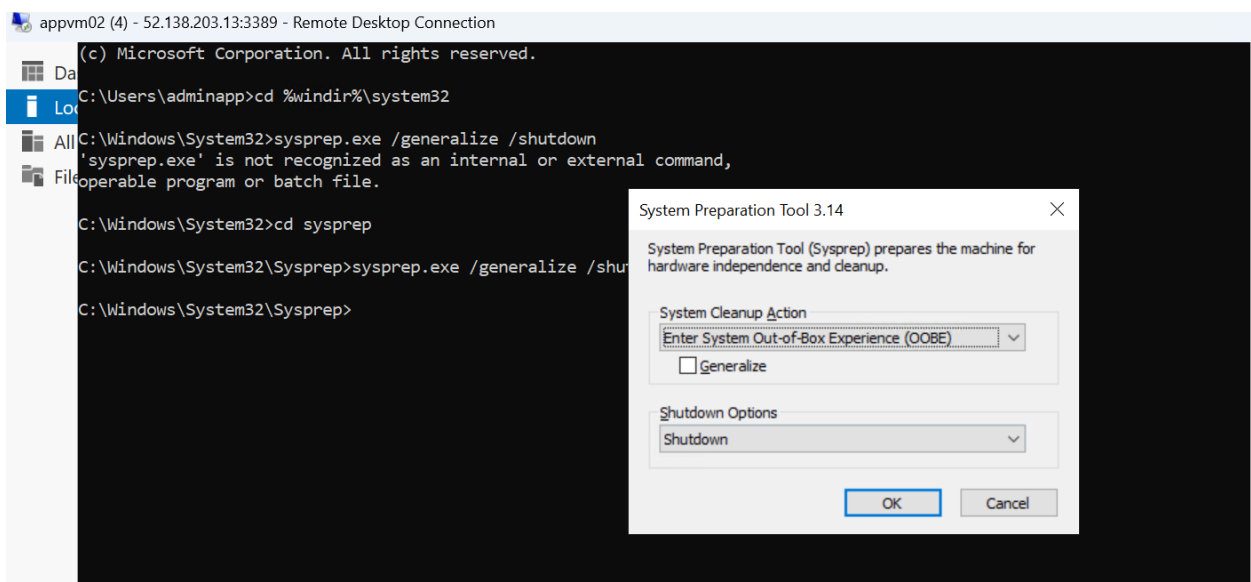
Now stopped vm



Create image

# Create an image    ···

✓ Validation passed

Basics    Tags    **Review + create**

## Basics

| | |
|---|---|
| Subscription | Azure subscription 1 |
| Resource group | app-rg |
| Region | North Europe |
| Share image to Azure compute gallery | Yes |
| Automatically delete this virtual machine after creating the image | No |
| Azure compute gallery | (new) companygallery |
| Operating system state | Generalized |
| Target VM image definition | (new) webimage |
| Version number | 0.0.1 |
| Source virtual machine | appvm02 |
| Exclude from latest | No |

| Create | | < Previous | Next > | Download a template for automation |
|---|---|---|---|---|

Got to resource and create vm

## 0.0.1 (companygallery/webimage/0.0.1)  📌 ☆ ···  🤖  How do I troubleshoot issues with
VM image version

🔍 Search    ◇ «

+ Create VM   + Create VMSS   🗑 Delete   ↻ Refresh   👥 Give feedback

🔲 Overview

📋 Activity log

👥 Access control (IAM)

🏷 Tags

∧ Essentials

| | |
|---|---|
| Resource group (move) | : app-rg |
| Status | : Succeeded |
| Location | : North Europe |

# Create a virtual machine ··· [logo] | Help me create a low cost VM | Help me choose the right VM size for

✓ Validation passed

Basics    Disks    Networking    Management    Monitoring    Advanced    Tags    **Review + create**

⚠ **You have set RDP port(s) open to the internet.** This is only recommended for testing. If you want to change this setting, go back to Basics tab.

companygallery/webimage/0.0.1    Standard B1ms
Image    1 vcpu, 2 GiB memory

## Basics

| | |
|---|---|
| Subscription | Azure subscription 1 |
| Resource group | app-rg |
| Virtual machine name | webvm02 |
| Region | North Europe |
| Availability options | No infrastructure redundancy required |
| Zone options | Self-selected zone |

[ < Previous ]  [ Next > ]  [ Create ]

Goto vm and check localserver check vm computer name "webvm"

## Note of deployment details -



## Redeploy

Azure Web Apps

Understand concept wherein we can host web applications on azure virtual machines

This is managed service, here the virtual machine and physical infrastructure is managed for you

Home > Create a resource >

## Create Web App  ...

all your resources.

| | |
|---|---|
| Subscription * ⓘ | Azure subscription 1 ⌄ |
| └── Resource Group * ⓘ | app-rg ⌄ |
| | Create new |

**Instance Details**

Name

webapp1003045 ✓

.azurewebsites.net

⬤ Try a secure unique default hostname. More about this update ⧉

Publish *     ⦿ Code    ◯ Container

Runtime stack *     .NET 8 (LTS) ⌄

Operating System *     ◯ Linux    ⦿ Windows

Region *     North Europe ⌄

ⓘ Not finding your App Service Plan? Try a different region or select your App Service Environment.

[ Review + create ]    [ < Previous ]    [ Next : Database > ]

# Create Web App ...

Basics　Database　Deployment　Networking　Monitor + secure　Tags　**Review + create**

## Summary

**Web App**
by Microsoft

**Free sku**
Estimated price - Free

ℹ Basic authentication for this app is currently disabled and may impact deployments. Click to learn more.

## Details

| | |
|---|---|
| Subscription | b435e57d-913c-4896-baf9-12e1971e7539 |
| Resource Group | app-rg |
| Name | webapp1003045 |
| Publish | Code |
| Runtime stack | .NET 8 (LTS) |

[ Create ]　[ < Previous ]　[ Next > ]　Download a template for automation

| | | | | | |
|---|---|---|---|---|---|
| ☐ 📄 ASP-apprg-b613 | ... | App Service plan | app-rg | North Europe | Azure subscription 1 |
| ☐ 🌐 webapp1003045 | ... | App Service | app-rg | North Europe | Azure subscription 1 |

Your web app is running and waiting for your content

Your web app is live, but we don't have your content yet. If you've already deployed, it could take up to 5 minutes for your content to show up, so come back soon.
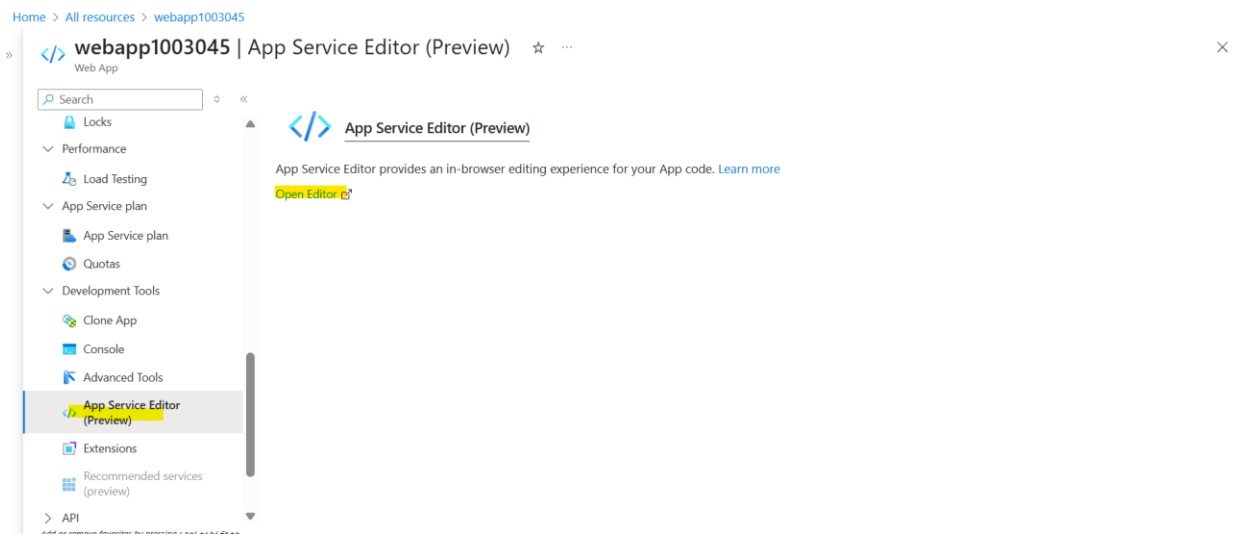
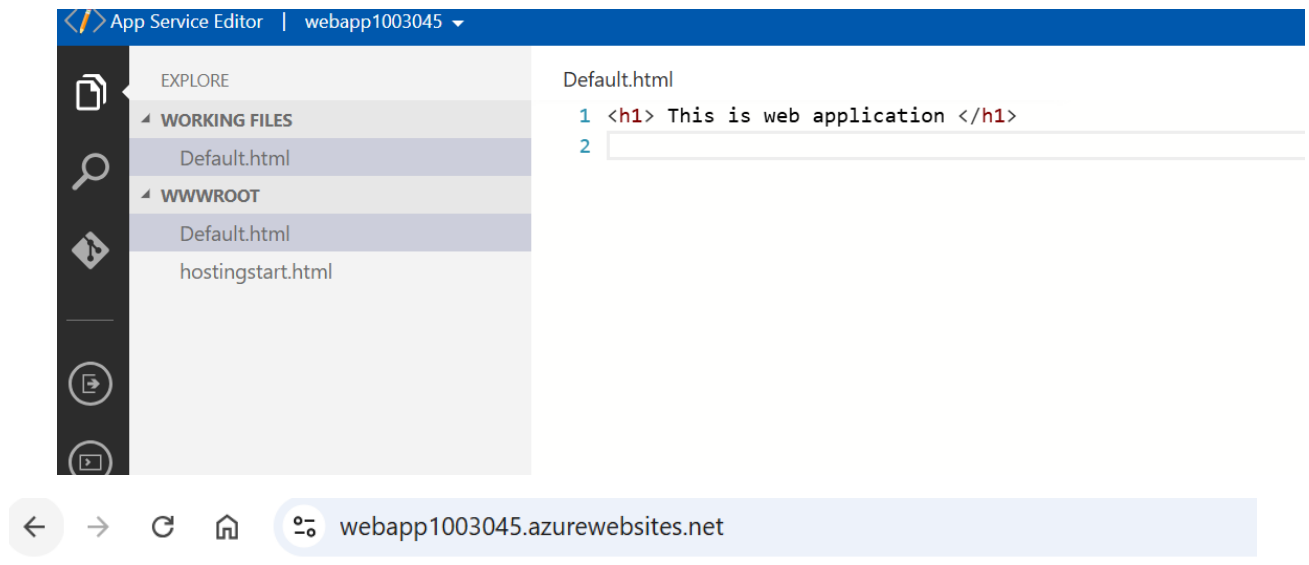</> **Supporting Node.js, Java, .NET and more**

Haven't deployed yet?                    Starting a new web site?

. Lab - Making simple changes to the Web App

Open app service editor-> add new file

App Service Editor    |    webapp1003045 ▾

EXPLORE

▲ WORKING FILES

Default.html

▲ WWWROOT

Default.html

hostingstart.html

Default.html

```html
1  <h1> This is web application </h1>
2
```

webapp1003045.azurewebsites.net

# This is web application

# Add deployment slot

This is web application Version 1

Swap



Swap to stg to prod

**This is web application**

Main url

# This is web application Version 1

# Autoscaling for Web Apps

## Scale out-> configure autoscale

## Lab - Deploying Docker on a virtual machine

### Create linux vm

## Create a virtual machine ···

[Help me choose the right VM size for my workload] [Help me create a VM optimized for high availability] [H

✅ Validation passed

Basics    Disks    Networking    Management    Monitoring    Advanced    Tags    **Review + create**

**Price**

1 X Standard B2s
by Microsoft
Terms of use | Privacy policy

Subscription credits apply ⓘ
**0.0450 USD/hr**
Pricing for other VM sizes

**TERMS**

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Name                    manisha b

[< Previous]    [Next >]    [Create]

---

Deployment complete > connect to linuxvm

Ref Ubuntu | Docker Docs

1. Set up Docker's **apt** repository.

2. # Add Docker's official GPG key:

3. sudo apt-get update

4. sudo apt-get install ca-certificates curl

5. sudo install -m 0755 -d /etc/apt/keyrings

6. sudo curl -fsSL https://download.docker.com/linux/ubuntu/gpg -o /etc/apt/keyrings/docker.asc

7. sudo chmod a+r /etc/apt/keyrings/docker.asc

8.

9. # Add the repository to Apt sources:

10. echo \

11. "deb [arch=$(dpkg --print-architecture) signed-by=/etc/apt/keyrings/docker.asc] https://download.docker.com/linux/ubuntu \

12. $(. /etc/os-release && echo "${UBUNTU_CODENAME:-$VERSION_CODENAME}") stable" | \

13. sudo tee /etc/apt/sources.list.d/docker.list > /dev/null

sudo apt-get update

14. Install the Docker packages.

1. sudo apt-get install docker-ce docker-ce-cli containerd.io docker-buildx-plugin docker-compose-plugin

```
Preparing to unpack .../8-slirp4netns_1.2.1-1build2_amd64.deb ...
Unpacking slirp4netns (1.2.1-1build2) ...
Setting up docker-buildx-plugin (0.26.1-1~ubuntu.24.04~noble) ...
Setting up containerd.io (1.7.27-1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/containerd.service → /usr/lib/systemd/system/conta
ice.
Setting up docker-compose-plugin (2.39.1-1~ubuntu.24.04~noble) ...
Setting up docker-ce-cli (5:28.3.3-1~ubuntu.24.04~noble) ...
Setting up libslirp0:amd64 (4.7.0-1ubuntu3) ...
Setting up pigz (2.8-1) ...
Setting up docker-ce-rootless-extras (5:28.3.3-1~ubuntu.24.04~noble) ...
Setting up slirp4netns (1.2.1-1build2) ...
Setting up docker-ce (5:28.3.3-1~ubuntu.24.04~noble) ...
Created symlink /etc/systemd/system/multi-user.target.wants/docker.service → /usr/lib/systemd/system/docker.se
Created symlink /etc/systemd/system/sockets.target.wants/docker.socket → /usr/lib/systemd/system/docker.socket
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for libc-bin (2.39-0ubuntu8.5) ...
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.
```

Lab - Running the nginx container on the Linux VM

**// Launching a container**

sudo docker run --name mynginx -p 80:80 -d nginx

```
linuxvm@linuxvm:~$ sudo docker run -p 80:80 -d nginx
Unable to find image 'nginx:latest' locally
latest: Pulling from library/nginx
b1badc6e5066: Pull complete
a2da0c0f2353: Pull complete
e5d9bb0b85cc: Pull complete
14a859b5ba24: Pull complete
716cdf61af59: Pull complete
14e422fd20a0: Pull complete
c3741b707ce6: Pull complete
Digest: sha256:33e0bbc7ca9ecf108140af6288c7c9d1ecc77548cbfd3952fd8466a75edefe57
Status: Downloaded newer image for nginx:latest
4b410d2e15a01eb9c0a3cff1b131b89b1a3099f3683fd9ebfe8fcec12171143f
```

Public ip of linuxvm

← → C ⌂  ⚠ Not secure  20.223.170.32

# Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

*Thank you for using nginx.*

# Lab - Azure Container Registry

## Create container registry ...

> 🛈 Running final validation

Basics    Networking    Encryption    Tags    **Review + create**

## Registry details

### Basics

| | |
|---|---|
| Registry name | appregistry300 |
| Subscription | Azure subscription 1 |
| Resource Group | app-rg |
| Location | North Europe |
| Domain name label scope | Unsecure |
| Availability zones | Disabled |
| Pricing plan | Standard |
| Role assignment permissions mode (Preview) | RBAC Registry Permissions |

### Networking

---

**Create**    **< Previous**    **Next >**    Download a template for automation

---

☁ **appregistry300** 📌 ☆ ⋯ ⚡  [ Run CanIpull to validate access to this ACR ]  [ Check AKS clusters pulling from this registry ]  [ Test if this ACR is accessible from connected AKS ]
   Container registry

🔍 Search                  ≪        → Move ∨    🗑 Delete

- 🏠 **Overview**                         ∧ Essentials
- 📋 Activity log
- 👥 Access control (IAM)      | Resource group (move) | : app-rg | | Login server | : appregistry300.azurecr.io |
- 🏷 Tags                       | Location | : North Europe | | Creation date | : 9/1/2025, 3:07 PM GMT+5:30 |
- 🚀 Quick start                | Subscription (move) | : Azure subscription 1 | | Provisioning state | : Succeeded |
- 🗺 Resource visualizer        | Subscription ID | : b435e57d-913c-4896-baf9-12e1971e7539 | | Pricing plan | : Standard |
- ⚡ Events                     | Soft delete (Preview) | : Disabled | | Domain name label scope | : Unsecure |
- ∨ Settings                   | Tags (edit) | : Add tags |
  - 🔑 Access keys
  - 🛡 Encryption            **Get started**    Monitoring    Capabilities (9)    Tutorials

```
linuxvm@linuxvm:~$ sudo docker login appregistry300.azurecr.io -u appregistry300 -p 2pTxhy7DseJG2/m
3dQJOG+ACRBk2qgA
WARNING! Using --password via the CLI is insecure. Use --password-stdin.

WARNING! Your credentials are stored unencrypted in '/root/.docker/config.json'.
Configure a credential helper to remove this warning. See
https://docs.docker.com/go/credential-store/

Login Succeeded
```

Tag the image

sudo docker tag phpapp appregistry34000.azurecr.io/phpapp


Publish the image onto the Azure container registry

sudo docker push appregistry34000.azurecr.io/phpapp

IP address

Lab - Working with Azure virtual network

# Create virtual network ···

✓ Validation passed

Basics    Security    IP addresses    Tags    **Review + create**

View automation template

## Basics

| | |
|---|---|
| Subscription | Azure subscription 1 |
| Resource Group | app-rg |
| Name | app-network |
| Region | North Europe |

## Security

| | |
|---|---|
| Azure Bastion | Disabled |
| Azure Firewall | Disabled |
| Azure DDoS Network Protection | Disabled |

Previous    Next    **Create**    Download a template for automation

Subnets help to segregate your workload with a virtual network

We can have the web servers located in one subnet and database server located in another subnet

Lab - Deploying a machine to the virtual network

# Add a subnet

Select an address space and configure your subnet. You can customize a default subnet or select from subnet templates if you plan to ad
select services later.  Learn more ↗

| | |
|---|---|
| Subnet purpose ⓘ | Default ⌄ |
| Name * ⓘ | default |

## IPv4

| | |
|---|---|
| Include an IPv4 address space | ✓ |
| IPv4 address range ⓘ | 10.0.0.0/16 ⌄ |
| | 10.0.0.0 - 10.0.255.255 |
| Starting address * ⓘ | 10.0.0.0 |
| Size ⓘ | /24 (256 addresses) ⌄ |
| Subnet address range ⓘ | 10.0.0.0 - 10.0.0.255 |

## IPv6

| | |
|---|---|
| Include an IPv6 address space | ☐ This virtual network has no IPv6 address ranges. |

**Add**  **Cancel**                                                                 ⚑ Give feed

---

# Create a virtual machine    ···  ✦  [ Help me create a VM optimized for high availability ]  [ Help me choose the right VM size for my workload ]  [ Help me create

✓ Validation passed

Basics    Disks    Networking    Management    Monitoring    Advanced    Tags    **Review + create**

## Price

1 X Standard B1s
by Microsoft
Terms of use | Privacy policy

Subscription credits apply ⓘ
**0.0113 USD/hr**
Pricing for other VM sizes

## TERMS

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information with the provider(s) of the offering(s) for support, billing and other transactional activities. Microsoft does not
provide rights for third-party offerings. See the Azure Marketplace Terms for additional details.

| Name | manisha b |
|---|---|

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Private IP address allow communication across resources within a network

Dynamic IP address : IP address is only assigned when the public ip address is assigned to resource . IT is released when you stop or delete the resource .

Static IP address: IP address is assigned when it is created IP address is released when the resource is deleted

If you had a dynamic IP address and you stop and start and machin the ipaddress would change