



Azure Generalized Image

A **generalized image** in Azure is a virtual machine (VM) image that has been **prepared for reuse** by removing all machine-specific and user-specific information. This is done by **deprovisioning** the VM (typically using the sysprep tool for Windows or waagent for Linux) before capturing the image.

Explanation

When you create a generalized image, you're essentially turning a configured VM into a **template** that can be used to create **new, clean VMs**. These new VMs won't contain any of the original user accounts, computer names, or unique identifiers.

Key Characteristics

- **Stripped of User/Computer Identity:** All personal and machine-specific settings are removed.
- **Used as a Template:** Ideal for creating multiple VMs with the same base OS and software setup.
- **Prepares VM for Scaling:** Used in scenarios where you need to deploy identical VMs at scale.

Use Cases

1. **VM Scale Sets:** Deploy many identical VMs for load-balanced services using a single base image.
2. **Dev/Test Environments:** Quickly spin up test VMs with a standard configuration.
3. **Enterprise Standardization:** Maintain a corporate image with pre-installed tools and settings.
4. **Automation and CI/CD:** Integrate with deployment pipelines to create environments on demand.

Benefits

- **Efficient Deployment:** Save time by not repeating the OS and software installation for each new VM.
- **Consistency:** Ensures all VMs are deployed with the exact same configuration.
- **Scalability:** Easily scale out applications by launching VMs from a standardized base image.
- **Security:** Sensitive user data and configurations are removed before sharing or reusing the image.

The process of creating a generalized image in Azure involves preparing a virtual machine (VM) by removing all user and machine-specific information using the sysprep tool. After logging into the VM, you delete the Panther directory, verify settings, and run sysprep.exe /generalize /shutdown. Once the VM is shut down, you capture it from the Azure Portal to create a reusable generalized image. The end goal is to generate a clean, template-based VM image that can be used to deploy multiple, identical VMs efficiently, ensuring consistency, scalability, and faster provisioning across development, testing, or production environments.

To begin with the Lab

Step 1: Generalizing the VM

1. Log in Azure Portal. Go to create resources. Then create a Windows Virtual Machine.

Create a virtual machine

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * 

Free Trial 

Resource group * 

app-grp 

[Create new](#)

Instance details

Virtual machine name * 

WindowsVm2 

Region * 

(Asia Pacific) Central India 

Availability options 

No infrastructure redundancy required 

Security type 

Standard 

Image * 

 Windows Server 2022 Datacenter - x64 Gen2 (free services eligible) 

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

 This image is compatible with additional security features. [Click here to swap to the Trusted launch security type.](#)

VM architecture 

Arm64

x64

 Arm64 is not supported with the selected image.

Run with Azure Spot discount 

Size * ⓘ Standard_D2s_v3 - 2 vcpus, 8 GiB memory (₹5,503.70/month) ✓

[See all sizes](#)

Enable Hibernation (preview) ⓘ
 ⓘ To enable Hibernation, you must register your subscription. [Learn more](#) ↗

Administrator account

Authentication type ⓘ Password SSH public key

Username * ⓘ demousr ✓

Password * ⓘ ✓

Confirm password * ⓘ ✓

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 * ⓘ Allow selected ports None

Select inbound ports * ⓘ HTTP (80), SSH (22) ✓

ⓘ All traffic from the internet will be blocked by default. You will be able to change inbound port rules in the VM > Networking page.

[Review + create](#)

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- After the deployment of the machine, go to resources. Then you need to download the RDP file. We need to log in to the virtual machine so that we can generalize it.

✓ Your deployment is complete



Deployment name: CreateVm-MicrosoftWindowsServer.WindowsSe...

Subscription: [Free Trial](#)

Resource group: [app-grp](#)

Start time: 12/29/2023, 1:46:23 PM

Correlation ID: 0405277b-6468-4f1e-8279-19f137f4c7b9



✓ Deployment details

✗ Next steps

[Setup auto-shutdown](#) Recommended

[Monitor VM health, performance and network dependencies](#) Recommended

[Run a script inside the virtual machine](#) Recommended

[Go to resource](#)

[Create another VM](#)

Refresh Troubleshoot More Options Feedback

Connecting using Public IP address | 20.204.83.178

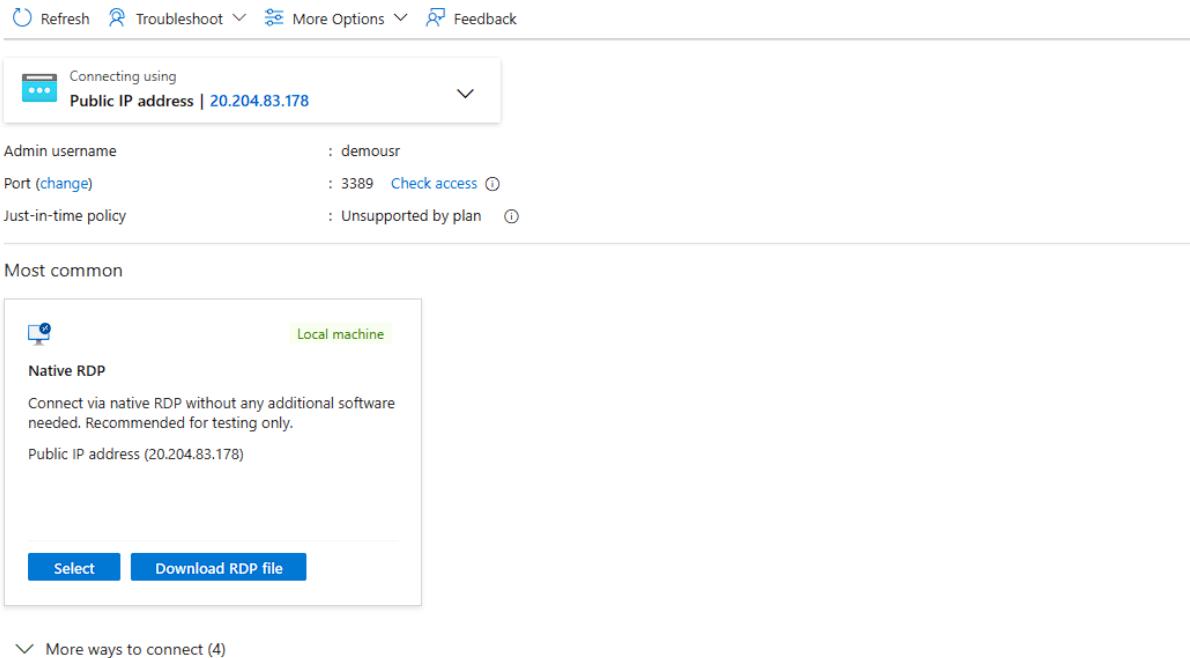
Admin username : demouser
Port (change) : 3389 Check access ⓘ
Just-in-time policy : Unsupported by plan ⓘ

Most common

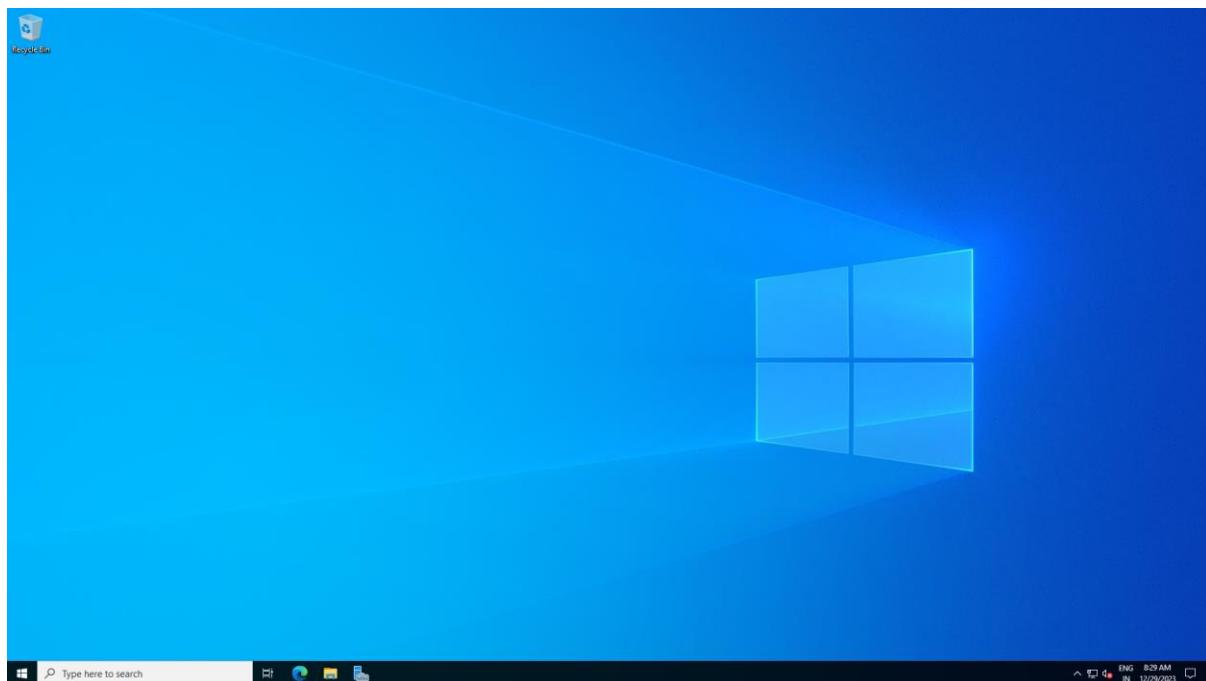
Native RDP
Connect via native RDP without any additional software needed. Recommended for testing only.
Public IP address (20.204.83.178)

Select Download RDP file

More ways to connect (4)



- Once you are in the VM, there are some steps that you need to follow in order to generalize the VM.



To generalize your Windows VM, follow these steps:

- Sign in to your Windows VM. Open the file explorer.
- Delete the Panther directory (C:\Windows\Panther).
- Verify if CD/DVD-ROM is enabled. If it is disabled, the Windows VM will be stuck at the out-of-box experience (OOBE).

Windows (C:)

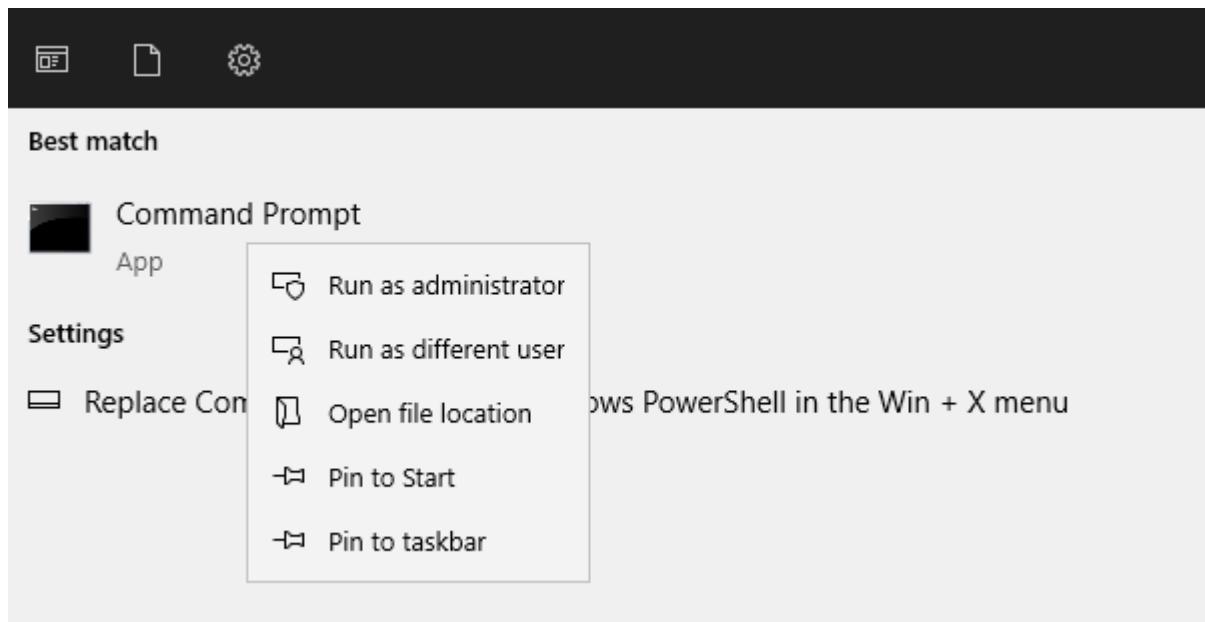
File	Home	Share	View
←	→	▼	▲
	This PC	>	Windows (C:)
Quick access		Name	Date modified
Desktop		Packages	12/29/2023 8:17 AM
Downloads		PerfLogs	5/8/2021 8:20 AM
Documents		Program Files	12/2/2023 1:23 PM
Pictures		Program Files (x86)	12/2/2023 1:23 PM
This PC		Temp	12/2/2023 1:34 PM
Network		Users	12/29/2023 8:27 AM
		Windows	12/29/2023 7:54 AM
		WindowsAzure	12/29/2023 8:17 AM

Windows

File	Home	Share	View
←	→	▼	▲
	This PC	>	Windows (C:) > Windows >
Quick access		Name	Date modified
Desktop		MICROSOFT	12/29/2023 8:17 AM
Downloads		Migration	5/8/2021 8:20 AM
Documents		ModemLogs	5/8/2021 8:20 AM
Pictures		OCR	5/8/2021 9:37 AM
This PC		OEM	12/29/2023 7:54 AM
Network		Offline Web Pages	5/8/2021 8:20 AM
		Panther	12/29/2023 8:16 AM
		Performance	5/8/2021 8:20 AM
		PLA	5/8/2021 8:34 AM
		PolicyDefinitions	12/2/2023 12:41 PM
		Prefetch	12/2/2023 1:17 PM
		RECENT	12/29/2023 8:20 AM

7. Open a Command Prompt window as an administrator
8. Then change the directory to `%windir%\system32\sysprep`, and then run the command using `cd`.
9. After this command, you need to run the following command to enable the generalization of your VM.

sysprep.exe /generalize /shutdown

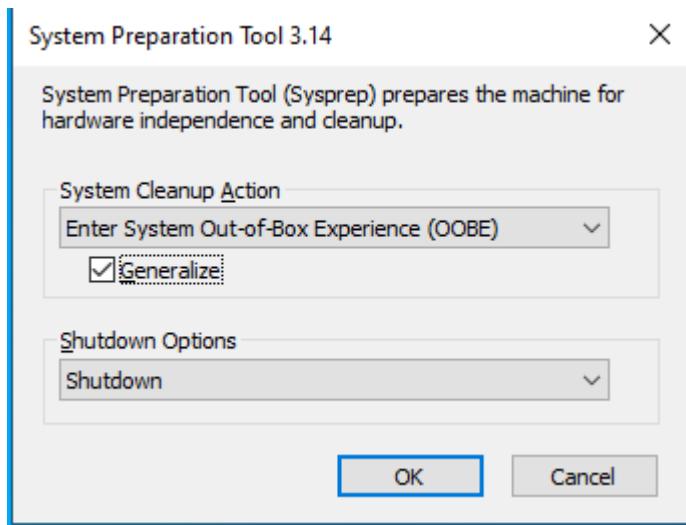


```
appvm - 20.204.83.178:3389 - Remote Desktop Connection
C:\Users\demouser>cd %windir%\system32\sysprep
```

```
appvm - 20.204.83.178:3389 - Remote Desktop Connection
Administrator: Command Prompt
Microsoft Windows [Version 10.0.20348.2159]
(c) Microsoft Corporation. All rights reserved.

C:\Users\demouser>cd %windir%\system32\sysprep
C:\Windows\System32\Sysprep>sysprep.exe /generalize /shutdown
```

10. Now you can see that a pop-up window has appeared, just enable the Generalize option here and click on OK.



Step 2: Create a Generalized Image

1. Once your machine is shut down. Now go back to the Portal and open the overview of the virtual machine.
2. In the overview, click on capture to create a generalized image out of the virtual machine.



3. Now you will see that the resource group and region are preselected. You only need to create a new compute gallery and choose generalized as your operating system state.

Create an image ...

Basics Tags Review + create

Create an image from this virtual machine that can be used to deploy additional virtual machines and virtual machine scale sets. With a shared image, you can easily replicate the image to Azure regions around the world and manage versions of the image. Certain information from the virtual machine will be carried forward to the image including OS type, VM generation, plan, and publishing details. [Learn more](#)

Project details

Subscription

Free Trial ▾

Resource group *

app-grp ▾

Instance details

Region

(Asia Pacific) Central India ▾

Share image to Azure compute gallery ⓘ

Yes, share it to a gallery as a VM image version.

No, capture only a managed image.

Automatically delete this virtual machine
after creating the image ⓘ

Gallery details

Target Azure compute gallery * ⓘ

(new) generalimage ▾

[Create new](#)

Operating system state ⓘ

Generalized: VMs created from this image require hostname, admin user, and other VM related setup to be completed on first boot

Specialized: VMs created from this image are completely configured and do not require parameters such as hostname and admin user/password

4. Once your compute gallery is created then you need to create the VM image definition.

Create a VM image definition

X

VM image definition name * ⓘ ✓

OS type Linux Windows

VM generation Gen 1 Gen 2

Security type

VM architecture x64 Arm64

Higher storage performance with NVMe (preview)

Hibernation supported (preview)

Accelerated networking

Publisher * ⓘ

Offer * ⓘ

SKU * ⓘ

▼ Publishing options (Optional)

5. After creating the image definition, give it a version number and end of life date then move to the review page to create the generalized image.

Target VM image definition * ⓘ

▼

[Create new](#)

Version details

Version number * ⓘ	1.0.0 ✓
Exclude from latest ⓘ	<input type="checkbox"/>
End of life date ⓘ	10/01/2024 CALENDAR
Shallow replication ⓘ	<input type="checkbox"/>

Replication

A VM image version can be replicated to different regions depending on what makes sense for your organization. One example is to always replicate the latest image in multiple regions while all older versions are only available in 1 region. This can help save on storage costs for VM image versions.

Default storage sku ⓘ	Zone-redundant ✓	
Default replica count * ⓘ	1	
Target regions		
(Asia Pacific) Central India	1	Zone-redundant ✓
(US) East US	1	Zone-redundant ▼

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6. Once the image is deployed, go to resources, where you will find the option to create a VM.

1.0.0 (generalimage/defimage/1.0.0) ⌂ ⚡ ⋮

VM image version

Search + Create VM Create VMSS Delete Refresh Give feedback

Overview

Activity log Resource group (move) : app-grp

Access control (IAM) Status : Succeeded

Tags Location : centralindia

Diagnose and solve problems Subscription (move) : Free Trial

Subscription ID : 9acac69d-f5ab-4d7e-9feb-ac0e3ea4372f

Settings

Update replication Configuration Properties Locks

Automation

CLI / PS Tasks (preview) Export template

Help Support + Troubleshooting

Tags (edit) : Add tags

Azure compute gallery : generalimage	VM image definition : defimage
Replication status : Completed	Replication mode : Full
Confidential OS disk enc... : -	Encryption type : Platform-managed key
End of life date : 2024-01-09	Exclude from latest : No
Storage account type : Standard HDD LRS	

7. Now you need to create a virtual machine out of this image. For that, click on the Create VM option.
8. Choose your resource group. Then give it a name.

9. Then select the rest of the options as shown below. You will notice that while creating a VM out of the generalized image, you need to provide the Username and password.

Basics Disks Networking Management Monitoring Advanced Tags Review + create

Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization. [Learn more](#)

 This subscription may not be eligible to deploy VMs of certain sizes in certain regions.

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription *	<input type="text" value="Free Trial"/>
Resource group *	<input type="text" value="app-grp"/> Create new

Instance details

Virtual machine name *	<input type="text" value="newvm"/> 
Region *	<input type="text" value="(Asia Pacific) Central India"/>
Availability options	<input type="text" value="No infrastructure redundancy required"/>
Security type	<input type="text" value="Standard"/>
Image *	 <input type="text" value="generalimage/defimage/1.0.0 - x64 Gen2"/> See all images Configure VM generation
VM architecture	<input type="radio"/> Arm64 <input checked="" type="radio"/> x64  Arm64 is not supported with the selected image.

Size * ⓘ Standard_D2s_v3 - 2 vcpus, 8 GiB memory (₹11,294.05/month) ▾

[See all sizes](#)

Enable Hibernation (preview) ⓘ ⓘ To enable Hibernation, you must register your subscription. [Learn more](#) ↗

Administrator account

Username * ⓘ appusr ✓

Password * ⓘ ✓

Confirm password * ⓘ ✓

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 * ⓘ HTTP (80), RDP (3389) ▾

ⓘ All traffic from the internet will be blocked by default. You will be able to change inbound port rules in the VM > Networking page.

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10. Once it is created and deployed, you can go resources and you can see your virtual machine. Log in to it and you will see that it is a fresh VM with the new user you defined.

✓ Your deployment is complete

Deployment name : CreateVm-1.0.0-20231229143012
 Subscription : [Free Trial](#)
 Resource group : app-grp

Start time : 12/29/2023, 2:31:17 PM
 Correlation ID : 1ff541bb-226f-4f7b-9abf-a2400fd113ec

- › Deployment details
- ✓ Next steps

newvm Virtual machine

Search

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Connect

Connect

Bastion

Windows Admin Center

Networking

Network settings

Load balancing

Application security groups

Network manager

Settings

Disks

Extensions + applications

Configuration

Advisor recommendations

Properties

Locks

Availability + scale

Size

Essentials

Resource group (move) : appvms

Status : **Resource group**

Location : centralindia

Subscription (move) : **Free Trial**

Subscription ID : 9acac69d-f5ab-4d7e-9feb-ac0e3ea4372f

Tags (edit) : **Add tags**

Properties Monitoring Capabilities (8) Recommendations Tutorials

Virtual machine

Computer name	newvm
Operating system	Windows (Windows Server 2022 Datacenter)
Image publisher	MicrosoftWindowsServer
Image offer	WindowsServer
Image plan	2022-datacenter-g2
VM image definition	defimage
VM generation	V2
VM architecture	x64
Agent status	Ready
Agent version	2.7.41491.1095
Hibernation	Disabled
Host group	-
Host	-
Proximity placement group	-
Colocation status	N/A
Capacity reservation group	-

Networking

Public IP address	20.219.35.98 (Network interface newvm602)
Public IP address (IPv6)	-
Private IP address	10.0.0.5
Private IP address (IPv6)	-
Virtual network/subnet	appvm-vnet/default
DNS name	Configure

Size

Size	Standard D2s v3
vCPUs	2
RAM	8 GiB

Disk

OS disk	newvm_OsDisk_1_70562c05f66a430a88086847f305fd9
Encryption at host	Disabled
Azure disk encryption	Not enabled
Ephemeral OS disk	N/A

JSON View

Once you are done with the testing, just delete all the resources.