



Specialized Image

A **specialized VM in Azure** refers to a virtual machine created from a **generalized image that has not been deprovisioned**, or a **custom VM image** that retains all the configurations, settings, user accounts, and data from its source system. Unlike generalized images (which are used to create fresh VMs with no saved configurations or user data), specialized VMs are ideal for **cloning or restoring exact copies of existing systems**.

Explanation

When creating a VM image in Azure, you typically choose between:

- **Generalized Image:** Stripped of user-specific information, used for creating clean, reusable VM templates.
- **Specialized Image:** Captures the current state of a VM without deprovisioning—preserving all settings, applications, and data.

A specialized VM image is commonly used when you need an **exact replica** of a configured machine, such as in disaster recovery, system duplication, or migration scenarios.

Use Cases

1. **Disaster Recovery:** Quickly restore a critical server using a specialized image that includes all system configurations and data.
2. **Application Cloning:** Deploy multiple identical VMs with pre-installed applications and settings without reconfiguration.
3. **VM Migration:** Move on-premises systems to Azure by capturing their state as specialized images.
4. **Testing and QA:** Spin up VMs with an exact environment (including data) to replicate bugs or test updates.

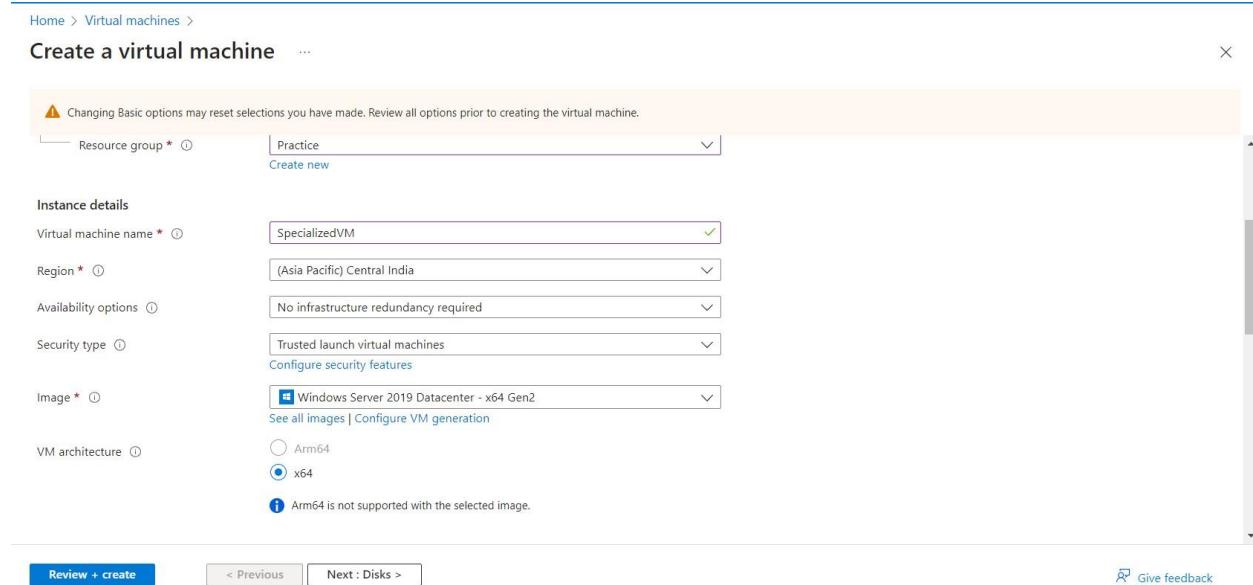
Benefits

- **Preserves Full System State:** Retains installed software, OS settings, user accounts, and data.
- **Reduces Setup Time:** Eliminates the need to reconfigure VMs or reinstall software during deployment.
- **Ideal for One-to-One Cloning:** Enables exact duplication of critical systems for specific purposes.

- **Supports Migration Scenarios:** Useful for lift-and-shift operations where existing configurations must be preserved.

To begin with the Lab

Step 1: Log in to the Azure Portal and Create a Windows Virtual Machine.



The screenshot shows the 'Create a virtual machine' wizard in the Azure portal. The 'Instance details' section is visible, containing fields for:

- Resource group: Practice (selected)
- Virtual machine name: SpecializedVM
- Region: (Asia Pacific) Central India
- Availability options: No infrastructure redundancy required
- Security type: Trusted launch virtual machines
- Image: Windows Server 2019 Datacenter - x64 Gen2
- VM architecture: x64 (selected)

A note at the bottom states: "Arm64 is not supported with the selected image." Navigation buttons at the bottom include 'Review + create' (highlighted in blue), '< Previous', 'Next : Disks >', and 'Give feedback'.

- You can use the Custom Script Extension for the direct installation of IIS (Internet Information Services).
- To use the Custom Script Extension, you will first need a Storage account where you will store your IIS script.
- Select your IIS Script from the storage account. Browse from the blob storage account. And select the uploaded IIS script.
- You can use the below code to create an IIS installation Custom Script: -

```
import-module servermanager
```

```
add-windowsfeature web-server -includeallsubfeature
```

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

- Make sure you are uploading the .ps1 extension file.
- Or you can use VS Code and select the language as PowerShell, it will automatically detect the extension for it.

- If the above code doesn't work for you, get the file from GitHub.

The screenshot shows the 'Create a virtual machine' wizard in the Azure portal. The 'Advanced' tab is selected. Under the 'Extensions' section, there is a list with one item: 'Custom script extension Microsoft Corp.' with a note 'Select an extension to install'. This item is highlighted with a red box. Below the extensions, there's a section for 'VM applications' with a note about VM applications containing application files. At the bottom, there are 'Review + create' and 'Tags' buttons, along with a 'Give feedback' link.

Step 2: Review + Create your VM.

- After complete deployment, copy the Public IP and run it on your local browser.

The screenshot shows the 'Overview' page for a virtual machine named 'SpecializedVM'. On the left, there's a navigation menu with options like 'Search', 'Overview', 'Activity log', 'Access control (IAM)', 'Tags', 'Diagnose and solve problems', 'Networking', 'Connect', 'Windows Admin Center', 'Disks', 'Size', 'Microsoft Defender for Cloud', 'Advisor recommendations', 'Extensions + applications', 'Availability + scaling', and 'Configuration'. The 'Overview' tab is selected. In the main area, under the 'Essentials' section, the 'Public IP address' is listed as '4.213.99.75'. This value is highlighted with a red box. To the right, there are sections for 'Properties' (Virtual machine and Networking), 'Monitoring', 'Capabilities (8)', 'Recommendations', and 'Tutorials'. The 'Networking' section shows the public IP address again, along with private IP addresses and network subnet information.

- The Default Windows page will appear. According to our Custom Script, we need to redirect to Default.html. Enter the URL as shown below.



Step 3: Go back to the overview of your VM. Click on Capture to create your specialized image.

The screenshot shows the Azure VM Overview page for 'SpecializedVM'. The top navigation bar includes 'Home > CreateVm-MicrosoftWindowsServer:WindowsServer-201-20230821124755 | Overview >' and a set of icons. The main content area has a title 'SpecializedVM' with a 'Virtual machine' subtitle. On the left, a sidebar lists 'Overview', 'Activity log', 'Access control (IAM)', 'Tags', 'Diagnose and solve problems', 'Settings', 'Networking', 'Connect', 'Windows Admin Center', 'Disks', 'Size', 'Microsoft Defender for Cloud', 'Advisor recommendations', 'Extensions + applications', 'Availability + scaling', 'Configuration', and 'Identity'. The main content area has tabs for 'Properties', 'Monitoring', 'Capabilities (8)', 'Recommendations', and 'Tutorials'. Under 'Properties', there are two sections: 'Virtual machine' and 'Networking'. The 'Virtual machine' section contains details like Computer name (SpecializedVM), Operating system (Windows (Windows Server 2019 Datacenter)), and Image publisher (MicrosoftWindowsServer). The 'Networking' section shows Public IP address (4.213.99.75), Private IP address (10.2.0.5), and Virtual network/subnet (Practice-vnet/default). The 'Capture' button in the top navigation bar is highlighted with a red box.

- You will find that your resource group and region are pre-selected. Scroll down.

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

Resource group *

Instance details

Region

Share image to Azure compute gallery ⓘ Yes, share it to a gallery as a VM image version.
 No, capture only a managed image.

- From the gallery details option, you have to create a new Azure compute gallery. This is the place where you can find your images. Select the operation system state as Specialized VMs.

Gallery details

Target Azure compute gallery * ⓘ
[Create new](#) 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

- Once your compute gallery has been created then you need to create an image definition. Click on create, and you just need to give a name to the definition.

Target VM image definition * ⓘ
[Create new](#) Create new

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 ⓘ

Hibernation supported ⓘ

Accelerated networking ⓘ

Ok Cancel Give feedback

- Enter the version number. Select the expiration for your image.

Step 4: In the end, move to the review page to create your specialized image.

Home > CreateVm-MicrosoftWindowsServer.WindowsServer-201-20230821124755 | Overview > SpecializedVM >

Create an image ...

Target VM image definition * ⓘ * ✓

[Create new](#)

Version details

Version number * ⓘ ✓

Exclude from latest ⓘ

End of life date ⓘ * ✓

Shallow replication ⓘ

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 ⓘ ✓

Default replica count * ⓘ ✓

| Target regions | Target region replica count | Storage account type |
|--|---|--|
| <input type="text" value="Asia Pacific Central India"/> * | <input type="text" value="1"/> * | <input type="text" value="Zone-redundant"/> ✓ |

Review + create < Previous Next : Tags > Give feedback

Step 5: After the image creation is completed, go to resources.

The screenshot shows the Azure Compute-CaptureVM-20230821130725 Overview page. A prominent green checkmark message 'Your deployment is complete' is displayed. Below it, deployment details are listed:

- Deployment name : Microsoft.Compute-CaptureVM-202...
- Subscription : Azure subscription 1
- Start time : 8/21/2023, 1:10:49 PM
- Correlation ID : 012464c7-a56e-49f2-87b3-570ef52d...
- Resource group : Practice

A table shows the status of resources created from the image:

| Resource | Type | Status | Operation details |
|----------------------|-----------------------|--------|-----------------------------------|
| ImageGallery/WinV... | VM image version | OK | Operation details |
| ImageGallery/WinV... | VM image definition | OK | Operation details |
| ImageGallery | Azure compute gallery | OK | Operation details |

Next steps include a 'Go to resource' button.

On the right side, there are promotional links for Cost management, Microsoft Defender for Cloud, Free Microsoft tutorials, and Work with an expert.

Step 6: Now, you can create the exact clone of your virtual machine using the image. Click on Create VM

“New VM created out of the images will have the same computer name and user information.”

The screenshot shows the 1.0.0 (ImageGallery/WinVM/1.0.0) VM image version page. The 'Create VM' button is highlighted with a red box.

Essential details for the image are listed:

- Resource group (move) : Practice
- Status : Succeeded
- Location : Central India
- Subscription (move) : Azure subscription 1
- Subscription ID : f55b27c1-cfe0-448c-9ca5-8454eecfeb4e
- Azure compute gallery : ImageGallery
- VM image definition : WinVM
- Replication status : Completed
- Replication mode : Full
- Confidential OS disk encr... : -
- Encryption type : Platform-managed key
- End of life date : 2023-08-23
- Exclude from latest : No
- Storage account type : Standard HDD LRS

Other sections visible include Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Settings, Update replication, Configuration, Properties, Locks, Automation, Tasks (preview), Export template, Help, and Support + Troubleshooting.

Step 7: Enter the name for your VM, image will be automatically selected. Keep all Next steps as default and proceed with creating a VM using an image.

- While creating a VM using Specialized images, username and password textbox are disabled. As it is completely clone you have to use the same credentials for logging in.

Home > Microsoft.Compute-CaptureVM-20230821130725 | Overview > 1.0.0 (ImageGallery/WinVM/1.0.0) >

Create a virtual machine ...

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

Subscription * ⓘ Azure subscription 1

Resource group * ⓘ Practice

Virtual machine name * ⓘ

Region * ⓘ (Asia Pacific) Central India

Availability options ⓘ No infrastructure redundancy required

Security type ⓘ Trusted launch virtual machines

Image * ⓘ ImageGallery/WinVM/1.0.0/ImageGallery/WinVM/1.0.0/ImageGallery/WinV

VM architecture ⓘ

Arm64

x64

Arm64 is not supported with the selected image.

Review + create < Previous Next : Disks > Give feedback

Step 8: Click on create.

Home > Microsoft.Compute-CaptureVM-20230821130725 | Overview > 1.0.0 (ImageGallery/WinVM/1.0.0) >

Create a virtual machine ...

Validation passed

Basics

| | |
|---------------------------------|--|
| Subscription | Azure subscription 1 |
| Resource group | Practice |
| Virtual machine name | |
| Region | Central India |
| Availability options | No infrastructure redundancy required |
| Security type | Trusted launch virtual machines |
| Enable secure boot | Yes |
| Enable vTPM | Yes |
| Integrity monitoring | No |
| Image | ImageGallery/WinVM/1.0.0/ImageGallery/WinVM/1.0.0/ImageGallery/WinV - Gen2 |
| VM architecture | x64 |
| Size | Standard B1s (1 vcpu, 1 GiB memory) |
| Username | |
| Public inbound ports | RDP, HTTP |
| Already have a Windows license? | No |
| Azure Spot | No |

Create < Previous Next > Download a template for automation Give feedback

Step 9: After the completion of deployment of the VM, go to your resources, copy the Public IP, and run it in your local browser. The Exact clone of your First Virtual Machine is running successfully. You can check for the /Default.html page.



“In Specialized VM images the information about specific users and machine information is retained “