

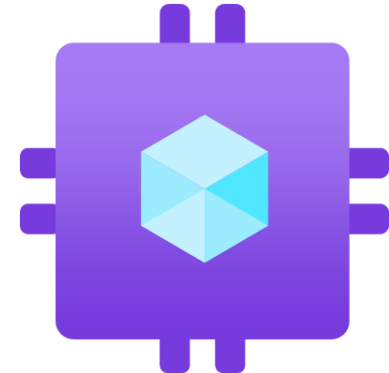
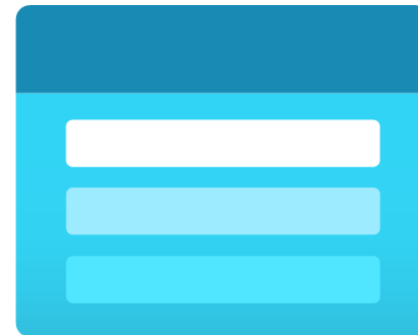
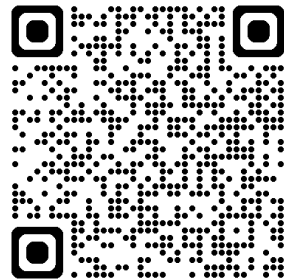
Custom Images and Azure Local

Jake Walsh

Senior Solution Architect – CDW UK

@jakewalsh90

jakewalsh.co.uk



Please note – the views/opinions in this presentation are entirely my own. This presentation will not be kept updated after the publication date (April 2025) – so may be outdated if downloaded afterwards.

If in any doubt, please check latest documentation and Links for updated info!

Our Session Today – the plan!



Why are custom images important?



Building Images – and the Azure Compute Gallery



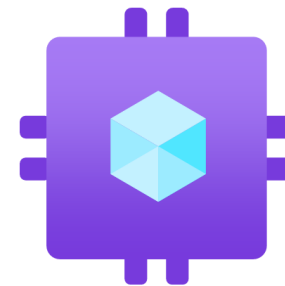
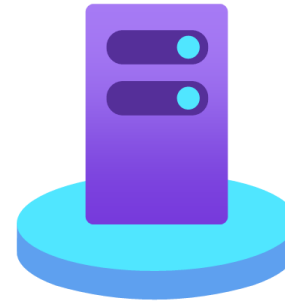
Existing Images – The Process!



How to use Custom Images with Azure Local



Questions



Why are custom images important?

Infrastructure as Code

DevOps Benefits

Use existing images

Standardisation

Repeatability

Why are custom images important?

Infrastructure as Code

Define once, deploy many times – across Azure and Azure Local.

DevOps Benefits

Image Deployment becomes part of existing processes and tooling.

Use existing images

Existing Azure Images created using AIB or Packer can be extended to Azure Local.

Standardisation

Image Templates and Definitions can be used across Azure and Azure Local.

Repeatability

Multiple Deployments using the same image.

**A Key Question – Why
not do this LOCALLY?**



Building Customized Images

Using a Packer Template!

```
{} win11-24h2-avd-choco.json X
C: > Users > Jake > Desktop > {} win11-24h2-avd-choco.json > [ ] builders > {} 0
1  {
2      "builders": [{
3          "type": "azure-arm",
4
5          "client_id": "xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx",
6          "client_secret": "xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx",
7          "subscription_id": "xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx",
8
9          "managed_image_resource_group_name": "packer-images",
10         "managed_image_name": "packer-win11-21h2-pro",
11
12         "os_type": "Windows",
13         "image_publisher": "MicrosoftWindowsDesktop",
14         "image_offer": "Windows-11",
15         "image_sku": "win11-24h2-avd",
16
17         "communicator": "winrm",
18         "winrm_use_ssl": true,
19         "winrm_insecure": true,
20         "winrm_timeout": "5m",
21         "winrm_username": "packer",
22
23         "shared_image_gallery_destination": {
24             "subscription": "xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx",
25             "resource_group": "packer-images",
26             "gallery_name": "jwblog01",
27             "image_name": "win11-24h2-avd",
28             "image_version": "1.0.0",
29             "replication_regions": ["uksouth"],
30             "storage_account_type": "Standard_LRS"
31         },
32
33         "azure_tags": {
34             "environment": "packer"
35         },
36
37         "build_resource_group_name": "packer-build",
38         "vm_size": "Standard_D2s_v4"
39     }],
40     "provisioners": [
41         {
42             "type": "powershell",
43             "inline": [
44                 "Set-ExecutionPolicy Bypass -Scope Process -Force",
45                 "[Net.ServicePointManager]::SecurityProtocol = [Net.SecurityProtocolType]::Tls12",
46                 "iex ((New-Object System.Net.WebClient).DownloadString('https://chocolatey.org/install.ps1'))",
47                 "choco install 7zip -y --force --force-dependencies",
48                 "choco install fslogix -y --force --force-dependencies"
49             ]
50         }
51     ]
52 }
```



Storing Images

Azure Compute Gallery & its many benefits...

```
"shared_image_gallery_destination": {  
  "subscription": "xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx",  
  "resource_group": "packer-images",  
  "gallery_name": "jwblog01",  
  "image_name": "win11-24h2-avd",  
  "image_version": "1.0.0",  
  "replication_regions": ["uksouth"],  
  "storage_account_type": "Standard_LRS"  
},
```

Home > All resources > 1.0.0 (jwblog01/win11-24h2-avd/1.0.0) >



Search

Overview

- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems
- Resource visualizer
- Settings
- Automation
- Help

+ Add Delete Refresh Give feedback

Essentials

Resource group (move) : packer-images
Location (move) : UK South
Subscription (move) : dev.jakewalsh.co.uk - MVP Credit
Subscription ID :
Status : Succeeded
Tags (edit) : Add tags

Get started Definitions

Filter by name... Filter by type... Showing 1 of 1 VM image definitions

Showing all 1 items

Name	Type	Provisioning State	OS type	
win11-24h2-avd	VM image definition	Succeeded	Windows	Gr

Image created and saved into an Azure Compute Gallery – ready for use Across Azure Public regions

1.0.0 (jwblog01/win11-24h2-avd/1.0.0) | Update replication ☆ ...

VM image version

Search

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Resource visualizer

Settings

Update replication

Configuration

Properties

Locks

> Automation

> Help

Save Discard Refresh

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. [Learn more](#)

Target regions	Replica count	Storage sku	Replication status
(Europe) UK South	1	Standard HDD LRS	Completed
(US) East US		Standard HDD LRS	-

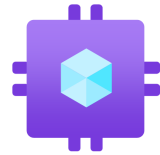
Give feedback

Help improve this page

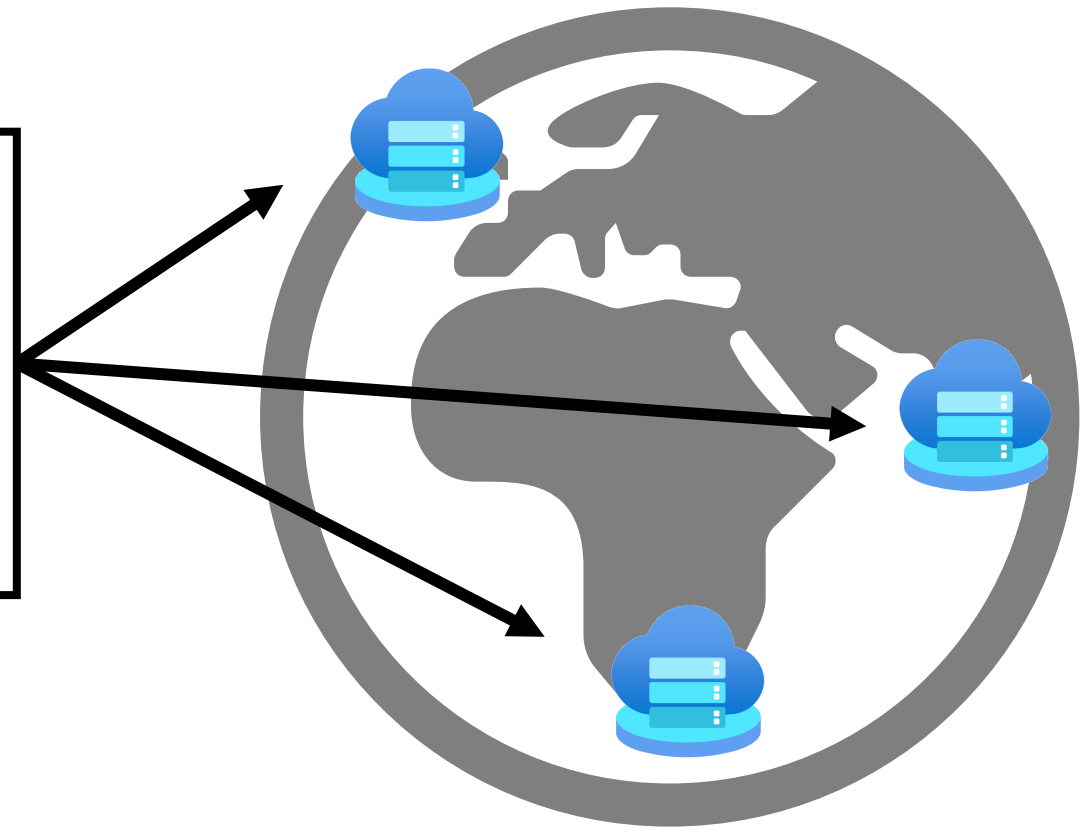
Choosing where to replicate our image to
– very useful for DR / Multi Geo
scenarios.

Let's Talk Geography

1. A Single Azure Compute Gallery – with replication to Regions close to our Azure Local deployments.



2. An image replicated to the Regions we are operating in – close to our Azure Local deployments.





Additional configuration options for the image via the Image Version in the Azure Compute Gallery.

1.0.0 (jwblog01/win11-24h2-avd/1.0.0) | Configuration ☆ ...


VM image version

 Search

 Refresh


 Overview

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 Tags

 Diagnose and solve problems

 Resource visualizer

▼ Settings

 Update replication

Exclude from latest ⓘ

☐

End of life date ⓘ

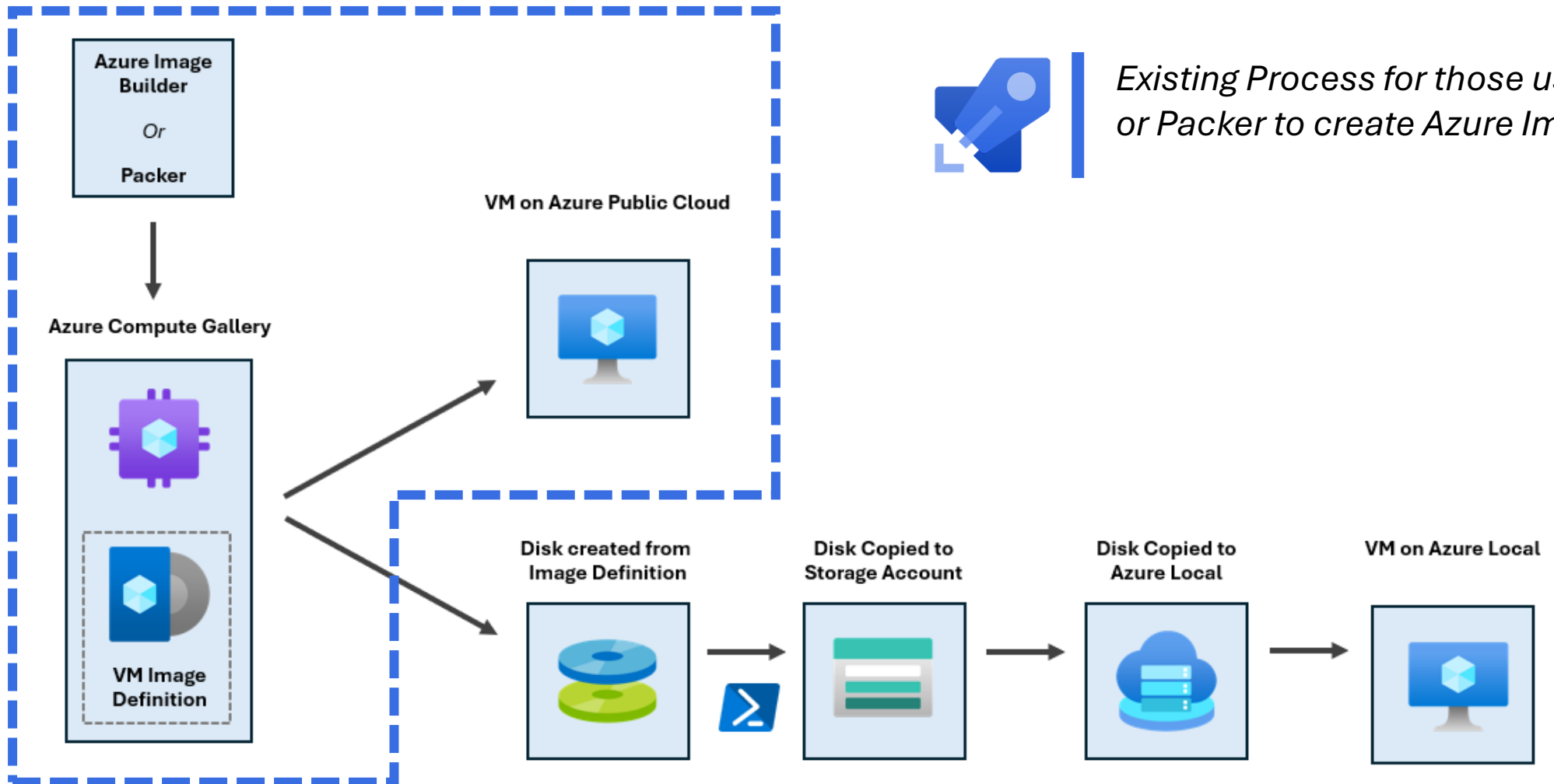


Lock deleting Replicated Locations ⓘ

☒

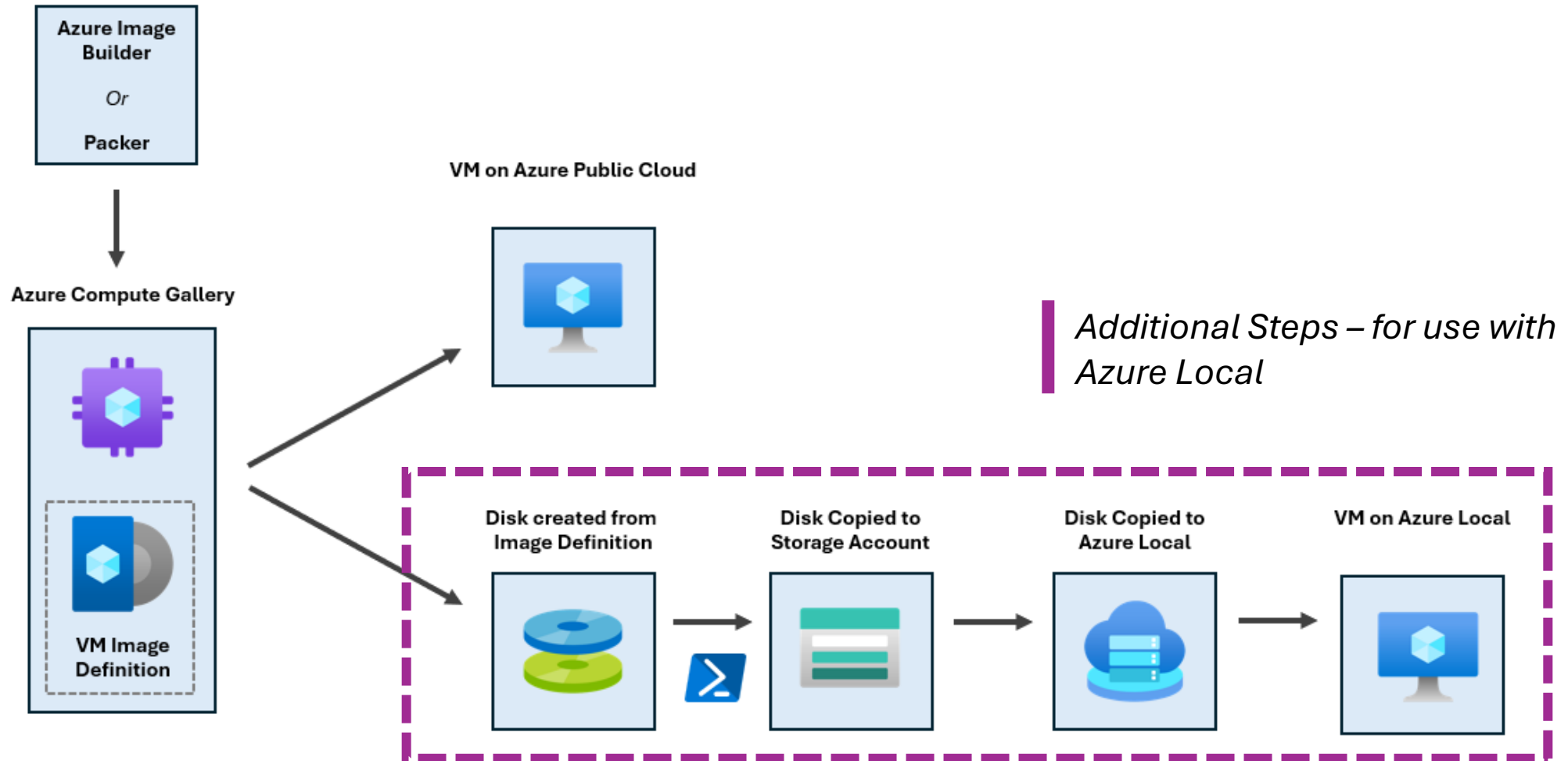
Existing Images

A Practical Example – the Azure Region



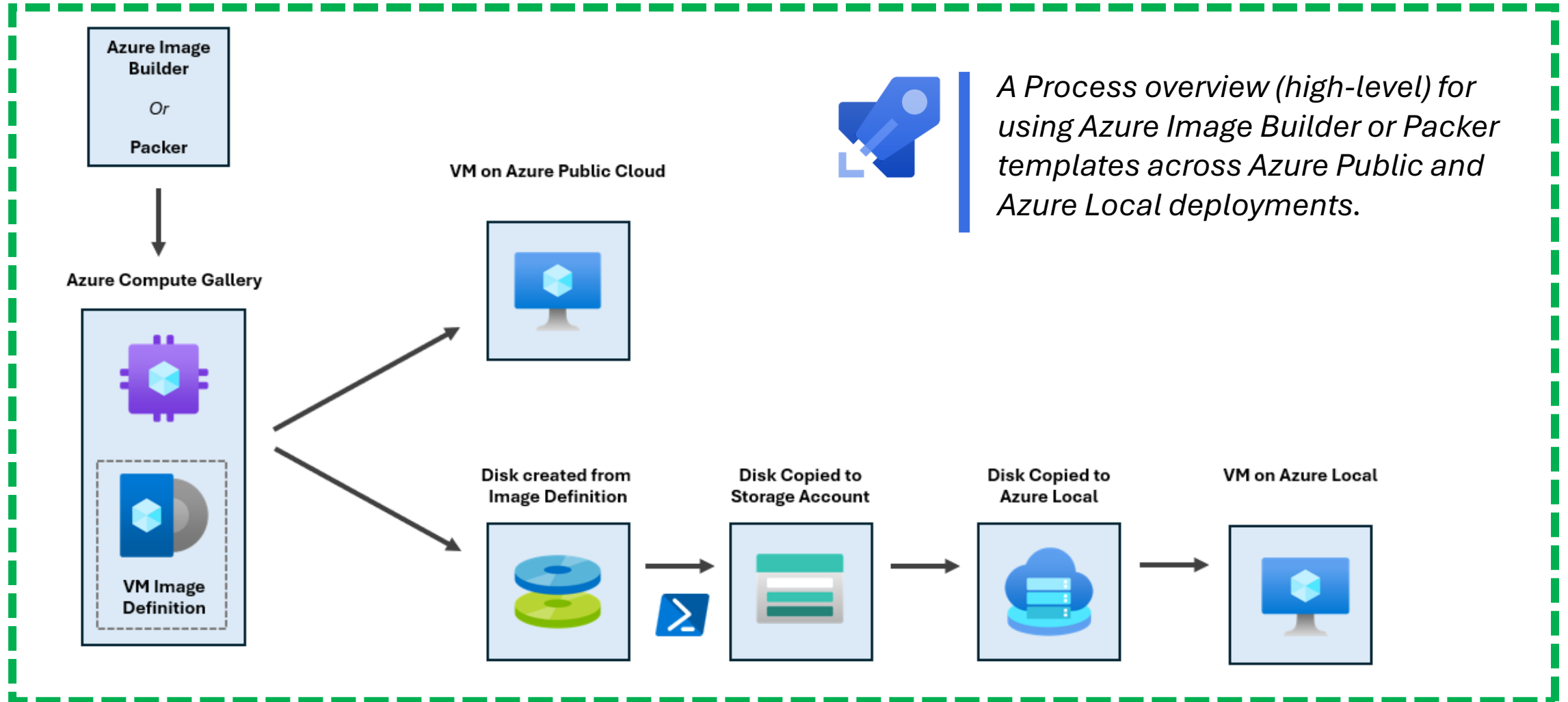
Existing Images

A Practical Example – Azure Local Process Extension



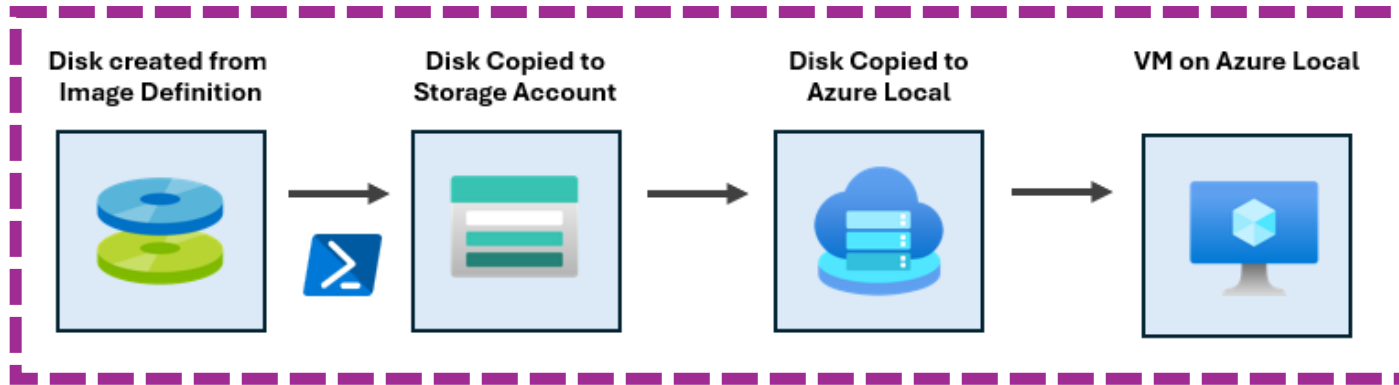
Existing Images

A Practical Example – Bringing it all together...



Azure Local – The Process!

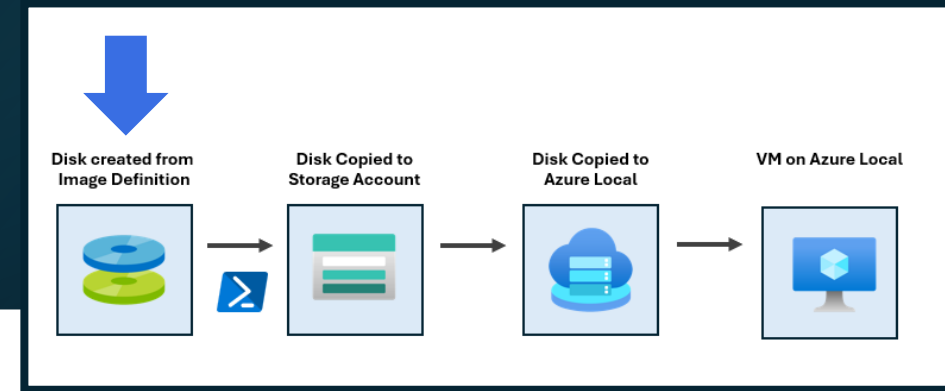
Getting the Image onto Azure Local



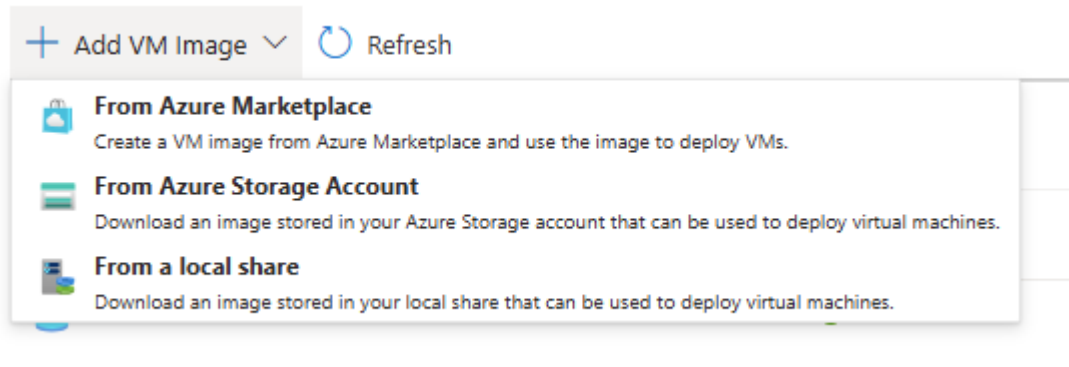
*Additional Steps – for use with
Azure Local*

1. **Disk Creation** – from Image Definition in the Azure Compute Gallery
2. **Disk Copied to Storage Account** – to allow import to Azure Local
3. **Disk Copied to Azure Local** – to allow VM creation
4. **VM created on Azure Local**

Disk Creation

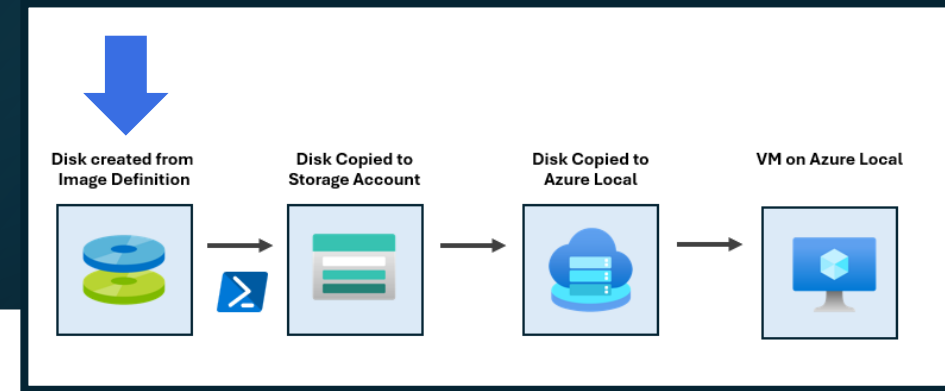


At the time of writing - we can only add VM Images to Azure Local from these sources:



So – we need to convert our Image in a Compute Gallery, to a Disk in a Storage Account.

Disk Creation

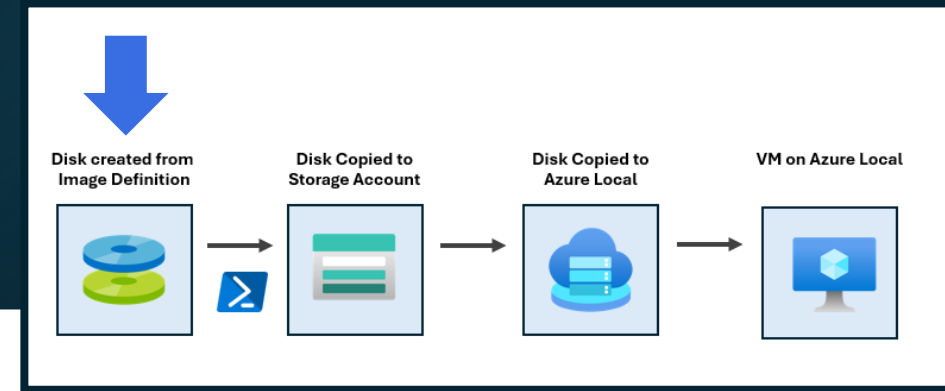


Azure CLI to the Rescue – creating an Unattached Disk from our Compute Gallery:

```
$source = "/subscriptions/xxxxxxxx-xxxx-xxxx-xxxx-  
xxxxxxxxxxxx/resourceGroups/packer-  
images/providers/Microsoft.Compute/galleries/jwblog01/images/win11-  
24h2-avd/versions/1.0.0"  
  
az disk create --resource-group packer-images --location uksouth --  
name win11-24h2-avd --gallery-image-reference $source
```

Disk Creation

Once completed – we have a disk!



win11-24h2-avd

Disk



Search

+ Create VM + Create VM image version + Create snapshot Delete Refresh Give feedback



Overview

^ Essentials



Activity log

Resource group [\(move\)](#) : [PACKER-IMAGES](#)



Access control (IAM)

Disk state : Unattached



Tags

Last ownership updat... : -



Diagnose and solve problems

Location : UK South



Resource visualizer

Subscription [\(move\)](#) : [dev.jakewalsh.co.uk - MVP Credit](#)



Settings

Subscription ID : .



Monitoring

Time created : 20/02/2025, 15:41:47



Automation

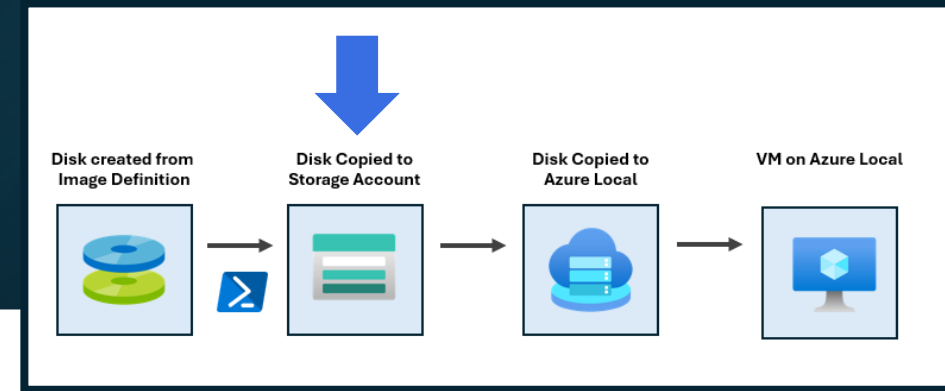
Tags [\(edit\)](#) : [Add tags](#)



Help

Disk size	: 127 GiB
Storage type	: Premium SSD LRS
Managed by	: -
Operating system	: Windows
Max shares	: 0
Availability zone	: No infrastructure redundancy required
Performance tier	: P10 - 500 IOPS, 100 MB/s
Security type	: Standard

Copy to a Storage Account



Next – we need to copy this disk to an Azure Storage Account

Sample script

PowerShell

Copy

```
#Provide the subscription Id of the subscription where managed disk is created
$subscriptionId = "yourSubscriptionId"

#Provide the name of your resource group where managed is created
$resourceGroupName = "yourResourceGroupName"
```



https://learn.microsoft.com/en-us/azure/virtual-machines/scripts/virtual-machines-powershell-sample-copy-managed-disks-vhd?WT.mc_id=AZ-MVP-5004974

#Provide the subscription Id of the subscription where managed disk is created

\$subscriptionId = "yourSubscriptionId"

#Provide the name of your resource group where managed is created

\$resourceGroupName = "yourResourceGroupName"

#Provide the managed disk name

\$diskName = "yourDiskName"

#Provide Shared Access Signature (SAS) expiry duration in seconds e.g. 3600.

#Know more about SAS here: <https://docs.microsoft.com/en-us/Az.Storage/storage-dotnet-shared-access-signature-part-1>

\$sasExpiryDuration = "3600"

#Provide storage account name where you want to copy the underlying VHD of the managed disk.

\$storageAccountName = "yourstorageaccountName"

#Name of the storage container where the downloaded VHD will be stored

\$storageContainerName = "yourstoragecontainername"

#Provide the key of the storage account where you want to copy the VHD of the managed disk.

\$storageAccountKey = 'yourStorageAccountKey'

#Provide the name of the destination VHD file to which the VHD of the managed disk will be copied.

\$destinationVHDFileName = "yourvhdfilename"

#Set the value to 1 to use AzCopy tool to download the data. This is the recommended option for faster copy.

#Download AzCopy v10 from the link here: <https://docs.microsoft.com/en-us/azure/storage/common/storage-use-azcopy-v10>

#Ensure that AzCopy is downloaded in the same folder as this file

#If you set the value to 0 then Start-AzStorageBlobCopy will be used. Azure storage will asynchronously copy the data.

\$useAzCopy = 0

Set the context to the subscription Id where managed disk is created

Select-AzSubscription -SubscriptionId \$SubscriptionId

#Generate the SAS for the managed disk

\$sas = Grant-AzDiskAccess -ResourceGroupName \$ResourceGroupName -DiskName \$diskName -DurationInSecond \$sasExpiryDuration -Access Read

#Create the context of the storage account where the underlying VHD of the managed disk will be copied

\$destinationContext = New-AzStorageContext -StorageAccountName \$storageAccountName -StorageAccountKey \$storageAccountKey

#Copy the VHD of the managed disk to the storage account

if(\$useAzCopy -eq 1)

{

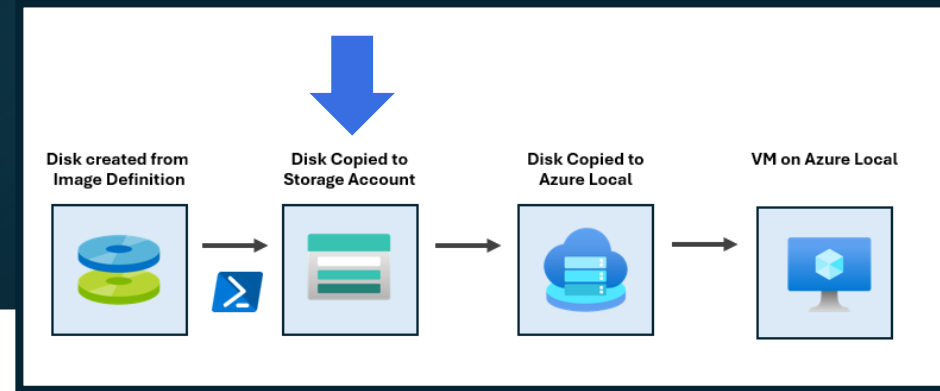
 \$containerSASURI = New-AzStorageContainerSASToken -Context \$destinationContext -ExpiryTime(get-date).AddSeconds(\$sasExpiryDuration) -FullUri -Name \$storageContainerName -Permission rw
 azcopy copy \$sas.AccessSAS \$containerSASURI

}else{

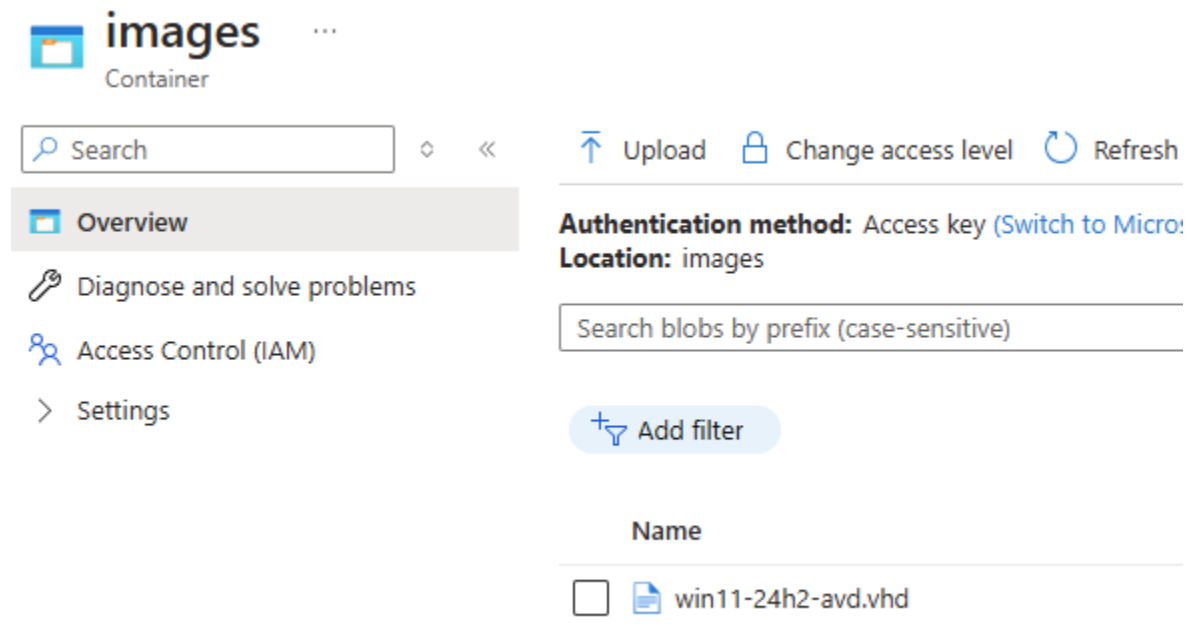
Start-AzStorageBlobCopy -AbsoluteUri \$sas.AccessSAS -DestContainer \$storageContainerName -DestContext \$destinationContext -DestBlob \$destinationVHDFileName

}

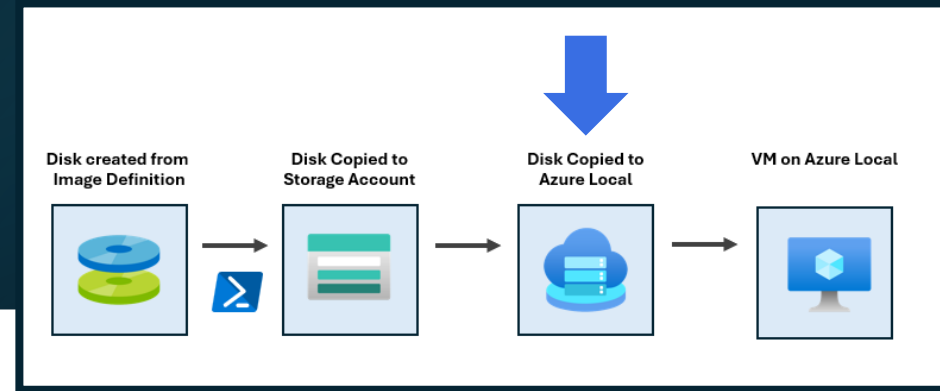
Copy to a Storage Account



We then have a disk ready in our Storage Account:



Copy to Azure Local



This is done using the Normal Process via the Azure Portal:

[Home](#) > [Azure Arc | Azure Local](#) > [azurelocal01 | VM images](#) > [Create an image](#) >

Create an image ...

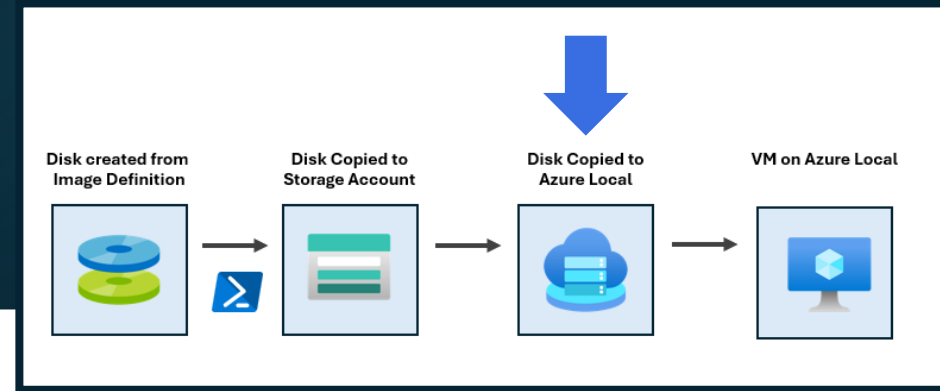
✓ Validation passed.

Basics Tags Review + create

Basics

Subscription	dev.jakewalsh.co.uk - MVP Credit
Resource group	rg-local
Custom location	LIN
Image to download	https://jwblogger01.blob.core.windows.net/images/win11-24h2-avd.vhd
Save image as	test-packer
OS type	Windows
VM generation	Gen2

Copy to Azure Local




This copy process will take some time whilst the image downloads from the Storage Account:

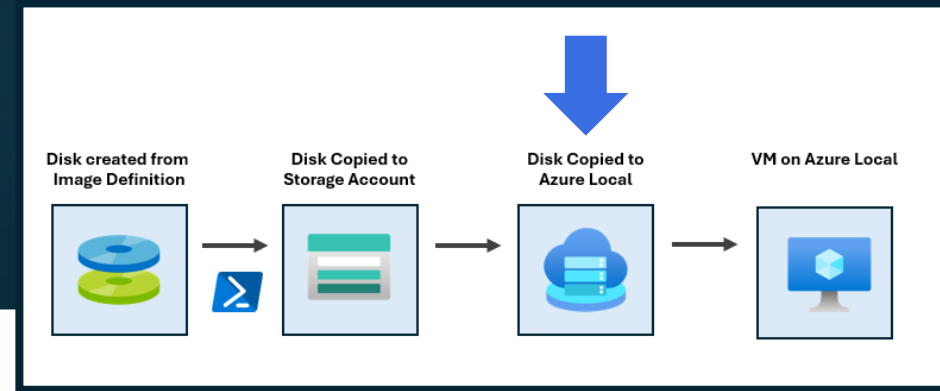
azurelocal01 | VM images ☆ ...
Azure Local

Search

+ Add VM Image ▾ Refresh

Image name	Version	Status	Operating syst...	Source
 win11-24h2-ent	-	*** Downloading (44%)	Windows	Customer managed

Copy to Azure Local



Once done – we have an image on Azure Local!



test-packer



Azure Local Gallery image



Refresh



Overview



Activity log



Access control (IAM)



Tags



Diagnose and solve problems



Resource visualizer



Settings



Automation

^ Essentials

Resource group

: [rg-local](#)

Location

: West Europe

Subscription

: [dev.jakewalsh.co.uk - MVP Credit](#)

Subscription ID

:

Tags [\(edit\)](#)

: [Add tags](#)

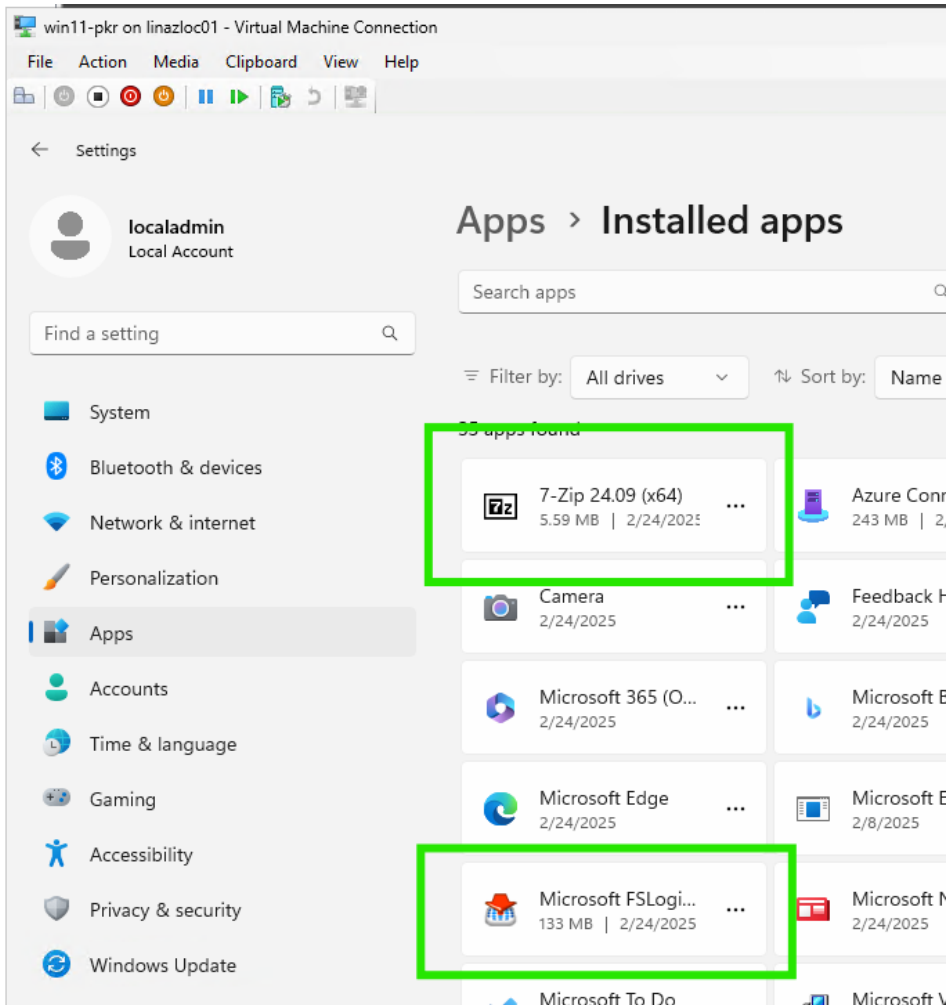
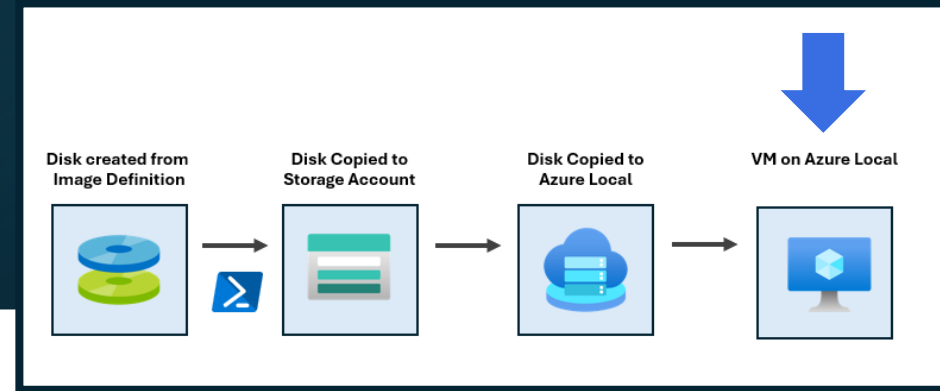
Operating system

: Windows

Source

: Customer managed

VM Test



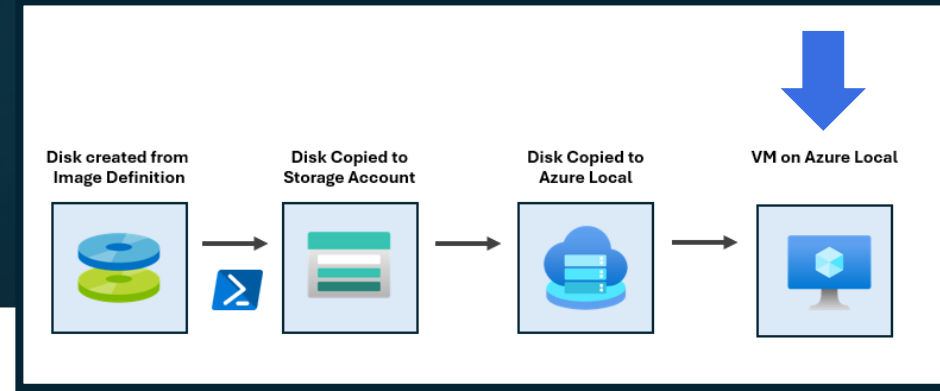
We can then use this Image to create a VM on Azure Local.

You can see here 7-Zip and FSLogix Installed – from our Packer Template:



```
}},
"provisioners": [
  {"type": "powershell",
   "inline": [
     "Set-ExecutionPolicy Bypass -Scope Process -Force",
     "[Net.ServicePointManager]::SecurityProtocol = [Net.SecurityProtocolType]::Tls12",
     "iex ((New-Object System.Net.WebClient).DownloadString('https://chocolatey.org/install.ps1'))",
     "choco install 7zip -y --force --force-dependencies",
     "choco install fslogix -y --force --force-dependencies"
   ]},
  {"type": "windows-restart"},
  {"type": "powershell",
   "inline": [
     "if ($?) {
```

Success!



✓ We have now confirmed a successful custom image deployment!

Any Questions?

A Recap of what we have covered today...



Why are custom images important?



Building Images – and the Azure Compute Gallery



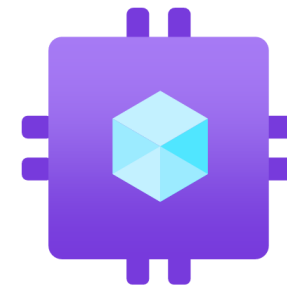
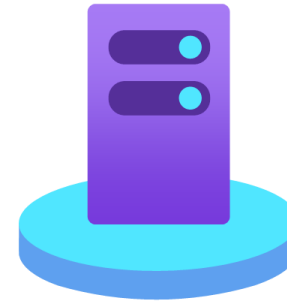
Existing Images – The Process!



How to use Custom Images with Azure Local



Questions



References / Further Reading

- Create Azure Local VM image using image in Azure Storage account - https://learn.microsoft.com/en-us/azure/azure-local/manage/virtual-machine-image-storage-account?view=azloc-24112&%3FWT.mc_id=AZ-MVP-5004974view%3Dazloc-24112&tabs=azurecli
- Export/Copy the VHD of a managed disk to a storage account in different region with PowerShell (Windows) - https://learn.microsoft.com/en-us/azure/virtual-machines/scripts/virtual-machines-powershell-sample-copy-managed-disks-vhd?WT.mc_id=AZ-MVP-5004974
- Create Azure Local VM image using images in a local share - https://learn.microsoft.com/en-us/azure/azure-local/manage/virtual-machine-image-local-share?view=azloc-24112&viewFallbackFrom=azloc-24112%3Fwt.mc_id%3Daz-mvp-5004974&tabs=azurecli
- Packer Template used today - <https://github.com/jakewalsh90/Packer-Azure/blob/847c599bfa51a7ae5fe3889a3d08c2f6346197c6/Windows%20Desktop/win11-24h2-avd-choco.json>

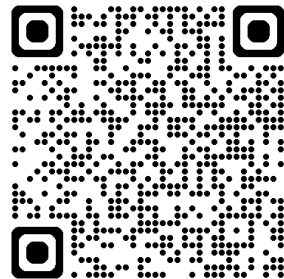
Custom Images and Azure Local

Jake Walsh

Senior Solution Architect – CDW UK

@jakewalsh90

jakewalsh.co.uk



Please note – the views/opinions in this presentation are entirely my own.
If in any doubt, please check latest documentation and Links for updated
info!



Thank You!

