

NIC REBEL
EDITION



THE TOP 5+ DO'S, DON'TS & HOW'S OF AZURE VIRTUAL DESKTOP

About me

Focus

Azure Virtual Desktop & Log
Analytics
WVDAdmin & Hydra for AVD

From
Germany

My Blog
blog.ITProCloud.de



Two screenshots of management tools for Azure Virtual Desktop. The top screenshot shows the 'WVDAdmin - Azure Admin for Windows Virtual Desktop' interface with sections for Azure, WVD V2, Host Pools, Workspaces, and Session hosts. It displays a list of virtual machines and session hosts, along with log and session details. The bottom screenshot shows the 'Project Hydra' interface with a 'Host Pool load - PROD' chart and a table of 'Session hosts for host pool PROD'.



Agenda

- Upgrading from Windows 10 -> 11
- Azure Boost: NVMe, Ephemeral, v6
- Orphan Resources
- Imaging Strategies
- My Top 5 Pitfalls and Reminders

Upgrading from Windows 10 -> 11

- Why
 - Windows 10 is EOL on October 14th, 2025
- Challenges
 - Older hosts / Golden Master on V1 disks (vTPM, Trusted Launch)
 - Windows update doesn't show an update path
 - How to run an in-place update
 - Site-node: Strange BitLocker behaviours on some updates (also Windows 11 23H2 -> 24H2)

V1 vs. V2 VM Sizes – Trusted Launch

- To upgrade from Windows 10 to Windows 11, we need a vTPM
- Usually, V1 VM sizes have no vTPM*
- Differences

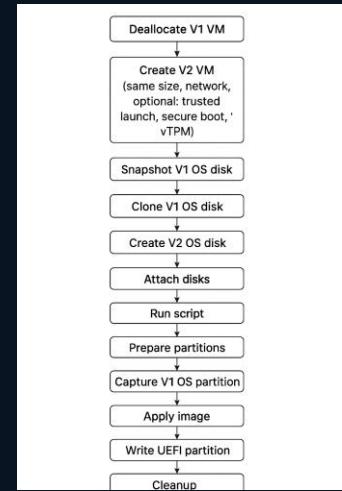
	v1	v2
Boot	PCAT / BIOS	UEFI
Disk Controller	IDE	SCSI (v6: NVME)
Advanced Security Feature	X	Yes, like vTPM, trusted launch*

- Action
 - Migrate the VM sizes (or at least the Golden Master)

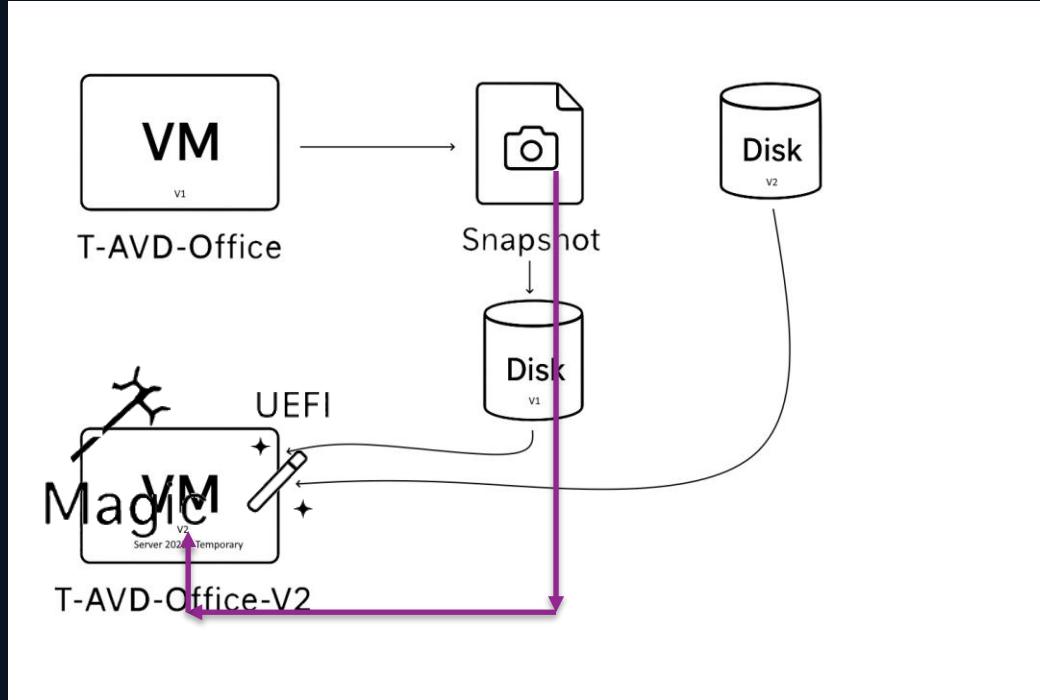
• * <https://learn.microsoft.com/en-us/azure/virtual-machines/trusted-launch-existing-vm-gen-1>

V1 vs. V2 VM Sizes – Trusted Launch

- Challenge
 - That is not directly possible!
- Solution
 - Create a V2 VM with Windows Server 2022 and a larger OS disk (256 GB+)
 - Create a copy of the V1 OS Disk (V1-disk)
 - Create a new V2 managed disk (V2-disk)
 - Attach both to the server VM
 - Capture content of the V1-disk with Dism.exe
 - Write image to the V2-disk
 - Modify partitions, write UEFI BIOS
 - We have a V2-disk with the content of the V1-disk and can create a VM



V1 vs. V2 VM Sizes – Trusted Launch

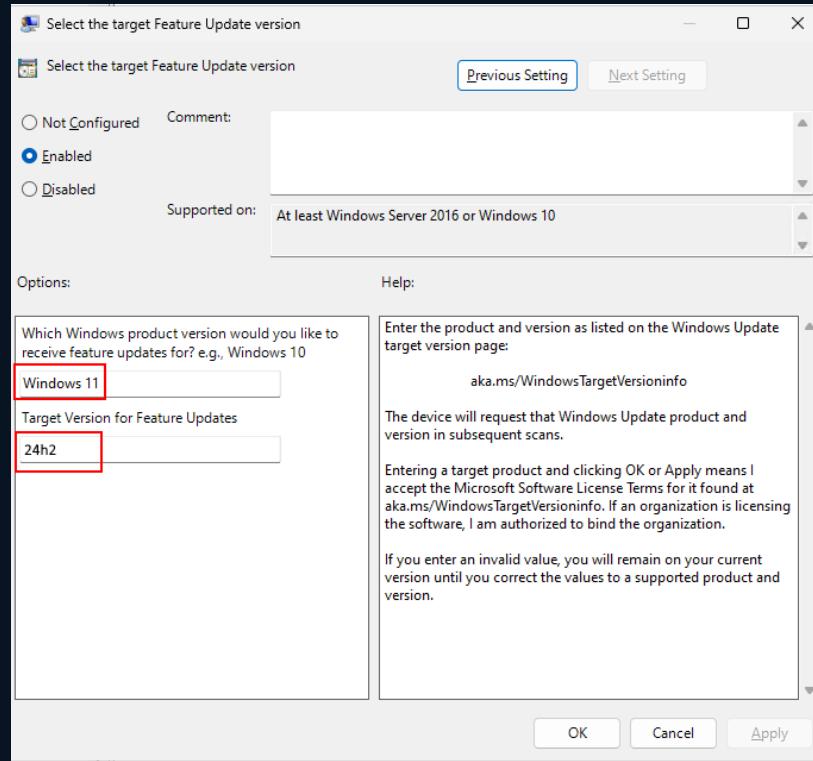


Windows – Updating

- Challenge:
 - Windows Update is not showing an update
- Two options
 - Forcing the new V2 Windows 10 client to search for a specific Windows update
 - Inplace upgrade

Windows – Updating 1

- Configuring a local policy



Windows – Updating 2

- Download multi-ISO to do an in-place upgrade
<https://www.microsoft.com/en-us/software-download/windows11>



- Note: “Rumors” say that in-place upgrade is not supported in Azure and Hyper-V should be used

Windows – Ready

- We hopefully migrated our Golden Master to Windows 11
- Does this work always?
- Automate the process with PowerShell:
 - <https://blog.itprocloud.de/Migrate-Azure-V1-VM-to-Azure-V2-VM-In-A-Safe-Way/>
 - <https://blog.itprocloud.de/Update-Windows-10-Multi-user-to-Windows-11-Multi-user/>

Azure Boost: NVMe, Ephemeral on v6

The new start in town “boost VMs”

- Advantages of boost with NVMe:
 - Higher input/output operations per second (IOPS)
 - Higher throughput (MBps)
 - Faster network connection
 - Modern CPU
 - Offloading of virtualisation tasks

Azure Boost: NVMe, Ephemeral on v6

The new start in town “boost VMs”

OS disk	Premium Disk				
Disk name	Storage type	Size (GiB)	Max IOPS	Max throughput (...)	Encryption
AVD-Design-001_disk1_def52e63fb	Premium SSD LRS	128	500	100	SSE with PM
OS disk	Ephemeral Disk				
Disk name	Storage type	Size (GiB)	Max IOPS	Max throughput (...)	Encryption
AVD-Design-003_OsDisk_1_c2dc69f	Standard HDD LRS	128	36000	477	SSE with PM

Azure Boost: NVMe, Ephemeral on v6



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Azure Boost: NVMe, Ephemeral on v6

Challenges

- No migration path for Windows
- Images are not compatible (custom, gallery)
- Pagefile on C:\ instead of D:\, if present

Azure Boost: Migration

“There is no support way to migrate to a V6 directly.”
(as I know)

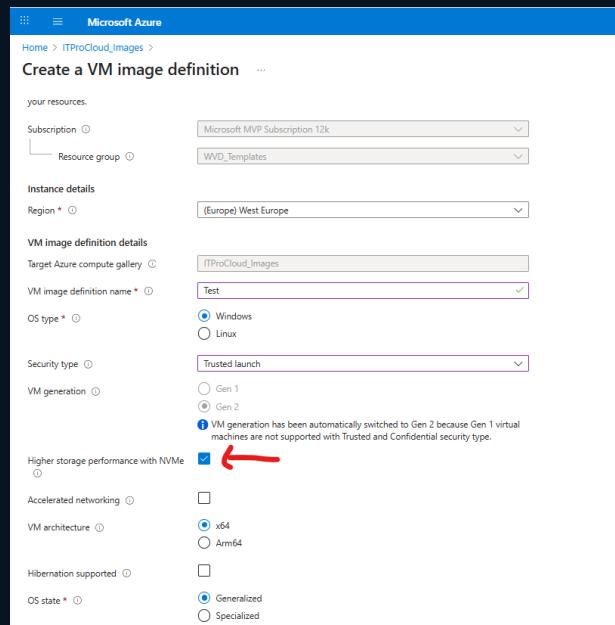
Azure Boost: Images

- Microsoft Marketplace images are working (scsi, nvme)
- Custom images are not working
- If we have no way to migrate a Golden Master, we have to create a new v6 Golden Master – with all the effort
- But ...

Azure Boost: Images

We can use a specific Azure Compute Gallery Definition

- Create a new definition
- Enable NVME
- Security type “trusted launch” (recommend)
- Capture the image from your old Golden Master into the definition (WVDAdmin, Hydra, PowerShell, ...)



Azure Boost: Images

You can now deploy session hosts with that image from the Gallery Definition

Add virtual machines to a host pool ...

Basics Virtual Machines Tags Review + create

Add virtual machines No Yes

Host pools are a collection of one or more identical virtual machines within Azure Virtual Desktop environments. Here you provide a common set of properties to update the Session hosts within your host pool.

Resource group

Name prefix * Session host name must be unique within the Resource Group.

Virtual machine type Azure virtual machine Azure Local virtual machine

Security type *

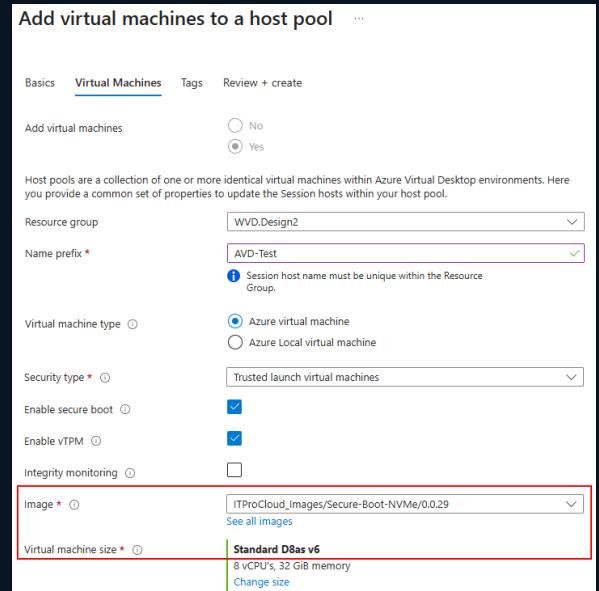
Enable secure boot

Enable vTPM

Integrity monitoring

Image * See all images

Virtual machine size * 8 vCPUs, 32 GiB memory Change size



Hints:

- The operating system must support NVMe

Demo Time

Azure Boost: Migration

One step back

If the OS supports NVMe, we can migrate existing VMs:

- Capture a specialized image into a prepared Gallery Definition
- Create a new v6 VM based on that image
- Done

Azure Boost: Pagefile

Do you know the “Don’t store data on D: drive” drive?

- E.g.: D8ads_v6
 - d stands for a local drive on the hypervisor
 - Perfect for the pagefile, because no network in between

And?

Hint: Check out <https://cloudprice.net/>



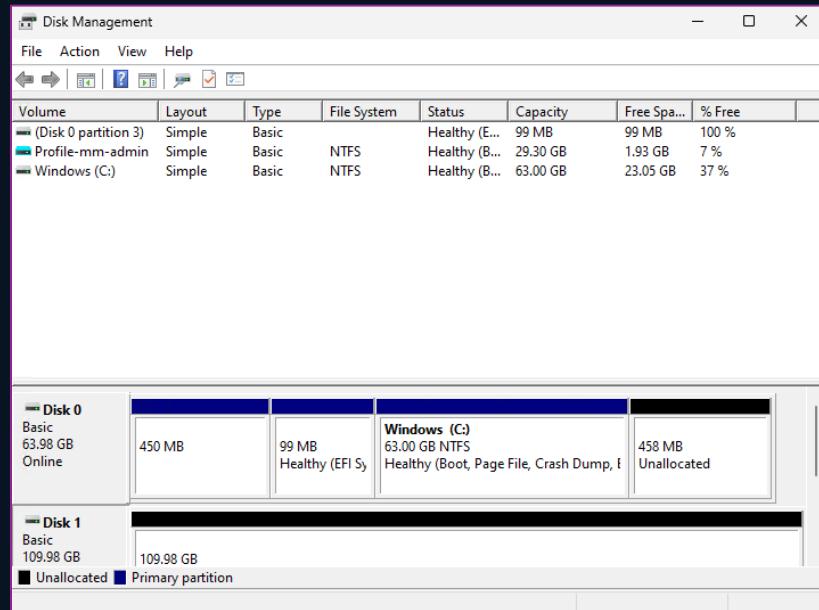
Azure Boost: Pagefile

Do you know the “Don’t store data on D: drive” drive?

The D: drive is not automatically mounted

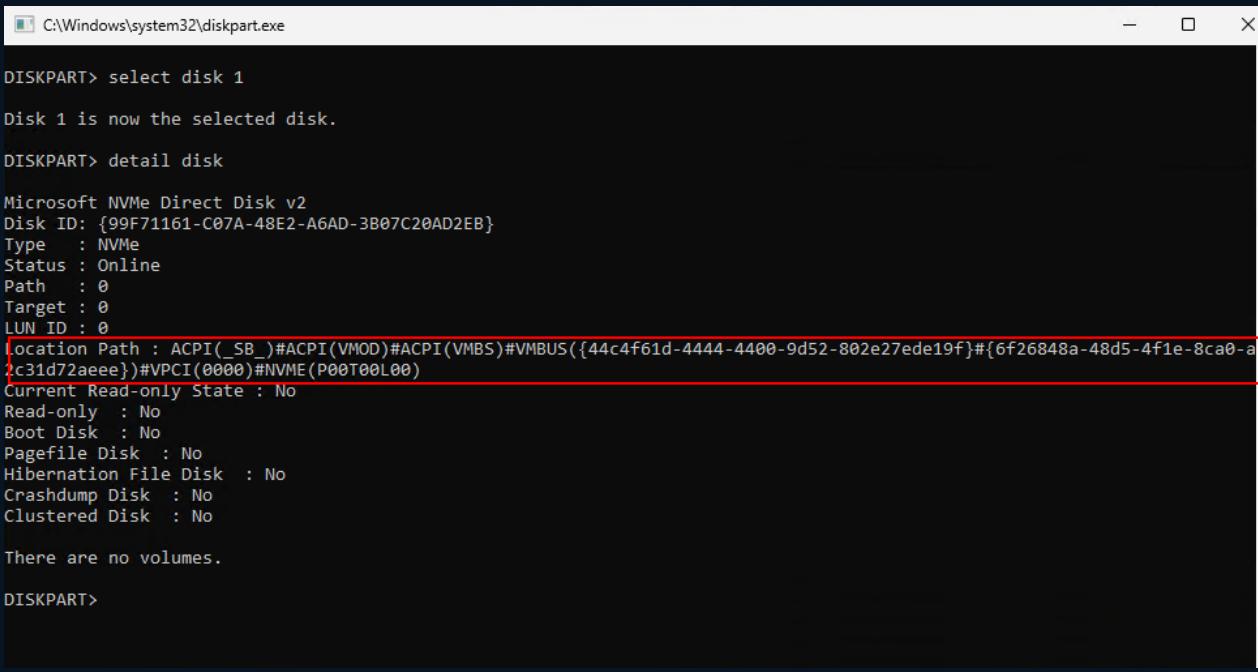
Challenge:

- Mount D:
- Format D:
- Reconfigure the pagefile
- Reboot



Azure Boost: Pagefile

But:



```
C:\Windows\system32\diskpart.exe
DISKPART> select disk 1
Disk 1 is now the selected disk.
DISKPART> detail disk
Microsoft NVMe Direct Disk v2
Disk ID: {99F71161-C07A-48E2-A6AD-3B07C20AD2EB}
Type : NVMe
Status : Online
Path : 0
Target : 0
LUN ID : 0
Location Path : ACPI(_SB_)\ACPI(VMOD)\ACPI(VMBS)\#VMBUS({44c4f61d-4444-4400-9d52-802e27ede19f}\#{6f26848a-48d5-4f1e-8ca0-a1c31d72ae00})\#VPCI(0000)\#NVME(P00T00L00)
Current Read-only State : No
Read-only : No
Boot Disk : No
Pagefile Disk : No
Hibernation File Disk : No
Crashdump Disk : No
Clustered Disk : No
There are no volumes.
DISKPART>
```

Azure Boost: Pagefile

- How to handle the pagefile:
 - Each time the host is allocated, the ID is changed
 - Therefore:
 - Detect if the NVMe disk exists but is not mounted/formatted
 - Mount and format the disk
 - Reconfigure pagefile
 - Do a reboot (a reboot will not change the device ID)
 - Do that very early before the AVD agent starts
- The upcoming Hydra version will do that automatically if you want.

Azure Boost: Finally

The screenshot shows the Microsoft Azure portal interface for a virtual machine named "AVD-Design-003". The main title bar says "Microsoft Azure". The left sidebar lists various management options like Overview, Activity log, and Connect. The central content area is titled "AVD-Design-003 | Boot diagnostics" and shows a "Screenshot" tab. The screenshot itself is a blue Windows error screen with a large white frowny face icon in the center. Below the icon, the text reads: "Your device ran into a problem and needs to restart. We'll restart for you." At the bottom of the screenshot, there's a QR code and a link to "https://www.windows.com/stopcode". Above the screenshot, the text "Updated: Friday, August 29, 2025 at 8:11:00 AM UTC" and a "Download screenshot" button are visible.

Orphan resources

```
"Name": "Design/AVD-Design-002.ITProCloud.test",
"Id": "/subscriptions/0cdce2ee-c9c0-4765-acd5-197126d21978/resourcegroups/WVD.Design2/providers/Microsoft.DesktopVirtualization/hostpools/Design/sessionhosts/AVD-Design-002",
"Type": "Microsoft.DesktopVirtualization/hostpools/sessionhosts",
"Properties": {
    "LastHeartBeat": "2025-09-03T06:47:28.622",
    "Sessions": 0,
    "AgentVersion": "1.0.11802.2200",
    "AllowNewSession": true,
    "AssignedUser": null,
    "FriendlyName": null,
    "Status": 2,
    "StatusTimestamp": null,
    "OsVersion": "10.0.22621.5768",
    "SxSStackVersion": "rdp-sxs250508650",
    "UpdateState": 3,
    "LastUpdateTime": "2025-09-01T08:18:35.252",
    "UpdateErrorMessage": "",
    "SessionHostHealthCheckResultObject": [],
    "ResourceId": "/subscriptions/dcdce2ee-c9c0-4765-acd5-197126d21978/resourceGroups/WVD.Design2/providers/Microsoft.Compute/virtualMachines/AVD-Design-002",
    "VirtualMachineId": "e2338658-aeee-46d6-8906-24cb9e14fb63"
```

Orphan resources

While a host is only linked to a VM, the following can happen:

- Orphan Host: The VM is deleted, but not the host -> Issues in autoscaling
- Orphan VM: The session host is deleted (in the Azure Portal), but the VM still exists:
 - If the VM is running, you pay for the full VM – Autoscale will not shut down the VM
 - You may run out of IP addresses
 - Storage costs
- Different and similar: If a host/VM is offline for 90+ days, the AVD Agent cannot connect to the backend the next time
 - The hosts show up as unavailable/shutdown -> See orphan host

Orphan resources - Investigate

Azure Virtual Desktop - Deep-Insights

This workbook gives you an insight into the logs coming from the Azure Virtual Backplane. These data can be used to resolve issues while user connecting or running sessions.

Check for an update of this Workbook - Current version: v3.5

Connections Errors Session Bandwidths & Latencies Graphic Performance Logon Timing VMs Runtime FSLogix Water Markings Resources

Azure Virtual Desktop Resources and Relationships

Check-out the ITProCloud Blog

- [blog.itprocloud.de](#)
- [WVDAdmin](#)
- [Hydra](#)

Hydra

Message

Orphan session hosts detected (Demo Tenant): We detected some session hosts without a linked virtual machine (or offline for longer than 90 days). That is expected during a rollout or deletion. Please validate the listed Session Hosts / VMs to avoid issues with auto scaling: AVD-AAD-GPU-002, AVD-Crazy2-0.ITProCloud.test, AVD-Crazy2-1.ITProCloud.test, AVD-Crazy2-2.ITProCloud.test, AVD-Crazy2-3.ITProCloud.test, AVD-SPLIT-S01.ITProCloud.test, AVD-SPLIT-S02.ITProCloud.test, AVD-SPLIT-S03.ITProCloud.test, VDI-11-MXE-001.ITProCloud.test

Orphan session hosts detected (Azure Local Tenant): We detected some session hosts without a linked virtual machine (or offline for longer than 90 days). That is expected during a rollout or deletion. Please validate the listed Session Hosts / VMs to avoid issues with auto scaling: AVD-PROD-M-302.FRA0204-AVD-LAB.local

Orphan AVD Agents detected (Demo Tenant): We detected some running Virtual Machines that are not listed as available on Azure Virtual Desktop. That is expected during a rollout or a longer operation, like Windows Update. Please validate the listed VMs/Session Hosts to avoid additional costs and issues: AVD-LAB-001 (VM running)

Warning	Crazy-II	AVD-Crazy2-2.ITProCloud.test	0	283	avd-crazy2-2
Warning	Crazy-II	AVD-Crazy2-1.ITProCloud.test	0	283	avd-crazy2-1
Warning	Crazy-II	AVD-Crazy2-0.ITProCloud.test	0	283	avd-crazy2-0

- Link: <https://blog.itprocloud.de/AVD-Azure-Virtual-Desktop-Error-Drill-Down-Workbook/>

Orphan resources

We will see it in my don't does....

Demo Time

Imaging Strategies

“Isn't using templates so 90s?”

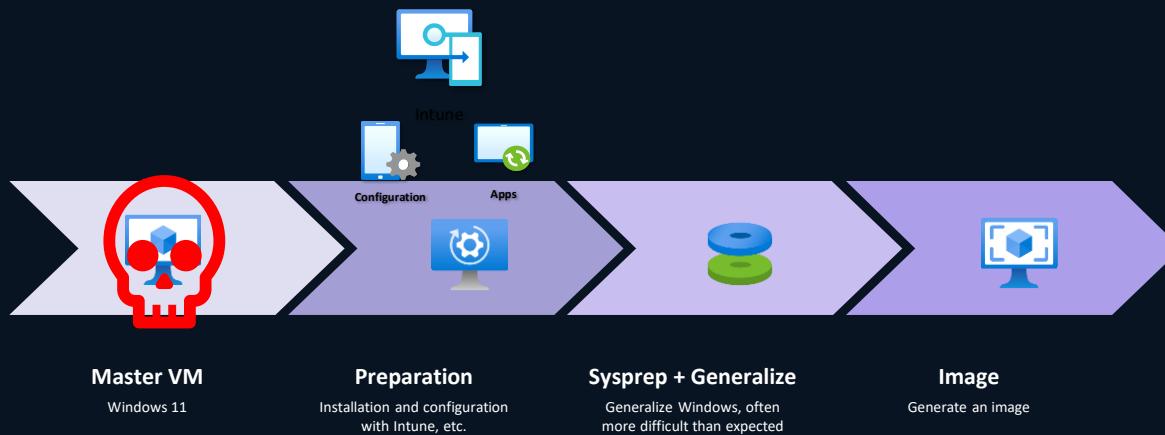
I don't think so...

Imaging Strategies

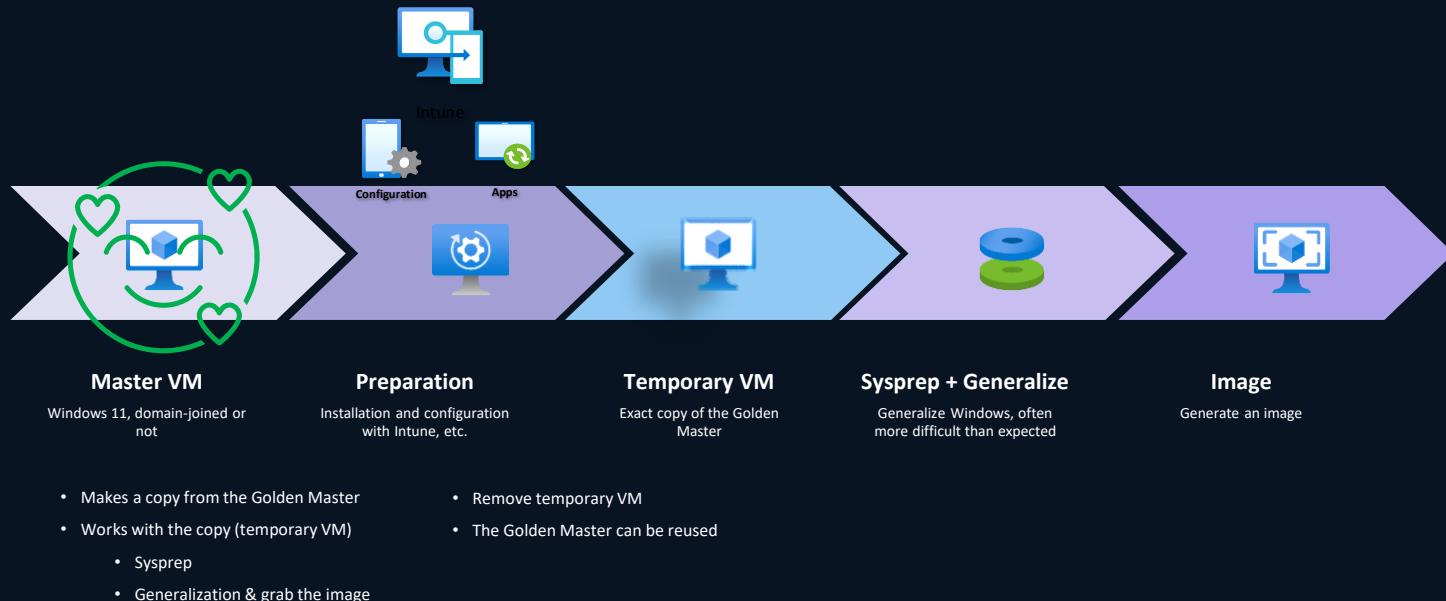
Why imaging still matters for most cases:

- Fast deployment
Deployment of session hosts with all apps and configuration in minutes
- Ready-to-use
Users can connect directly and work with the apps
- Simple
No complex installation process with all challenges regarding autoscaling, processes are in use, ...
- Repeatable
All hosts in a shared pool are equal
- Management
So easy – with the right tools
- ...

Imaging Strategies - Native



Imaging Strategies – With tools



Imaging Strategies - Challenges

What do we have to care about:

- Image types:
 - Custom/compute images
 - Gallery Images
 - Azure local images
- VM types:
 - Security type standard
 - Security type trusted launch
 - Confidential
- Specific settings:
 - Accelerated NIC
 - NVMe vs. SCSI
 - Plan-based (not plant-based)
 - Hibernation
 - ...
- Sysprep 😊

Imaging Strategies – Gallery Definition

Example:

A correct gallery definition is needed for a deployment of:

- Hibernation enabled
- Trusted Launch
- Accelerated NIC

Create a VM image definition ...

Instance details

Region * (US) West US

VM image definition details

Target Azure compute gallery ITProCloud/Images

VM image definition name * Windows-11-Office-TrustedLaunch.Hib.AccNic

OS type * Windows

Security type Trusted launch

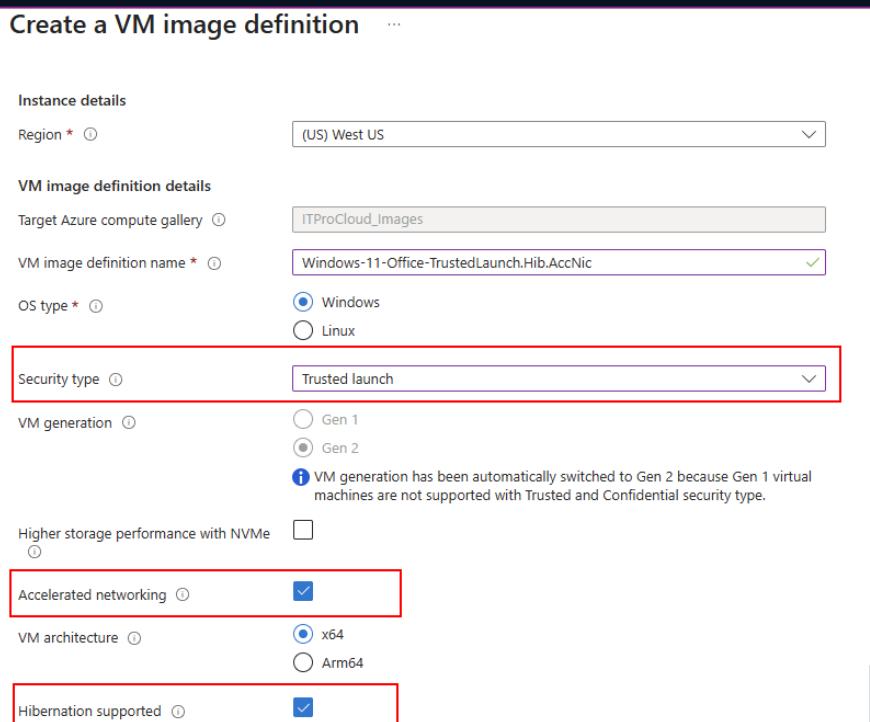
VM generation Gen 2

Higher storage performance with NVMe

Accelerated networking

VM architecture x64

Hibernation supported



VM generation has been automatically switched to Gen 2 because Gen 1 virtual machines are not supported with Trusted and Confidential security type.

Demo Time

My top 5

Does and don't do:

**“Never delete a host in the Azure Portal without
reading the small letters”**

Don't forget to delete the VM – or use fancy tools to do that. Don't forget the disk and nic

My top 5

Does and don't do:

**“Separate FSLogix profiles and don’t mix them up
(usually)”**

Keep a folder for each host pool to store the profiles. Use the same name as the pool and configure NTFS permissions correctly

My top 5

Does and don't do:

“Choose the right storage for FSLogix”

Huge differences between performance, provisioned and used capacity, pay-as-you-go, and the
“Provisioned price model”

E.g., Pay-as-you-go, standard storage: Tier and transactions matters

My top 5

Does and don't do:

“Always configure diagnostic settings on the pools”

This gives you so many insights into what happens on the backend.

<https://blog.itprocloud.de/AVD-Azure-Virtual-Desktop-Error-Drill-Down-Workbook/>

My top 5

Does and don't do:

“Check for orphan resources”

Stop paying for VM of “unavailable” session hosts.

<https://blog.itprocloud.de/AVD-Azure-Virtual-Desktop-Error-Drill-Down-Workbook/>

My top 5

Does and don't do:

“Don’t put a half-installed Windows Update in an Image”

Stop slow deployments.

Thanks a lot