

Ephemeral OS Disks

Short lived disk storage and the WVD Use-Case

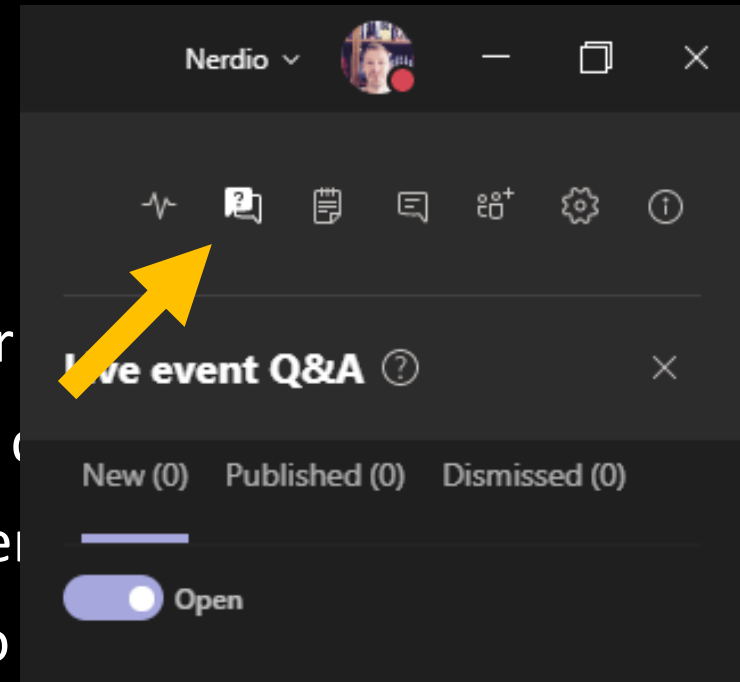


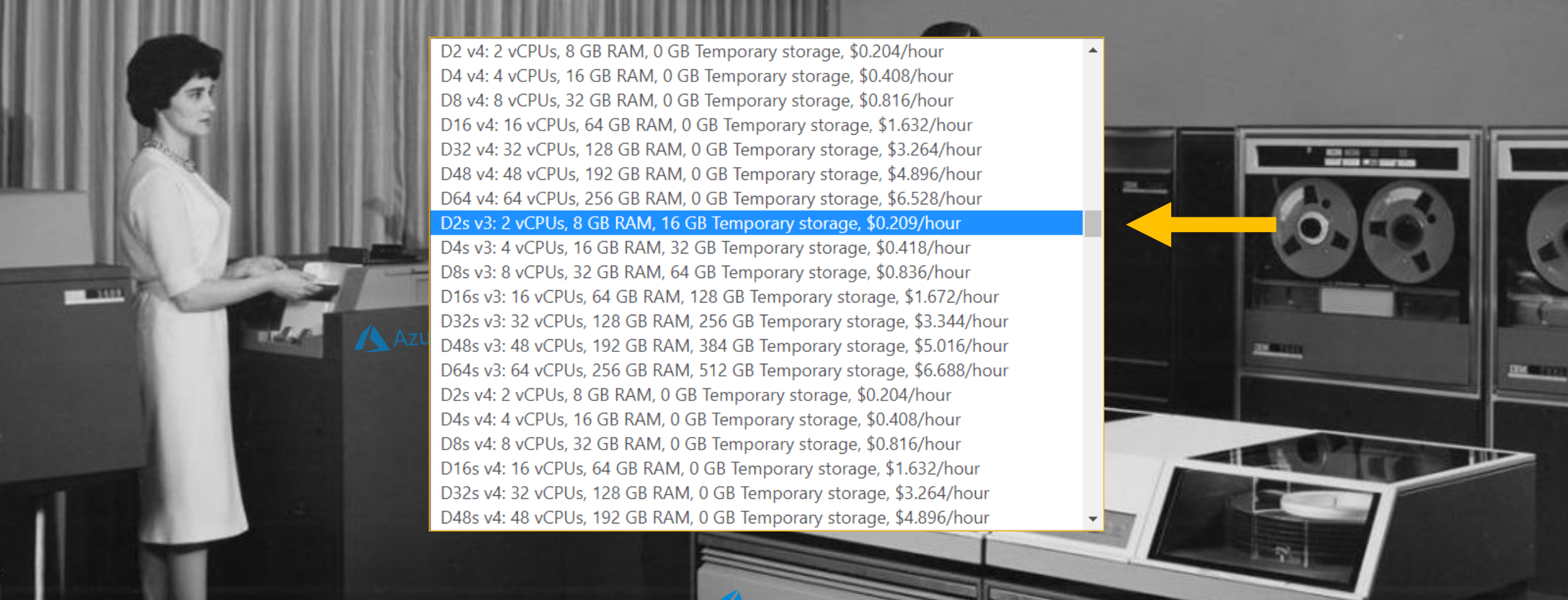
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Agenda

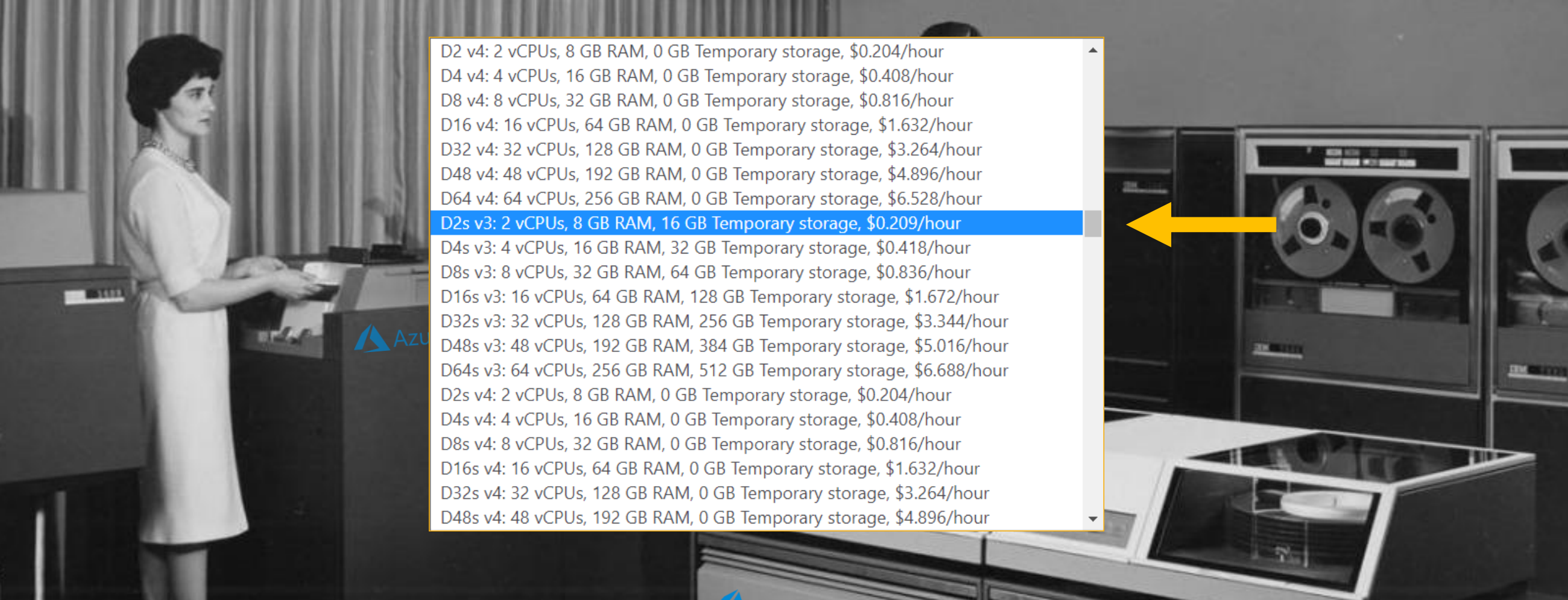
- Popular
- Storage
- Ephemeral
- What to
- What to take advantage of
- RDHS / VDI use-case
- Turning cons into pros
- Nerdio demo





D2 v4: 2 vCPUs, 8 GB RAM, 0 GB Temporary storage, \$0.204/hour
D4 v4: 4 vCPUs, 16 GB RAM, 0 GB Temporary storage, \$0.408/hour
D8 v4: 8 vCPUs, 32 GB RAM, 0 GB Temporary storage, \$0.816/hour
D16 v4: 16 vCPUs, 64 GB RAM, 0 GB Temporary storage, \$1.632/hour
D32 v4: 32 vCPUs, 128 GB RAM, 0 GB Temporary storage, \$3.264/hour
D48 v4: 48 vCPUs, 192 GB RAM, 0 GB Temporary storage, \$4.896/hour
D64 v4: 64 vCPUs, 256 GB RAM, 0 GB Temporary storage, \$6.528/hour
D2s v3: 2 vCPUs, 8 GB RAM, 16 GB Temporary storage, \$0.209/hour
D4s v3: 4 vCPUs, 16 GB RAM, 32 GB Temporary storage, \$0.418/hour
D8s v3: 8 vCPUs, 32 GB RAM, 64 GB Temporary storage, \$0.836/hour
D16s v3: 16 vCPUs, 64 GB RAM, 128 GB Temporary storage, \$1.672/hour
D32s v3: 32 vCPUs, 128 GB RAM, 256 GB Temporary storage, \$3.344/hour
D48s v3: 48 vCPUs, 192 GB RAM, 384 GB Temporary storage, \$5.016/hour
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D, E, F, N, and B Series



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<https://azure.microsoft.com/en-us/global-infrastructure/services/?products=virtual-machines®ions=all>

Your Estimate



Storage Accounts



Managed Disks, Premium SSD, P10 Disk Type 1 Disk...



Upfront: \$0.00

Monthly: \$21.68

Storage Accounts

REGION:

West Europe

TYPE:

Managed Disks

TIER:

Premium SSD

Disk size:

P10: 128 GiB, \$21.680/month

Number of Disks

1

Disks



\$21.68

Per month

Savings Options

1 year reserved option is not available for your instance selection.

Pay as you go

1 year reserved

\$21.68

Average per month
(\$0.00 charged upfront)

ADD SNAPSHOT

- P1: 4 GiB, \$0.780/month
- P2: 8 GiB, \$1.560/month
- P3: 16 GiB, \$3.120/month
- P4: 32 GiB, \$5.807/month
- P6: 64 GiB, \$11.227/month
- P10: 128 GiB, \$21.680/month**
- P15: 256 GiB, \$41.811/month
- P20: 512 GiB, \$80.540/month
- P30: 1024 GiB, \$148.680/month
- P40: 2048 GiB, \$284.937/month
- P50: 4096 GiB, \$545.097/month
- P60: 8192 GiB, \$1,040.640/month
- P70: 16384 GiB, \$1,982.170/month
- P80: 32767 GiB, \$3,964.340/month

- Standard HDD
- Standard SSD
- Premium SSD**
- Ultra Disk

= \$21.68
Average per month
(\$0.00 charged upfront)

Keep costs in mind when looking at Ephemeral disks



Upfront cost	\$0.00
Monthly cost	\$21.68

The screenshot shows the Windows Disk Management console. At the top, a table lists the volumes:

Volume	Layout	Type	File System	Status	Capacity	Free Sp...	% Free
Data (F:)	Simple	Basic	NTFS	Healthy (P...	128.00 GB	127.90 GB	100 %
OS (C:)	Simple	Basic	NTFS	Healthy (B...	126.51 GB	117.71 GB	93 %
System Reserved OS	Simple	Basic	NTFS	Healthy (S...	500 MB	465 MB	93 %
Temporary Storage (D:)	Simple	Basic	NTFS	Healthy (P...	16.00 GB	14.07 GB	88 %

Below the table, the disk layout is visualized. Three disks are shown:

- Disk 0:** Contains System Reserved OS (500 MB NTFS) and OS (C:) (126.51 GB NTFS). An orange callout box labeled "OS disk" points to the OS (C:) partition.
- Disk 1:** Contains Temporary Storage (D:) (16.00 GB NTFS). An orange callout box labeled "Temp disk" points to this partition.
- Disk 2:** Contains Data (F:) (128.00 GB NTFS). An orange callout box labeled "Data disk" points to this partition.

A legend at the bottom left indicates that black bars represent unallocated space and blue bars represent primary partitions.

Keep temp disks in mind when looking at Ephemeral disks

A photograph of a beach with waves crashing onto the shore. The sand is golden-brown and has several footprints. The water is white with foam. A blue semi-transparent banner is overlaid on the middle of the image.

What are ephemeral OS Disks

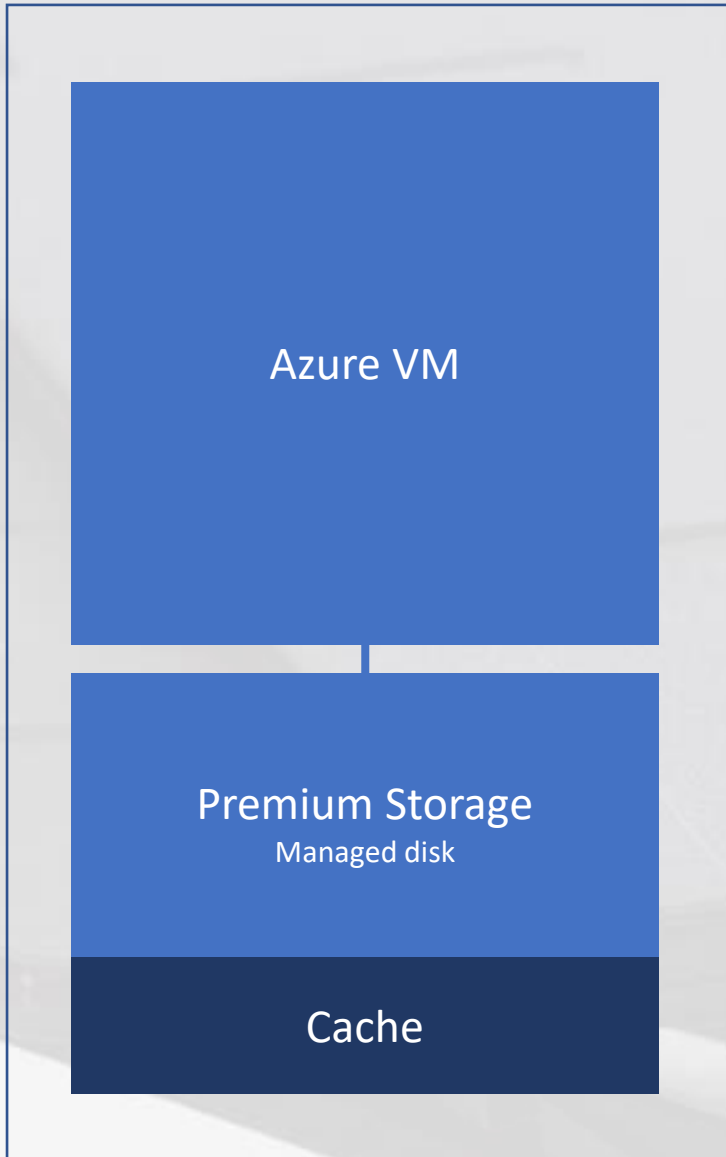
And the WVD use-case

Managed disks and Premium storage

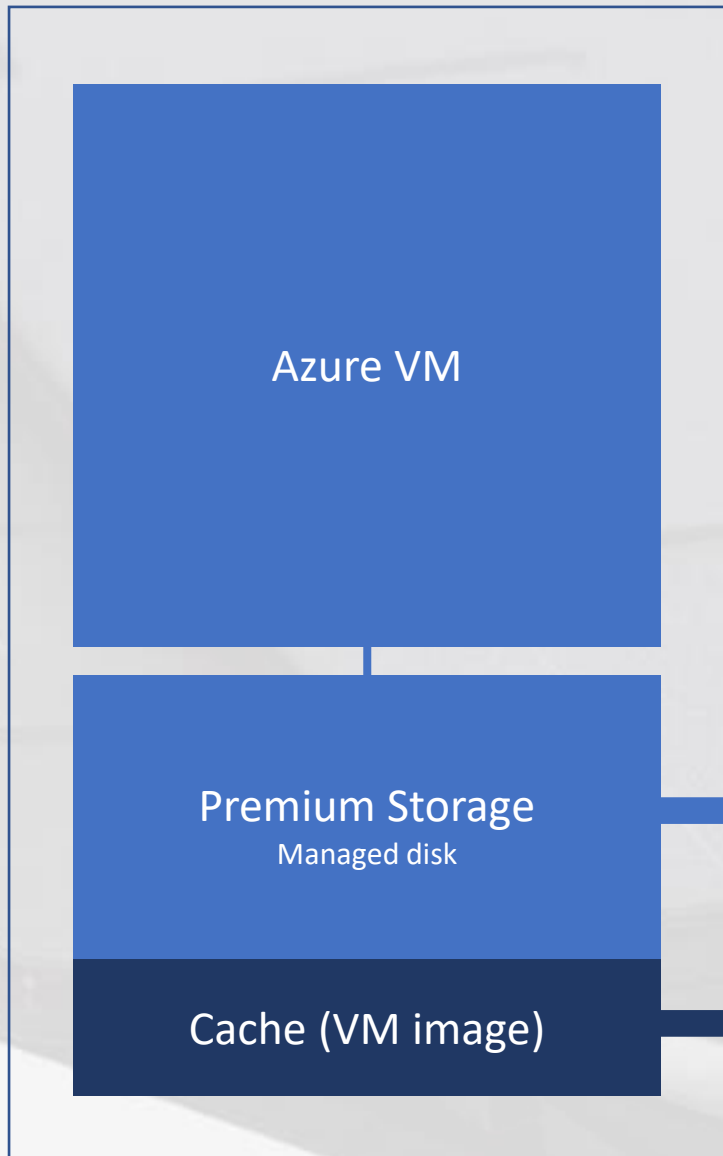


Both are needed for Ephemeral disks

Physical machine in Azure datacenter



Physical machine in Azure datacenter



- Free to use
- Part of VM SSD cache
- Image needs to fit cache
- Work with all types of images
- Lower latency, like local disks

Data & Temp Disk

Ephemeral OS Disk

Keep an eye on

- Not available for all VM types
- Cannot be stop-deallocated
- Dependent on cache size
- Not supported
 - Capturing VM images
 - Disk snapshots
 - Azure Disk Encryption
 - Azure Backup
 - Azure Site Recovery
 - OS Disk Swap

Take advantage of

- Local to VM, no mounting needed, faster provisioning, faster start/stop...
- Popular VM's for WVD are supported
 - DSv1, DSv2, DSv3, Esv3, Fs, FsV2, GS, M
- Perfect fit for Nerdio Manager for WVD
- Cost savings. They are FREE

<https://www.cloud-architect.be/2019/07/15/virtual-desktop-running-on-os-disks/>



Micha Wets

www.cloud-architect.be

al-

Persistent OS Disk

Feature

Ephemeral OS Disk

2 TiB



SIZE LIMIT FOR OS DISK



Cache size of VM or 2 TiB

All



VM SIZES SUPPORTED



DSv1, DSv2, DSv3, Esv3, Fs, FsV2, GS, M

Managed and unmanaged disks



DISK TYPE SUPPORT



Managed disk

All regions



REGION SUPPORT



All regions

OS disk data written to Azure storage



DATA PERSISTENCE



OS data written to local VM storage

Yes



STOP / DEALLOCATE VM



No. Yes with Nerdio Manager for WVD

Yes



SHARED IMAGE GALLERY SUPPORT



No

During creation & stopped / deallocated



OS DISK RESIZE



During creation only

OS disk data is preserved



RESIZING TO A NEW VM



OS disk data is deleted

Variable, depends on type and size



COSTS



Free of use

Yes



OS DISK ENCRYPTION



No

Yes



DISK SNAPSHOTS



No



Manager
for WVD

Demo





Preview - Ephemeral OS

Disks can now be stored on temporary disks

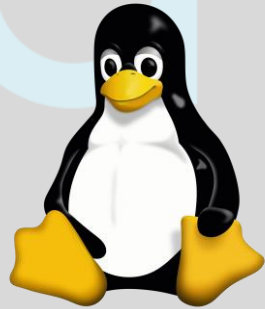
The screenshot shows the Windows Disk Management console with the following disk configuration:

Volume	Label	Type	File System	Status	Capacity	Free Sp.	% Free
OS (C:)	OS (C:)	Simple	NTFS	Healthy	120.00 GB	117.94 GB	100%
OS (C:)	OS (C:)	Simple	NTFS	Healthy	120.00 GB	117.74 GB	98%
System Reserved OS		Simple	NTFS	Healthy	300.00 MB	480.00 MB	99%
Temporary Storage (D:)		Simple	NTFS	Healthy	16.00 GB	14.07 GB	88%

Disk #	Label	File System	Status	Capacity	Free Sp.	% Free
Disk 0	System Reserved OS	NTFS	Healthy	300 MB	480 MB	100%
Disk 1	Temporary Storage (D:)	NTFS	Healthy	16 GB	14.07 GB	88%
Disk 2	Data (D:)	NTFS	Healthy	120 GB	117.74 GB	98%

Annotations in the image point to:

- OS disk:** Points to the OS (C:) volume in the top table.
- Temp disk:** Points to the Temporary Storage (D:) volume in the top table and the Temporary Storage (D:) disk in the bottom table.
- Data disk:** Points to the Data (D:) volume in the bottom table.



Azure region

VM types

VM types

VM types

Storage options

Unmanaged disks

Managed disks

Premium storage

Ultra SSD

Premium SSD

Standard SSD / HDD

Ephemeral OS disks

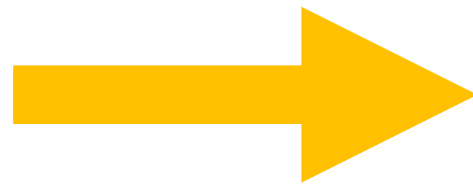
VM cache size

VM temporary disk size

Preview



CONS



Ephemeral OS Disks



Pros

AUTO-SCALE ⓘ

Multi-session dynamic host pools provide each user a desktop session on a session host VM within the host pool. Multiple users can connect to the same session host. Auto-scaling is configured by setting minimum and maximum host pool sizing and defining the scaling logic that properly sizes the host pool with sufficient capacity to support the user load. When auto-scale is turned off, session hosts can be added to and removed from the host pool.

Hosts will be provisioned based on the template for pool:

NAME PREFIX: ⓘ

NETWORK: ⓘ

DESKTOP IMAGE (TEMPLATE): ⓘ

VM SIZE (TEMPLATE): ⓘ

OS DISK (TEMPLATE): ⓘ

RESOURCE GROUP: ⓘ

Re-use host names ⓘ

Changes to the template will apply to newly created or re-imaged host VMs.

ESTIMATED MONTHLY COSTS ⓘ		
	MINIMUM ⓘ	MAXIMUM ⓘ
COMPUTE ⓘ	\$121.67	\$584.00
STORAGE ⓘ	-	-

1 HOST POOL SIZING ⓘ

Active host defined as: ⓘ

Base host pool capacity: host(s) in the pool ⓘ

Min active host capacity: host(s) in the pool ⓘ

Burst beyond base capacity: up to extra host(s) in the pool ⓘ



2 SCALING LOGIC ⓘ

Select autoscale trigger: ⓘ

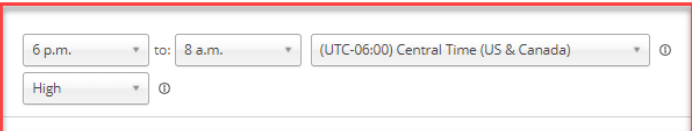
Start or create (scale out) up to host(s) if CPU utilization across all hosts exceeds % for minutes ⓘ

Stop or remove (scale in) up to host(s) if CPU utilization across all hosts drops below % for minutes ⓘ

Scale in restrictions

Stop or remove (scale in) hosts only from: to: ⓘ

Scale in aggressiveness: ⓘ



3 PRE-STAGE HOSTS ⓘ

Work days: ⓘ

Start of work hours: ⓘ

Hosts to be active by start of work hours: ⓘ



4 MESSAGING ⓘ

Send a warning message to users on the host: before scaling in host

The message should say: ⓘ

Sorry for the interruption. We are doing some housekeeping and need you to log out. You can log in right away to continue working. We will be terminating your session in 10 minutes if you haven't logged out by then.

5 AUTO-HEAL BROKEN HOSTS ⓘ

Auto-scale can automatically attempt to repair "broken" session hosts by restarting and deleting/recreating them. It can make a few attempts to restart the host to try to get it back into operational state and then either leave it alone or delete and re-create the host.





Manager
for WVD

Demo





Manager
for WVD

Community 🚀 **Edition**



Tech Insider



<https://www.meetup.com/Nerdio-Tech-Insider/>



<https://communityinviter.com/apps/nerdiotechinsider/nerdio-tech-insider>



LINKS

- VM series per region: <https://azure.microsoft.com/en-us/global-infrastructure/services/?products=virtual-machines®ions=all>
- Disk types in Azure: <https://docs.microsoft.com/nl-nl/azure/virtual-machines/disks-types>
- Azure Managed Disks: <https://docs.microsoft.com/nl-nl/azure/virtual-machines/managed-disks-overview>
- Managed Disk bursting: <https://docs.microsoft.com/nl-nl/azure/virtual-machines/disk-bursting?toc=/azure/virtual-machines/linux/toc.json&bc=/azure/virtual-machines/linux/breadcrumb/toc.json>
- B-series burstable Azure VM's: <https://docs.microsoft.com/nl-nl/azure/virtual-machines/sizes-b-series-burstable>
- Azure VM sizes, including available cache for Ephemeral OS Disks: <https://docs.microsoft.com/nl-nl/azure/virtual-machines/sizes>
- Ephemeral OS Disks for Azure VM's: <https://docs.microsoft.com/nl-nl/azure/virtual-machines/ephemeral-os-disks>
- Nerdio Manager for WVD Community Edition: <https://getnerdio.com/academy-enterprise/available-now-nerdio-manager-for-wvd-community-edition/>
- Nerdio Manager for WVD Zendesk page: <https://nmw.zendesk.com/hc/en-us>



THANK YOU!