

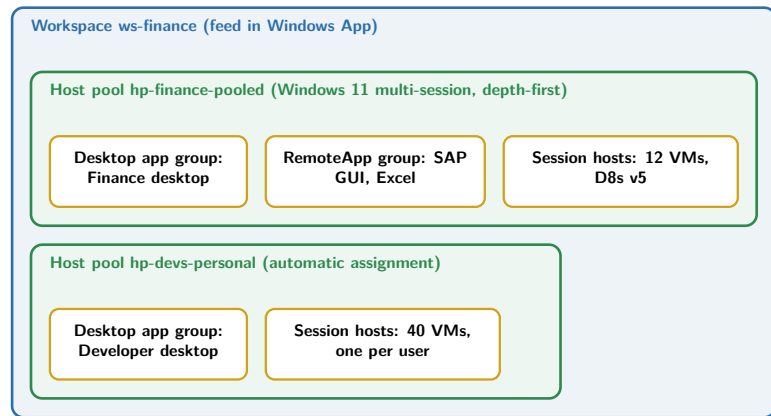


Plan AVD: Host Pools, App Groups, Capacity, Licensing

AZ-140 domain 1, Plan and implement an Azure Virtual Desktop infrastructure (part 1) | Architecture and object model, pooled vs personal, load balancing and session limits, sizing users per vCPU, regions and metadata, AVD vs Windows 365 vs Azure Local, licensing; PowerShell and az CLI

AZ-140 Domain 1 Host pools Sizing

Architecture and object model



How AVD objects nest; users are assigned to application groups

- **Control plane (Microsoft)** web access and feed, broker, gateway, load balancing, diagnostics; reached by clients over HTTPS 443
- **Reverse connect** the AVD agent on each host keeps outbound 443 connections to the service: no inbound port, no public IP on hosts
- **Your responsibility** session host VMs, images, VNet and DNS, identity join, profile storage, apps, updates, cost
- **Rules** an application group belongs to one host pool and is registered in one workspace; a host pool can serve one desktop app group and several RemoteApp groups
- **Clients** Windows App (Windows, macOS, iOS, Android, web), Remote Desktop client for Windows during the transition; web client in any modern browser

Pooled	vs	Personal
✓ low: many users per multi-session VM	Cost per user	high: one VM per user
FSLogix profile, apps installed in the image	User state	persistent VM, user can install apps ✓
no	Admin rights	possible (developers) ✓
✓ one golden image, redeploy hosts	Image management	patch each VM, like physical PCs
✓ autoscale by load	Scaling	start on connect, deallocate on logoff
task and knowledge workers, call centres	Typical users	developers, power users, special hardware (GPU) ✓

Capacity and load balancing

Workload (multi-session)	Users per vCPU	Example VM	Users per VM
Light: data entry, single app	6	D4s v5 (4 vCPU, 16 GiB)	about 24
Medium: Office, browsers, line-of-business apps	4	D8s v5 (8 vCPU, 32 GiB)	about 32
Heavy: many apps, large files, Teams video	2	D8s v5	about 16
Power: CAD, data science, GPU	1	NV-series GPU VM	about 6-12

Session hosts needed for a pooled host pool

FORMULA

$$H = U / (u \times c)$$

WHERE

- H = session hosts needed before rounding up and adding spare capacity (VMs)
- U = peak concurrent users (not named users) (users)
- u = users per vCPU for the workload class (light 6, medium 4, heavy 2) (users/vCPU)
- c = vCPUs per session host VM (vCPU)

WORKED

```

U = 600
u = 4
c = 8
H = 600 / (4 × 8)
H = 18.75 VMs

```

RESULT

H = 18.75 VMs

READ IT

Round up (18.75 → 19) and add at least one spare host for maintenance (N + 1 = 20); set max session limit to u × c = 32.

MISTAKES

- Using named users instead of concurrent peak
- Ignoring memory: 2-4 GiB per medium user
- Validating sizing without a load test (LoginVSI or similar)

Setting	Breadth-first	Depth-first
Where a new session goes	host with fewest sessions	fullest host still below the max session limit
User experience	best: load spread	fuller hosts, same per-user resources if sized
Cost with autoscale	hosts stay partly used	empties hosts so they can be stopped
Typical use	peak hours (scaling plan peak phase)	off-peak and ramp-down phases

Create a pooled host pool, app group and workspace (PowerShell Az.DesktopVirtualization)

```

$hp = New-AzWvdHostPool -ResourceGroupName rg-avd -Name hp-fin `
  -Location westeurope -HostPoolType Pooled `
  -LoadBalancerType DepthFirst -MaxSessionLimit 32 `
  -PreferredAppGroupType Desktop -StartVMOnConnect:$true
$ag = New-AzWvdApplicationGroup -ResourceGroupName rg-avd `
  -Name ag-fin-desktop -Location westeurope `
  -HostPoolArmPath $hp.Id -ApplicationGroupType Desktop
New-AzWvdWorkspace -ResourceGroupName rg-avd -Name ws-fin `
  -Location westeurope -ApplicationGroupReference $ag.Id
New-AzRoleAssignment -ObjectId $grpId `
  -RoleDefinitionName "Desktop Virtualization User" `
  -ResourceName ag-fin-desktop -ResourceGroupName rg-avd `
  -ResourceType Microsoft.DesktopVirtualization/applicationGroups
New-AzWvdRegistrationInfo -ResourceGroupName rg-avd `
  -HostPoolName hp-fin -ExpirationTime (Get-Date).AddHours(4)

```

⑤ AVD, Windows 365 or Azure Local; licensing

	Recommended Azure Virtual Desktop	Windows 365	AVD on Azure Local
Model	PaaS control plane + your VMs	SaaS Cloud PC per user	AVD control plane + on-premises hosts
Multi-session	✓	✗	✓
Pricing	Azure consumption (VMs, storage) + user licences	fixed monthly per user (Frontline shared options)	Azure Local + AVD service fee
Management	you build images, scaling, network	Intune, little Azure skill	you run the hardware
Best for	flexible VDI at scale, RemoteApp, cost optimisation	simple persistent desktops, predictable cost	data residency, low latency to on-premises apps

- **Internal users** Windows client OS hosts are covered by Microsoft 365 E3/E5/A3/A5/F3/Business Premium or Windows Enterprise E3/E5 per user
- **Windows Server hosts** need RDS CALs with Software Assurance (or subscription)
- **External users** per-user access pricing billed monthly to the Azure subscription
- **Azure costs** VMs (reserved instances or savings plans for always-on hosts), disks, storage for profiles, networking, Log Analytics

📄 Worked example: pooled or personal for 600 users?

Peak concurrency 600 medium users. Pooled: 20 × D8s v5 (8 vCPU) = 160 vCPU, roughly 0.27 vCPU per user, and autoscale can stop half the hosts outside 8:00-18:00. Personal: 600 × D2s v5 (2 vCPU) = 1,200 vCPU, 7.5 × more compute, each VM billing whenever it runs. Keep personal only for the 40 developers who need admin rights: 40 × 2 = 80 vCPU, with start VM on connect and deallocate on logoff.

YOU MAY HEAR

"Host pool metadata must be in the same region as the session hosts"

BUSTED

✓ **ACTUALLY**

Metadata location and host region are independent

Metadata goes to the object's geography; hosts can run in any Azure region.

YOU MAY HEAR

"Depth-first gives users a better experience"

BUSTED

✓ **ACTUALLY**

Breadth-first spreads load

Depth-first saves money with autoscale.

YOU MAY HEAR

"Windows 11 multi-session can run on any Azure VM outside AVD"

BUSTED

✓ **ACTUALLY**

It is licensed for AVD (and Azure Local) only
Use it inside host pools.

Q1 Load balancing to fill hosts so others can be stopped?

A Depth-first (with a max session limit).

Q2 Users per vCPU for medium multi-session workloads?

A About 4.

Q3 Role users need to see an application group?

A Desktop Virtualization User on the application group.

Q4 Cmdlet that creates the registration token?

A New-AzWvdRegistrationInfo with a short expiration time.

Q5 Host pool flag to test AVD service updates first?

A Validation environment.

Q6 External customer users accessing your AVD apps: licence?

A Per-user access pricing.

Q7 Personal host pool assignment types?

A Automatic (first connection) or direct (admin assigns).

Q8 Session hosts must stay on-premises for residency?

A Azure Virtual Desktop on Azure Local.

