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Choosing Between Windows 365 and Azure Virtual Desktop (AVD): A Business Perspective

> ## *"Is it an oversized iPhone or a small laptop without a keyboard?"*

This was the question many were asking when the iPad was first introduced by Steve Jobs in 2010. Today, more than a decade later, we know that it is neither. iPad created a brand-new tablet computing category. It didn't replace the smartphone and didn't make the laptop obsolete. It created new use-cases and markets for tablet devices.

With the introduction of Windows 365 in July 2021 a similar question is being asked.

> ## *"Is Cloud PC a new type of virtual desktop or a replacement for a physical PC?"*

On one hand, Windows 365 Cloud PCs are virtual desktops similar to those delivered by Azure Virtual Desktop and other similar services. On the other hand, it is a personal Windows device that is managed and behaves the way a physical device does. Cloud PC is likely to create a new category of computing. One that will complement both the physical PC and virtual desktop.

In this article, I will compare Windows 365 to the existing Azure Virtual Desktop service that many are already familiar with and analyze several use-cases where Windows 365 is the right choice and some where AVD is the way to go. In a future article, we'll compare Windows 365 Cloud PCs to their physical equivalents.

If you're interested in a deep dive comparing Windows 365 to Azure Virtual Desktop across several technical dimensions like architecture, IT administration, end-user experience, and licensing and infrastructure costs then take a look at Windows 365 vs. Azure Virtual Desktop (AVD) – Comparing Two DaaS Products.
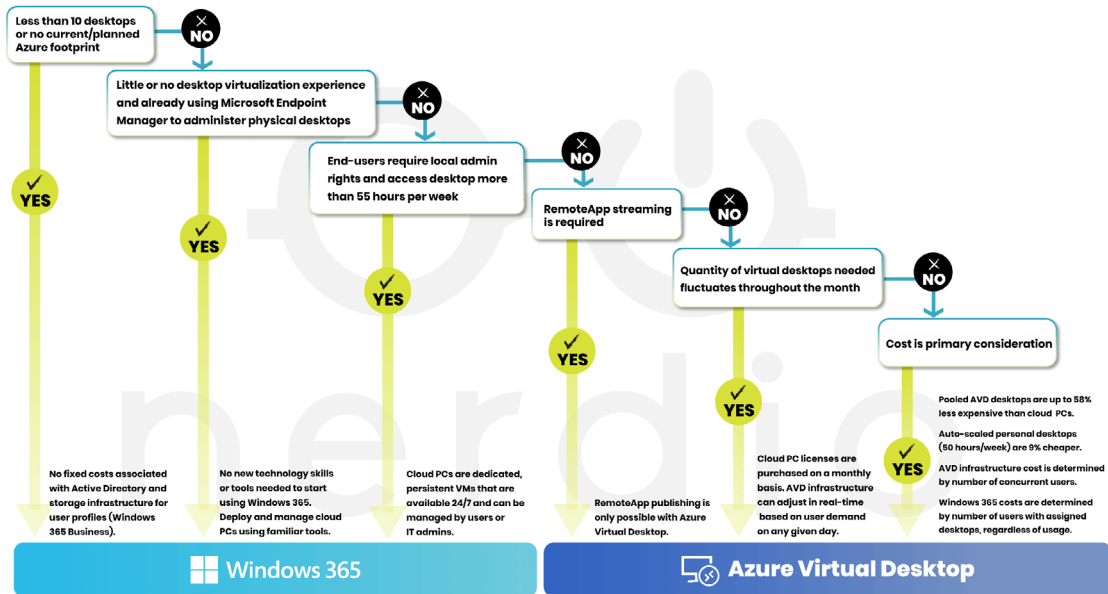
6 use-cases where Windows 365 is a better fit than Azure Virtual Desktop

1. Fewer than 10 desktops

If there are a small number of desktops in the IT environment, then Windows 365 Business is the perfect choice. It does not require any pre-requisites like AVD does. For example, there is no need for an Active Directory configuration or a storage location for FSLogix containers. Therefore, from an ease of deployment, management, and cost-effectiveness perspective Windows 365 Business is a clear winner.

2. No current/planned Azure footprint

Some organizations have simple, cloud-only IT environments with Microsoft 365 and other SaaS products and no infrastructure footprint in Azure with no plans to add any such infrastructure. In this scenario, Windows 365 Business is an excellent choice because it is easy to assign desktops to users and there is no administrative overhead for IT admins.

3. No prior desktop virtualization experience

Only a small fraction of Windows devices are virtualized today with technologies like AVD. Desktop virtualization is a complex technology requiring a specialized skill set.

Many organizations do not possess such a skill set and are not looking to build it. In this scenario, Windows 365 Enterprise is a great option. It does not require knowledge of multi-session administration, profile encapsulation, auto-scaling, and other complex concepts found in AVD. Instead, it provides a simpler way to deploy and manage Cloud PCs alongside existing physical PCs in much the same way.

4. **Current investment into Microsoft Endpoint Manager**

   Organizations that have already made an investment into Microsoft Endpoint Manager to administer physical desktops and laptops will find Windows 365 an easy way to extend their existing environment with Cloud PCs. Similar policies can be used to manage both physical and Cloud PCs.

5. **Personalized desktops and local admin rights**

   Cloud PCs are designed to be dedicated, personalized VMs belonging to each individual user. These users may need the ability to administer their own PCs by installing software or making other configuration changes that require local administrator rights. Windows 365 Cloud PCs make it easy for IT to delegate administration of Cloud PCs to their users.

6. **Users need to access desktop 24/7**

   Auto-scaling is a common way to save on Azure costs when using Azure Virtual Desktop. Cloud PCs, on the other hand, run 24/7 and shutting them down does not save any costs. If users need access to their Cloud PC on a 24/7 basis (or even more than 55 hours per week), then Windows 365 is not just easier to deploy and manage, it is also more cost effective.

3 scenarios where Azure Virtual Desktop may be a better fit than Windows 365

1. **RemoteApp application streaming**

   Sometimes all that's needed is a published application rather than a complete Windows desktop session. In these scenarios using a full Cloud PC (or AVD desktop) would be overkill and a published RemoteApp application is a better way to go. Since RemoteApps cannot be published from Windows 365 Cloud PCs, Azure Virtual Desktop is the preferred choice.

2. **High fluctuations of number of desktops needed throughout the**

month

Windows 365 licenses are monthly subscriptions. Once purchased, they are available for use and the cost is incurred regardless of users actually making use of their desktops. In IT environments where numbers of virtual desktop users fluctuate throughout the month, AVD may be a better fit. Azure Virtual Desktop infrastructure costs are only incurred when users are actually consuming the resources whereas Windows 365 costs are incurred as soon as a per-user license is purchased.

3. **Cost is primary consideration**

When cost is the primary consideration and pooled Azure Virtual Desktops can be used to consolidate several users on a shared VM, then AVD will be the better option since it will be more cost effective than Windows 365 in this scenario. On average, pooled AVD desktops are up to 58% less expensive than dedicated Cloud PCs. Even auto-scaled personal AVD desktops can be up to 9% cheaper than Windows 365 equivalents if users only utilize their desktop 50 hours per week. Finally, Windows 365 costs are determined by the number of users with assigned Cloud PCs, regardless of actual usage. Azure Virtual Desktop infrastructure cost is determined by the number of concurrent users, which is often much lower than the total number of users assigned to desktops.

Comparing Cloud PC license costs vs. AVD Azure consumption

There are several considerations that come into play when deciding on the right virtual desktop technology for your organization. Microsoft provides customers with ample choice and meets customers where they are in terms of admin tooling, existing licenses, and Azure expertise. Here we'll explore the cost efficiency of different virtual desktop use cases and determine when Windows 365 fixed-price licenses are more cost-efficient than usage-based AVD infrastructure costs. For this discussion, we'll assume that Windows OS licensing costs are the same in both AVD and Windows 365 scenarios and focus exclusively on the cost of the infrastructure.

Windows 365 license costs depend on the hardware specs needed by a user. Each desktop comes with a certain number of vCPUs, GB of RAM, and SSD storage. If we align the vCPU and RAM configuration of each Cloud PC license with a comparable Azure VM size and managed

disk we can then compare their costs side-by-side.

Since Cloud PCs are dedicated, persistent desktops they are most similar to AVD personal desktops. If we compare Cloud PCs with equivalently sized personal AVD desktops, using a VM on a 3-year reserved instance, we'll see that the prices are very similar and Windows 365 is slightly less expensive for some sizes and much more cost effective for the largest VMs. *On average, Windows 365 is **11%** cheaper than a comparably sized Azure VM and managed disk running 24/7 on a 3-year reserved instance.*

Windows 365			Azure Virtual Desktop Personal Host Pool (3-year reserved instance)			
vCPU and RAM	SSD Storage (GB)	User Price (monthly)	Compute	SSD Storage	Monthly Cost	$ Savings (%) (relative to Windows 365)
Light user 1 vCPU / 2 GB RAM	64	$20	$27	$5	$32	$-12
Basic user 2 vCPU / 4 GB RAM	64	$28	$27	$5	$32	$-4
	128	$31	$27	$10	$37	$-6
	256	$40	$27	$19	$46	$-6
Standard user 2 vCPU / 8 GB RAM	128	$41	$32	$10	$42	$-1
	256	$50	$32	$19	$51	$-1
Premium user 4 vCPU / 16 GB RAM	128	$66	$64	$10	$74	$-8
	256	$75	$64	$19	$83	$-8
	512	$101	$64	$38	$102	$-1
Super user 8 vCPU / 32 GB RAM	128	$123	$132	$10	$142	$-19
	256	$132	$132	$19	$151	$-19
	512	$158	$132	$38	$170	$-12
AVERAGE AVD SAVINGS (as compared to Windows 365)						−11%

Currency shown: United States Dollar

If we assume that users are using their personal AVD desktops 50 hours per week (10 hours X 5 weekdays) and the VMs are stopped the rest of the time, then there will be a cost savings by using personal AVD desktops with pay-as-you-go VM pricing and powering them off outside of the 50 work hours (70% of the time). There are a few scenarios when Cloud PC is about the same cost as an AVD personal desktop, but on *average, Azure Virtual Desktop personal desktops are **9%** cheaper than Cloud PCs in this use-case.*

Windows 365			Azure Virtual Desktop Personal Host Pool (Pay-as-you-go with auto-scaling)			
vCPU and RAM	SSD Storage (GB)	User Price (monthly)	Compute	SSD Storage	Monthly Cost	$ Savings (%) (relative to Windows 365)
Light user 1 vCPU / 2 GB RAM	64	$20	$22	$5	$27	$-7
Basic user 2 vCPU / 4 GB RAM	64	$28	$22	$5	$27	$1 (3%)
	128	$31	$22	$10	$32	$-1
	256	$40	$22	$19	$41	$-1
Standard user 2 vCPU / 8 GB RAM	128	$41	$25	$10	$35	$6 (15%)
	256	$50	$25	$19	$44	$6 (12%)
Premium user 4 vCPU / 16 GB RAM	128	$66	$50	$10	$60	$6 (9%)
	256	$75	$50	$19	$69	$6 (8%)
	512	$101	$50	$38	$88	$13 (13%)
Super user 8 vCPU / 32 GB RAM	128	$123	$100	$10	$110	$13 (11%)
	256	$132	$100	$19	$119	$13 (10%)
	512	$158	$100	$38	$138	$20 (13%)

Assumptions:
- Average work week: **50 hours**

AVERAGE AVD SAVINGS (as compared to Windows 365) — **9%**

Currency shown: United States Dollar

Let's take this a step further and assume that not all users need a dedicated personal desktop and groups of users can be pooled together on multi-session AVD session hosts. We can see that there is significant per-user savings with AVD pooled desktops using Reserved Instances (RI). *On average, the cost of a pooled Azure Virtual Desktop user on VMs that run 24/7 using 3-year reserved instances is* **53%** *lower than Windows 365.*

Windows 365			Azure Virtual Desktop Pooled Host Pool (3-year reserved instances)			
vCPU and RAM	SSD Storage (GB)	User Price (monthly)	Compute	SSD Storage	Monthly Cost	$ Savings (%) (relative to Windows 365)
Light user 1 vCPU / 2 GB RAM	64	$20	$5	$1	$6	$14 (70%)
Basic user 2 vCPU / 4 GB RAM	64	$28	$6	$1	$7	$21 (73%)
	128	$31	$6	$7	$14	$17 (56%)
	256	$40	$6	$20	$26	$14 (36%)
Standard user 2 vCPU / 8 GB RAM	128	$41	$9	$7	$17	$24 (59%)
	256	$50	$9	$20	$29	$21 (42%)
Premium user 4 vCPU / 16 GB RAM	128	$66	$19	$7	$26	$40 (61%)
	256	$75	$19	$20	$38	$37 (49%)
	512	$101	$19	$44	$62	$39 (38%)
Super user 8 vCPU / 32 GB RAM	128	$123	$37	$7	$44	$79 (64%)
	256	$132	$37	$20	$57	$75 (57%)
	512	$158	$37	$44	$81	$77 (49%)

Assumptions:
- AVD pooled desktop minimum: **10 users**
- Average work week: **50 hours**
- Disk space used for OS and apps: **50 GB**
- Average disk space usage: **50%**
- Pooled session host VM OS disk: **E10 (128 GB Std SSD)**

Pooled user/vCPU density:
- Light: **4 users / vCPU**
- Basic: **3 users / vCPU**
- Standard: **2 users / vCPU**
- Premium: **1 users / vCPU**
- Super: **0.5 users / vCPU**

AVERAGE AVD SAVINGS (as compared to Windows 365) — **53%**

Currency shown: United States Dollar

Combining pooled AVD desktops with auto-scaling provides the deepest savings when using Azure Virtual Desktop as compared to Windows 365. Assuming that users are working 10 hours/day, 5 days/week the *average savings is **58%** when using pay-as-you-go VMs with auto-scaling.*

Windows 365			Azure Virtual Desktop — Pooled Host Pool (Pay-as-you-go with auto-scaling)			
vCPU and RAM	SSD Storage (GB)	User Price (monthly)	Compute	SSD Storage	Monthly Cost	$ Savings (%) (relative to Windows 365)
Light user 1 vCPU / 2 GB RAM	64	**$20**	$4	$1	$5	$15 (75%)
Basic user 2 vCPU / 4 GB RAM	64	**$28**	$5	$1	$6	$22 (77%)
	128	**$31**	$5	$7	$12	$19 (60%)
	256	**$40**	$5	$20	$25	$15 (39%)
Standard user 2 vCPU / 8 GB RAM	128	**$41**	$8	$7	$15	$26 (64%)
	256	**$50**	$8	$20	$27	$23 (46%)
Premium user 4 vCPU / 16 GB RAM	128	**$66**	$15	$7	$22	$44 (66%)
	256	**$75**	$15	$20	$35	$40 (54%)
	512	**$101**	$15	$44	$59	$42 (42%)
Super user 8 vCPU / 32 GB RAM	128	**$123**	$30	$7	$37	$86 (70%)
	256	**$132**	$30	$20	$50	$82 (62%)
	512	**$158**	$30	$44	$74	$84 (53%)

Assumptions:
- AVD pooled desktop minimum: **10 users**
- Average work week: **50 hours**
- Disk space used for OS and apps: **50 GB**
- Average disk space usage: **50%**
- Pooled session host VM OS disk: **E10 (128 GB Std SSD)**

Pooled user/vCPU:
- Light: **4 users / vCPU**
- Basic: **3 users / vCPU**
- Standard: **2 users / vCPU**
- Premium: **1 users / vCPU**
- Super: **0.5 users / vCPU**

AVERAGE AVD SAVINGS (as compared to Windows 365)	58%

*Currency shown: United States Dollar

Another important consideration is that Cloud PCs are priced per-**named** user. Meaning that a license is consumed for every user who is assigned to a Cloud PC – regardless of whether this user ever connects to the desktop. AVD desktops, on the other hand, only consume infrastructure when **concurrent** users are logged in. If no users are connected, no session host VMs need to be powered on. As more users log in, more infrastructure is brought online to accommodate the demand.

In most environments, user concurrency is a fraction of the total named users at any given time – often 50% or less. This means that the cost savings in an AVD desktop environment will be even greater than presented in the tables above when concurrency is considered.

In summary, we see that Windows 365 Cloud PCs are most cost effective when users need dedicated, persistent desktops and will be using them more than 55 hours per week. With users who do not need dedicated, persistent desktops, there is significant infrastructure cost

savings by using pooled desktops and auto-scaling technology.

Windows 365			Azure Virtual Desktop			
vCPU and RAM	SSD Storage (GB)	User Price (monthly)	Personal Desktop User Cost (3-year reserved instances)	Personal Desktop User Cost (% savings) (Pay-as-you-go & auto-scaling)	Pooled Desktop User Cost (% savings) (3-year reserved instances)	Pooled Desktop User Cost (% savings) (Pay-as-you-go & auto-scaling)
Light user 1 vCPU / 2 GB RAM	64	$20	$32	$27 (0%)	$6 (70%)	$5 (75%)
Basic user 2 vCPU / 4 GB RAM	64	$28	$32	$27 (3%)	$7 (73%)	$6 (77%)
	128	$31	$37	$32 (0%)	$14 (56%)	$12 (60%)
	256	$40	$46	$41 (0%)	$26 (36%)	$25 (39%)
Standard user 2 vCPU / 8 GB RAM	128	$41	$42	$35 (15%)	$17 (59%)	$15 (64%)
	256	$50	$51	$44 (12%)	$29 (42%)	$27 (46%)
Premium user 4 vCPU / 16 GB RAM	128	$66	$74	$60 (9%)	$26 (61%)	$22 (66%)
	256	$75	$83	$69 (8%)	$38 (49%)	$35 (54%)
	512	$101	$102	$88 (13%)	$62 (38%)	$59 (42%)
Super user 8 vCPU / 32 GB RAM	128	$123	$142	$110 (11%)	$44 (64%)	$37 (70%)
	256	$132	$151	$119 (10%)	$57 (57%)	$50 (62%)
	512	$158	$170	$138 (13%)	$81 (49%)	$74 (53%)
AVERAGE AVD SAVINGS (as compared to Windows 365)			-11%	9%	53%	58%

Assumptions:
- AVD pooled minimum: **10 users**
- Average work week: **50 hours**
- OS and apps used disk space: **50 GB**
- Average disk space usage: **50%**
- Pooled session host VM OS disk: **E10 (128 GB Standard SSD)**

Pooled user/vCPU density:
- Light: **4 users / vCPU**
- Basic: **3 users / vCPU**
- Standard: **2 users / vCPU**
- Premium: **1 users / vCPU**
- Super: **0.5 users / vCPU**

Currency shown: United States Dollar

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Nerdio empowers IT professionals and Managed Service Providers (MSPs) to deploy, manage, and optimize virtual desktops in Microsoft Azure. Nerdio Manager for Enterprise is a packaged Azure application that runs in users' own tenant without compromising security and compliance by allowing third-party vendors access into the IT environment. Nerdio Manager for MSP is an Azure managed application that enables MSPs to automatically provision a complete virtual desktop environment in Azure in under an hour, connect to an existing deployment in minutes, manage all their clients in a single pane of glass admin portal, and optimize their virtual desktop environment with powerful auto-scaling. For more information, visit www.getnerdio.com.

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