Executive Viewpoint

AWS EUC Services and Microsoft AVD

December 8, 2020

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Author's Note

Seth Morrell is a veteran of on-premises and cloud computing in the enterprise space. Seth spent the initial part of his career with a decade of cross-industry, large enterprise consulting experience; subsequently, Seth spent the next ten years in industry, leading teams at Aon, Walgreens, and Hub International to develop, implement and support over 200,000+ physical and virtual end points across a wide a variety of end user experiences. Seth is a forward-thinking technology and organizational-change-at-scale specialist with demonstrable transformation success in large, global organizations. He understands the technology and business pressures CIOs and CTOs operate within and helps SynchroNet's customers navigate these challenges. He is currently the Vice President of Strategy & Innovation at SynchroNet. SynchroNet is recognized as the global leader of End User Computing on AWS.

Executive Summary

Microsoft has entered the "desktop in the cloud" space with their **Microsoft's Azure Virtual Desktop** (AVD) offering. Their entry into the space helps further legitimize the "desktop in the cloud" solution as a true, viable option organizations who are looking to approach end user computing in new ways in which they can confidently adopt. AVD can meet the needs for the right organization (those that are already heavily invested in Azure.) However, organizations who are not Azure-aligned need to be cognizant of the architectural and operational complexity AVD introduces.

AWS has been in the end user computing cloud space for several years, and has two primary offerings in the form of **Amazon WorkSpaces** and **Amazon AppStream 2.0**. These solutions are appealing to organizations that do not require the same degree of heavy technical lift and technical skill investment Microsoft's solution requires.

Both organizations have compelling cost stories, but it is recommended that the first conversation an organization undertakes is ***which strategic, architectural, and operational path it wants to take.*** This will save you time and allow you to better understand total-cost implications if/when a cost comparison is performed. The strategic and operational paths can be simply summed-up as follows:

- AWS' solutions work "out of box", fit seamlessly into your organization's existing skillset and scale without effort. The solutions organically flex and change with your business needs

- Microsoft's AVD solution requires significant investment in people capacity and skills to support complex architecture, design, operational maintenance, and know-how, and is more analogous to running an Infrastructure-as-a-Service stack relative to Amazon's solutions

For those organizations where reliability is a key component of such a critical service such as desktop in the cloud, each organization provides their respective SLAs.

- Amazon, for both **WorkSpaces** and **AppStream**, advertise 99.9% availability and backs their SLAs with service credit percentages.

- Microsoft indicates they "**strive to attain 99.9%**" availability for the AVD desktop, and the SLA is not backed with any service credit options; it is also not inclusive of the third-party solutions often needed to build and maintain the service.

If your organization is heavily invested in Azure, then Microsoft's AVD solution might be worth investigating, though there are organizational considerations detailed in the paper below worth thinking about. Otherwise, if you are newer to the cloud or already have a significant AWS focus, then after examining the details below and our more **technical whitepaper**, it is recommended that Amazon WorkSpaces and AppStream 2.0 are the right fit to provide your team members the desktop/application cloud experience they need.

Purpose

Remote work and remote learning are now commonplace with enterprises, public sector organizations, and educational systems/institutions having to rapidly investigate options to help their customers, constituents, and students connect with the resources they need to operate, be served, and learn.

Prior to COVID-19, utilizing a desktop in the cloud was already seen as a cost-effective, flexible method of providing secure, remote access to applications and data across a variety of use cases for organizations of all sizes. COVID-19 has seen a significant acceleration in the adoption desktops in the cloud, but organizations are also faced with choices about the platform investment they need to make.

Within this summary document, SynchroNet will outline the options from Amazon and Microsoft and provide its perspective as to why the Amazon-based solutions are right path for organizations that have already leaned into the AWS ecosystem or for those who are exploring cloud for the first time.

Services Overview

Amazon Web Services (AWS) offers two distinct services for desktop and application delivery. **Amazon WorkSpaces** is a managed and secure Desktop-as-a-Service (DaaS) solution. It can be used to quickly provision persistent Windows or Linux desktops in a scalable and cost-effective fashion. **Amazon AppStream 2.0** is a non-persistent alternative to WorkSpaces. It is a fully managed application or desktop streaming service that allows you to centrally manage your desktop applications and deliver them to any user on any computer.
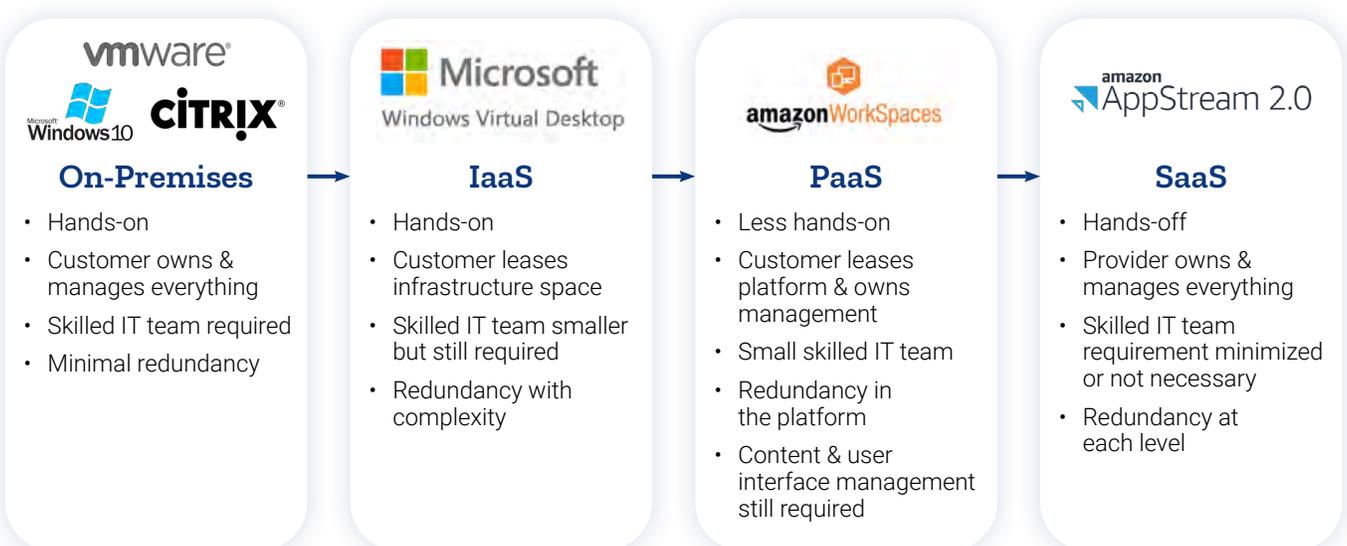
Microsoft's Azure Virtual Desktop is a desktop and application virtualization service that supports persistent and non-persistent sessions in a full desktop or RemoteApp experience. It runs on Microsoft's Azure cloud platform and can quickly deploy and scale.

While similar in concept, there are distinct, costly, and long-term architectural and operational considerations an organization must consider when choosing between the two vendors.

SynchroNet has written a more detailed **technical whitepaper** that details both services that your technical teams are encouraged to review.

Brief Services Comparison

Fundamentally, Amazon WorkSpaces can be seen as a Platform-as-a-Service (PaaS) and Amazon AppStream 2.0 can be seen as a Software-as-a-Service (SaaS) solution. Microsoft's AVD solution is Infrastructure-as-a-Service (IaaS). While on the surface, it seems like just a difference in classification, the differences have significant, strategic organizational impact.

vmware **Windows 10** **CiTRIX**	**Microsoft** Windows Virtual Desktop	**amazon**WorkSpaces	**amazon** AppStream 2.0
On-Premises	**IaaS**	**PaaS**	**SaaS**
• Hands-on	• Hands-on	• Less hands-on	• Hands-off
• Customer owns & manages everything	• Customer leases infrastructure space	• Customer leases platform & owns management	• Provider owns & manages everything
• Skilled IT team required	• Skilled IT team smaller but still required	• Small skilled IT team	• Skilled IT team requirement minimized or not necessary
• Minimal redundancy	• Redundancy with complexity	• Redundancy in the platform	• Redundancy at each level
		• Content & user interface management still required	

Long-term architectural and operational considerations

ARCHITECTURE

As IT organizations evolve, there is a general trend towards solutions that do not burden the organization with traditional software and infrastructure constraints. IT organizations just want something that "works off the shelf" without heavy investment in skills and time. Microsoft's AVD solution is not much different than running Citrix or VMWare Horizon on-premises or in the cloud. All the complexity those solutions bring to an environment are also present with Microsoft AVD. In short, while a move to AVD does mean "moving to the cloud," an organization's team will still have to architect, build, and support nearly every aspect of the infrastructure (hence, the IaaS classification.) The same operational, capacity, uptime, and experience risks exist with Microsoft AVD as they do with Citrix or VMware Horizon on-premises; thus organizations essentially find themselves back in the position they were trying to evolve from in the first place but now they have a cloud consumption model to manage on top of it. If a company is looking to reduce complexity, infrastructure risk, maintenance, operational overhead, then Microsoft AVD is not the right architectural solution.

Contrasted with AWS' capabilities, both of Amazon's solutions work "out of the box", require very little maintenance beyond what a normal desktop environment may require, and all the infrastructure is completely managed by AWS. The solutions (WorkSpaces and AppStream) drastically simplify the entire technology and operations stack, and complexity is reduced as a result.

Both Amazon and Microsoft have third-party solutions available that help with deployment and management. The differences are that the tools available for Amazon raise the operational plane that an organization can execute and scale against whereas the third-party tools for Microsoft AVD are nearly necessary just to build and perform basic operations against the environment.

OPERATIONS

With AWS taking care of everything but the desktop itself, the environment requires much less knowledge, care-and-feeding, and can fit naturally in how organizations manage their existing PC fleets today. With this simplicity, it also allows for more efficient and cost-effective scaling relative to the number of architects, engineers, operations and administrative personnel required. An organization can scale to tens of thousands of desktops or instances without having to invest in additional headcount across multiple technology and support teams.

For Microsoft AVD, investment will be required in architects, engineers, operations and administrative personnel just to build the solution, but even more so to operate and maintain it. The higher the user count, the more complex the environment becomes, and the more complex the environment becomes, the more personnel that will be required to continually architect, engineer, support, monitor and operate its components.

For the AWS stack, its failure points are generally limited to overall AWS service availability (for **WorkSpaces** and **AppStream**, both advertise 99.9% availability) or customer infrastructure dependencies such as network circuits, etc. AWS backs their SLAs with service credit percentages.

When looking at Microsoft AVD, they "**strive to attain 99.9%**" availability for the desktop, and the SLA is not backed with any service credit options. Their SLA is also dependent on the underlying infrastructure required to deliver a desktop, so striving for an easy-to-understand SLA, let alone one backed with service credit percentages is a concern an organization sensitive to confidence in up-time and reliability should strongly consider.

In addition, the Microsoft AVD architecture is significantly complex (**see our technical whitepaper**) and with that complexity you introduce more opportunities for failure, challenges in troubleshooting where issues may exist, and require to have the breadth and depth of expertise readily available to be able to address those challenges in a "service degraded" or "service down" situation.

This complexity leads to another significant consideration an organization must weigh between the solutions, which is not only the amount of potential headcount required to support a Microsoft AVD environment, but determining who is organizationally accountable for the end user experience. With Amazon's solutions, a small AWS cloud team assists with initial setup and ongoing minor changes (if and when needed,) but the desktops (and applications) themselves can be administered with an organization's existing "end user computing" team. For Microsoft AVD, an organization will either need to train its Azure team on how desktops work, or train its "end user computing" team on how Azure works – both in significant detail.

In short, going down the Microsoft AVD path means you are making a strategic, organizational decision to invest heavily in infrastructure management skills and headcount at scale; with AWS' solutions, existing teams can easily adopt, deploy, and support the solutions with little effort and scale without the concern about material increase in headcount.
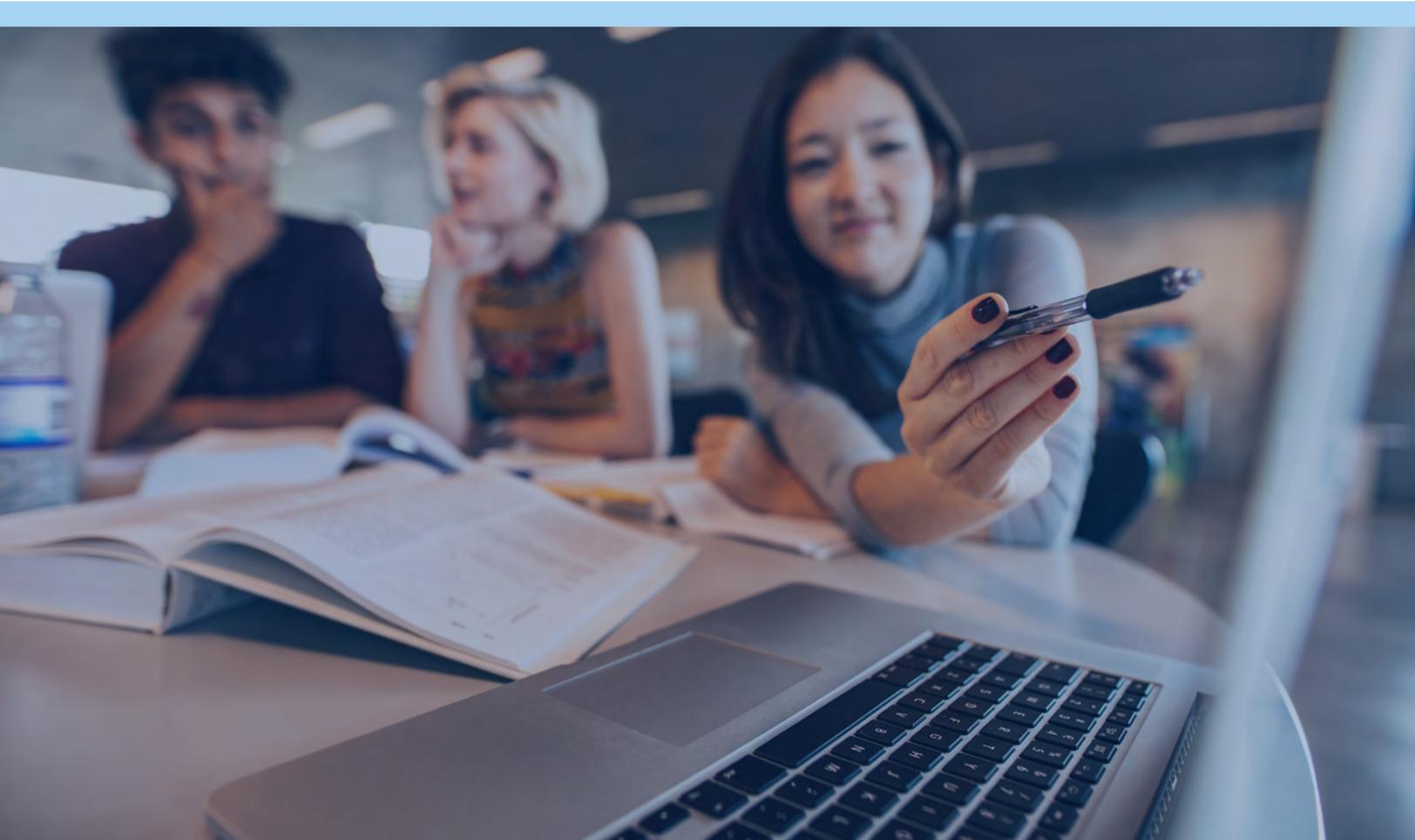
PRICING

SynchroNet is working on a comprehensive TCO model comparing the solutions and will publish at a later date (and has comparative cost data in the **technical whitepaper** it has written that shows AWS cost savings,) but to demonstrate the challenges in building an "apples to apples" comparison, merely take a look at the pricing lists and calculators each vendor provides its potential customers below. The AWS pricing and calculators are straightforward and easy-to-understand. The Microsoft pricing and calculators are chockfull of complexity, caveats, and requires layers of infrastructure modeling to arrive at a potential cost – that can vary based on usage and use cases:

Amazon's pricing + calculators

Amazon WorkSpaces Pricing

Amazon AppStream 2.0 Pricing (Admittedly, AppStream 2.0 pricing can appear to be intimidating, but a quick 5-10 minute conversation with an AWS or SynchroNet team member can demonstrate how straightforward it ultimately is.)

AWS Pricing Calculator

Microsoft's pricing + calculators

Azure Virtual Desktop Pricing

Azure Pricing Calculator

AVD Solution Configurator

A screenshot of Microsoft's AVD Solution Configurator is included to demonstrate the level of complexity, across multiple Excel tabs, required to determine cost:

Table 1: AVD Solution Configurator

	User Group 1	User Group 2	User Group 3	User Group 4	User Group 5
Azure Region (for infrastructure)	us-west	us-west	us-west	us-west	
Currency	USD	USD	USD	USD	
User Type	Light	Heavy	Medium	Medium	
Named (total) users	500	150	350	350	

Compute

Session-host VM

	User Group 1	User Group 2	User Group 3	User Group 4	User Group 5
peak concurrency	80%	80%	90%	90%	
# concurrent users	400	120	315	315	
off-peak concurrency	0%	0%	5%	5%	
# off-peak users	-	-	18	18	
work hours / day	12	12	12	12	
work days / week	5	7	5	7	
work hours / month	260	364	260	364	
non-work hours / month	470	366	470	366	

	User Group 1	User Group 2	User Group 3	User Group 4	User Group 5
OS Type	Windows 10 multi-session	Windows Server	Windows 10 multi-session	Windows 10	
Pooled / Personal	Pooled	Pooled	Pooled	Pooled	
Deployment Type (Default)	Multi-session	Multi-session	Multi-session	Single-session	
Deployment Type (Override)					
Deployment Type (Final)	Multi-session	Multi-session	Multi-session	Single-session	

	User Group 1	User Group 2	User Group 3	User Group 4	User Group 5
# users/vCPU (only valid for multi-session) (Default)	6.0	3.0	4.0		
# users/vCPU (only valid for multi-session) (Override)					
# users/vCPU (only valid for multi-session) (Final)	6.0	3.0	4.0		
Calculations use live lookup functions. If those functions break down, need manual input					
VM Instance (Default)	D4s v3	D4s v3	D4s v3	F2s v2	
VM Instance (Override)					
VM Instance (Final)	D4s v3	D4s v3	D4s v3	F2s v2	
# VM vCPUs	4	4	4	2	
VM RAM (GB)	16	16	16	4	
Reserved Instance (Default)	3-year reserved	3-year reserved	3-year reserved	3-year reserved	

| ... | 1. Opportunity Profile | 2. Desktop License Cost | 3. WVD Management Cost | 4. Infrastructure Cost | Default Values (MSFT Guidance) | 5. Service Cost | 6. Cost Benefi |

Source: https://www.microsoft.com/en-us/us-partner-blog/2020/04/07/is-your-customer-right-for-AVD-take-these-4-steps-to-price-an-offer-and-decide/

It is important to note that when it comes to pricing, Microsoft's pricing approach is significantly more complex and that these complexities and considerations are outlined in more detailed within our **technical whitepaper**.

Conclusion

The good news is that the market for "desktop in the cloud" is growing, and Microsoft's entry into this space further legitimizes the concept as one organizations can actively consider.

For organizations that are feeling pressure to either save money, increase security, improve the user experience, improve uptime/reliability, introduce flexibility and/or enhance remote work capabilities, AWS' solutions are a straightforward, simple, scalable, proven and cost-effective way of delivering applications to your user base. They can be deployed in days (sometimes hours.)

While Microsoft's AVD solution, on the surface, appeals to many of the same desired outcomes, it is not meant for organizations that are trying to reduce complexity and free-up their IT teams' capacity to become more focused on business opportunities - and the solution is relatively arduous to deploy and maintain. If your organization is already Azure-aligned, AVD may be a fit, if you are able to build the skillsets across multiple teams it requires.

Otherwise, It is the expert opinion of SynchroNet that AWS can offer a more robust and turnkey solution that can provide the key benefits that organizations have come to know and love of cloud solutions.