



Windows Virtual Desktop

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Agenda

1. Learn

You learn about the solution,
we learn about you

1. Overview of Windows Virtual Desktop
2. Differences between RDS and WVD
3. WVD Architecture

2. Plan

Make informed decisions
that influence the design

1. WVD Deployment
2. WVD current GA (non-ARM) & Spring Release (ARM)

3. Implement

Decide how we're going to
complete the work

1. WVD Practice Sharing
2. WVD Assessment & Management Tool

Overview

Virtualization scenarios



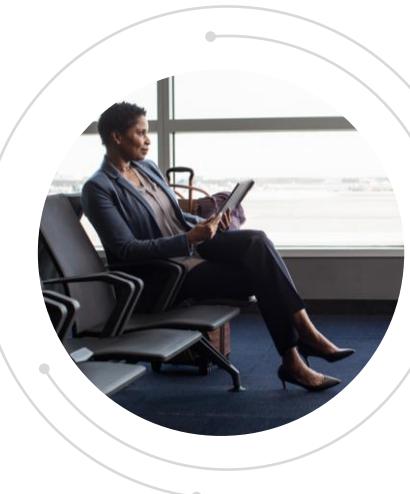
Security and regulation

Financial Services
Healthcare
Government



Elastic workforce

Mergers and acquisition
Short term employees
Contractor
and partner access



Specific employees

BYOD and mobile
Call centers
Branch workers



Specialized workloads

Design and engineering
Legacy apps
Software dev test

Windows Virtual Desktop Benefits

Enables a multi-session Windows 10 experience, optimized for Office 365 ProPlus

Supports Windows Server (2012R2 +)

Most flexible service allowing you to virtualize both desktops and apps

Windows 7 virtual desktop with free Extended Security Updates

Integrated with the security and management of Microsoft 365



Supported OS

Windows 10 Enterprise Multi-session

Windows 10 Enterprise Single-Session

Windows 7 Single-Session

Windows Server 2019

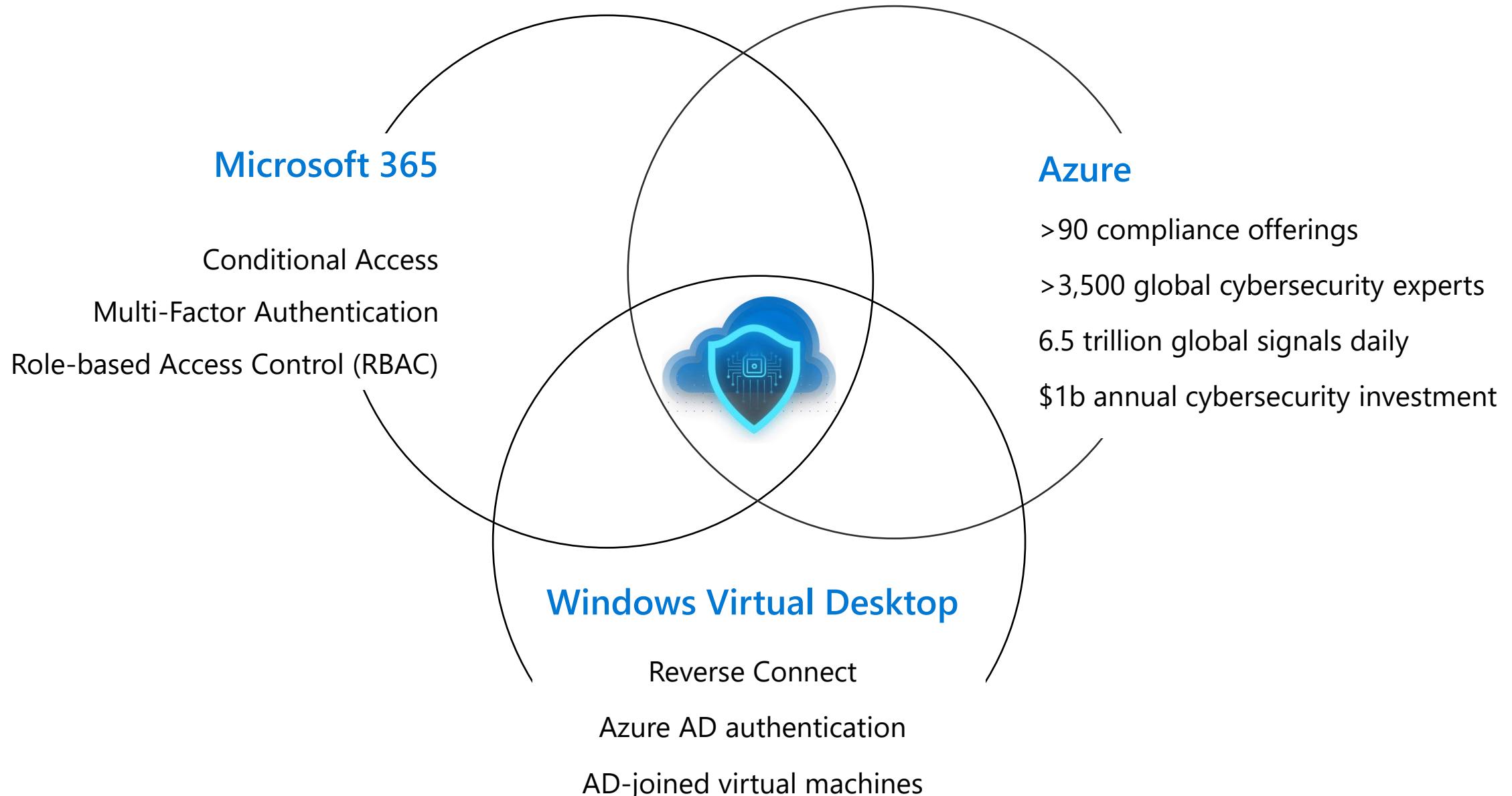
Windows Server 2016

Windows Server 2012 R2

VMs in customer's Azure subscription



Blending the security of the convergence of the Microsoft ecosystem



Most customers are already eligible for WVD



Client

Customers are eligible to access Windows 10 single and multi session and Windows 7 with Windows Virtual Desktop (WVD) if they have one of the following licenses*:

- Microsoft 365 E3/E5
- Microsoft 365 A3/A5/Student Use Benefits
- Microsoft 365 F1
- Microsoft 365 Business
- Windows 10 Enterprise E3/E5
- Windows 10 Education A3/A5
- Windows 10 VDA per user



Server

Customers are eligible to access Server workloads with Windows Virtual Desktop (WVD) if they have one of the following licenses:

- RDS CAL license with active Software Assurance (SA)



Pay only for the virtual machines (VMs), storage, and networking consumed when the users are using the service

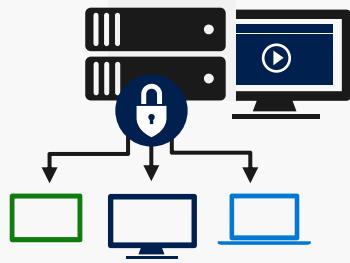
Take advantage of options such as [one-year or three-year Azure Reserved Virtual Machine Instances](#), which can save up to 72 percent versus pay-as-you-go pricing. [Now with monthly payment options!](#)

[WVD Pricing page on Azure.com](#)

Differences between RDS and WVD

Solutions to Meet your Requirements

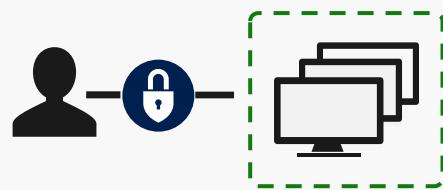
Session-based computing



Session-based desktops and RemoteApp

Cost-effective,
easy to manage

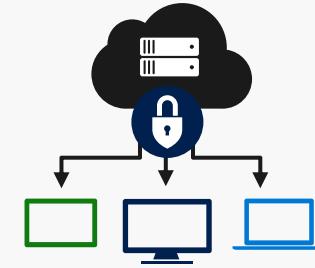
Virtual Desktop Infrastructure



Access to pooled or personal virtual desktops running Windows client OS

High performance,
app compatibility

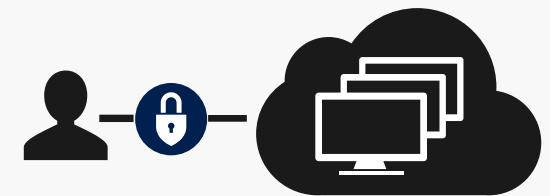
Session-based computing in the cloud



Remote Desktop Session Host deployed on cloud infrastructure services

Customizable with minimum CAPEX

Client desktops in the cloud



Access to pooled or personal virtual Windows 10 desktops in Azure

All VDI benefits with elasticity with low CAPEX

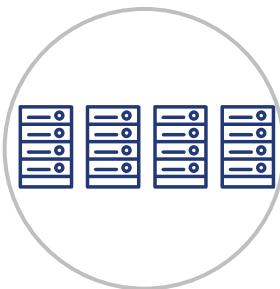


On-premises



In cloud

RDS 2019



On-premises Desktop + App virtualization

RDS desktop and app images; RDS infrastructure roles run on-premises

Windows Server (multi-session)

RDS CAL, RDS SAL or RDS Subscriptions,

Hosted in customer or partner datacenter

Somewhat difficult to setup, requires infrastructure investments

RDS on IaaS



Desktop + App virtualization on IaaS

RDS desktop and app images ;RDS infrastructure roles run on IaaS. Hybrid capable in IaaS model where Infra can be in Azure and VMs can be on-premises

Windows Server (multi-session)

RDS user CAL with SA, RDS SAL or RDS Subscriptions (CSP) + IaaS compute & storage

Hosted in a customer or partner's Azure subscription

Somewhat difficult to setup, infra cost savings

Windows Virtual Desktop



Desktop + App virtualization on Azure

Desktop and app images hosted in Azure IaaS; RDS infrastructure roles hosted in Azure as PaaS

Windows 10 multi-session, Windows 10, Windows Server 2012R2+, Windows 7 (w/free ESU)

M365 E3/E5/(F1/B), Win E3/E5, entitlement. Azure compute + storage cost

Hosted in customer or partner tenant on Azure

Easy to setup and deploy, infrastructure managed by Microsoft

Cloud vs On-Premises Comparison



- Infrastructure maintenance expense
- Flexible construction and expansion



Data



Application



OS (Virtual Desktops)



VDI Management Products



Cloud



- Maintaining a complex and operational infrastructure
- Time cost to build and expand the environment



Data



Application



OS (Virtual Desktops)



VDI Management Products



Hypervisor



Network Equipment



Server Equipment

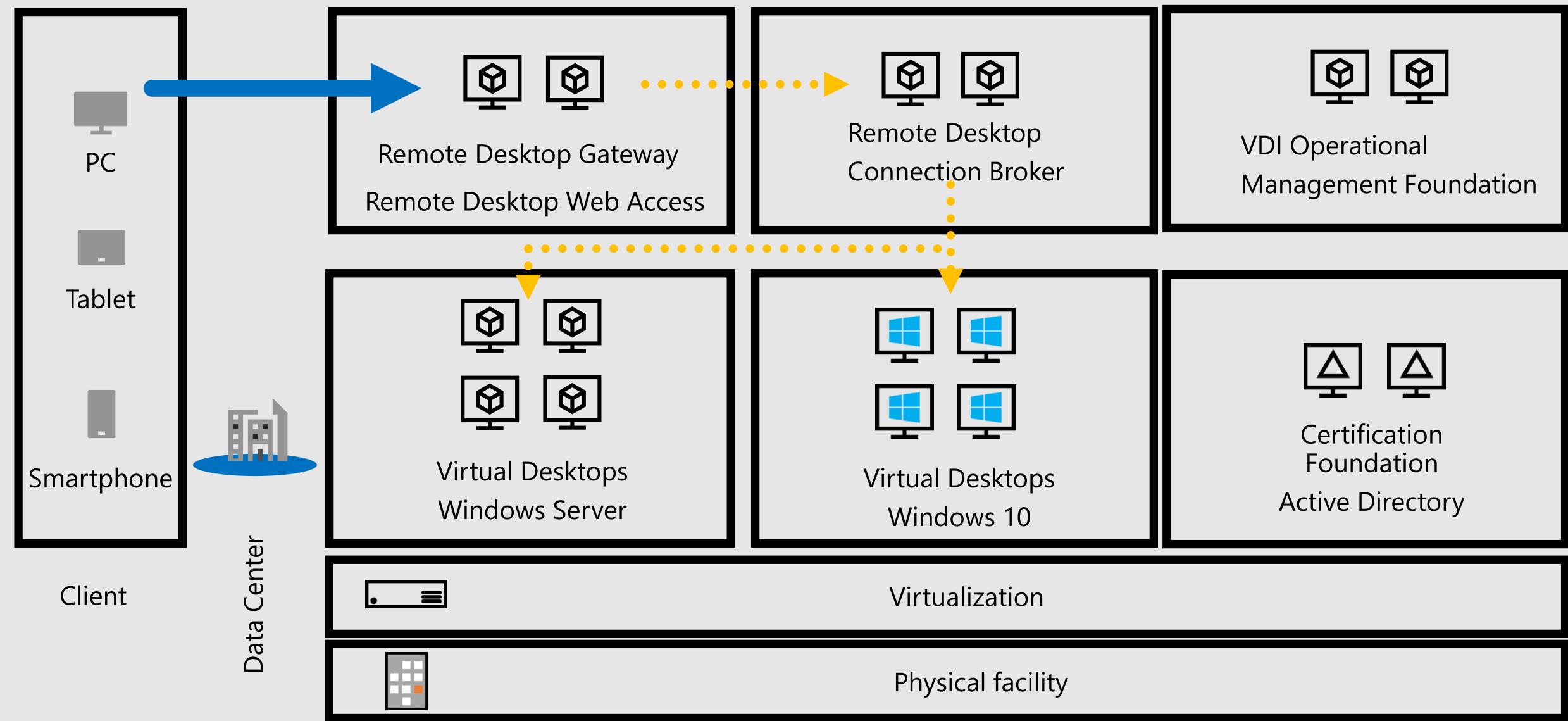


Storage Equipment

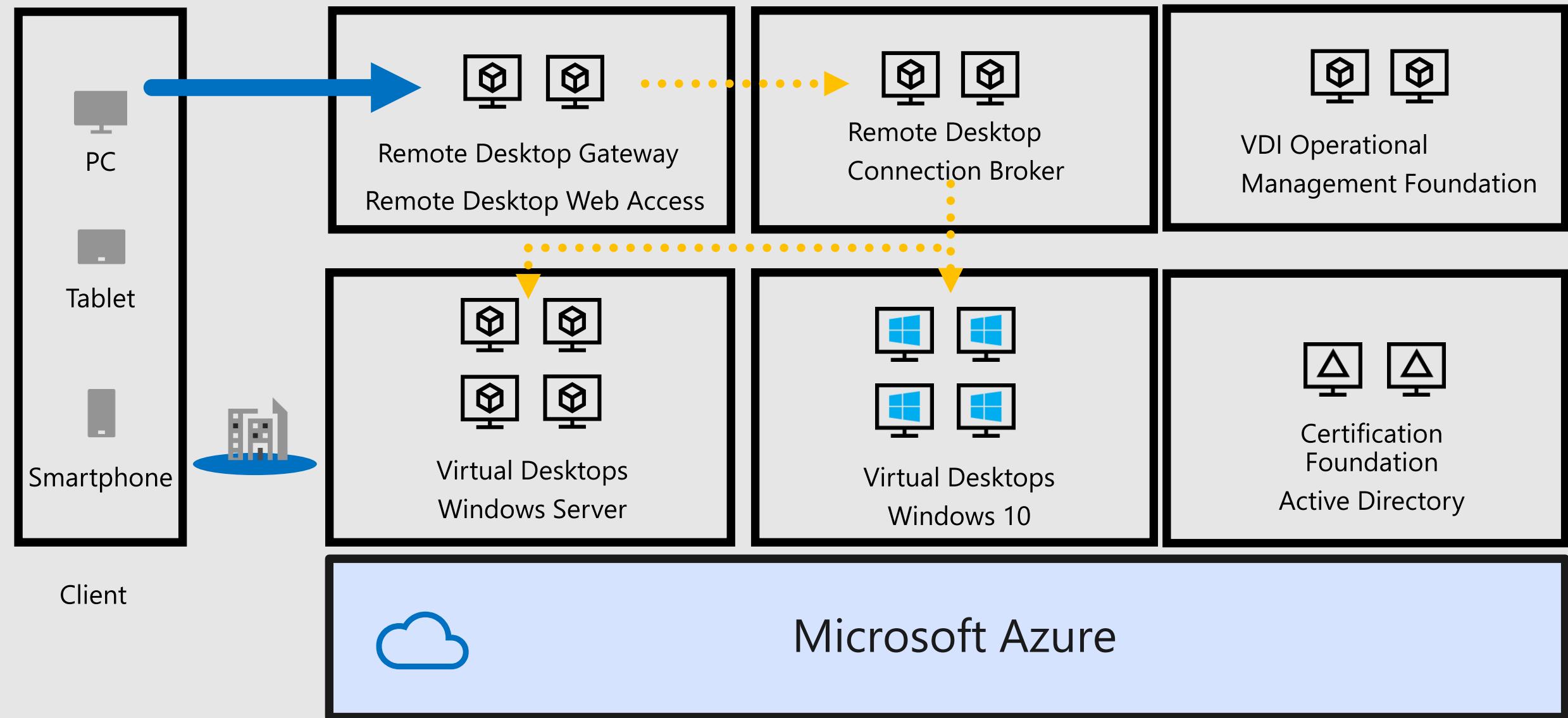


Data center Facilities

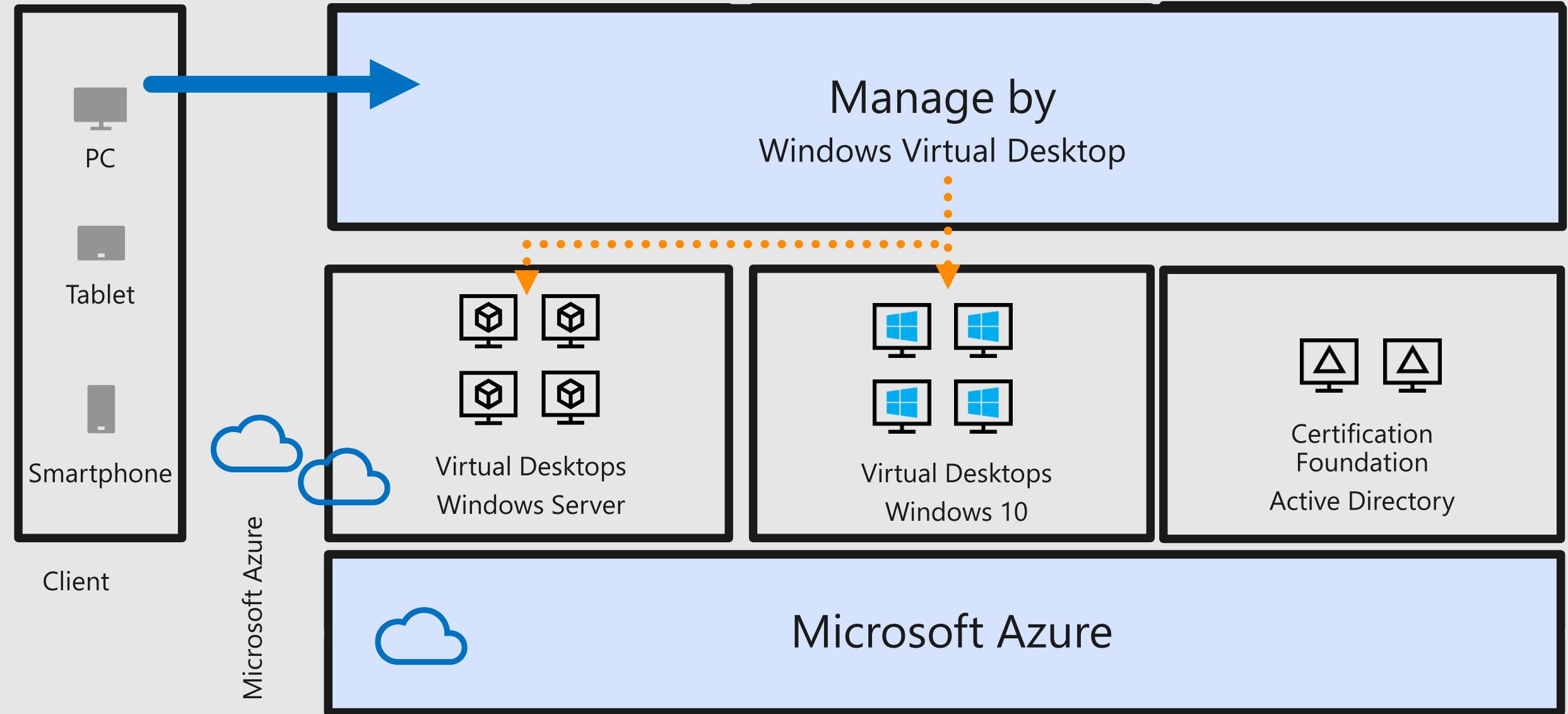
On-Premises Client virtualization



On-Premises Client virtualization



Microsoft Azure Client Virtualization



WVD Architecture

Native Windows Virtual Desktop

High Level Architecture

Use Azure Active Directory identity management service

Provide virtualization infrastructure as a managed service

Deploy and manage virtual machines in Azure subscription

Manage using existing tools like Configuration Manager or Microsoft Intune

Connect easily to on-premises resources

Managed by Microsoft



Web access



Diagnostics



Gateway



Management



Broker



Load balancing

Your subscription – Your control



Windows 7 Enterprise



Windows 10 Enterprise



Windows Server 2012 R2 and up



Windows 10 Enterprise multi-session



RemoteApp

Managed by Microsoft



Compute

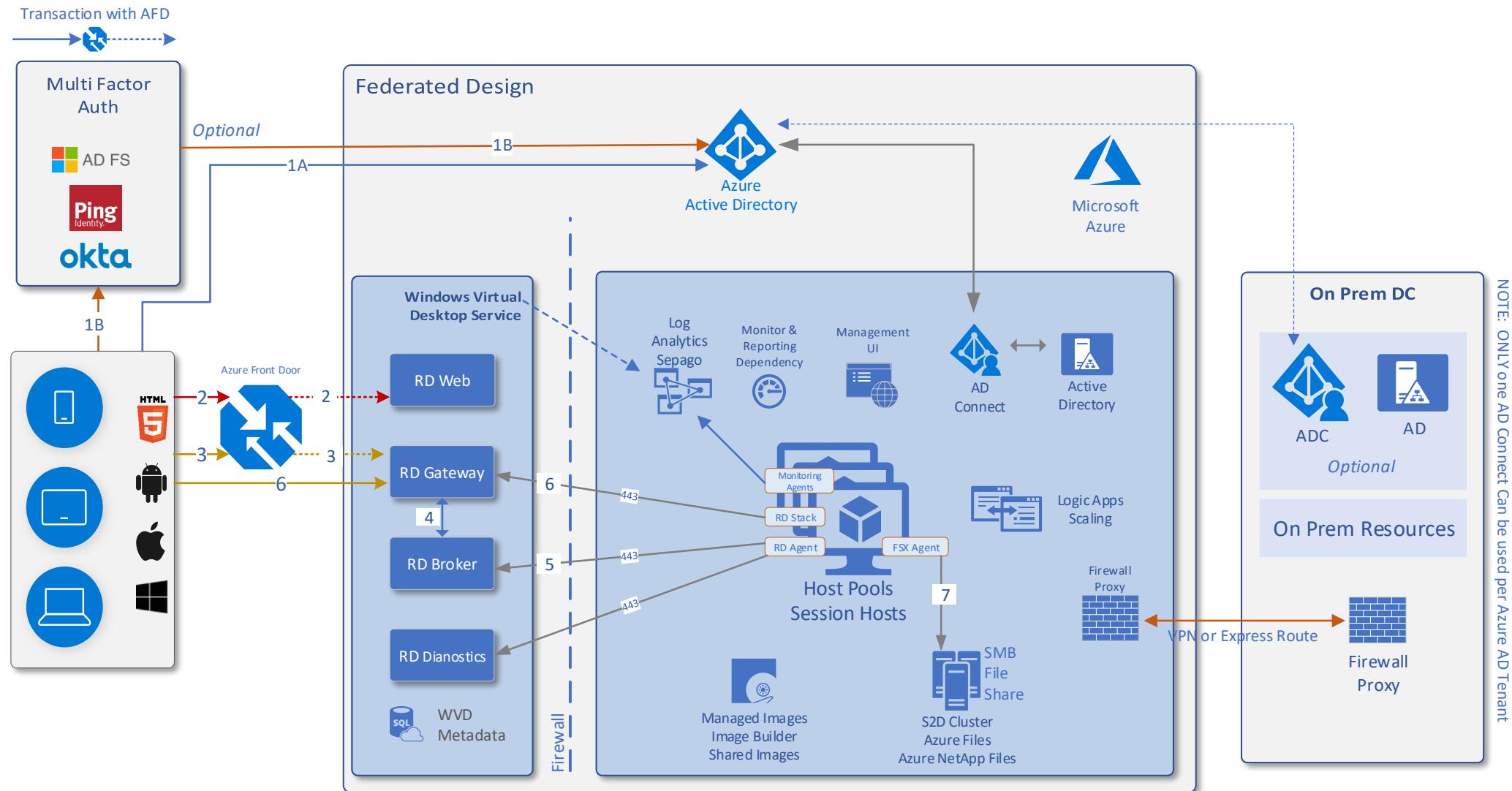


Storage



Compute

WVD Authentication Flow



Data flow

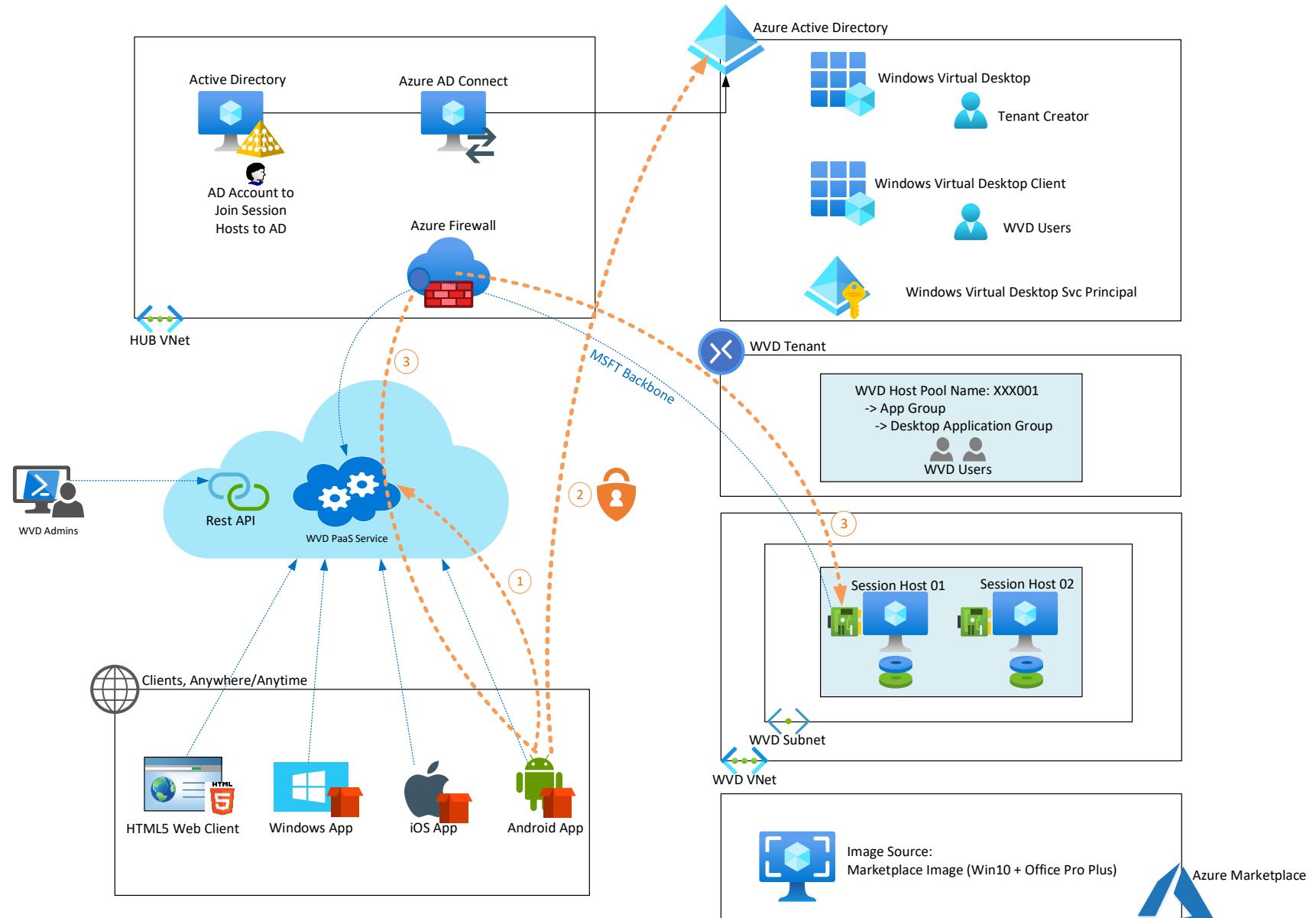
Flow index	Purpose	Protocol	Encryption	Port used	Transmitted information (Data/ Auth).
1.1	User token between RD Client and AAD	HTTPS	TLS 1.2	443	AAD user UPN and auth token
1.2	User token between RD Client and Ping/Okta	HTTPS	TLS1.2	443	Ping user creds and auth token
2	XML Feed + user token	HTTPS	TLS 1.2	443	AAD Bearer token
3	RDP channel + user token	HTTPS	TLS 1.2	443	AAD Bearer token
4	REST Calls	HTTPS	TLS 1.2	443	AAD Bearer token
5	443:Persistent channel	HTTPS	TLS 1.2	443	RDBroker Bearer Token, Host health, session info
6	443:Persistent channel	HTTPS	TLS 1.2	443	RDBroker Bearer Token, Diagnostic info
7	RDP Channel	HTTPS	TLS 1.2	443	Reverse connect GUID
8	User Profile Access	SMB	Yes, if customer uses SMB 3.0	Standard SMB ports	VHD file content
9	Update RDAgent from Azure blob storage	HTTPS	TLS 1.2	443	RDAgent bits

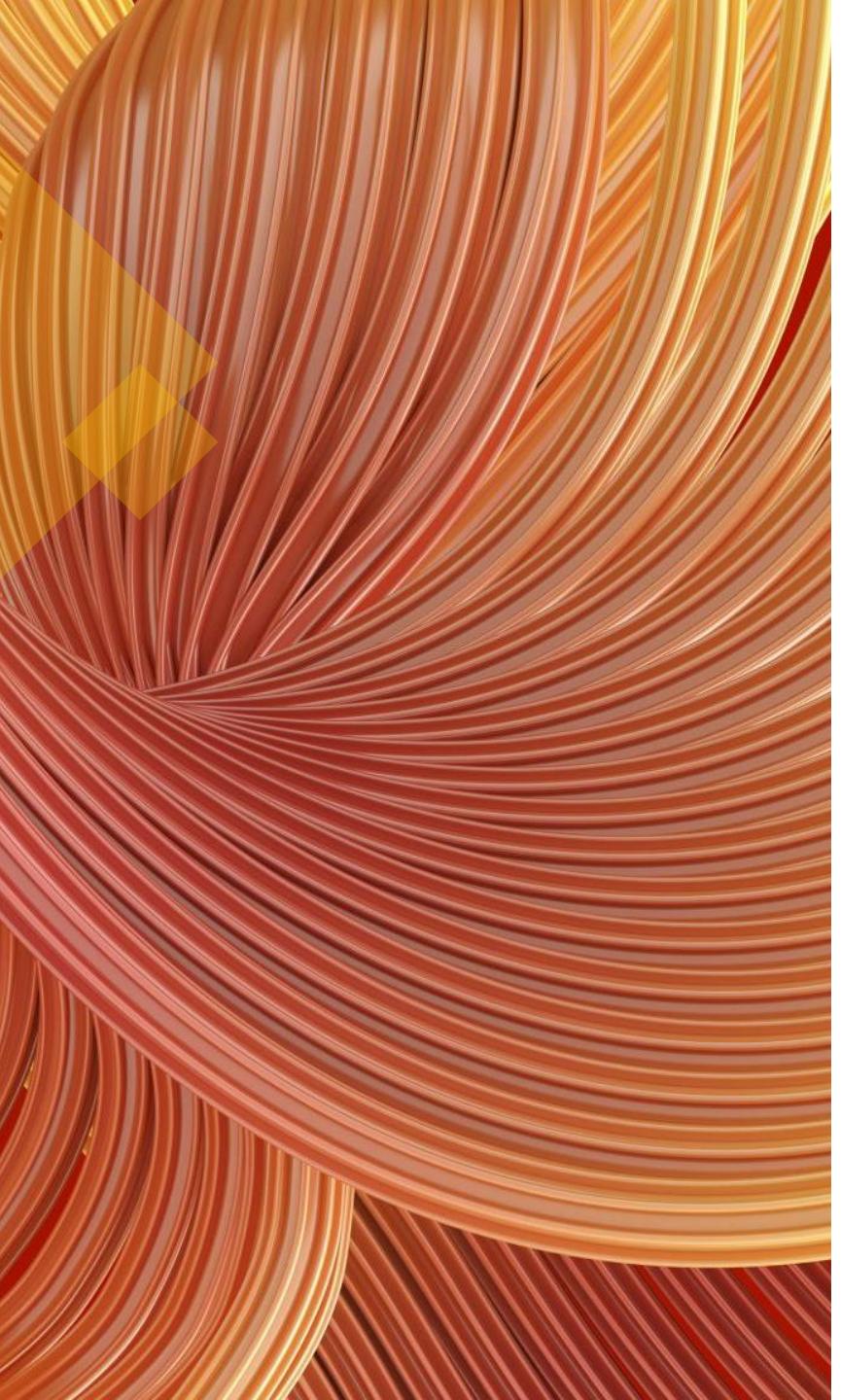
Secure Authentication

1. User access WVD via PaaS Service

2. User Authenticates with Azure AD MFA

3. User connected to remote desktop and Authenticates via Kerberos





WVD V2



Updated object model



New feature support:

User group support

Integrated PS with AZ module

Integration into Azure Monitor and Log Analytics

Uses Azure RBAC and Lighthouse

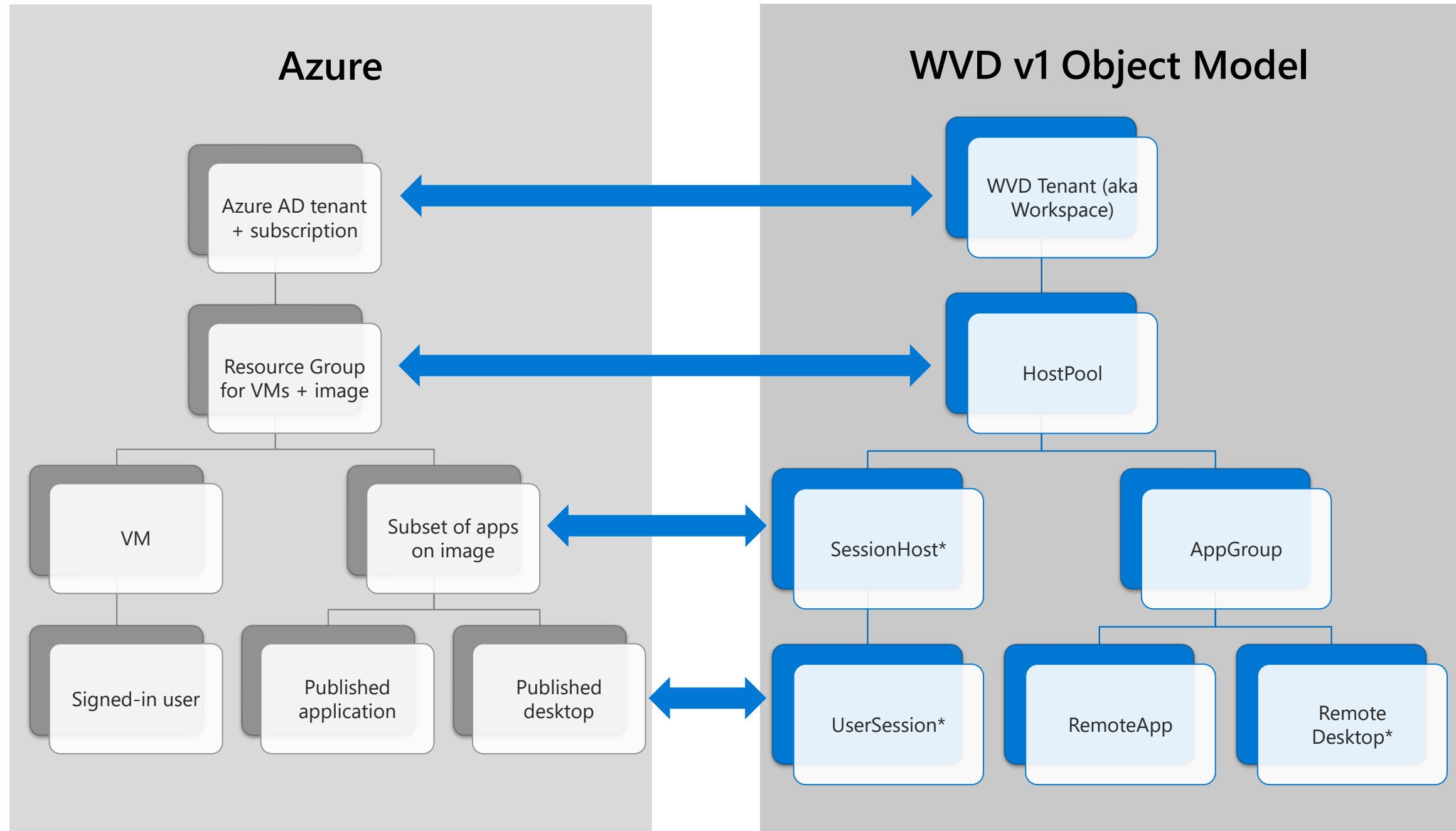
Azure portal support for creation, management and diagnostics

New Insiders preview version of the Windows Virtual Desktop client—with Connection information on latency



WVD v1 versus v2

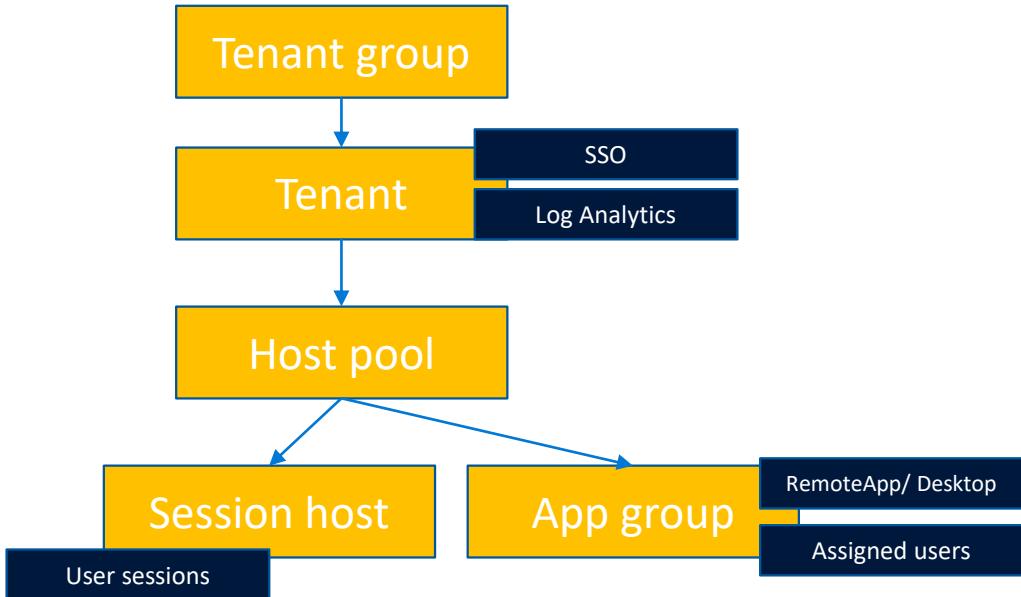
Feature	Non-ARM based	ARM based
App publishing	Individual user	Azure AD user group and individual user
Admin access control	Windows Virtual Desktop custom roles	Azure Role-Based Access Control (RBAC) built-in and custom roles
PowerShell module	Separate PowerShell module	Integrated with AZ PowerShell module
Management UI	Separate management web GUI	Integrated into Azure portal
Monitoring UI	PowerShell and separate monitoring web GUI	Integrated with Azure portal (Log Analytics)
Service metadata storage	US only	Select geography for storage
Consent for reading Azure AD	Mandatory	Not Applicable



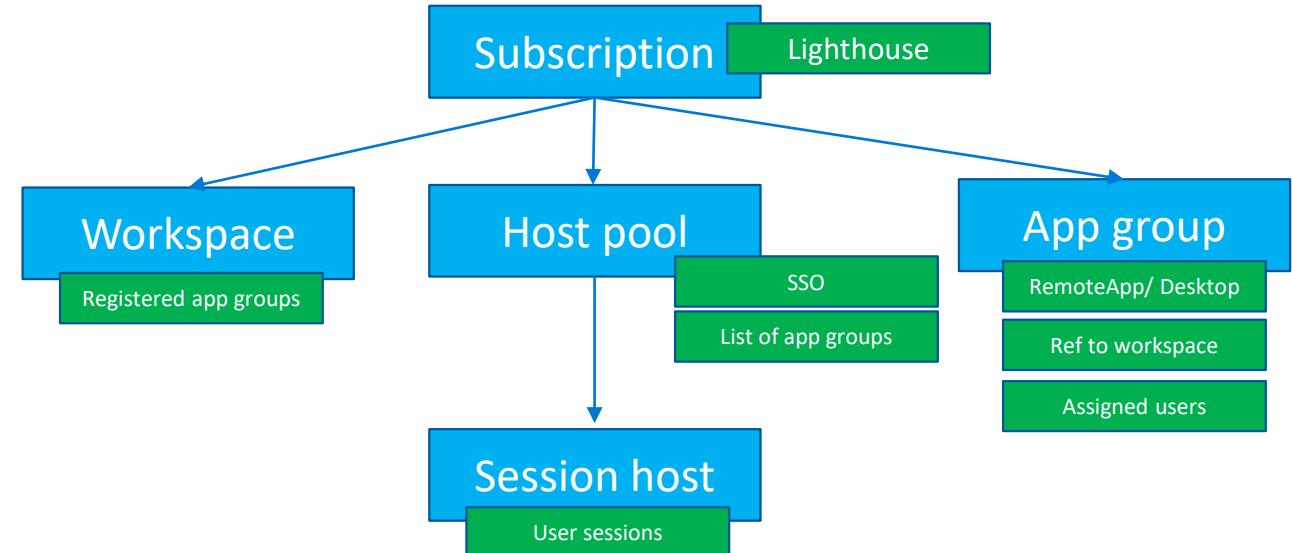
* Implicitly created object

WVD v2 Object model - comparison

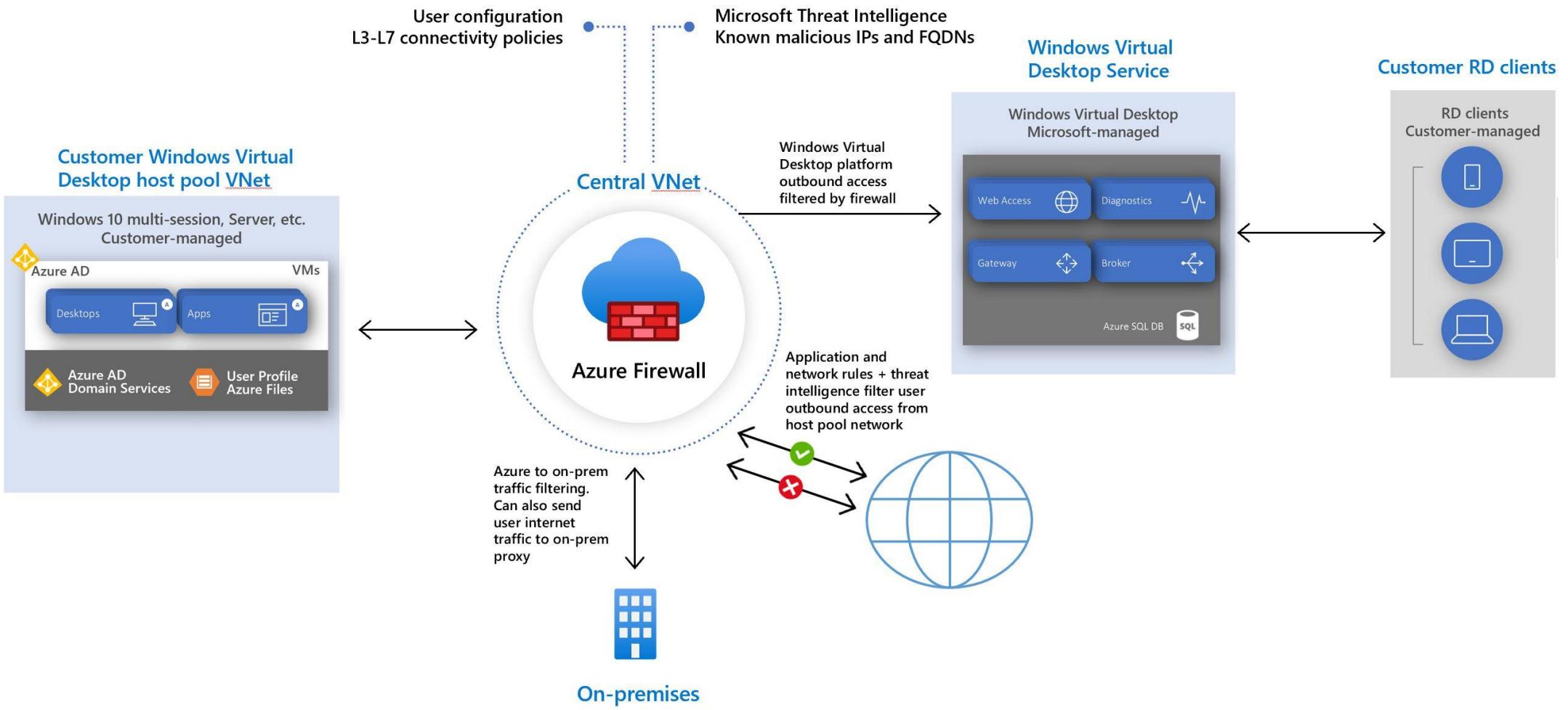
GA object model



V2 object model



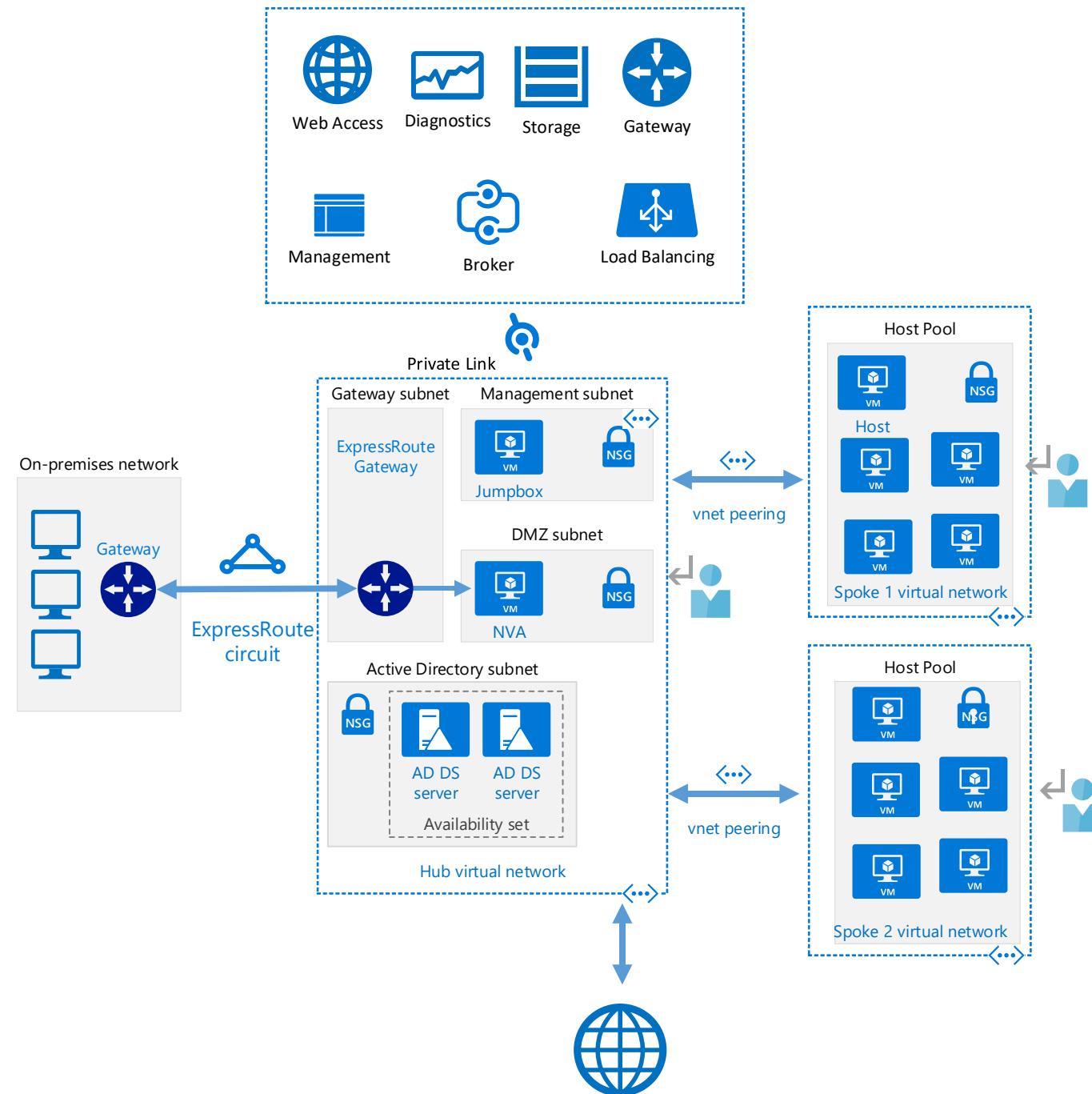
Note: All resources will have resource group and location associated with it



Read more at <https://docs.microsoft.com/en-us/azure/firewall/protect-windows-virtual-desktop>

Reference Architecture

- Hub-Spoke model is recommended
 - Consideration: VNet Peering Limit
- Regulate Internet and Intranet traffic with Firewall/NVA and UDR
- Private Link to WVD services* (In Preview)
 - <https://rdgateway.wvd.microsoft.com>
 - <https://rdweb.wvd.microsoft.com>
- ADDS/AADDS, AAD Connect considerations
- Limited outbound ports is required to be opened
 - DNS, LDAP, SMB, HTTPS
- Different pattern for Cloud Native Customers



WVD Deployment

Prerequisites to deploy Windows Virtual Desktop

[Get started at aka.ms/startwvd](https://aka.ms/startwvd)

STEP

1

Choose an identity strategy

- Azure ADDS
- VM with AD configured
- ExpressRoute or VPN to on-premises DC

STEP

2

Choose where to host FSLogix profiles

- Fileserver
- Azure Files with Azure ADDS
- Azure NetApp Files

STEP

3

Make sure you have all credentials needed

- Subscription admin
- Azure AD global admin
- Active directory administrator
- WVD tenant admin

Windows Virtual Desktop Minimum Requirements

These components are on the critical path for deployment of WVD

- AD Domain with AD Connect Syncing users to Azure AD Tenant
 - Access to an Azure AD Tenant GA account to deploy WVD
 - Domain Admin or User with computer domain join rights
- Azure Subscription connection to Azure AD Tenant
- VNET(s) set up and ready
- SMB File Share for user Profiles: FSLogix – S2D Cluster, Azure files, or ANF
- [Licensing](#): Check eligibility of Windows and M365 licenses for access to WVD
- VPN or Express Route with Defined Routes (if needed - for access to on prem resources)
- [MFA](#) or Conditional Access (Not a requirement for WVD but needed if required by Security)
- Domain Controller
 - Locating a Datacenter in Azure close to the customer's WVD Hosts is a best practice
 - An alternative is if you have ER or VPN, an on prem Datacenter would work (NOTE: This could introduce latency and slower logins)

FSLogix entitlements

Access to FSLogix technology*

FSLogix technology, which improves the performance of Office 365 ProPlus in multi-user virtual environments, is now available at no additional cost for Microsoft 365 customers

Microsoft 365 E3/E5/F1/Business

Microsoft 365 A3/A5/Student Use Benefits

Windows 10 Enterprise E3/E5

Windows 10 Education A3/A5

Windows 10 VDA per user

Remote Desktop Services (RDS) CAL

Remote Desktop Services (RDS) SAL

*Including Office 365 Container, Profile Container, App Masking and Java Redirection

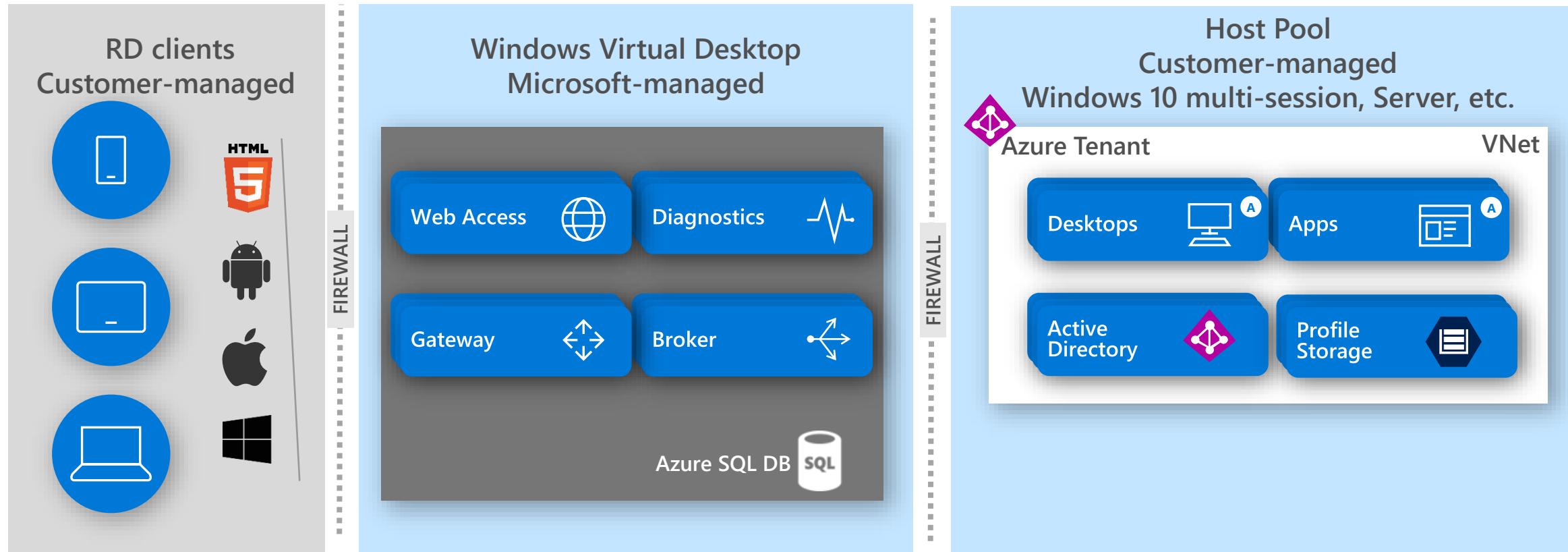
Major Deployment Steps

Identity (AD)

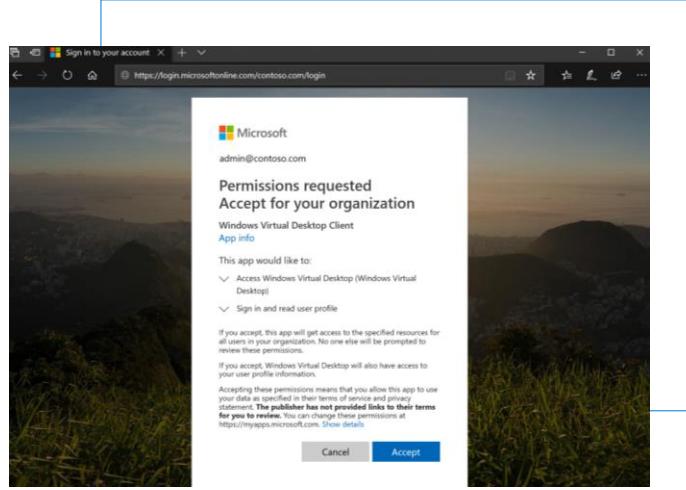
WVD Tenant
Consent & Creation

Host Pool Provision

Profile Storage



Create Windows Virtual Desktop tenant



Grant Azure AD consent

Assign a Tenant Creator

```
PS> Install-Module -Name Microsoft.RDInfra.RDPSHShell  
PS> Import-Module Microsoft.RDInfra.RDPSHShell  
PS> <redacted>
```

Create your tenant

Documentation: aka.ms/wvdpreview

Getting Started Guide: aka.ms/startwvd

Automation

- Create or update VMs for a host pool
 - [Create and provision host pool](#)
 - [Update VMs in existing host pool](#)
- Scale your host pool
 - [Scaling script](#)



(*) Now with Spring Update there is a specific option to scale out your host pool - no need to rerun anything, and you just specify how many VM's you want to add.

There are three Azure features that work together to perform scaling:

- Azure Automation
- Azure Webhooks
- Azure Logic Apps



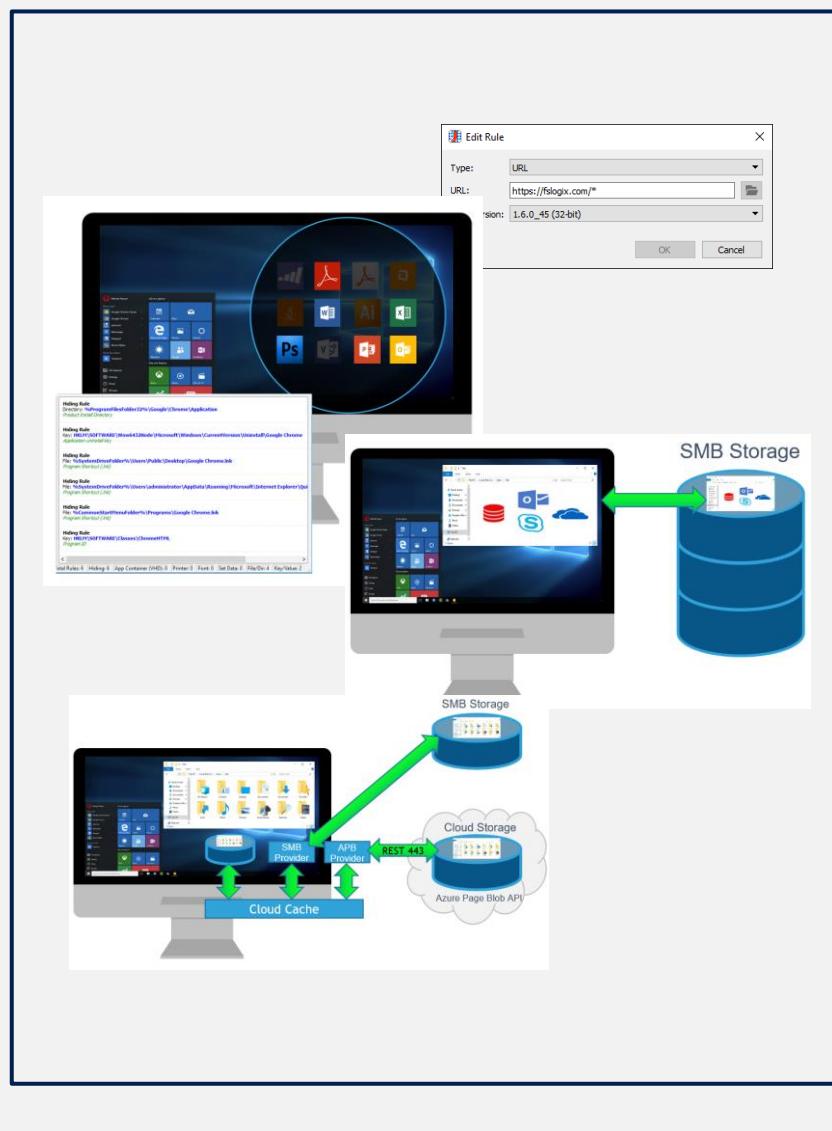
WVD Scaling – How does it work?

- The Automation Account is an Automation Run As Account that has “[RDS Contributor](#)” rights to your WVD tenant(s). This allows it to execute and perform changes in your tenant (like powering on or off session hosts).
- Within the Automation Account is a runbook called [WVDAutoScaleRunbook](#)
- The [WVDAutoScaleRunbook](#) authenticates using the Automation Run As Account which acts as a Service Principal within Azure. No credentials are passed through.
- The [WVDAutoScaleRunbook](#) has a Webhook configured within it called [WVDAutoScaleWebhook](#)

WVD Scaling – How does it work?

- We then create a [Logic App](#)
- The Logic App contains a recurrence interval – how frequently it runs to see if WVD sessions hosts need to scale up or down
- When the recurrence interval is hit, it then calls the [HTTP Webhook](#) (the one associated with our Automation Runbook) and passes along a series of parameters.
- The parameters tell the [Automation Runbook](#) when the peak hours of usage are, how big or small to scale the session hosts, what message to provide to end users (if scaling down) and how long of a grace period to give users before scaling down.

FSLogix profiles



- Profile is stored in VHD/VHD(X)
- Same approach used by UPD
- Mounted at Login – faster login and no target storage requirement
- Size of Profile doesn't impact logon time
- VHD(X) = Block Transfer decreases network utilization
- Caching from Windows Cache Manager
- Profile Container redirects everything from the user profile.
- Filter driver causes profile to appear local – broader application support

WVD v1 non-ARM

WVD v2 ARM Spring Release

And more...

WVD Practical deployment

Identity Strategies



Option

Spin up a DC in your Azure subscription.

For cloud-based organizations, use Azure AD DS.

For hybrid organizations, use VPN or ExpressRoute and make sure your on-premises DCs can be found in Azure.



Pros

Can sync with on-premises DCs if VPN or ExpressRoute is configured.
All familiar AD Group Policies can be used.
Virtual machines can be paused or stopped when needed to reduce costs.

Great for test or isolated environments that do not need connectivity to on-premises resources.
Azure AD will be your leading source for identities.

Adds additional management of a VM and Active Directory in Azure.
No AD DS or Domain Controller required in Azure.



Cons

Adds additional management of a VM and Active Directory in Azure.

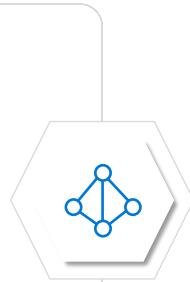
AD DS will always be running resulting in a **fixed charge per month**.

Latency could be increased adding delays during user authentication to VMs.
This assumes you have an on-premises environment, not suitable for cloud only tests.

Domain join strategy

Option	Target	Pros	Cons
Use VM with DC in your Azure subscription	Smaller customers or PoC	<ul style="list-style-type: none">• Can sync with on-premises DCs via VPN or ExpressRoute• All familiar AD Group Policies can be used• Virtual machines can be paused or stopped to reduce costs	Adds additional management of a VM and AD in Azure
Use Azure AD DS	"Born in the cloud" organizations	<ul style="list-style-type: none">• Great for test or isolated environments that do not need connectivity to on-premises resources.• Azure AD will be your leading source for identities.	AD DS results in a fixed charge per month
Use VPN or ExpressRoute for connectivity from Azure to on-premises DCs	Hybrid customers	No AD DS or Domain Controller required in Azure	<ul style="list-style-type: none">• Additional latency could add delays during user authentication to VMs• Not suitable for cloud only tests

Recommended identity setup for cloud-based organizations

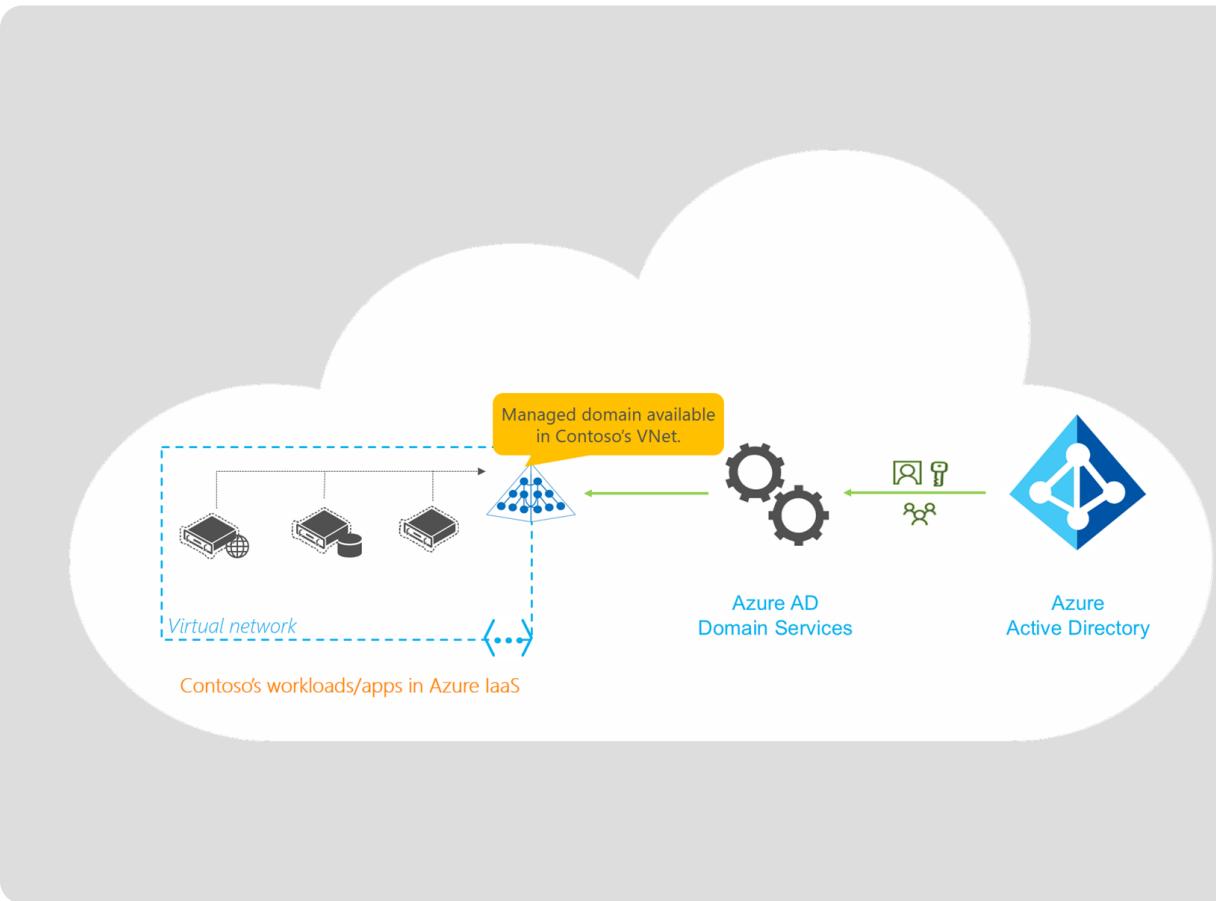


Azure AD

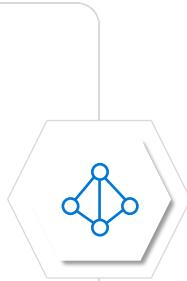


Azure AD Domain Services

- Windows Server AD run as a service by Azure
- Allows VMs to be domain-joined
- Users recognized both in Azure AD and Windows Server AD



Recommended identity setup for hybrid organizations

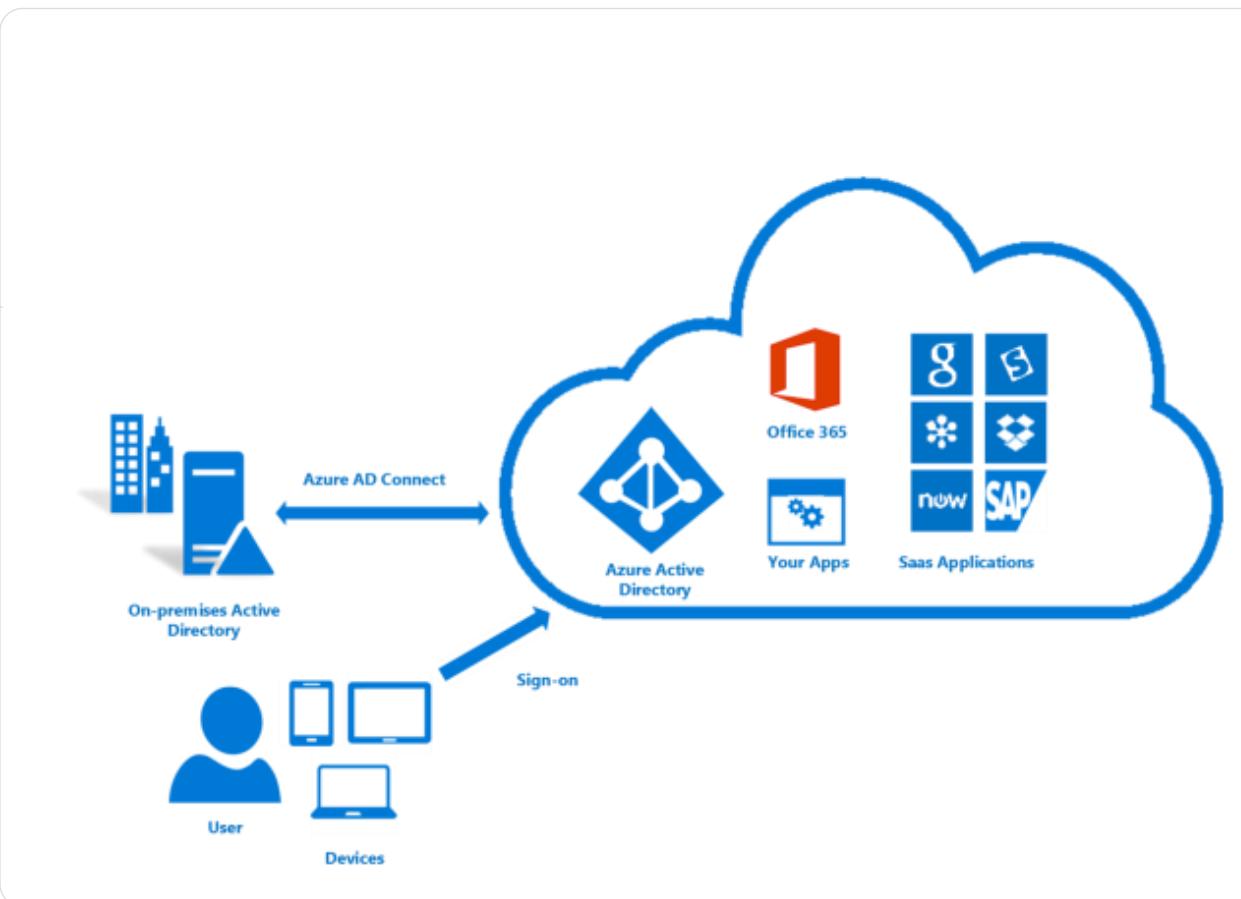


Azure AD

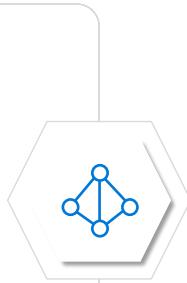


Windows Server AD on-prem
connected to Azure

- ExpressRoute or site-to-site VPN to Azure
- Azure AD Connect to synchronize identities



Single Sign-on



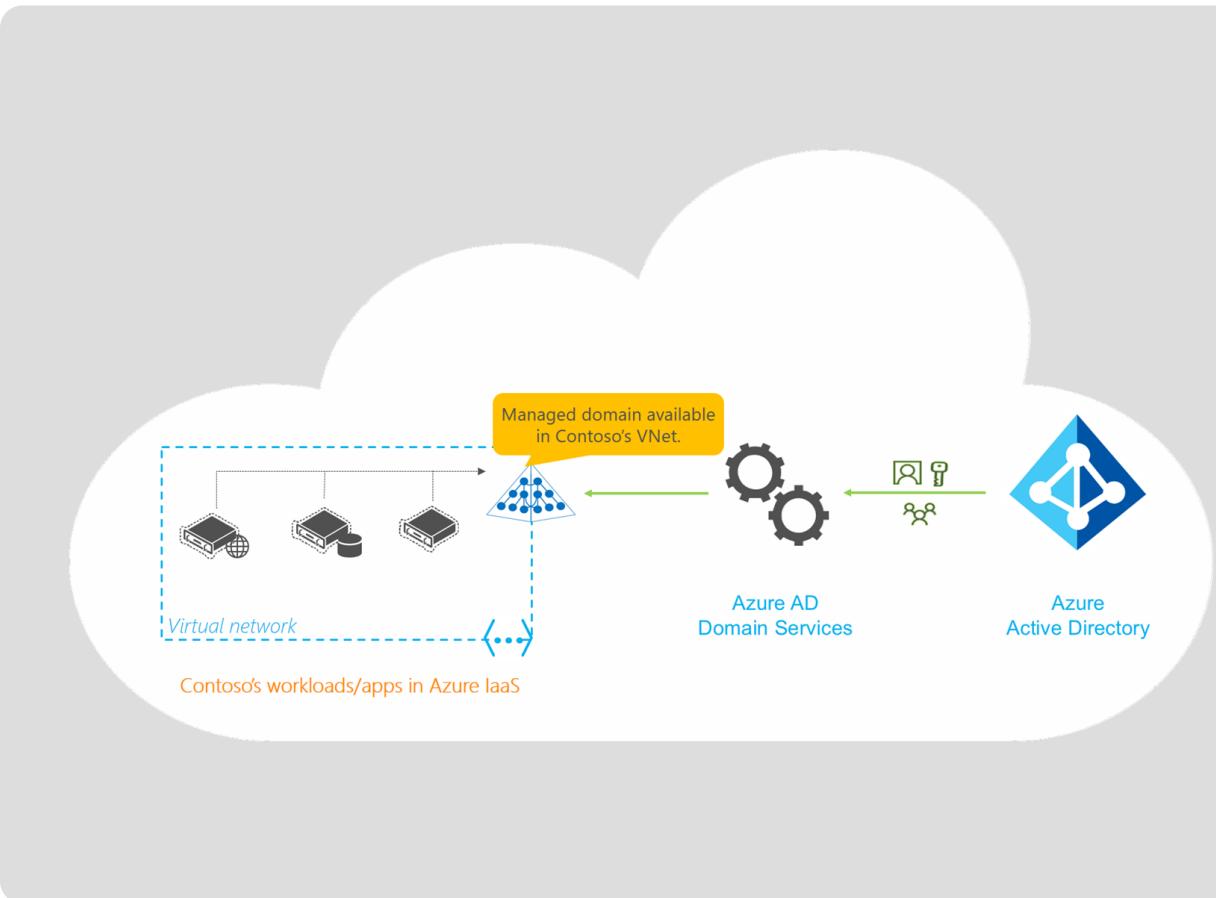
Pre-requisites

Federated Identity

Session hosts joined to ADDS or
AAD-DS



Configure Relying party trust in
ADFS



Network Requirements and Considerations

Requirements

- Network must route to a Windows Server Active Directory (AD)
- This AD must be in sync with Azure AD so users can be associated between the two
- VMs must domain-join this AD

Considerations

Connectivity Type	Special Considerations
ExpressRoute	Hybrid Dedicated network through service provider
Site-to-Site VPN	Hybrid Limited bandwidth compared to ExpressRoute
Azure AD Domain Services	Isolated Must synchronize password hashes to Azure AD

Networking Considerations

<https://docs.microsoft.com/en-us/configmgr/core/understand/configuration-manager-on-azure#networking>

ExpressRoute is recommended. There is nothing to stop you using an Azure VPN Gateway but c'mon...

The transfer of Configuration Manager data can be controlled between site servers and distribution points, but site server-to-site server communication can't be controlled.

The following addresses are required specifically for Update Management. Communication to these addresses occurs over port 443.

Azure Public	Azure Government
*.ods.opinsights.azure.com	*.ods.opinsights.azure.us
*.oms.opinsights.azure.com	*.oms.opinsights.azure.us
*.blob.core.windows.net	*.blob.core.usgovcloudapi.net
*.azure-automation.net	*.azure-automation.us

<https://docs.microsoft.com/en-us/azure/automation/automation-update-management>

Networking Sizing

- Experience Estimator (regional access)
 - Estimate the quality of end user experience when connecting to Windows Virtual Desktop.
 - You can estimate the connection round trip time (RTT) from your current location to each Azure region in which you are able to deploy virtual machines*.
 - The Azure region recommended is based on connection round trip time (RTT) to your current location*.
 - To provide users with good experience, the RTT latency from the client's network to region in which host pools have been deployed should be less than 150ms
- Available bandwidth on customer side
 - Type of Application (requirement at Graph ,Storage IO, memory etc.)
 - Display resolutions
 - Amount of user accounts

AZURE REGION	ROUND TRIP TIME (MS)
West US 2	209
West US	227
West Central US	230
Central US	245
South US	253
Canada Central	264
East US	273
Canada East	275

*Actual experience will vary depending on network conditions, end user device, and the configuration of the deployed virtual machines.

The times displayed are estimates intended to help assess the quality of end user experience for your Windows Virtual Desktop deployment.

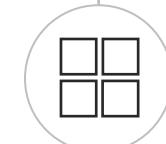
With the acquisition of FSLogix, eligible customers will get access to three core pieces of technology



Profile Container

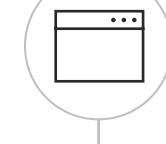
Replacement for roaming profiles and folder redirection. Dramatically speeds up logon and application launch times.

- Includes Office 365 Container, which roams Office cache data (Outlook OST, OneDrive cache, Skype for Business GAL, etc.) and Windows Search DB with user in virtual desktop environments.



App Masking

Minimize number of gold images by creating a single image with all applications. Excellent app compatibility with no packaging, sequencing, backend infrastructure, or virtualization.



Java Redirection

Helps protect the enterprise from vulnerabilities of multiple installed versions of Java by mapping specific versions to individual apps or websites.

Storage Considerations in WVD



Option

Considerations

Azure Files

Managed PaaS Service.
Azure AD/.AAD DS Integration only*
Up to 100K IOPS/Share. Higher Latency (~3ms)
Easy to Manage, cost effective
Service available broadly across regions

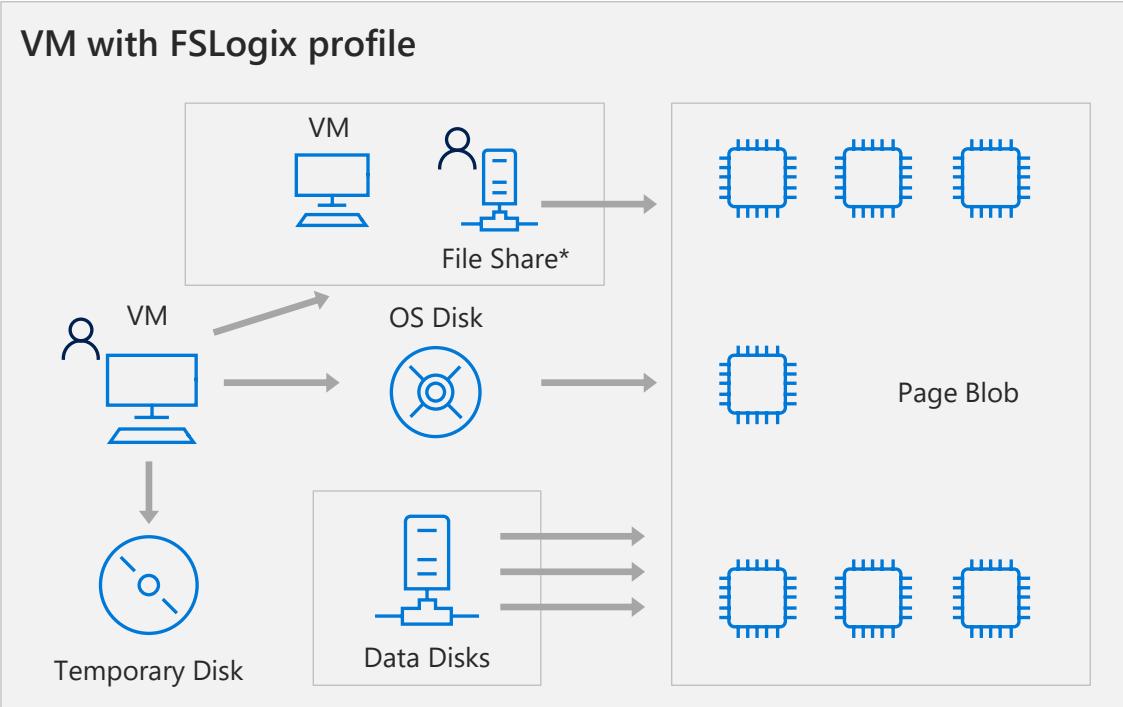
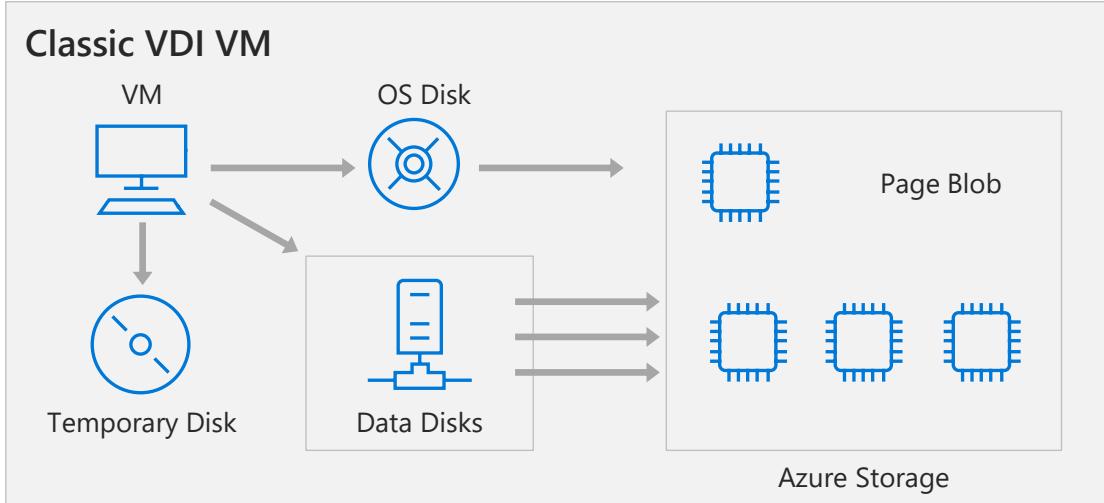
Scale Out File Server

Customer Managed IaaS Service
ADDS Integration Only
Up to 160K IOPS/disk with a latency of ~1ms using Ultra Disks
Minimum of 2 VMs (with Cloud Witness) or 3 Without CW + Cost of disks

Azure NetApp Files

Managed PaaS Service
ADDS Integration Only
Up to 320K IOPS with a latency of ~1ms
Region dependent

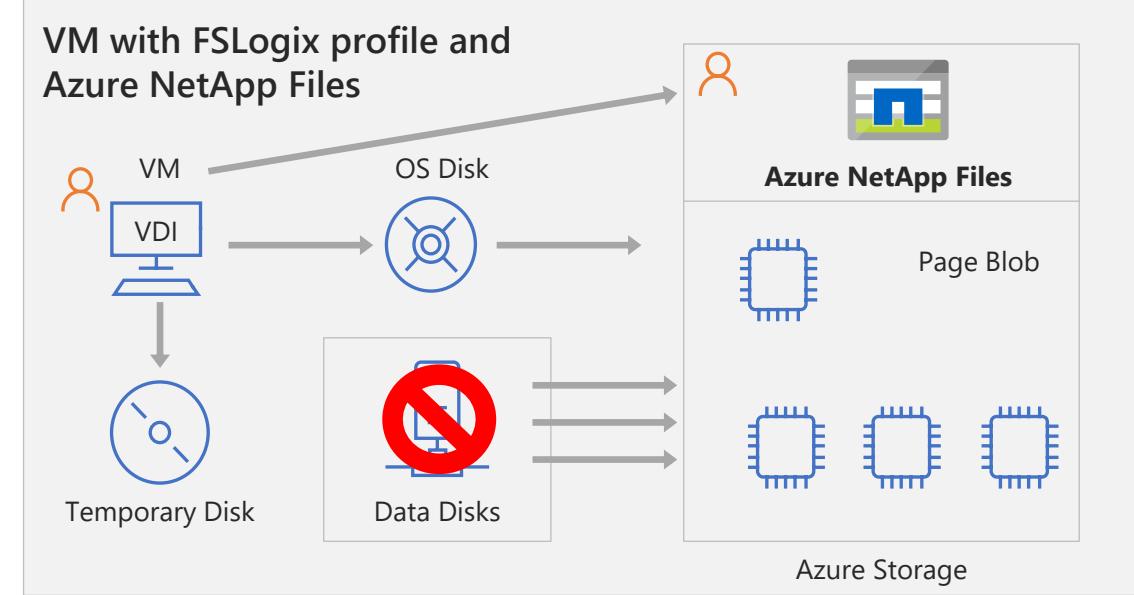
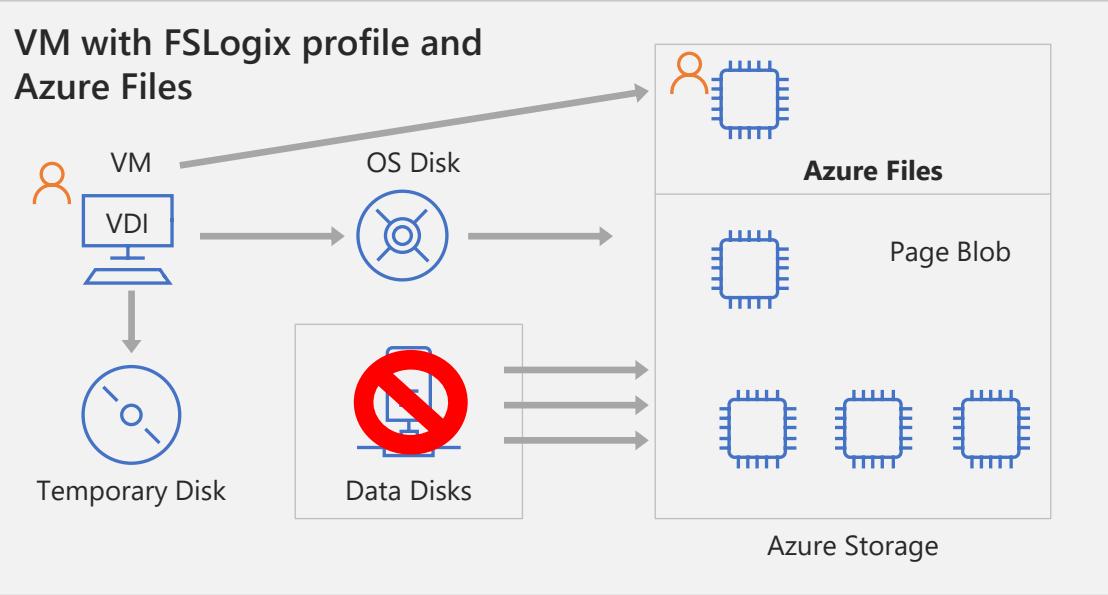
Storage in WVD



Dependencies

- On prem AD integration (Coming soon)
- ✓ Premium Files rollout (overlap in hero regions)
- ✓ AADS integration

Azure Storage in WVD



Azure Files

- ✓ Ring 0 Azure service – broad DC availability
- ✓ AADDS only integration
- ✓ No minimum storage requirements
- ✓ Premium, max 100k IOPs per share w/ 5GBps per share
- ✓ Azure backup integration

Azure NetApp Files

- Limited DC availability (check [Products available by regions](#))
- Native Active Directory support and NTFS ACLs
- Requires Minimum capacity pool 4TiB, min volume size 100GiB
- High, 320k+ IOPs w/ 4GBps per Volume

Use case	General purpose	Ultra performance or migration from NetApp on-premises	Cross-platform
Platform service	Yes, Azure-native solution	Yes, Azure-native solution	No, self-managed
Regional availability	All regions	Select regions	All regions
Redundancy	Locally redundant/zone-redundant/geo-redundant	Locally redundant	Locally redundant/zone-redundant/geo-redundant
Tiers and performance	Standard Premium Up to max 100k IOPS per share with 5 GBps per share at about 3 ms latency	Standard Premium Ultra Up to 320k (16K) IOPS with 4.5 GBps per volume at about 1 ms latency	Standard HDD: up to 500 IOPS per-disk limits Standard SSD: up to 4k IOPS per-disk limits Premium SSD: up to 20k IOPS per-disk limits We recommend Premium disks for Storage Spaces Direct
Capacity	100 TiB per share	100 TiB per volume, up to 12.5 PiB per subscription	Maximum 32 TiB per disk
Required infrastructure	Minimum share size 1 GiB	Minimum capacity pool 4 TiB, min volume size 100 GiB	Two VMs on Azure IaaS (+ Cloud Witness) or at least three VMs without and costs for disks

Host Pool Load Balancing

Breadth First

- Best suited for organizations that want to provide the best experience for users
- Queries sessions host that allow new connections.
Selects host with least number of sessions
- When tie, selects the first session host in the query

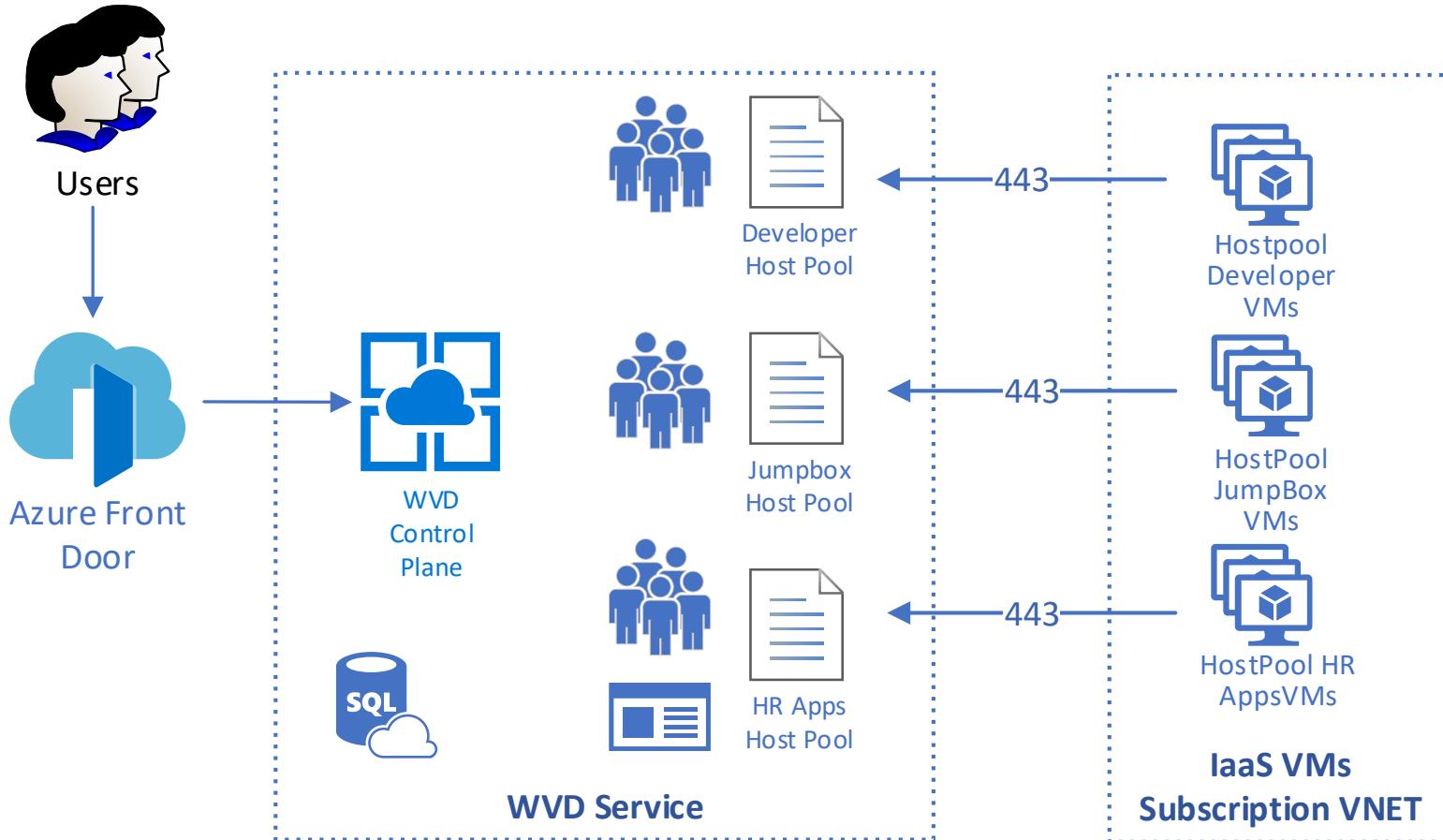
Depth First

- Best suited for cost-conscious organizations that want more granular control on the number of sessions hosts
- Queries session hosts that allow new connections and haven't gone over the maximum session limit
- Session host with highest number of sessions is selected
- When tie, selects the first session host in the query

Host Pool Design Principles

- Create Host Pools based on similarities in user type or applications
 - Group Users types
 - Group Application or Department types
 - Group locations
 - Security Boundaries
 - Performance Characteristics

Host Pool Design Principles



Pricing & Sizing Recommendations

Pricing Considerations

- Customer EA Discount
- Region
- Total user count
- Multi Session Users v 1:1 VDI users
- Peak concurrency
- Work hours per day
- Work hours per week
- Virtual Machine Specification
- Reserved Instances v Automation
- Profile storage requirements
- Network Egress
- *Customer Image (VMs)*



Windows Virtual Desktop Host Sizing Recommendations

Multi-Session Recommendations

The following table lists the maximum suggested number of users per virtual central processing unit (vCPU) and the minimum VM configuration for each workload. These recommendations are based on [Remote Desktop workloads](#)

Workload type	Maximum users per vCPU	vCPU/RAM/OS storage minimum	Example Azure instances	Profile container storage minimum
Light	6	2 vCPUs, 8 GB RAM, 16 GB storage	D2s_v3, F2s_v2	30 GB
Medium	4	4 vCPUs, 16 GB RAM, 32 GB storage	D4s_v3, F4s_v2	30 GB
Heavy	2	4 vCPUs, 16 GB RAM, 32 GB storage	D4s_v3, F4s_v2	30 GB
Power	1	6 vCPUs, 56 GB RAM, 340 GB storage	D4s_v3, F4s_v2, NV6	30 GB

Single Session / Personal Desktop Recommendations

Sizing largely dependent on the workload, apps deployed, and user type. We recommend at least two physical CPU cores per VM (typically four vCPUs with hyperthreading). If you need more specific VM sizing recommendations for single-session scenarios, check with your software vendors specific to your workload. VM sizing for single-session VMs will likely align with physical device guidelines. Other tools like Lakeside and Liquidware can be utilized to get granular level sizing recommendations.

Default Values (Microsoft Guidance) for WVD Cost Estimation

User Type Profiles	Light	Medium	Heavy	Heavy Graphics
Description	Ideal for lightweight use cases with such as data entry and call center apps.	Ideal for basic Microsoft Office apps such as Word and Excel, as well as database apps.	Ideal for more intensive workloads such as development or engineering.	Ideal for graphics intensive apps such as 3D CAD and Adobe Photoshop.
VM Instance (Default) Multi-session	D8s v3	D8s v3	D8s v3	NV6
VM Instance (Default) Single-session	D2s v3	D2s v3	D2s v3	NV6
# users/vCPU (only valid for multi-session) (Default)	6	4	3	1
OS Disk size (GB) required (Default)	127	127	127	127
# OS Disk per VM (Default)	1	1	1	1
OS Disk Tier (Default)	Premium	Premium	Premium	Premium
Profile Data Disk size (GB) required (Default)	2,000	2,000	2,000	2,000
Storage GB/user (Default)	20	20	20	20
Storage Option (Default)	Azure NetApp Files	Azure NetApp Files	Azure NetApp Files	Azure NetApp Files
Storage Tier (Default)	Standard	Standard	Standard	Standard
Profile Data Disk Tier (Default)	Premium	Premium	Premium	Premium
Network egress (Default kbps per user)	75	150	500	1,000

Azure Pricing Examples for 100 Users

Scenario examples for a 100-user deployment with multi-session in East US region:

<https://azure.microsoft.com/en-in/pricing/details/virtual-desktop/>

SCENARIO	DESCRIPTION	ESTIMATED SESSION HOST VM COST	ESTIMATED STORAGE COST ³
Light	Ideal for lightweight use cases with such as data entry and call center apps.	3x D8s v3 (8 vCPUs each): \$0.4422 per hour total ^{1,2}	3x E20 Standard SSDs (512 GB each) + 2x DS1 v2: \$144.7066 per month total ⁴
Medium	Ideal for basic Microsoft Office apps such as Word and Excel, as well as database apps.	4x D8s v3 (8 vCPUs each): \$0.5895 per hour total ^{1,2}	3x E20 Standard SSDs (512 GB each) + 2x DS1 v2: \$144.7066 per month total ⁴
Heavy	Ideal for more intensive workloads such as development or engineering.	7x D8s v3 (8 vCPUs each): \$1.0316 per hour total ^{1,2}	3x E20 Standard SSDs (512 GB each) + 2x DS1 v2: \$144.7066 per month total ⁴
Heavy Graphics	Ideal for graphics intensive apps such as 3D CAD and Adobe Photoshop.	7x NV6 (6 vCPUs each): \$3.5397 per hour total ^{1,2}	3x E20 Standard SSDs (512 GB each) + 2x DS1 v2: \$144.7066 per month total ⁴

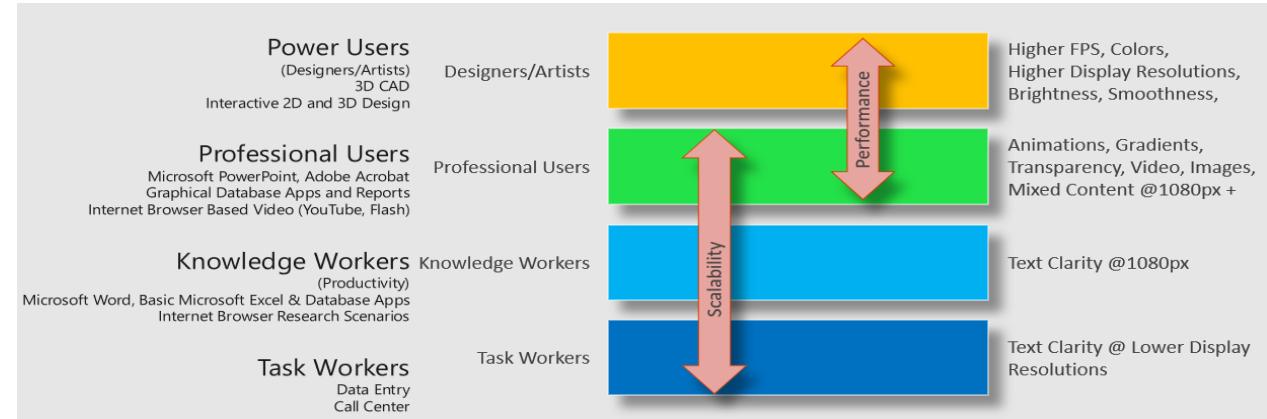
Scenario example for 1 user with a personal desktop:

SCENARIO	DESCRIPTION	ESTIMATED SESSION HOST VM COST	ESTIMATED STORAGE COST ³
Personal desktop (1 user per VM)	Ideal for a persistent experience for each user.	D2s v3 (2 vCPUs each): \$0.0369 per hour per VM ²	2x E10 Standard SSDs (128 GB each) per VM: \$19.20 per month per VM ⁵

Planning and Design

Sizing Guidelines

- Option 1 – Sizing Chart



Task Worker	Knowledge Worker	Professional Worker	Power Worker
Data Entry, Call Centre	Word, Excel, database apps, internet browser	PowerPoint, Acrobat, Internet based video	3D CAD
6 users per vCPU 250 MB Memory per user	4 users per vCPU 450 MB Memory per user	3 users per vCPU 650 MB Memory per user	1 user per vCPU 1.5 GB Memory per user, GPU requirement

20 GB user storage per user for profiles

Planning and Design

Sizing Guidelines

Example -

- *100 users of each WVD persona.*
- *Max 50 users per server*
- *Always use at least 2 session hosts*
- *At a minimum, you would need these VM requirements for a Host Pool →*

WVD User Persona	Min vCPU per server	Min Memory (GB) per server	Min SMB Storage endpoint (TB) per server	Notes
Task Worker	8 (~6 users per vCPU)	16 (~250 MB per user)	2 (~ 20GB per user)	Ideally, let's assume each server will have a max of 50 user at any given time. Although, if one of the session hosts goes down (maintenance Etc.), there should be enough capacity on the other server to accommodate additional users. <i>Apply a relative model when planning for more than 2 session hosts in your hostpool (scale-out)</i>
Knowledge Worker	24 (~4 users per vCPU)	64 (~450 MB per user)	2 (~ 20GB per user)	
Professional Users	32 (~3 users per vCPU)	64 (~650 MB per user)	2 (~ 20GB per user)	
Power Users [GPU enabled VMs]	100 (~1 user per vCPU)	1600 (~1.6 GB per user)	2 (~ 20GB per user)	

Min RAM is rounded off to the next highest

EXAMPLE - Pricing table

Service type	Custom name	Region	Description	Estimated Cost
Windows Virtual Desktop	Pooled	Southeast Asia	Pooled, 100 Users, 0.9 Peak concurrency, 0.05 Off peak concurrency, 220 Usage hours/month, multi-session, light workload, D8s v3 (8 vCPU(s), 32 GB RAM), P10 (128 GiB, 500 IOPS) Disks	\$514.42
Virtual Machines	Domain Controller	Southeast Asia	1 D4s v3 (4 vCPU(s), 16 GB RAM) x 730 Hours; Windows – (OS Only); Pay as you go; 1 managed OS disks – P10	\$336.53
Storage Accounts	Domain Controller Disk	Southeast Asia	Managed Disks, Premium SSD, P10 Disk Type 1 Disks, Pay as you go	\$19.71
Virtual Machines	File Server	Southeast Asia	1 D4s v3 (4 vCPU(s), 16 GB RAM) x 730 Hours; Windows – (OS Only); Pay as you go; 1 managed OS disks – P10	\$336.53
Storage Accounts	File Server Disk	Southeast Asia	Managed Disks, Premium SSD, P20 Disk Type 1 Disks, Pay as you go	\$73.22
Virtual Machines (optional)	AV Server	Southeast Asia	1 F4s v2 (4 vCPU(s), 8 GB RAM) x 730 Hours; Windows – (OS Only); Pay as you go; 1 managed OS disks – P10	\$277.40
Virtual Machines	Master Image	Southeast Asia	1 D2s v3 (2 vCPU(s), 8 GB RAM) x 24 Hours; Windows – (OS Only); Pay as you go; 1 managed OS disks – P10	\$24.92
Storage Accounts	Master Image Snapshot	Southeast Asia	Managed Disks, Premium SSD, P10 Disk Type 1 Disks, Pay as you go	\$19.71
App Service	Management Tool	Southeast Asia	Standard Tier; 1 S1 (1 Core(s), 1.75 GB RAM, 50 GB Storage) x 730 Hours; Windows OS	\$73.00
VPN Gateway		Southeast Asia	VPN Gateways, VpnGw1 tier, 730 gateway hour(s), 10 S2S tunnels, 128 P2S tunnels, 01 GB, VPN VPN gateway type	\$138.79
Bandwidth		Southeast Asia	Zone 2: Asia Pacific, Japan, Australia, 1 TB	\$122.28
Support	Standard support	Southeast Asia	Standard support is for small- or mid-size companies with minimal business-critical dependence on Azure.	\$100

Planning and Design

Sizing Guidelines

- **Option 2 – Use the VM SKU & storage recommendations by Azure Migrate**

Machine	Recommended size	Operating system	Cores	Memory(MB)	Storage(GB)	Standard disks	Premium disks	Network adapters	IP address	MAC address	Network in(MBPS)	Network out(MBPS)
winServer2016-01	Standard_F2s	Microsoft Windows server 2016 R2 Datacenter (64-bit)	2	8192	127	0	1	1	[10.1.10.65]; [00:50:56:9e:05:10]	0.44	0.01	
winServer2016-02	Standard_D1_v2	Microsoft Windows server 2016 R2 Datacenter (64-bit)	2	8192	127	Not applicable	Not applicable	1	[10.1.10.68]; [00:50:56:9e:30:24]	0	0	

Networking

- The recommendation is to design your Azure Networking using a Hub-Spoke topology.
- HUB deployed with your Virtual network Gateways and other security/edge appliances like firewalls.
- The spoke will act as the backend zone where your session hosts servers are deployed to and is peered with the hub.

WVD Assessment & Management



Lakeside[®]

Measuring Success with SysTrack



Diagnostics

Trending User
Experience

Root Cause
Analysis

Assessing an Environment

Core Applications & Data

Important Workspace Features

Technology & Business Alignment

Continuous assessment



Groups of Users



Common
Characteristics



Requirements &
Needs



Devices



Workstyle



Comparative
Analytics

Management UI

The Management UI interacts directly with Windows Virtual Desktop

It does **not** support B2B Scenarios

Each Azure Active Directory (AAD) tenant's subscription will need its own separate deployment of the management tool.

This management tool is a **sample**. Microsoft will provide important security and quality updates. The [source code is available in GitHub](#). Customers and partners are encouraged to customize the tool to fit their business needs.

The following browsers are compatible with the management tool:

- Google Chrome 68 or later
- Microsoft Edge 40.15063 or later
- Mozilla Firefox 52.0 or later
- Safari 10 or later (macOS only)

Management UI – Pre-requisites

Before deploying the management tool, you'll need an Azure Active Directory (Azure AD) user to create an app registration and deploy the management UI. This user must:

- ✓ Have Azure Multi-Factor Authentication (MFA) disabled
- ✓ Have permission to create resources in your Azure subscription
- ✓ Have permission to create an Azure AD application.

After you deploy and configure the management tool, we recommend you ask a user to launch the management UI to make sure everything works.

The user who launches the management UI must have a role assignment that lets them view or edit the Windows Virtual Desktop tenant.

Management UI - Deployment

Log in with your AZADMIN account to get to your subscription associated with your Azure AD Tenant.

You will deploy the template to your Azure AD Subscription tenant.

Important!

The account password of the account you use to deploy cannot contain a “\$” in it. This is because the deployment template has a bug in it where if you have a \$ in the password it will treat it like a variable and the deployment will repeatedly fail. (This was a lesson learned in previous boot camps).

Management UI - Deployment

1. Navigate to

<https://github.com/Azure/RDS-Templates/tree/master/wvd-templates/wvd-management-ux/deploy>

The screenshot shows a GitHub repository page for 'Azure / RDS-Templates'. The repository has 34 watchers, 97 stars, and 157 forks. The 'Code' tab is selected, showing 70 issues, 3 pull requests, 0 projects, and security insights. The branch is set to 'master'. The 'deploy' directory is selected in the breadcrumb navigation. A commit by ChristianMontoya titled 'Updating output' is shown, along with several other commits from the same author dated 25 days ago, all related to updating template files and fixing bugs. Below the commit list, there is a section titled 'Create MSFT-WVD-SAAS-UX Environment' with instructions to deploy the web app to Azure and a 'Deploy to Azure' button.

Azure / RDS-Templates

Watch 34 | Star 97 | Fork 157

Code Issues 70 Pull requests 3 Projects 0 Security Insights

Branch: master RDS-Templates / wvd-templates / wvd-management-ux / deploy / Create new file Find file History

ChristianMontoya Updating output ✓ Latest commit d3e4daa 25 days ago

..

scripts Updating output 25 days ago

README.md Added the converged template functionality files and fixed the "Bug 2..." 2 months ago

mainTemplate.json Added the converged template functionality files and fixed the "Bug 2..." 2 months ago

msft-wvd-saas-api.zip Added the converged template functionality files and fixed the "Bug 2..." 2 months ago

msft-wvd-saas-web.zip Added the converged template functionality files and fixed the "Bug 2..." 2 months ago

README.md

Create MSFT-WVD-SAAS-UX Environment

Deploy the web app to your azure environment.

Click the button below to deploy:

Deploy to Azure

Management UI - Deployment

2. Select Deploy to Azure
3. Select your existing Resource Group or create a new one
4. Leave Is Service Principal to **false**
5. For the Azure Admin account /password, use the azadmin account you have been using in this environment
6. For the Application name, select a unique name. This name will be used in the URL so don't go too crazy
7. Agree to the T's and C's and click "Purchase"

TEMPLATE

Customized template
5 resources

[Edit template](#) [Edit param...](#) [Learn more](#)

BASICS

Subscription * Visual Studio Enterprise

Resource group * (New) WVD-Management-UI [Create new](#)

Location * (Europe) North Europe

SETTINGS

Is Service Principal false

Azure Admin User Principal Name Or Application Id * azadmin@thefamousericmoe.onmicrosoft.com

Azure Admin Password * ⋮

Application Name * ermoe-wvd-ui3

_artifacts Location https://raw.githubusercontent.com/Azure/RDS-Templates/master/wvd-template

_artifacts Location Sas Token ⋮

TERMS AND CONDITIONS

[Azure Marketplace Terms](#) | [Azure Marketplace](#)

By clicking "Purchase," I (a) agree to the applicable legal terms associated with the offering; (b) authorize Microsoft to charge or bill my current payment method for the fees associated the offering(s), including applicable taxes, with the same billing frequency as my Azure subscription, until I discontinue use of the offering(s); and (c) agree that, if the deployment involves 3rd party offerings, Microsoft may share my contact information and other details of such deployment with the publisher of that offering.

I agree to the terms and conditions stated above

The Deployment Completes

 Delete  Cancel  Redeploy  Refresh

 Your deployment is complete

 Deployment name: Microsoft.Template
Subscription: [Visual Studio Enterprise](#)
Resource group: [WVD-Management-UI](#)

Start time: 1/13/2020, 9:51:35 AM
Correlation ID: e7780fdf-630b-4a2b-bf05-6ae55e1c93c6

⌄ Deployment details [\(Download\)](#)

⌖ Next steps

[Go to resource](#)

Verify User Settings

1. Navigate into Azure Active Directory
2. Select **Users** and then **User Settings**
3. Select 'Manage how end users launch and view their applications'

The screenshot shows the 'Users - User settings' page in the Azure Active Directory portal. The navigation bar at the top shows 'Home > The Famous Eric Moe > Users - User settings'. The main title is 'Users - User settings' with the subtitle 'The Famous Eric Moe - Azure Active Directory'. On the left, there is a sidebar with the following options: 'All users', 'Deleted users', 'Password reset', 'User settings' (which is highlighted), 'Diagnose and solve problems', and 'Activity' (which includes 'Sign-ins'). On the right, there are two sections: 'Enterprise applications' (with a sub-section 'Manage how end users launch and view their applications' highlighted with a blue dashed box) and 'App registrations' (with a sub-section 'Users can register applications' and a toggle switch set to 'Yes'). At the top right of the main content area are 'Save' and 'Discard' buttons.

4. Verify users can consent to apps accessing company data on their behalf is set to Yes

Home > The Famous Eric Moe > Users - User settings > Enterprise applications - User settings

Enterprise applications - User settings

The Famous Eric Moe - Azure Active Directory

Overview

Save Discard

Enterprise applications

Users can consent to apps accessing company data on their behalf ⓘ Yes No

Users can add gallery apps to their Access Panel ⓘ Yes No

Admin consent requests (Preview)

Users can request admin consent to apps they are unable to consent to ⓘ Yes No

Select users to review admin consent requests ⓘ

*Select admin consent request reviewers >
Configure required settings

Selected users will receive email notifications for requests ⓘ Yes No

Selected users will receive request expiration reminders ⓘ Yes No

Consent request expires after (days) ⓘ 30

Office 365 Settings

Users can only see Office 365 apps in the Office 365 portal ⓘ Yes No

All applications

Application proxy

User settings

Conditional Access

Sign-ins

Usage & insights (Preview)

Audit logs

Provisioning logs (Preview)

Access reviews

Admin consent requests (Preview)

Troubleshooting + Support

Virtual assistant (Preview)

New support request

Enterprise applications

Users can consent to apps accessing company data on their behalf ⓘ

Yes

No

Access Web UI

1. Navigate back into the Resource Group that contains the Management UI resources
2. Look for the App Service that matches the name of the UI you chose and select it

Subscription (change) : Visual Studio Enterprise Deployments : 1 Succeeded

Subscription ID : 34be8fb2-7dd2-41c4-b4e8-2fca626ff4e7

Tags (change) : Click here to add tags

Filter by name... Type == all Location == all Add filter

Showing 1 to 3 of 3 records. Show hidden types ⓘ No group

<input type="checkbox"/> Name ↑↓	Type ↑↓	Location ↑↓
<input type="checkbox"/>  ermoe-wvd-ui3	App Service	North Europe

Management UI URL

Find the URL associated with your management UI and open it.

Authenticate as one of your users (or azadmin) and then select to Grant Consent.

The screenshot shows the Azure portal interface for managing an app service. At the top, there's a toolbar with icons for Browse, Stop, Swap, Restart, Delete, Get publish profile, and Reset publish profile. Below the toolbar, the app service details are listed:

Setting	Value
Resource group (change)	WVD-Management-UI
Status	: Running
Location	: North Europe
Subscription (change)	Visual Studio Enterprise
Subscription ID	: 34be8fb2-7dd2-41c4-b4e8-2fca626ff4e7
Tags (change)	: Click here to add tags
URL	: https://ermoe-wvd-ui3.azurewebsites.net
App Service Plan	: ermoe-wvd-ui3-SPlan (S1: 1)
FTP/deployment userna...	: No FTP/deployment user set
FTP hostname	: ftp://waws-prod-db3-145.ftp.azurewebsites.windows.net
FTPS hostname	: ftps://waws-prod-db3-145.ftp.azurewebsites.windows.net



azadmin@thefamousericmoe.onmicrosoft.com

Permissions requested

wvdSaaSwvd-management-
ui34be8fb27dd241c4b4e

[App info](#)

This application is not published by Microsoft.

This app would like to:

- ✓ Access Azure Service Management as organization users (preview)
- ✓ Access Windows Virtual Desktop (Windows Virtual Desktop)
- ✓ Sign in and read user profile
- Consent on behalf of your organization

If you accept, this app will get access to the specified resources for all users in your organization. No one else will be prompted to review these permissions.

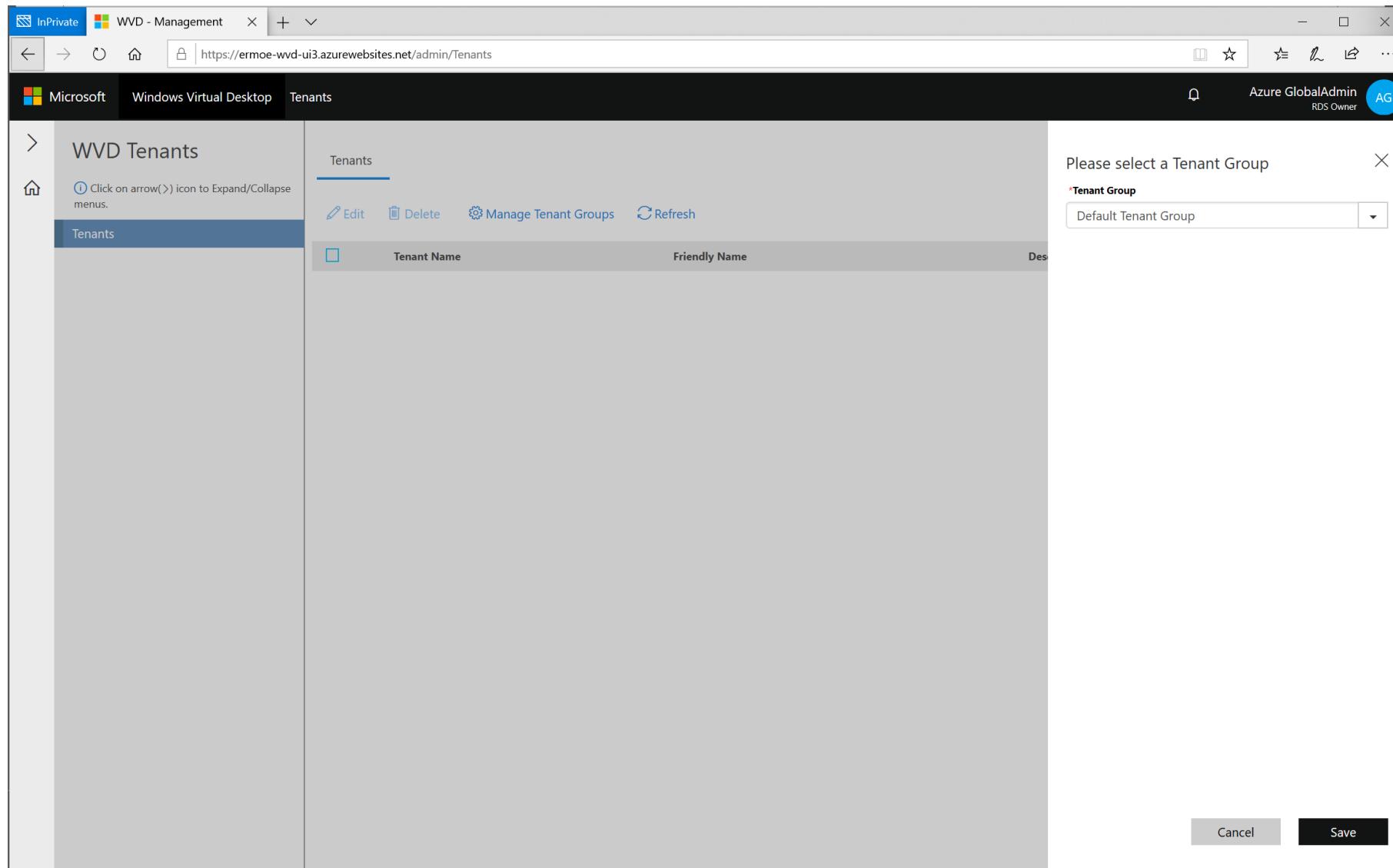
If you accept, Windows Virtual Desktop will also have access to your user profile information.

Accepting these permissions means that you allow this app to use your data as specified in their terms of service and privacy statement. You can change these permissions at <https://myapps.microsoft.com>. [Show details](#)

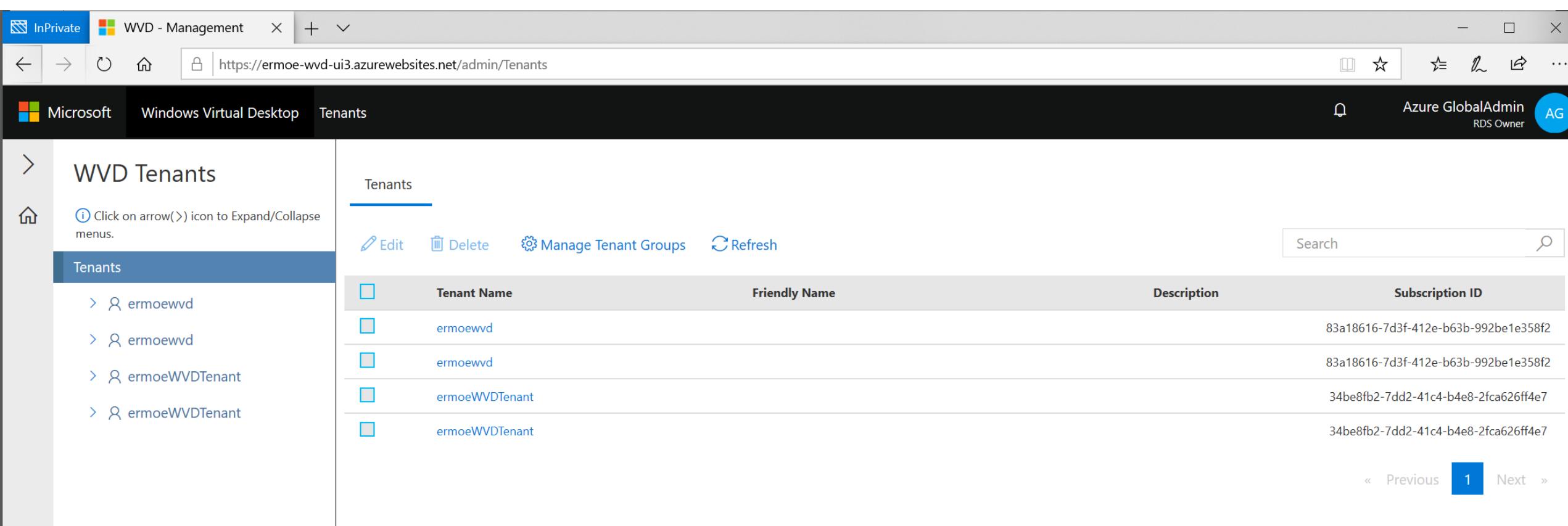
Cancel

Accept

Select your tenant group and click Save



Verify you can see your tenant listed



The screenshot shows a Microsoft Edge browser window titled "WVD - Management". The URL is https://ermoe-wvd-ui3.azurewebsites.net/admin/Tenants. The page displays a list of tenants under the "Tenants" tab. The left sidebar shows "WVD Tenants" with a note to expand/collapse menus. The main area has buttons for Edit, Delete, Manage Tenant Groups, Refresh, and Search. The tenant list table has columns: Tenant Name, Friendly Name, Description, and Subscription ID. There are five entries, all named "ermoewvd" or "ermoeWVDTenant" with different friendly names and subscription IDs.

	Tenant Name	Friendly Name	Description	Subscription ID
<input type="checkbox"/>	ermoewvd			83a18616-7d3f-412e-b63b-992be1e358f2
<input type="checkbox"/>	ermoewvd			83a18616-7d3f-412e-b63b-992be1e358f2
<input type="checkbox"/>	ermoeWVDTenant			34be8fb2-7dd2-41c4-b4e8-2fcfa626ff4e7
<input type="checkbox"/>	ermoeWVDTenant			34be8fb2-7dd2-41c4-b4e8-2fcfa626ff4e7

Note: In the screenshot above you can see how many tenants I have spun up over time.

InPrivate WVD - Management X +

← → ⌂ ⌂ https://ermoe-wvd-ui3.azurewebsites.net/admin/hostpoolDashboard/Win10-HostPool

Microsoft Windows Virtual Desktop Tenants > ermoewVTenant > Win10-HostPool

> **WVD Tenants**

Home Click on arrow(>) icon to Expand/Collapse menus.

Tenants

- > ermoewvd
- > ermoewvd
- < ermoewVTenant
 - Win10-HostPool
 - > ermoewVTenant

Host pool "Win10-HostPool"

General	Hosts	App Groups
Type	Load Balancer Type	
Non-Persistence	BreadthFirst	
Host pool Unique Name	Maximum Session Limit	
Win10-HostPool	999999	
Host pool Friendly Name	Description	
Win10-HostPool	Created through ARM template	
Custom RDP Property	Validation Env	
NA	No	

InPrivate WVD - Management X +

← → ⌂ ⌂ https://ermoe-wvd-ui3.azurewebsites.net/admin/hostpoolDashboard/Win10-HostPool

Microsoft Windows Virtual Desktop Tenants > ermoeWVDTenant > Win10-HostPool Azure GlobalAdmin RDS Owner AG

WVD Tenants

Click on arrow(>) icon to Expand/Collapse menus.

Tenants

- > ermoevwd
- > ermoevwd
- < ermoeWVDTenant
 - Win10-HostPool
- > ermoeWVDTenant

Host pool "Win10-HostPool"

General Hosts App Groups

+ Add Host Edit Delete Restart Drain Mode Refresh Search

	Host Name	Allow New Sessions	Agent Version	Last Heart Beat	Last Updated Time
<input type="checkbox"/>	Win10WVD-0.thefamousericmoe.com	Yes	1.0.1632.1200	2020-01-10T17:28:06.2891644	2019-12-30T17:36:41.23816
<input type="checkbox"/>	Win10WVD-1.thefamousericmoe.com	Yes	1.0.1632.1200	2020-01-10T17:28:09.7397411	2019-12-30T17:41:52.7595476

« Previous 1 Next »

InPrivate WVD - Management +

https://ermoe-wvd-ui3.azurewebsites.net/admin/hostpoolDashboard/Win10-HostPool

Microsoft Windows Virtual Desktop Tenants > ermoeWVDTenant > Win10-HostPool Azure GlobalAdmin RDS Owner AG

WVD Tenants

Click on arrow(>) icon to Expand/Collapse menus.

Tenants

- > ermoewvd
- > ermoewvd
- < ermoeWVDTenant

Win10-HostPool

Host pool "Win10-HostPool"

General Hosts App Groups

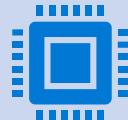
+ Create App Group Edit App Group Delete App Group Refresh

Search

App Group Name	Friendly Name	Type	Description
Desktop Application Group (Desktop Application Group)	Desktop Application Group	Desktop App Group	The default desktop application group for the session host pool

« Previous 1 Next »

Monitoring Solutions



Monitoring solutions in Azure Monitor are **packaged sets of logic** that provide insights for a particular application or service.



One such solution is in the Azure Marketplace – **Azure Monitor for RDS and Windows Virtual Desktop**



Azure Monitor

Application

Operating System

Azure Resources

Azure Subscription

Azure Tenant

Custom Sources



Insights



Application



Container



VM



Monitoring
Solutions

Visualize



Dashboards



Views



Power BI



Workbooks

Analyze



Metric Analytics



Log Analytics

Respond



Alerts



Autoscale

Integrate



Logic Apps



Export APIs

Log Analytics Solution

Microsoft Azure (Preview) Report a bug

Home > InfrastructureInsights(ericanalytics-tibwkclafkfuw)

InfrastructureInsights(ericanalytics-tibwkclafkfuw)

Search (Ctrl+ /) Delete

Overview

Activity log

Access control (IAM)

Diagnose and solve problems

Settings

Locks

Export template

General

Workbooks

Log Analytics Workspace

Properties

Saved searches

Workspace Data Sources

Virtual machines

Storage accounts logs

Azure Activity log

Support + troubleshooting

Resource health

New support request

Essentials

Resource group
vwd-monitoring

Status
Active

Location
East US

Subscription name (change)
ermoe Visual Studio Enterprise

Subscription ID
83a18616-7d3f-412e-b63b-992be1e358f2

Solution
InfrastructureInsights(ericanalytics-tibwkclafkfuw)

Type
Microsoft.OperationsManagement/solutions

Workspace Name
ericanalytics-tibwkclafkfuw

Management services
Operations logs

Summary

Infrastructure Insights

Solution Resources

1

InfrastructureInsights(ericanalytics-tibwkclafkfuw)

[View Summary](#) | [Open Logs](#)



Marketplace

[My Saved List](#)[Recently created](#)[Service Providers](#)

Categories

[Get Started](#)[AI + Machine Learning](#)[Analytics](#)[Blockchain](#)[Compute](#)[Containers](#)[Databases](#)

Private

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Operating System

Azure Monitor for Citrix E

Azure Monitor for RDS and Windows Virtual Desktop

Azure Monitor for RDS and Windows Virtual Desktop



Azure Managed Services

Aumatics

Managed Services for your Azure Tenant



VIACode Managed Services for Azure

VIACode

Extend your IT team with VIACode Managed Services for Azure to improve your IT processes



Data#3

Data#3 Azure Managed Services

Data#3 Limited

Data#3 Azure Managed Services





Microsoft Azure (Preview)

[Report a bug](#) Search resources, services, and docs (G+/)[Home](#) > [Marketplace](#) > Azure Monitor for RDS and Windows Virtual Desktop

Azure Monitor for RDS and Windows Virtual Desktop

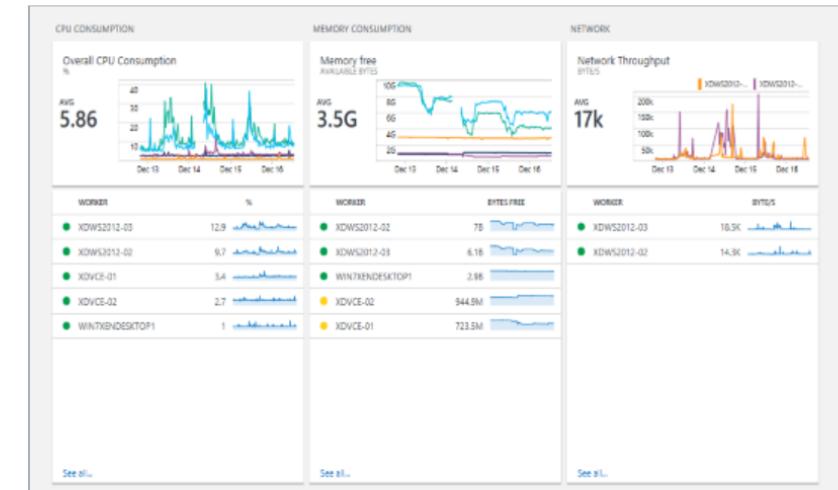
sepago GmbH



Azure Monitor for RDS and Windows Virtual Desktop

[Save for later](#)[Preferred solution](#)[Create](#)[Overview](#)[Plans](#)

Use the power of Azure Monitor and Log Analytics with this [agent](#) for your Windows Workers – servers and desktops. You don't need an SQL server for monitoring data nor additional infrastructure. Collected data are analyzed and shown in your Azure Monitor workspace.



Empty Log Analytics Workspace

Home > Monitoring-RG > [WVD-Monitor-Workspace-5mvomeq3y42vy](#) > Overview

Overview

wvd-monitor-workspace-5mvomeq3y42vy

Refresh + Add Logs

Last 24 hours

Filter by name...

RDS Processes 

0 TOTAL

RDS Sessions 

0 ACTIVE

RDS Site and Applications 

- Unique Users

RDS Workers 

Performing Assessment

There are no data at this time. Make sure that you have installed the agents (<http://loganalytics.sepago.com>).

Keep in mind that after the first time data arrived to Log Analytics it takes some time (up to hours) to build the data

Obtain Workspace ID and SharedKey

1. In your Log Analytics Workspace, navigate to *Advanced Settings*
2. Copy the **Workspace ID** to Notepad
3. Copy the SharedKey (**Primary Key**) to Notepad

The screenshot shows two views of the Azure Log Analytics workspace settings interface. A large blue arrow points from the left view to the right view.

Left View (Overview Tab):

- Header: Home > Monitoring-RG > WVD-Monitor-Workspace-5mvomeq3y42vy
- Workspace Name: WVD-Monitor-Workspace-5mvomeq3y42vy (Log Analytics workspace)
- Search Bar: Search (Ctrl+ /)
- Delete Button
- Essentials** (highlighted with a dashed blue box)
- Resource group: monitoring-rg
- Status: Active
- Location: East US
- Subscription name: ermo Visual Studio En
- Subscription ID: 83a18616-7d3f-412e-b
- Get started: Log Analytics coll give you insights
- General Tab (highlighted with a yellow box)

Right View (Advanced settings Tab):

- Header: Advanced settings (wvd-monitor-workspace-5mvomeq3y42vy)
- Refresh, Logs Buttons
- Connected Sources** >
- Windows Servers** >
- Data** >
- Linux Servers** >
- Computer Groups** >
- Azure Storage** >
- System Center** >
- Windows Servers** (under Windows Computers Connected)
- 0 WINDOWS COMPUTERS CONNECTED
- [Download Windows Agent \(64 bit\)](#) [Download Windows Agent \(32 bit\)](#)
- You'll need the Workspace ID and Key to install the agent.
- WORKSPACE ID** (highlighted with a yellow box): #46ed39f-0589-4879-8953-ac9820168d2
- PRIMARY KEY** (highlighted with a yellow box): QvA9UlnmbuCa2p6lDLuvWeM3l+Q+CpcZl (Regenerate)
- SECONDARY KEY** (highlighted with a yellow box): Kn/eUX1Ez91BvDxL+21IQ+FP7JeANemH7l (Regenerate)
- OMS Gateway**
If you have machines with no internet connectivity to OMS, download the OMS Gateway to act as a proxy. [Learn more](#).
- [Download OMS Gateway](#)



Deploy



Nerdio Admin Portal
Logged in as NAP Admin

HOME

ACCOUNTS

NAP USERS

NAP COMPANIES

REG REQUESTS

REPORTS

BILLING

SETTINGS

MESSAGES

EXTERNAL API

LOGS

NAP OPS



Vadim Vladimirsiky ▾

Home > Accounts > Create NFA account

ADD NFA ACCOUNT

There's a few things we need to know in order to provision a Nerdio IT environment in Azure. Follow steps below and click Save when you are ready to kick off the provisioning process. Need some tips on signing up for Office 365 or Azure? See our [KB article](#).

1. Grant access to Azure AD, Office 365 and Azure subscription

Connect

AZURE AD TENANT: admin@nerdio1013.onmicrosoft.com ✓

OFFICE 365: admin@nerdio1013.onmicrosoft.com ✓

SUBSCRIPTION:

MfS Sponsored Subscription (73431e)

REGION:

West US (GPU capable)

RESOURCE GROUP:

WVD-ResourceGroup

HYBRID USAGE BENEFIT:

No

CORES QUOTA:

A-series : 350

B-series : 350

D-series : 349

2. Provide account information

COMPANY:

WVD Customer Inc.

+ ADVANCED OPTIONS

PLAN:

Enterprise (WVD)

Requires 14 B-series cores

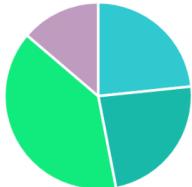
Cancel

Save

Price

\$51 per user

average across 150 user(s)
Includes Azure, AHU, Office 365, WVD & NFA Enterprise



Azure: \$1,783
Office 365: \$3,000
W10E: \$1,050
AHU: 112 cores
Nerdio: \$1,800
Total: \$7,633/month

Estimate only. All costs listed on this page are per month. Actual costs may vary depending on usage, price changes and other factors.

Back

RESOURCES

150 desktop(s)

- 140 Pooled desktop(s)
- 10 Personal desktop(s)
- 0 GPU enabled desktop(s)

On-ramp regions	No	Office 365 Enterprise licenses	150
Purchasing Windows 10 Enterprise licenses for customer	Yes	In-region backup	Yes
Desktop auto-scale	No	Out-of-region DR	No
Site-to-site VPN	Yes	Azure Hybrid Usage enabled	Yes
Hybrid AD	Yes	Reserved instances	3 years

VM	INSTANCE SIZE	OS DISK	DATA DISK
AD domain controller (three years reserved)	D2sv3 (2C/8GB/SSD)	E10 (128 GB SSD)	
File server (three years reserved)	D2sv3 (2C/8GB/SSD)	E10 (128 GB SSD)	E10 (128 GB SSD)
Hybrid AD domain controller (three years reserved)	D2sv3 (2C/8GB/SSD)	E10 (128 GB SSD)	
10 Personal Desktops (three years reserved)	DS1v2 (1C/3.5GB/SSD)	E10 (128 GB SSD)	
Pooled Desktops (1 three years reserved, 5 pay as you go)	E8sv3 (8C/64GB/SSD)	E10 (128 GB SSD)	

Manage

Nerdio Admin Portal
Account ID: 5104

Home > Users > Add user

ADD USER

FIRST NAME
John

LAST NAME
Smith

PRIMARY EMAIL ADDRESS
jsmith @ 5104.nerdio.net

We will send a text message to this number for 2FA during login and password reset.

MOBILE NUMBER
123-555-1212

ADDITIONAL EMAIL ADDRESSES
john@5104.nerdio.net

[Delete](#) [Set as primary](#)

Make username same as primary email address

USERNAME
jsmith @ 5104.nerdio.net

OFFICE 365 LICENSE
 Enterprise E3
 None

USER PERMISSIONS
 Allow user to login to NAP as Account IT Admin

Grant desktop local admin rights

DESKTOP
 Pooled
 Personal
 None

SELECT DESKTOP SIZE
D2sv3 (2C/8GB/SSD)

SELECT DISK SIZE
128 GB - Standard SSD (E10)
We recommend 128 GB - Premium SSD disks

COPY FROM: Angie Accounting

ACTIVE DIRECTORY GROUPS
Finance Department Group x Accounting Department Group x

+ Show extended attributes
+ Send welcome email

Optimize



WVD test ▾

Nerdio Admin Portal
Account ID: 5104

HOME

USERS

GROUPS

SHARED MAILBOXES

SERVERS

NETWORK

BACKUP & DR

ONBOARD

SECURITY

OPTIMIZE

REPORTS

SETTINGS

LOGS

ADD USER

FIRST NAME

John

LAST NAME

Smith

PRIMARY EMAIL ADDRESS

jsmith

@

5104.nerdio.net

MOBILE NUMBER

123-555-1212

We will send a text message to this number for 2FA during login and password reset.

USERNAME

 Make username same as primary email address

jsmith

@

5104.nerdio.net

ADDITIONAL EMAIL ADDRESSES

john@5104.nerdio.net

[Add email](#)[Delete](#) [Set as primary](#)

OFFICE 365 LICENSE

- Enterprise E3
- None

DESKTOP

- Pooled

- Personal

- None

SELECT DESKTOP SIZE

D2sv3 (2C/8GB/SSD)

SELECT DISK SIZE

128 GB - Standard SSD (E10)

We recommend 128 GB - Premium SSD disks

USER PERMISSIONS

 Allow user to login to NAP as Account IT Admin[Account IT Admin](#) Grant desktop local admin rights**COPY FROM:** Angie Accounting

ACTIVE DIRECTORY GROUPS

[Finance Department Group](#) [Accounting Department Group](#)[+ Show extended attributes](#)[+ Send welcome email](#)[Cancel](#)[Save](#)

Outcomes

Scope

These outcomes are in-scope for this session

- WVD Design
 - Identify the Customer requirements and Azure Platform gaps in order to do WVD Architecture design and sizing.
- WVD Implementation
 - Deploy the designed Azure WVD solution using Windows 10 image with Office Pro Plus from the Azure Marketplace.

Out of scope

Add-on option

Describe the add-on

- Profile Management Solution
- Custom Images
- Management and monitoring capabilities (in-depth)

Scale option

Describe the scale option

- The solution may be expanded for additional desktops

Thank you