

INGRAM MICRO

Setup a POC with

Azure Virtual Desktop

Wednesday, December 4, 2024

COURSE WILL START AT 9h15

Diego Lens
Cloud Enablement



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Diego Lens

- 24 Years working in Distribution
- Cloud Enablement
- Sales/Technical Trainings
- Microsoft Azure
- Microsoft 365
- Azure Virtual Desktop

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5

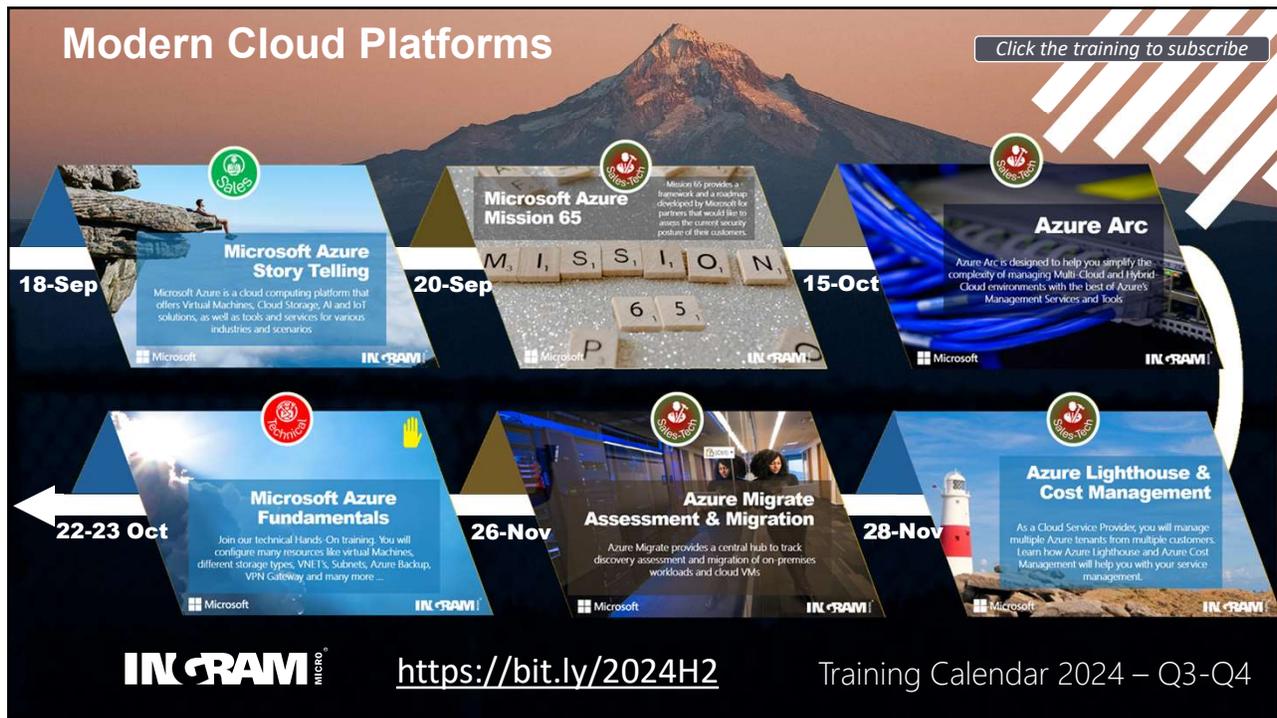
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Microsoft Azure is a cloud computing platform that offers Virtual Machines, Cloud Storage, AI and IoT solutions, as well as tools and services for various industries and scenarios.

20-Sep **Microsoft Azure Mission 65**
Mission 65 provides a framework and a roadmap developed by Microsoft for partners that would like to assess the current security posture of their customers.

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- 25-Sep** **Microsoft 365 Story Telling**
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- 27-Nov** **Microsoft Defender for Business**
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- 11-Dec** **Microsoft Defender XDR**
Microsoft Defender XDR is a set of security products and solutions that protect your organization from cyberattacks
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- 9-Oct** **Windows 365 and Azure Virtual Desktop Story Telling**
Windows 365 and Azure Virtual Desktop are bringing Desktop Virtualization to the next level
- 4-Dec** **Azure Virtual Desktop Setup a POC**
Learn how to install your first Azure Virtual Desktop installation. Discover the AVD components like a Workplace, Hostpools, Application Groups, FSLogix
- 18-Dec** **Azure Virtual Desktop Advanced Topics**
Learn how to do a production installation with Azure Virtual Desktop. Learn the concepts like Golden Images, AutoScaling, Printing and Monitoring

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2-Oct

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Microsoft Copilot is an AI assistant that boosts productivity by integrating with Microsoft apps like Word, Excel, and PowerPoint. It helps with tasks such as drafting emails, generating reports, and analyzing data, making work more efficient and less stressful.

16-Oct

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22-Nov

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Learn how to develop Low Code Applications using Power Apps with Copilot Integration.

← tba

Microsoft Fabric

Microsoft Fabric is an end-to-end data analytics platform that integrates data engineering, data warehousing, and data science to streamline data workflows and enhance business insights.

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Ingram Micro Cloud

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24-Sep
10-Dec

Quarterly Update

The Microsoft cloud landscape is changing rapidly. To make sure you don't miss any program change, incentive or product update, we are organizing a quarterly update.

24-Oct

Ingram Micro Cloud Marketplace

The Ingram Micro Cloud Marketplace is a top-of-the-line platform with lots of cool features. It's our mission to keep on improving our platform and to keep expanding the possibilities.

26-Sep

NIS2 directive: How to achieve compliance

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Are you organizing your own event for your customers ?

Searching for a speaker ?

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11



Agenda

- Remote Desktop : Historical Overview
- Remote Desktop : Challenges
- Azure Virtual Desktop
- AVD : How does it work ?
- AVD : Requirements
- AVD : Prepare your Environment
- AVD : Components
- AVD : Build your POC
- AVD : Sizing
- AVD : FSLogix Integration
- Shared Computer Activation
- AVD : Load Balancing
- AVD Value Added Solutions
- AVD Roadmap

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12

12

Remote Desktop : Historical Overview



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13

Vocabulary

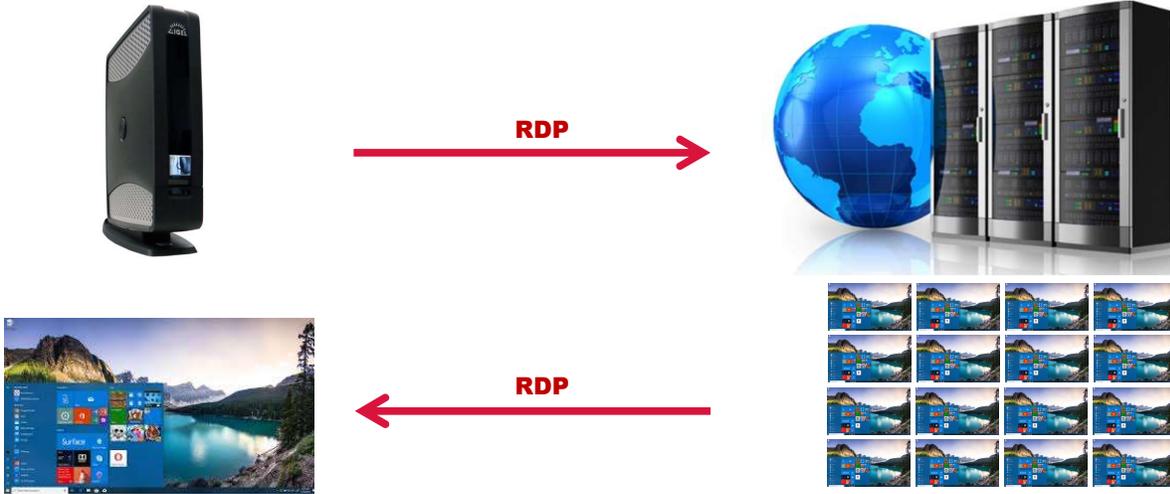
RDS	VDI	RD Web	RD Gateway
RDP	RemoteFX	RD Client	RD Broker



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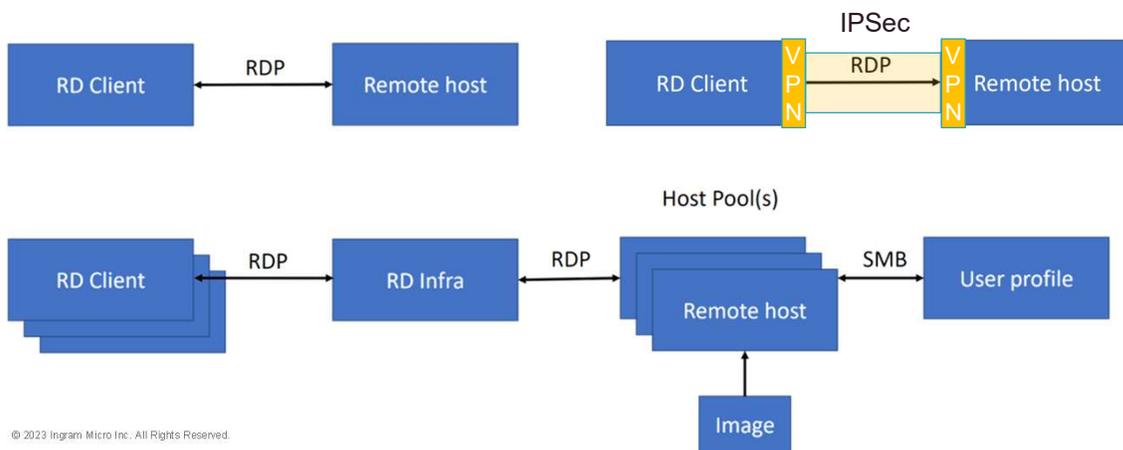
14

Remote Desktop Services



15

RDS Access Methods



16

RDS Security Issues

Almaar meer Remote Desktop Protocol-aanvallen

10 april 2020 15:09 | Frederic Petitjean

Topic Security



Het aantal aanvallen op Remote Desktop Protocol-servers lag in maart van dit jaar dertig procent hoger dan in februari. Deze stijging valt samen met een aanzienlijke toename van het aantal blootgestelde RDP-servers, zo rapporteert het Sans Institute.

De bevindingen zijn zorgwekkend omdat ze samenvallen met de enorme golf van bedrijven die werknemers vanuit huis laten werken. Om werknemers in staat te stellen te telewerken, hebben veel organisaties RDP geïmplementeerd en dat kan vertrouwelijke systemen aan het publieke internet blootstellen. Zwakke RDP-servers kunnen opgespoord worden door de zoekmachine

Shodan waarmee gebruikers op het internet naar verbonden apparaten kunnen zoeken

Remote Desktop Protocol is een door Microsoft ontwikkeld protocol dat een grafische interface biedt om via een netwerkverbinding met andere computers een verbinding te leggen. Het is voor bedrijven een goedkope en relatief eenvoudige manier om telewerken mogelijk te maken. Een gebruiker dient hiervoor RDP-clientsoftware te gebruiken, terwijl de andere computer RDP-serversoftware moet toepassen.

<https://www.computable.nl/artikel/nieuws/security/6912416/250449/almaar-meer-remote-desktop-protocol-aanvallen.html>

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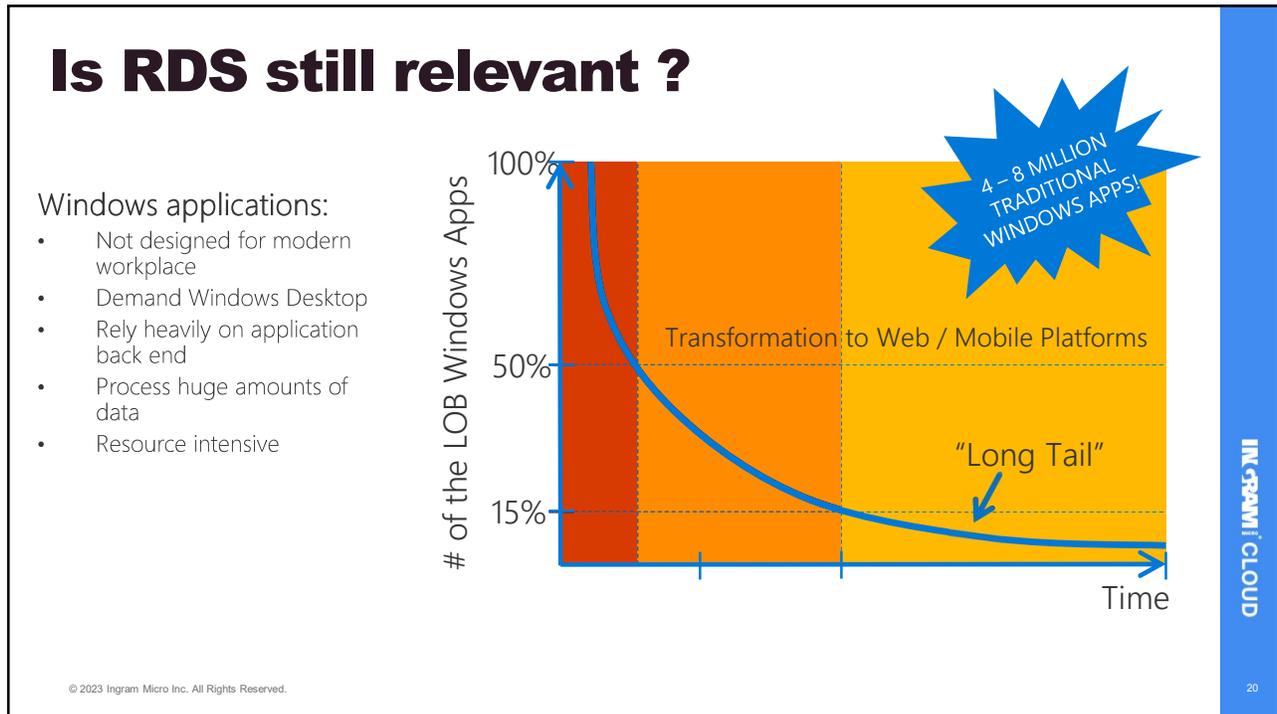
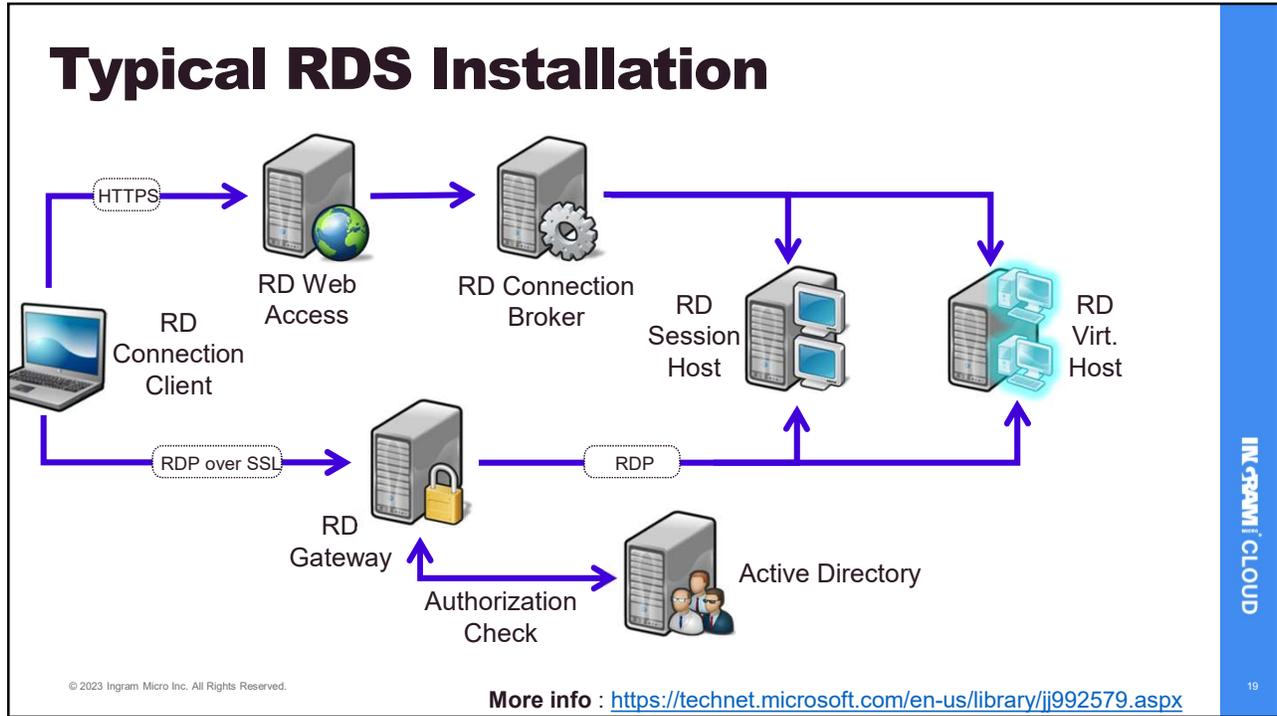
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RDS versus VDI

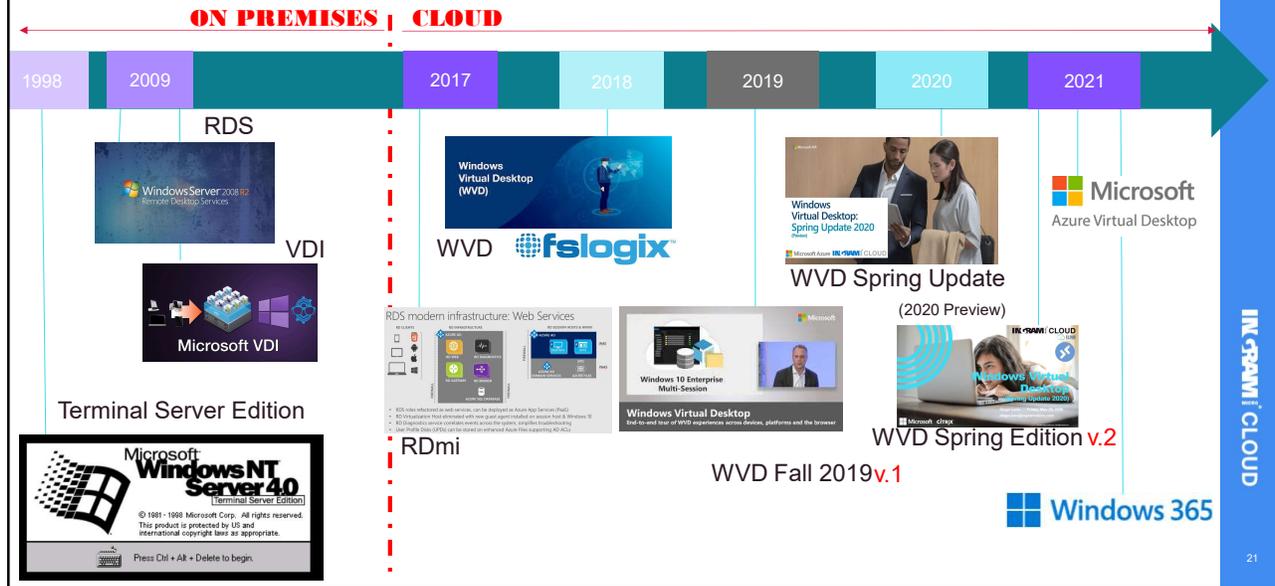
Remote Desktop Services (RDS)	Virtual Desktop Infrastructure (VDI)
Server Operating System	Desktop Operating System
Multi Session Environment	Single Session Environment
Applications installed by Admin	Personal Installed Applications

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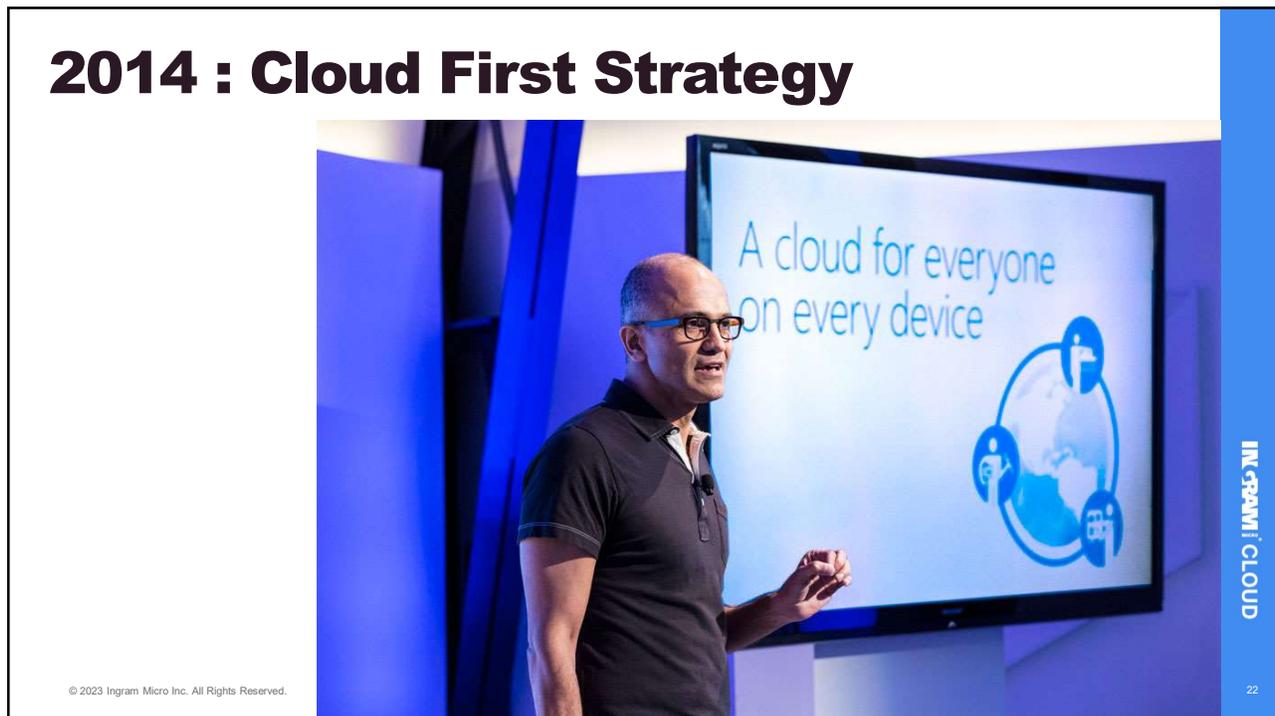
18



Historical Steps in RDS



2014 : Cloud First Strategy



RDS 2012 R2 & Azure Integration

RD CLIENTS

RD INFRASTRUCTURE

RD SESSION HOSTS

IAAS

- All roles implemented in Azure virtual machines

=> "Lift & Shift" approach

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WS 2016 : Azure Integration & RDS

RD CLIENTS

RD INFRASTRUCTURE

RD SESSION HOSTS

IAAS

PAAS

- PaaS for Azure SQL Database and AAD Domain Services

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24

24

WS 2016 Additional Improvements

RD CLIENTS

RD INFRASTRUCTURE
RD SESSION HOSTS WIN10

AZURE AD

RD WEB

RDVH

RD GATEWAY

RD BROKER

DESKTOPS

APPS

FILE SERVER

IAAS
PAAS

AZURE SQL DATABASE

AZURE AD DOMAIN SERVICES

FIREWALL

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Remote Desktop: Challenges

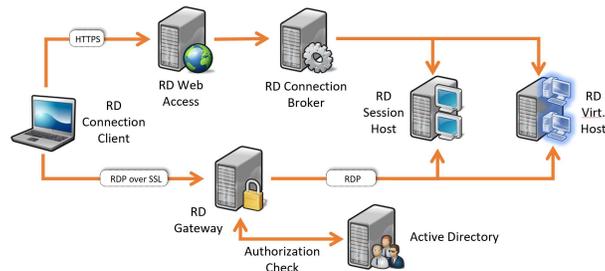
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RDS Challenges

- RD Infrastructure needs
- Licensing – RDS CALs / VDA CALs
- RD Client Availability
- User Profiles / Security
- Domain Authentication
- Domain Membership
- Multiple Azure Tenants
- Cost
- Outlook on RDS
- OneDrive Desktop App not supported on RDS
- MS Teams



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27

27

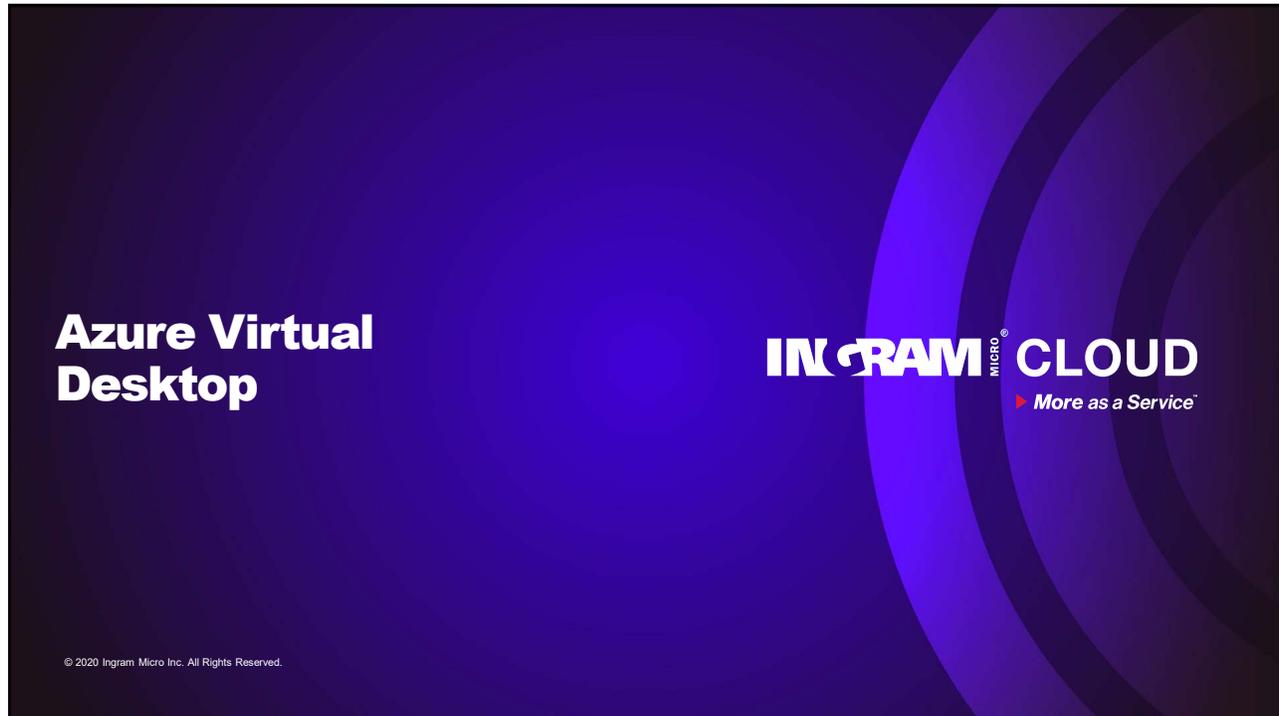
Outlook on RDS

- Cached Exchange Mode
 - OST Files are 50% - 80% larger compared to Mailbox Size
 - 50 GB Data Storage in Office365
- Online Mode
 - Direct from Server
- <https://docs.microsoft.com/en-us/exchange/outlook/cached-exchange-mode>

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28

28



29

Azure Virtual Desktop

- 2017 Started as Remote Desktop Modern Infrastructure (RDMi)
- 2018 : Announced Windows Virtual Desktop
- 2019 : Release Windows Virtual Desktop
 - Now called Windows Virtual Desktop Classic
 - Earlier called WVD 2019 Autumn Release
- 2020 : 2nd Release of Windows Virtual Desktop
 - Now called Windows Virtual Desktop
 - Earlier called WVD 2020 Spring Update
- 2021 : Rebranding as Azure Virtual Desktop
- 2022 : Additional Features

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What is Azure Virtual Desktop ?

- Azure service for VDI/RDSH management
- Enables a multi-user Windows 10 experience
- Optimized for Office 365 ProPlus
- Supports Windows 7 with free Extended Security Updates
- Virtualize full desktop and apps
- Scalable service to deploy and manage
- Integrates with Microsoft 365

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Virtualization Before

RDS



VDI



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Virtualization Today

RDS

**Windows Server
RD Session Host**

Scalable multi-session **legacy**
Windows environment

Windows Server
Office 2019 Perpetual
Multiple Sessions

AVD

**Windows Virtual Desktop
Multi-session**

Scalable multi-session **modern**
Windows user experience with
Windows 10 Enterprise security

Windows 10
Office 365 ProPlus
Multiple Session

VDI

**Windows 10
Enterprise**

Native single-session **modern**
Windows experience

Windows 10
Office 365 ProPlus
Single Session

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Best of Both Worlds

RDS

**Windows Server
RD Session Host**

Scalable multi-session **legacy**
Windows environment

Windows Server
Office 2019 Perpetual
Multiple Sessions

AVD

**Windows Virtual Desktop
Multi-session**

Scalable multi-session **modern**
Windows user experience with
Windows 10 Enterprise security

Windows 10
Office 365 ProPlus
Multiple Session

VDI

**Windows 10
Enterprise**

Native single-session **modern**
Windows experience

Windows 10
Office 365 ProPlus
Single Session

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34

Azure Virtual Desktop Service

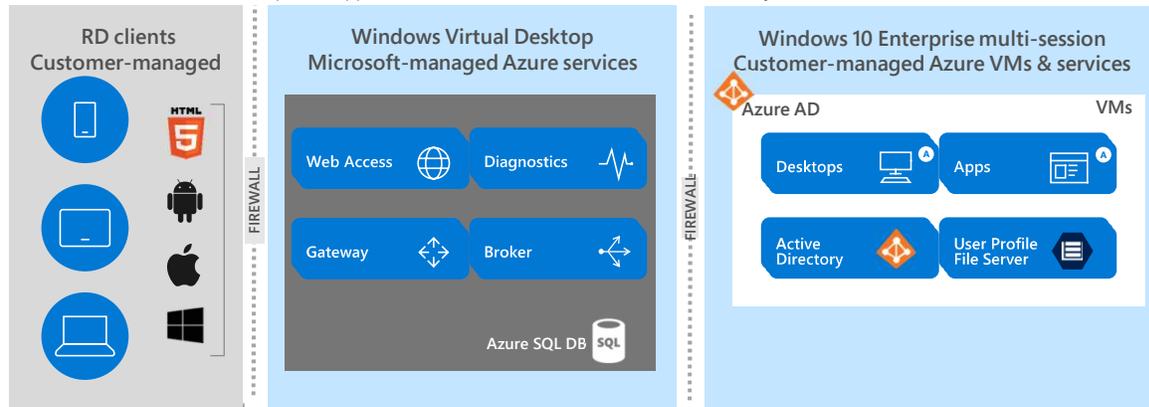
Consists of: **Azure service** to manage connections between **RD clients** and **Windows 10 Enterprise multi-session VMs**

IT admins can:

- Publish remote desktops and apps to end users from pools of single or multi-session Windows 10 Enterprise VMs in Azure
- Manage and troubleshoot connections between RD Clients and Windows virtual machines

End users can:

- Connect to Windows desktops and applications from their favorite client device from anywhere on the internet



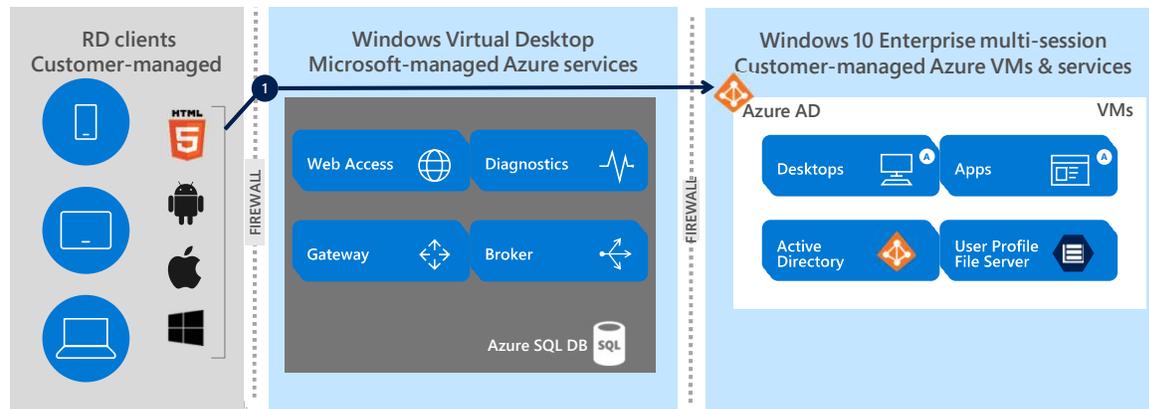
35

Azure AD Authentication

RD clients authenticate with **Azure Active Directory (AAD)**

Enables Azure AD security features, such as Conditional Access, **Multi-factor Authentication**, and Intelligent Security Graph

Maintains app compatibility in the customer's environment where **Windows VMs are AD domain-joined**



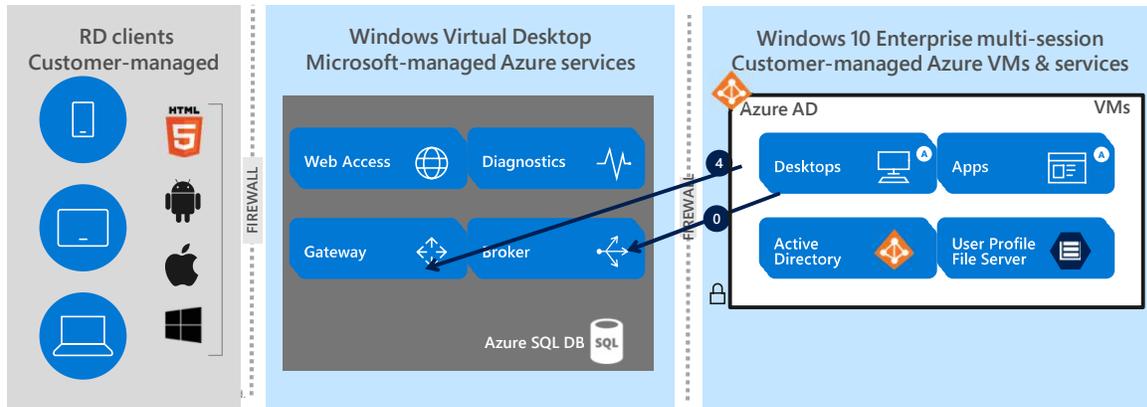
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Improved Isolation : Reverse Connect

Outbound WebSocket connections from customer VMs to Broker and Gateway

Bidirectional communications between VMs and RD infra over https (443)

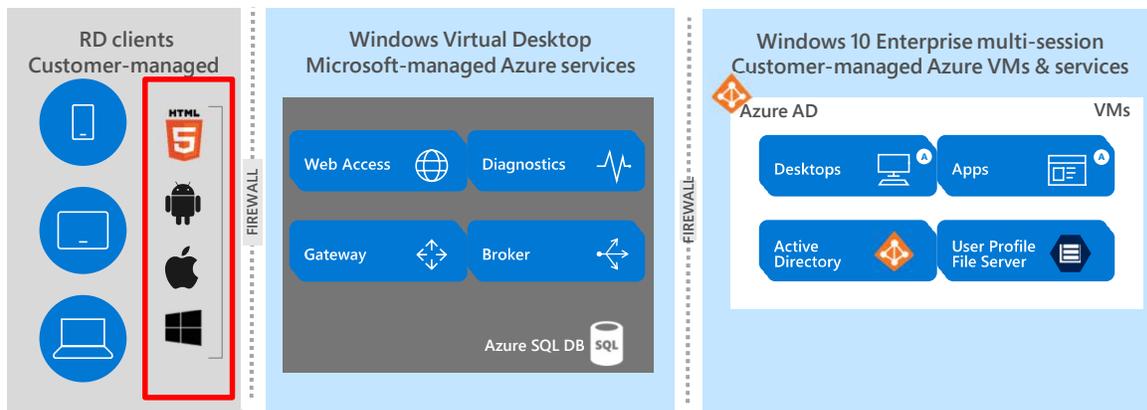
No inbound ports need be opened to the customer environment



37

Azure Virtual Desktop Access

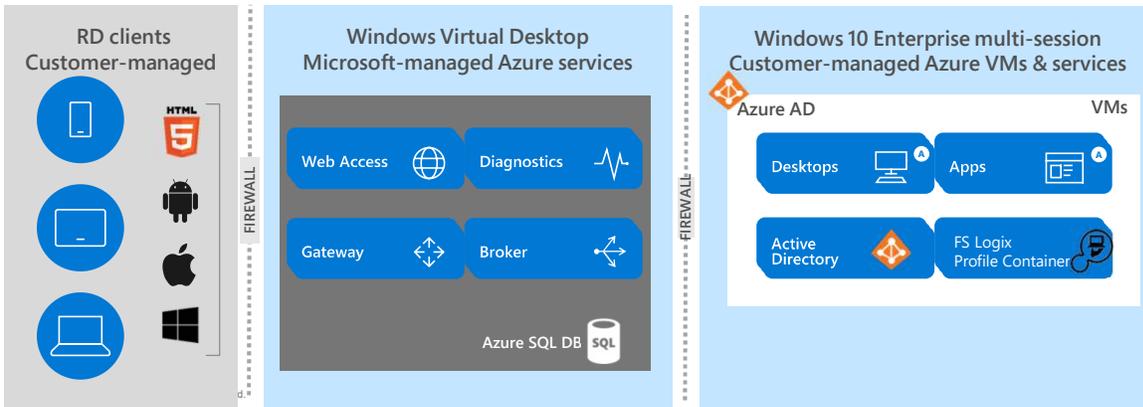
- Windows Virtual Desktop HTML5 Web Client
- WVD Remote Desktop Client



38

FSLogix Profile Container

- Hybrid User Profiles with FS Logix Profile Container
- FS Logix Office 365 Container
- Application Masking

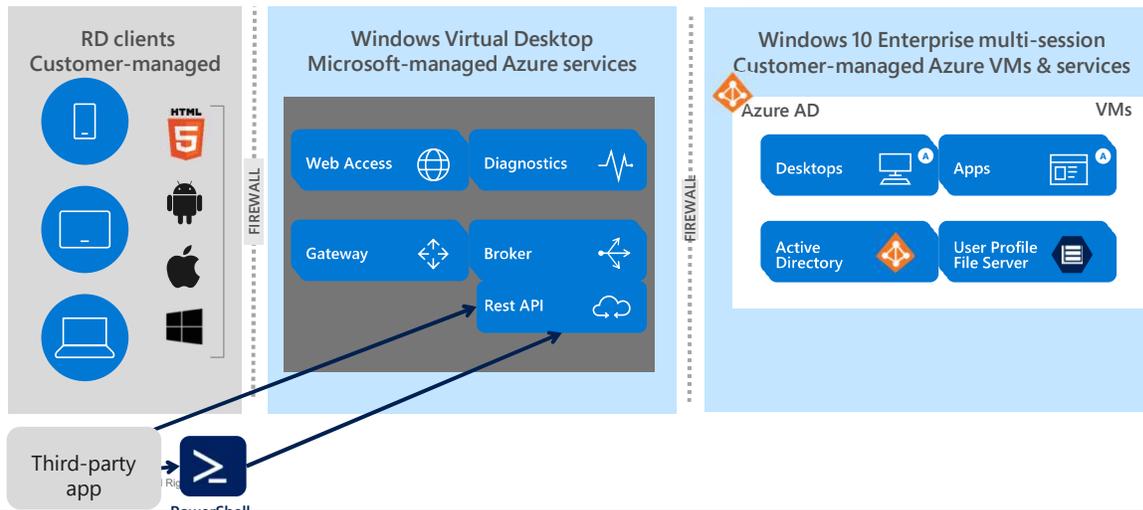


39

Extensible Platform

Third-party apps can use PowerShell or REST API to extend Windows Virtual Desktop platform

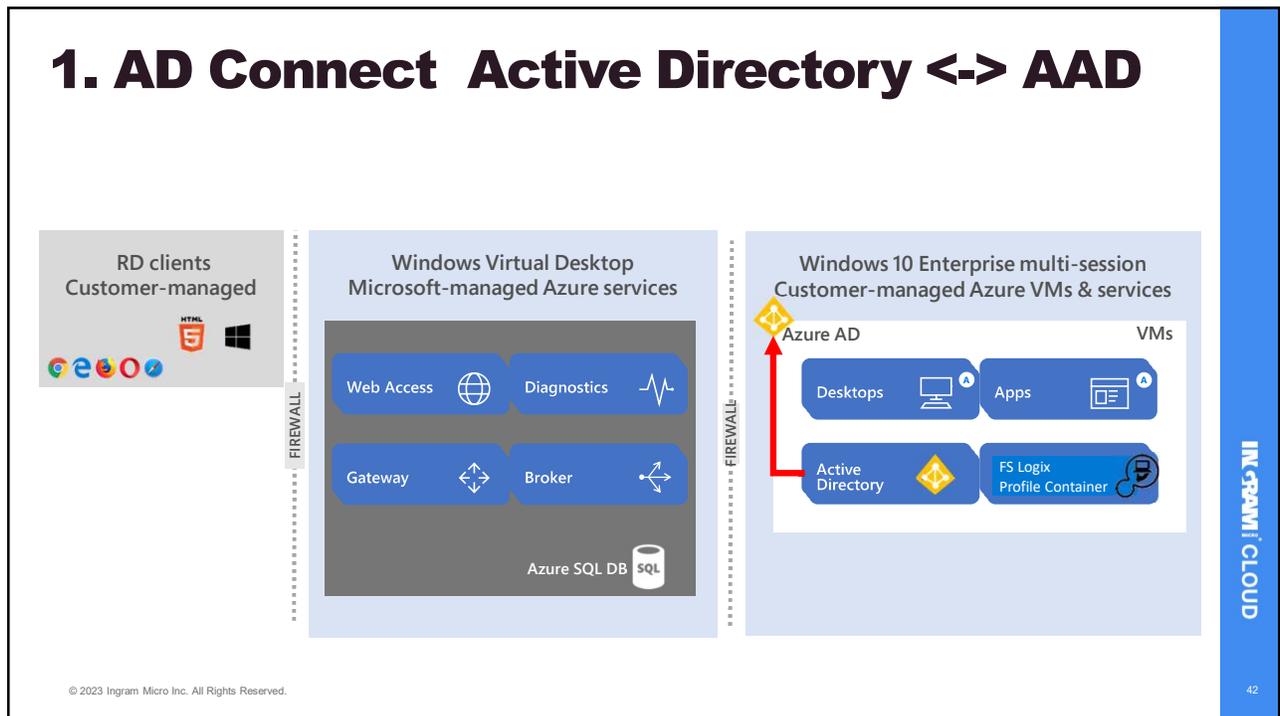
Examples: Deployment automation, VM scaling & provisioning, Web UI to configure, monitor, and troubleshoot, etc.



40

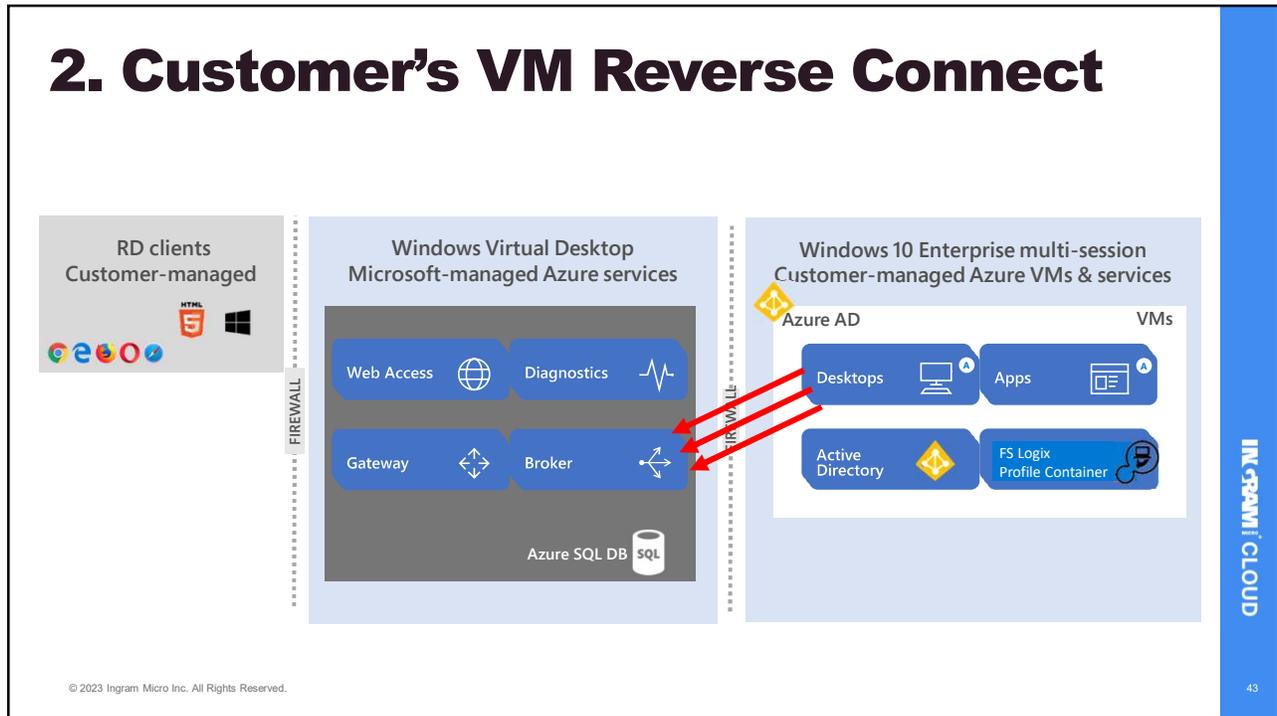


41



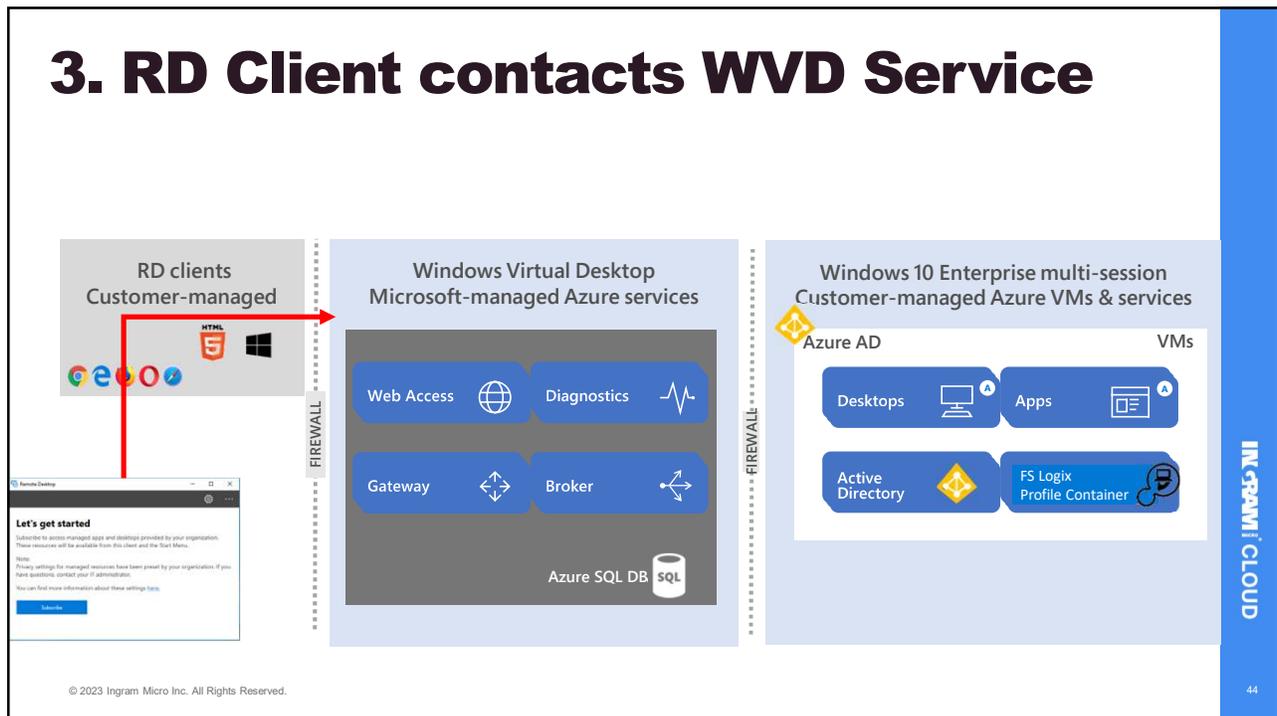
42

2. Customer's VM Reverse Connect



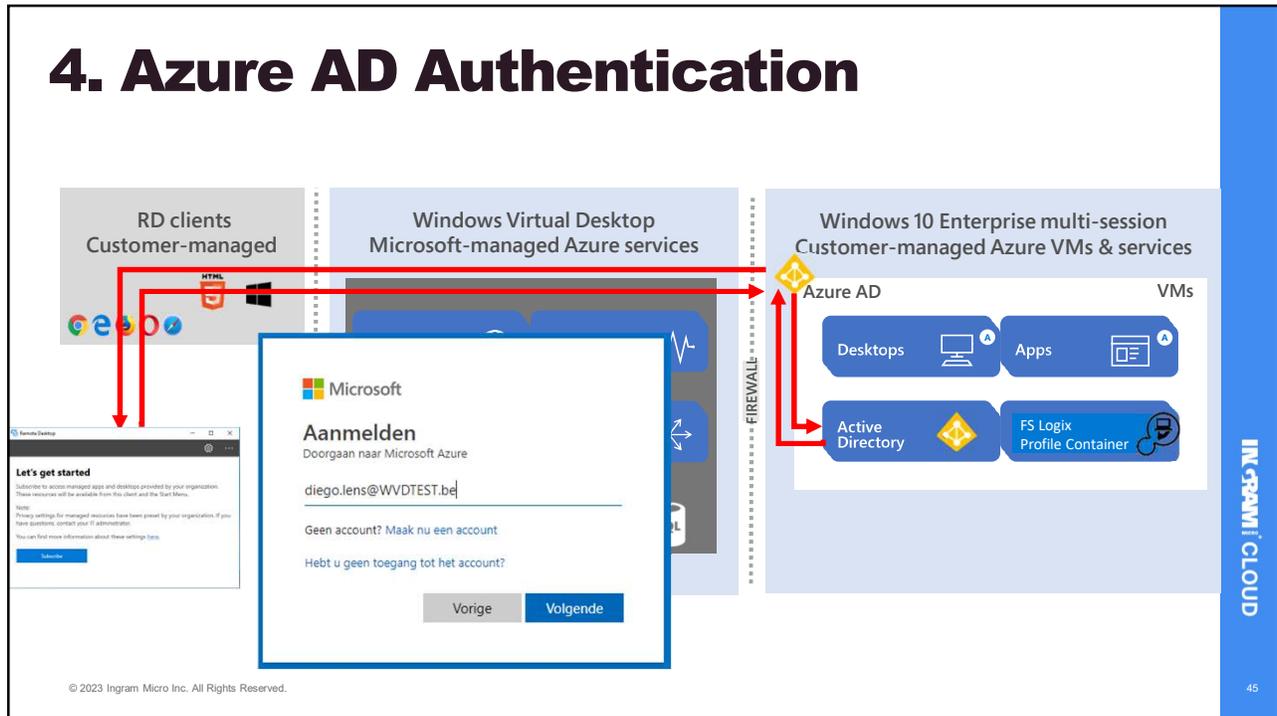
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3. RD Client contacts WVD Service

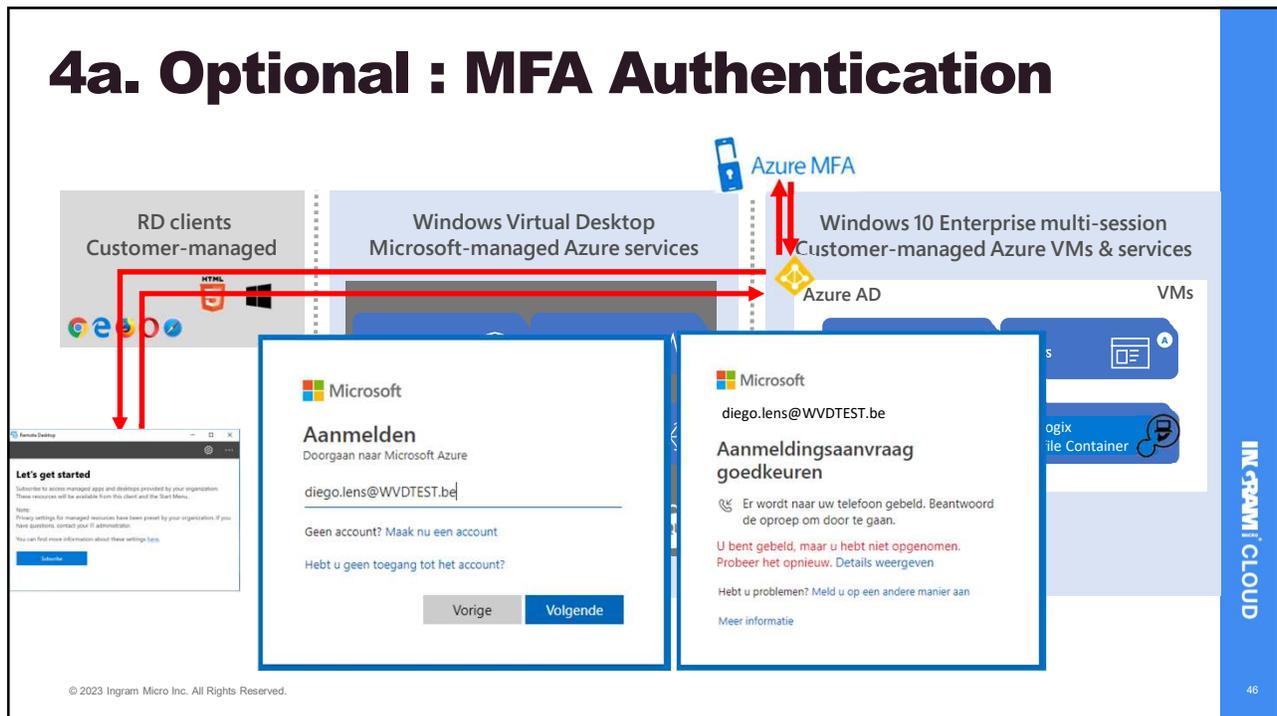


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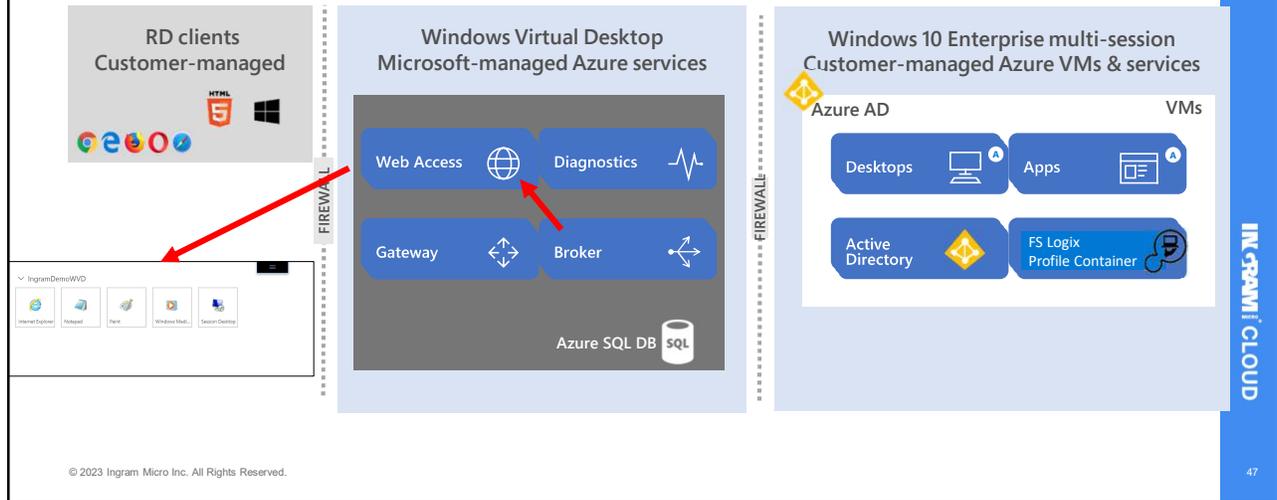
4. Azure AD Authentication



4a. Optional : MFA Authentication

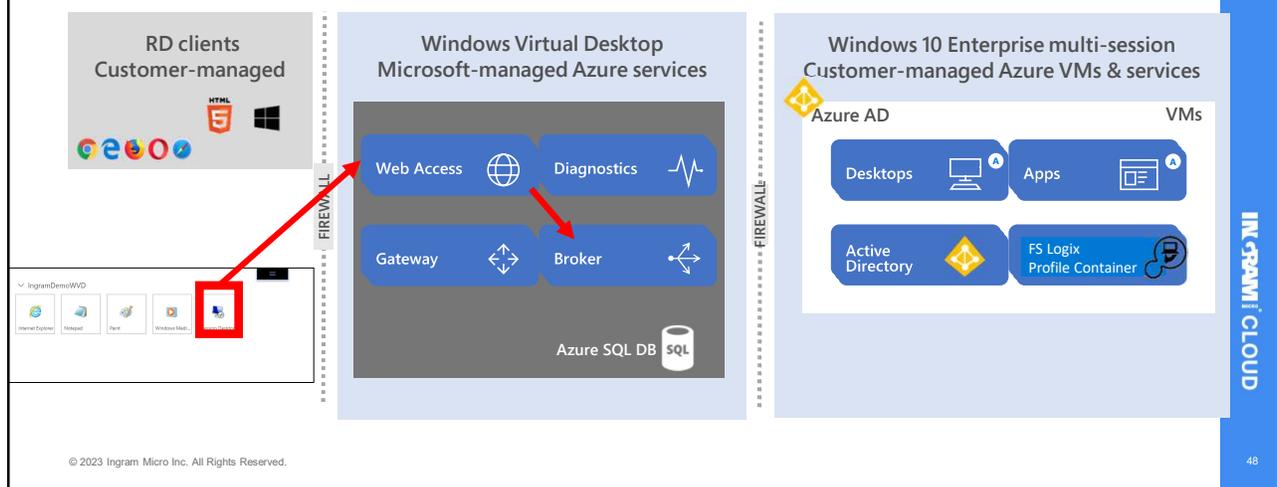


5. Application & Desktop Enumeration



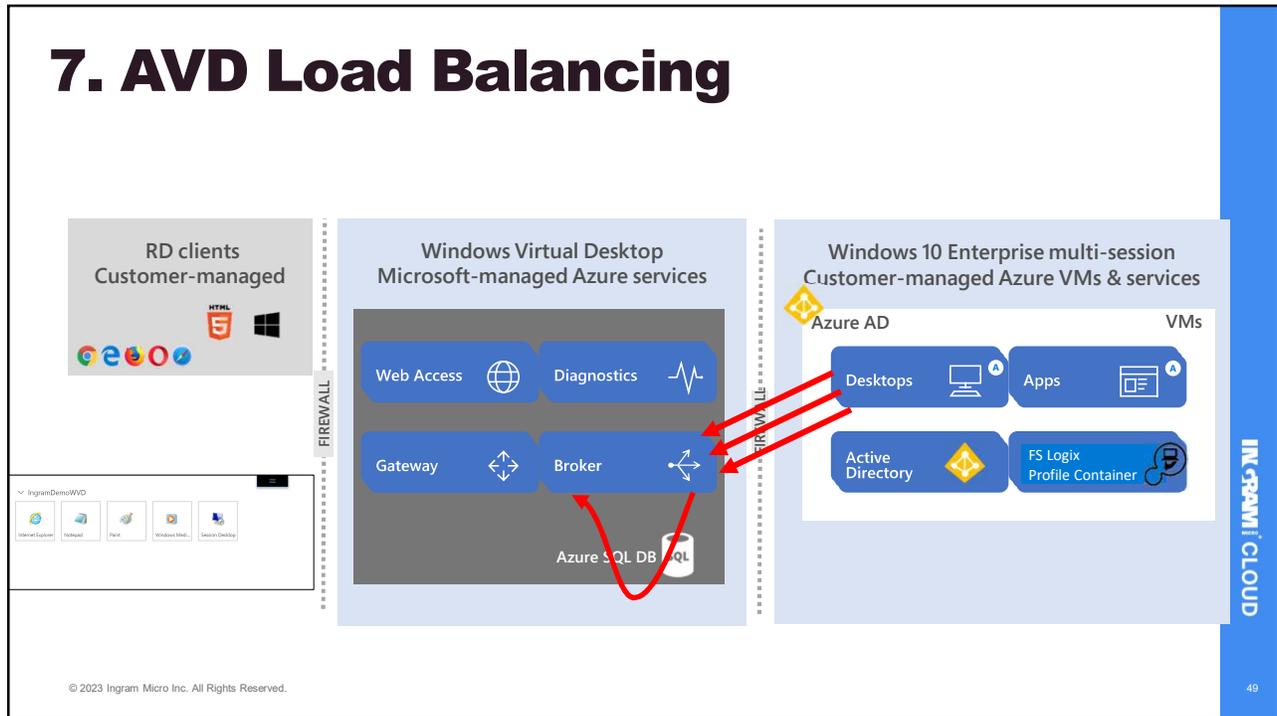
47

6. User will launch Application/Desktop



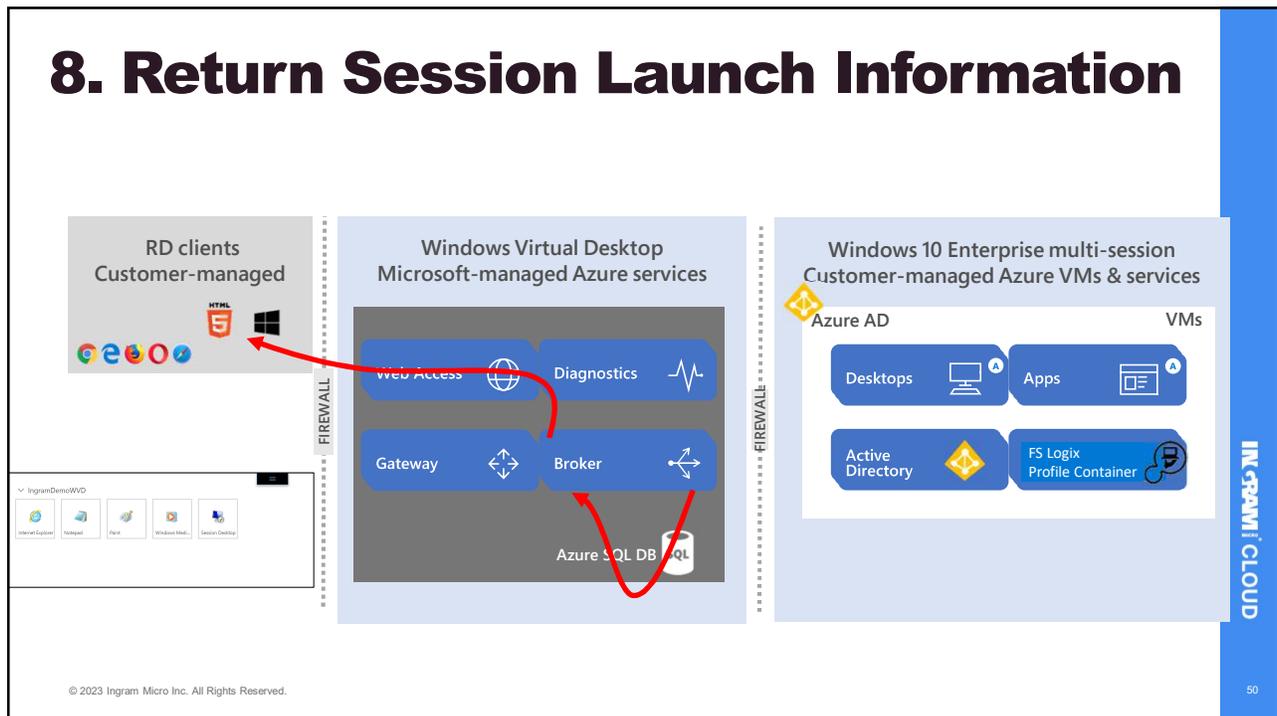
48

7. AVD Load Balancing



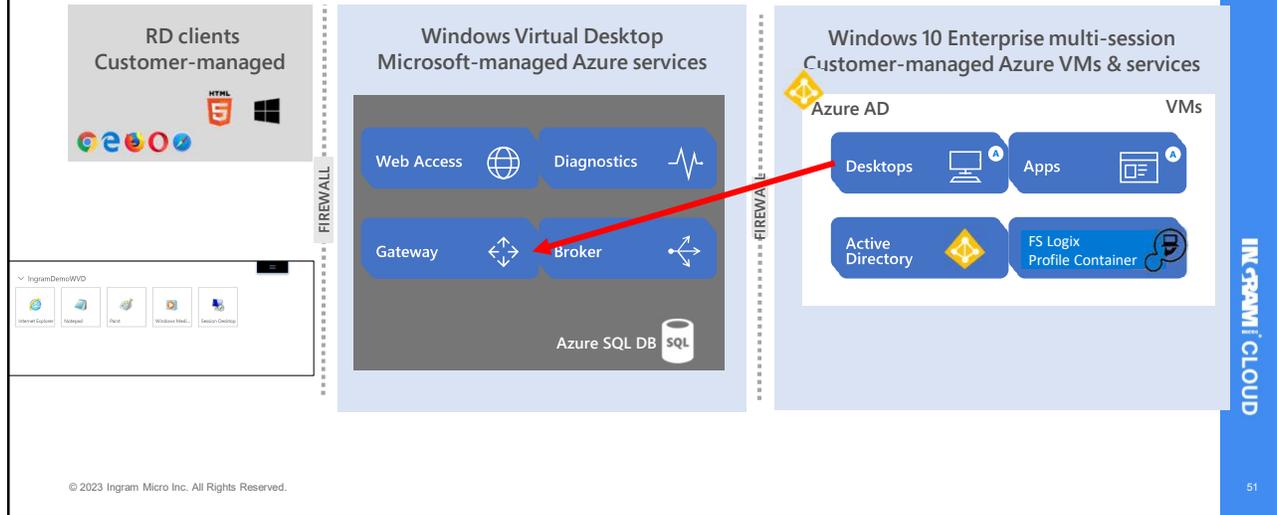
49

8. Return Session Launch Information



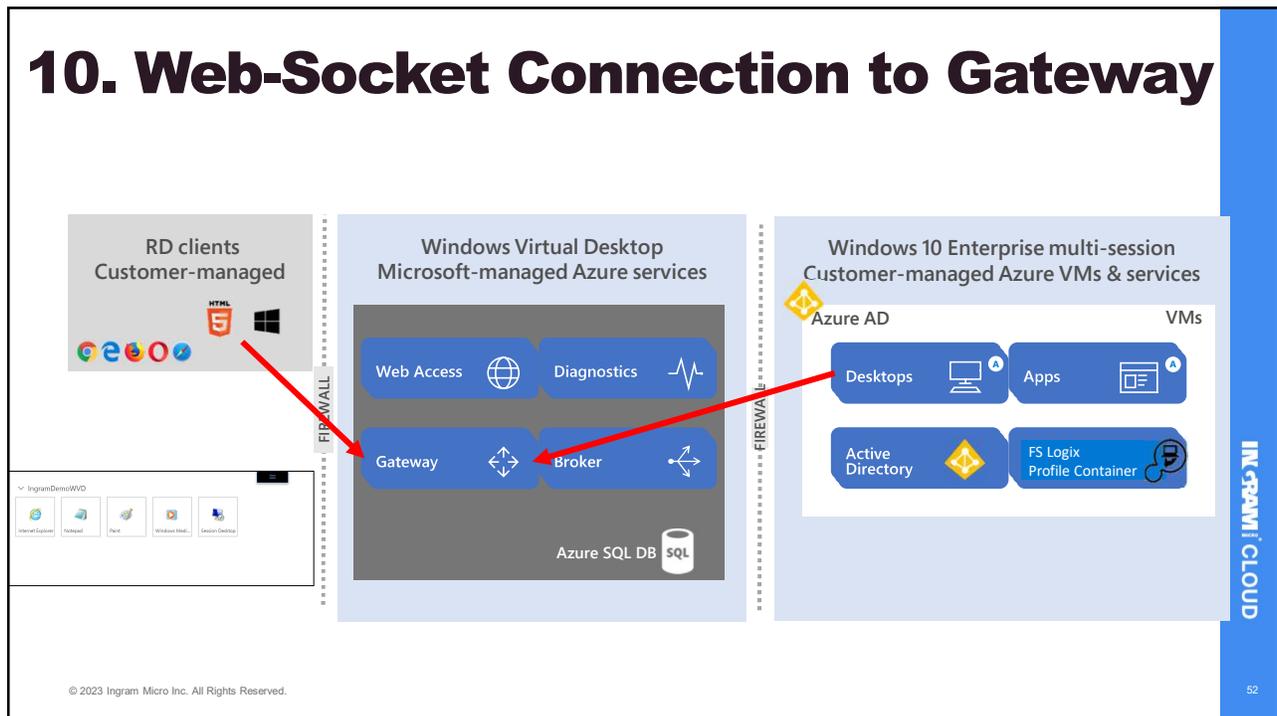
50

9. Reverse Connect VM to Gateway



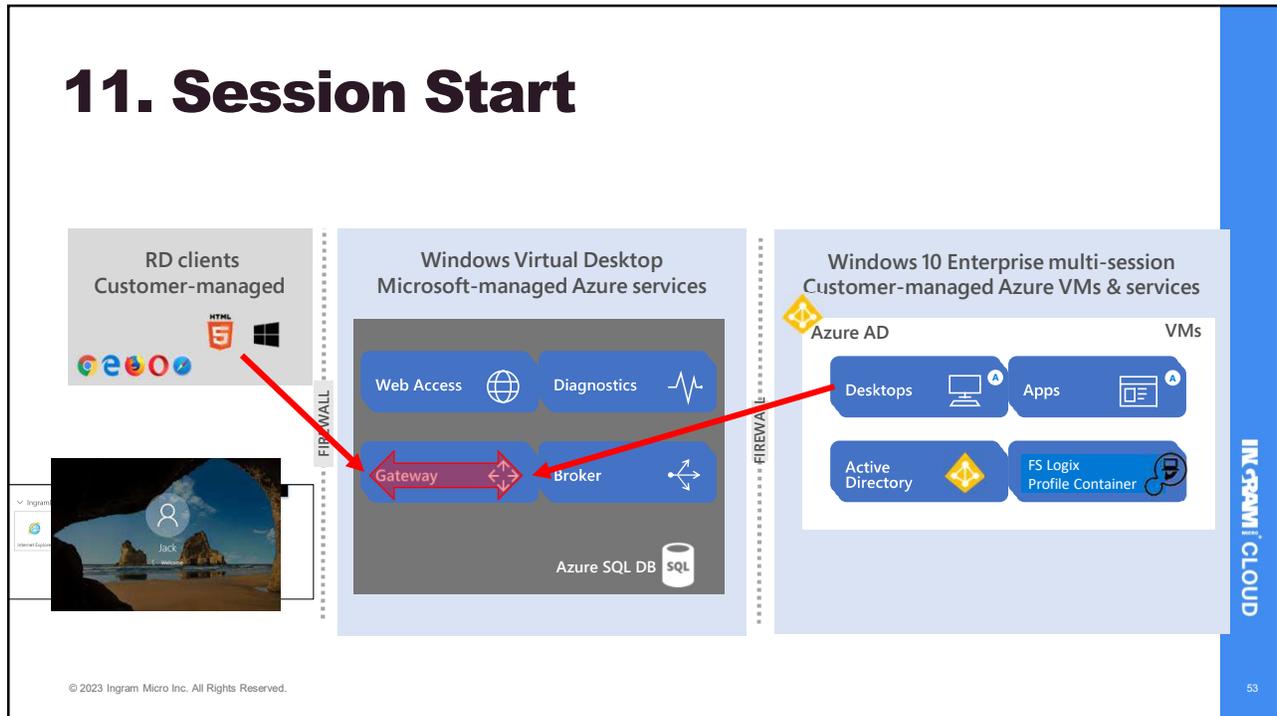
51

10. Web-Socket Connection to Gateway



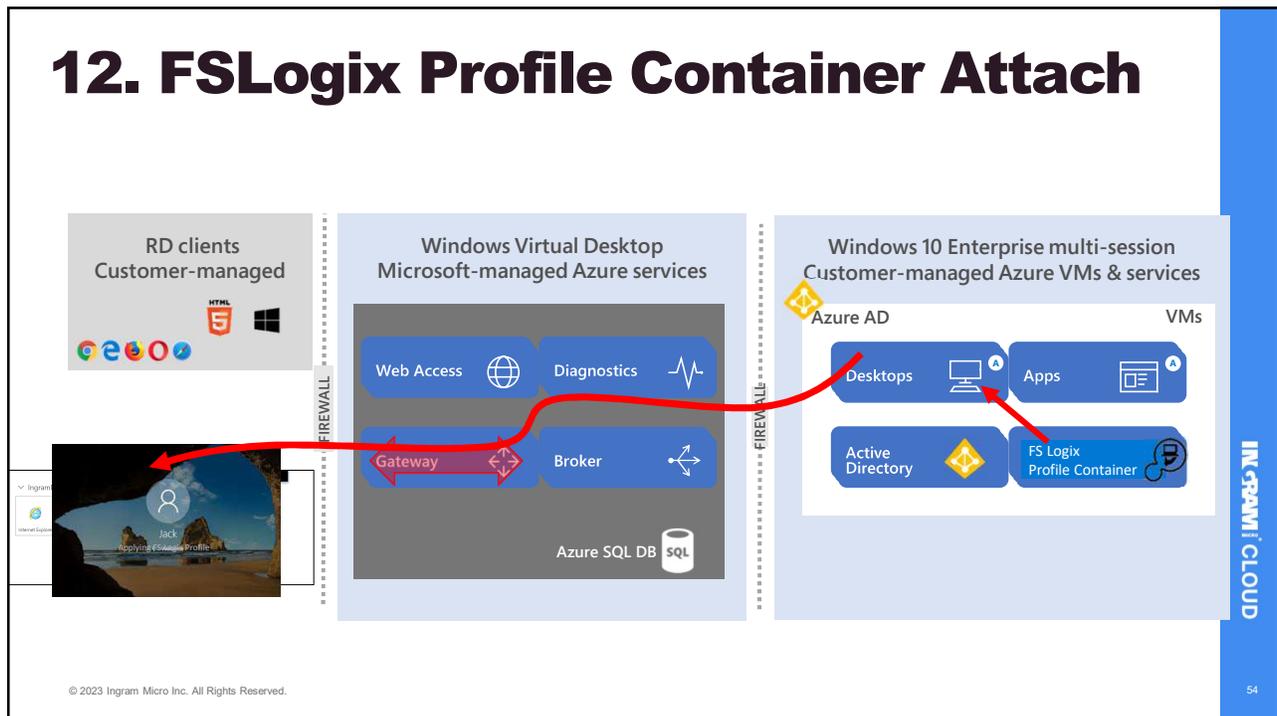
52

11. Session Start



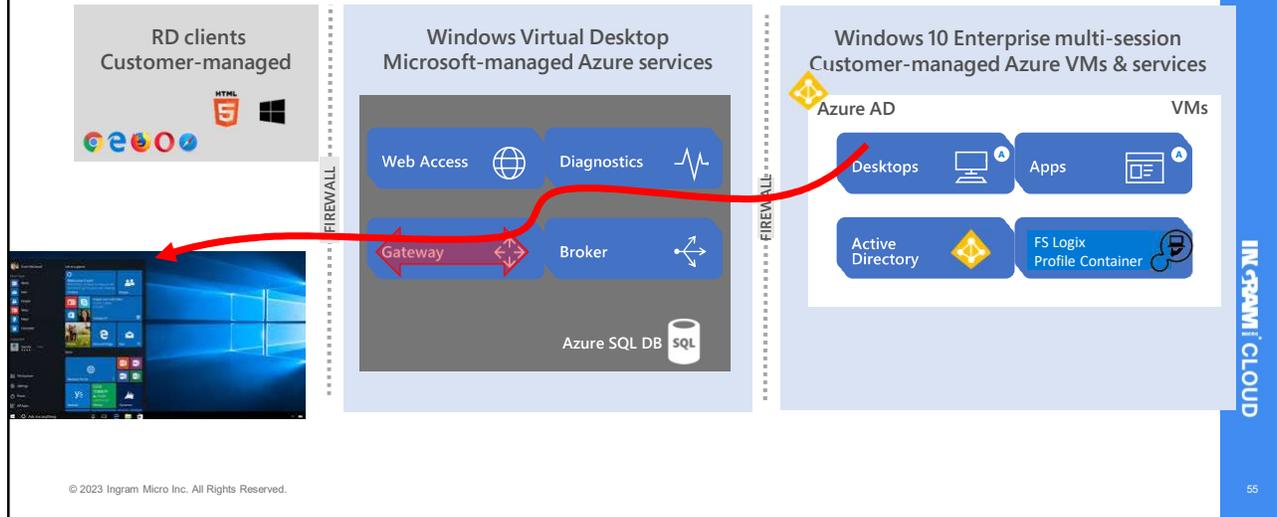
53

12. FSLogix Profile Container Attach



54

13. Active Application/Desktop



55

Azure Virtual Desktop Requirements

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56



Azure Virtual Desktop requires:
To run Windows 10* multi-session, Windows 10* single-session, or Windows 7

Microsoft 365 E3, E5, A3, A5, Business Premium, F3
 Windows E3, E5, A3, A5

Customers can access Azure Virtual Desktop from their non-Windows Pro endpoints if they have a Microsoft 365 E3/E5, Microsoft 365 A3/A5 or Windows 10 VDA per user license.

To run Windows Server* 2012 R2, 2016, 2019

Remote Desktop Services (RDS) Client Access License (CAL) with active Software Assurance (SA)

**Access to FSLogix technology, including Office container, profile containers and app masking, are included in Windows E3+, Microsoft 365 E3+, and Remote Desktop Services (RDS) CAL licenses*

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57

FrontEnd Workers & AVD

		Microsoft 365 F1 \$4/u/m	Microsoft 365 F3 \$10/u/m (Renamed from M365 F1 as of 4/1/20)	Office 365 F3 \$4/u/m (Renamed from O365 F1 as of 4/1/20)
EMS	EMS E3	●	●	
	Windows 10 E3		●	
Windows	Windows Virtual Desktop Rights		●	
	Teams	●	●	●
Office 365	SharePoint ¹ and Yammer Enterprise	●	●	●
	Office Web/Mobile Apps	Read-only	● ²	● ²
	Microsoft Forms		●	●
	OneDrive Storage		2 GB	2 GB
	Email		2 GB ³	2 GB ³
	Power Automate		2000 steps/day	2000 steps/day
	Power Apps		●	●
	Stream ⁴	●	●	●

¹SharePoint Plan K. Cannot be administrators. No site mailbox. No personal site. F1 users unable to create forms, 2GB per user/10GB shared storage

²Office mobile apps included in F1 limited to devices with integrated screens 10.1" diagonally or less

³2GB inbox only, No Outlook Integration, No Voicemail

⁴Consumption only, no publish/share

User Eligibility: M/O365 F-SKU licenses may only be assigned to users without a Dedicated Device. A Dedicated Device is a computing device used for work with a 10.1" screen or larger, used by the user more than 60% of the **user's total work** time during any 90-day period.

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58

Azure Pricing

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

You have the flexibility to pick any VM and storage options to match your use cases

Take advantage of options such as [one-year or three-year Azure Reserved Virtual Machine Instances](#), which can save you up to 72 percent versus pay-as-you-go pricing. Reserved Virtual Machine Instances are flexible and can easily be exchanged or returned

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Active Directory integration

- Active Directory is optionally
- Windows Server Active Directory in sync with Azure Active Directory
 - Azure AD Connect
- OR
- Azure Active Directory Domain Services (AADDS)

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60

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Virtual Machines (Session Hosts)

- Domain Joined
- AAD Joined
- Hybrid Joined

Windows 10 Enterprise Multi-session
Windows 10 Enterprise Single-Session
Windows 7 Single-Session
Windows Server 2019
Windows Server 2016
Windows Server 2012 R2

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61

**Azure Virtual Desktop
Prepare your Environment**

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AD Joined or AAD Joined Devices

- AAD Joined devices supported since July 2021
 - Limitations today :
 - External Users not supported with AAD Joined devices
 - Only Local Profiles supported with AAD Joined Devices
 - No support for FSLogix with AAD Joined Devices
 - No support for MSIX App Attach with AAD Joined Devices
 - No SSO support with AAD Joined Devices

• <https://docs.microsoft.com/en-us/azure/virtual-desktop/deploy-azure-ad-joined-vm>



Azure Active Directory



Active Directory

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63

63

Prepare your Active Directory

- ARM Template Deployment
- Prepare an Additional Disk for FS Logix
- Prepare an OU for WVD Users
 - GPO's
- Prepare an OU for WVD Hostpools
 - GPO's
- If possible : Domain Name equal to Azure Active Directory Domain
- DNS Server

Home > New > Template deployment > Custom deployment

Custom deployment
Deploy from a custom template

[Read the docs](#)

[Build your own template in the editor](#)

Common templates

- [Create a Linux virtual machine](#)
- [Create a Windows virtual machine](#)
- [Create a web app](#)
- [Create a SQL database](#)

Load a GitHub quickstart template

Select a template (disclaimer)

active-directory-new-domain

This template creates an Azure VM with AD

Author: simongdavies
Last updated: 2018-07-04
[Learn more](#)

[Select template](#) [Edit template](#)

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OR

Azure Active Directory Domain Service

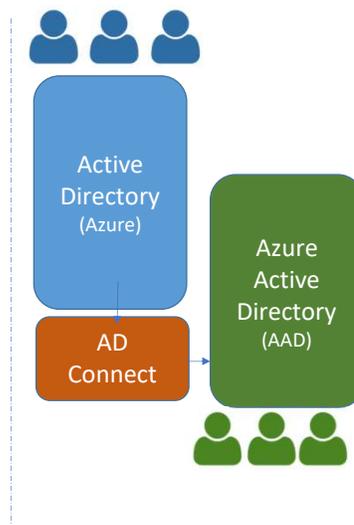
- High Available
- No Deployment
- No Management
- No Patching
- Automatic integration with AAD



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65

Configure AD Connect



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66

AD Connect Software Download

The screenshot shows the Azure AD Connect console interface. On the left is a navigation pane with 'Azure AD Connect' selected. The main area displays the 'SYNCHRONISATIESTATUS' section, where the 'Azure AD Connect downloaden' button is highlighted with a red rectangle. Other sections include 'AANMELDING DOOR GEBRUIKER' and 'ON-PREMISES TOEPASSINGEN'.

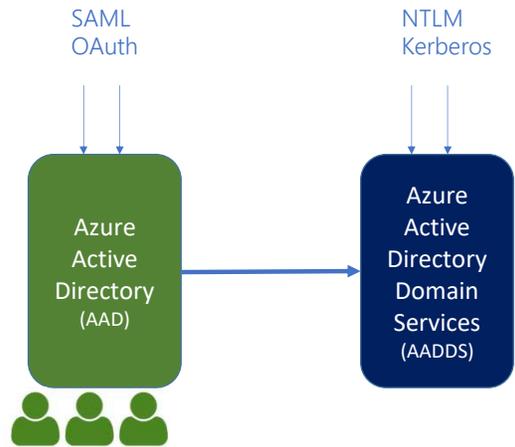
67

AD Connect Configuration

The screenshot shows the 'User sign-in' configuration window in Microsoft Azure Active Directory Connect. The 'Pass-through authentication' option is selected and highlighted with a red box. Red arrows point from this box to the text 'Same Sign-On experience' and 'Single Sign-On experience'. The 'Enable single sign-on' checkbox is also checked. The window includes a navigation pane on the left and 'Previous' and 'Next' buttons at the bottom.

68

Azure Active Directory Domain Services



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69

Create File Share (FSLogix)



File Server

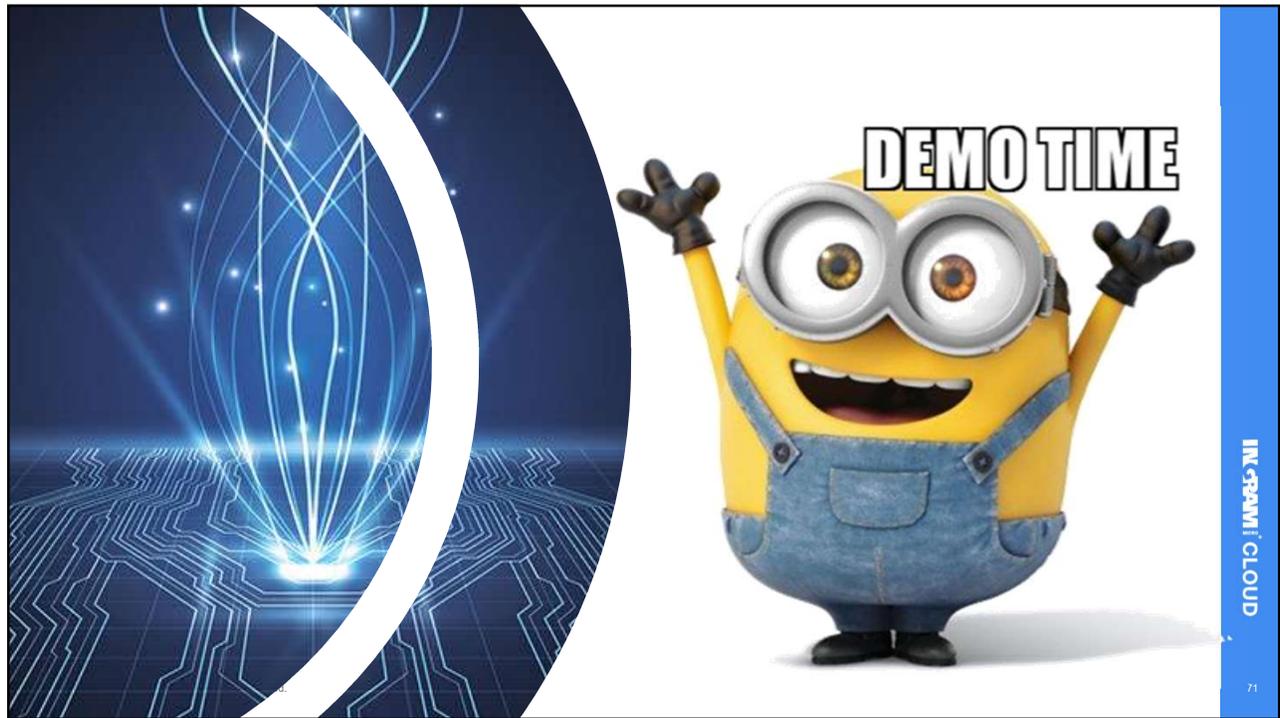


Azure Files

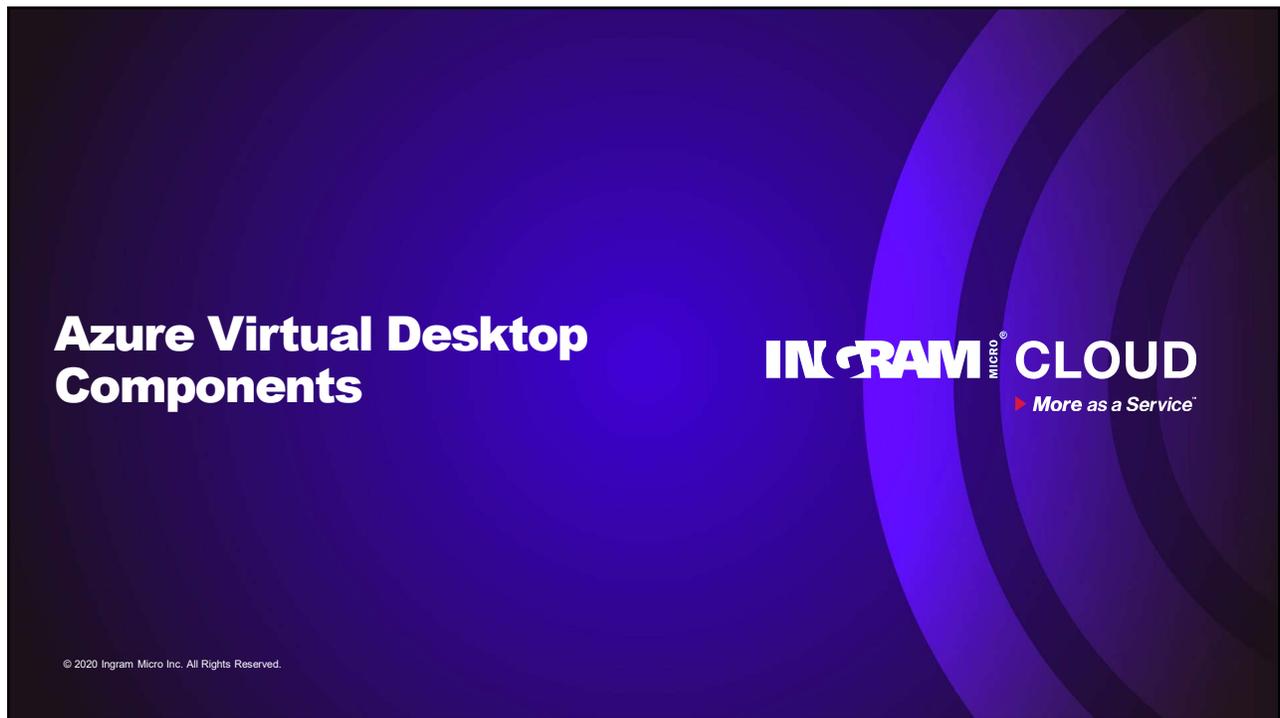
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<https://docs.microsoft.com/en-us/azure/virtual-desktop/store-fslogix-profile>

70

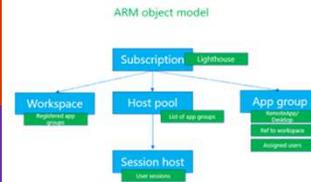
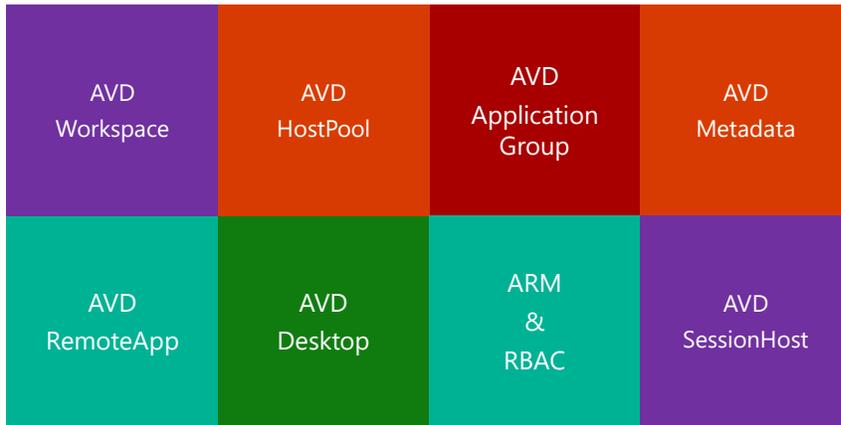


71



72

Azure Virtual Desktop Components



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73

Role Based Access Control (RBAC)

- WVD is ARM Based
- A new Role has been introduced :
Desktop Virtualization User
- Allows user to use the applications in an application group
User Access Administrator
- Administrator than can change the User Access

Role

Desktop Virtualization User

Owner

Owner

User Access Administrator

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74

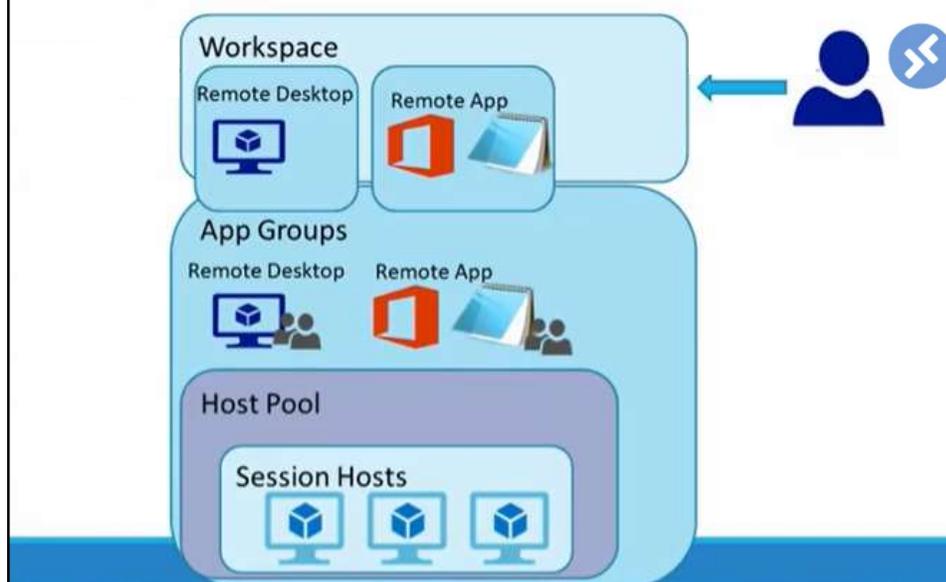
What is a Workspace ? (for the Administrator)

- A Workspace will replace the WVD Tenant in WVD Classic
- A workspace is a logical grouping of application groups
- A Hostpool is not dependent to a Workspace (anymore)
- You can create a Hostpool without assigning to a workspace
- In order to make Application Groups visible to the User, you need to register them against a Workspace
- [Workspace – Hostpool – Application Group] are located in the same region
- A Workspace has got none, one, or multiple Application Groups Assigned

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75

Workspace Dependencies



76

What is a Workspace ? (for the User)



- A collection of Applications and Desktops
- The user does not see the different application Groups
- A Workspace can contain multiple Application Groups



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What is a Hostpool ?



- Is a Container of equal Virtual machines (Session Hosts)
- In the same location as Workspace and Application Group(s)
- Contains One or Multiple Session Hosts
- Hostpool delivers VMs to the Application Group(s)
- Defines Multi User Environment or Single User Environment
- Has only ONE Image & Image Version assigned
Same OS, same Disk Type, same Image Type & Version

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78

What is an Application Group ?



- A Container of Applications or Desktops
- Two (Resource)Types :
 - RemoteApp : Contains Shortcuts to Remote Applications
 - Desktop : Contains Shortcut to full-blown Desktop
- Both Resource Types can be created in ONE Hostpool
- One User can be part of both resource type (same hostpool)
- The Desktop Application Group is called {HostpoolName}-DAG



Application Group 1



Application Group 2

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79

AVD MetaData

- The configuration of Windows Virtual Desktop
 - West Europe
 - North Europe
 - North Central US
 - East US
 - East US 2
 - North CentralUS
 - South Central US
 - West Central US
 - West US
 - West US2

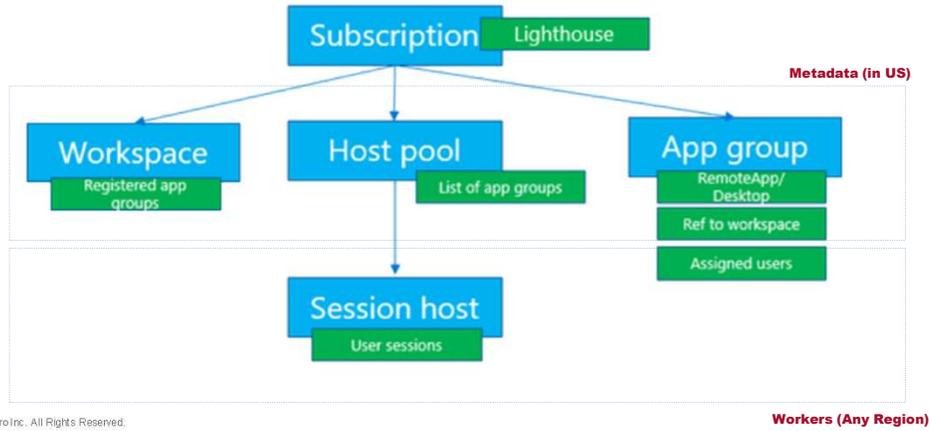


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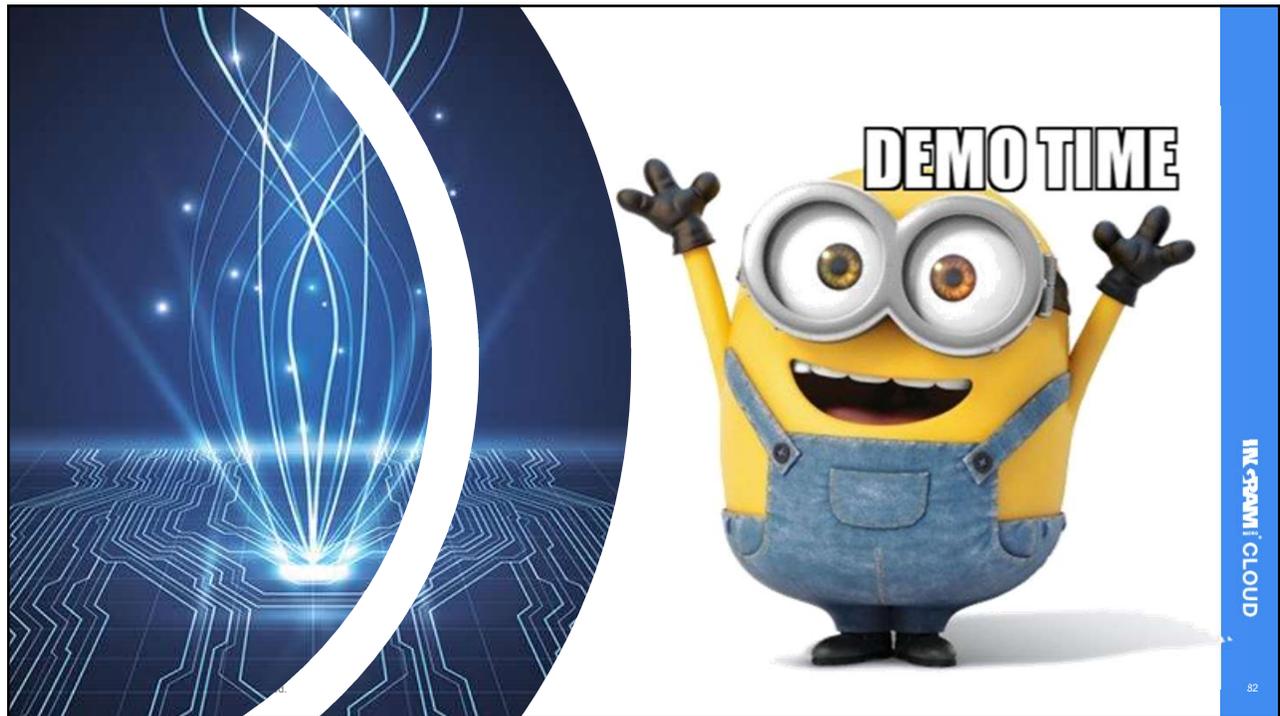
80

AVD Components Overview

ARM object model



81



82

Azure Virtual Desktop Build your POC



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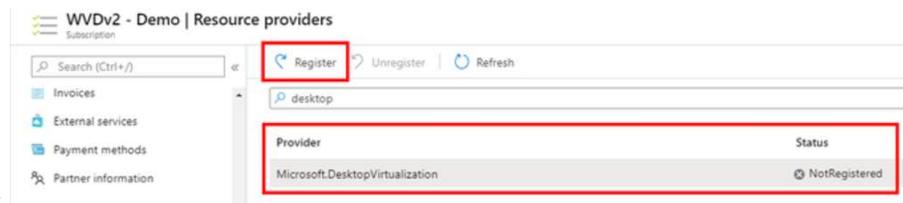
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83

1. Microsoft.DesktopVirtualization Resource Provider

- You do not need to create a WVD Tenant anymore
- You do not need to enable Consent – Pages anymore
- You still need to have an Azure Subscription
- Verify : Microsoft.DesktopVirtualization Resource Provider is **registered**
- Where ?

Azure Portal > Subscription > Resource Provider > Microsoft.DesktopVirtualization



The screenshot shows the Azure Portal interface for a subscription named 'WVDv2 - Demo'. The 'Resource providers' page is displayed, with a search filter set to 'desktop'. A table lists the resource providers, with 'Microsoft.DesktopVirtualization' highlighted. The status for this provider is 'NotRegistered'. The 'Register' button is also visible and highlighted.

Provider	Status
Microsoft.DesktopVirtualization	NotRegistered

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84

84

2. Domain Controller or AADDS

Home > New > Template deployment > Custom deployment

Custom deployment
Deploy from a custom template

- Read the docs
- Build your own template in the editor

Common templates

- Create a Linux virtual machine
- Create a Windows virtual machine
- Create a web app
- Create a SQL database

Load a GitHub quickstart template

Select a template (disclaimer)

active-directory-new-domain

This template creates an Azure VM with AD

Author: simongdavies
Last updated: 2018-07-04
[Learn more](#)

Select template Edit template

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Microsoft Azure AD Domain Services

Kerberos
NTLM
LDAP
Group Policy

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85

85

3. Create File Share (FSLogix)

File Server

Azure Files

Azure NetApp Files

<https://docs.microsoft.com/en-us/azure/virtual-desktop/store-fslogix-profile>

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4. Create a Workspace

- Same region as Hostpool and Application Group(s)
- Locations in Europe is available !
- Name Displayed to Users

Create a workspace

Basics Application groups Tags Review + create

Work space is a logical grouping of application groups. Users will only be able to access an application group published to them if it is registered to a workspace. [Learn more EG](#)

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription *

Resource group * [Create new](#)

Instance details

Workspace name *

Friendly name

Description

Location *

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4. Create a HostPool

- Same region as Workspace and Application Group(s)
- Configure the HostPool Type
 - Personal (VDI)
 - Pooled (RDS or WVD Multi-Session)
- Load Balancing Configuration
- Session Hosts not needed yet



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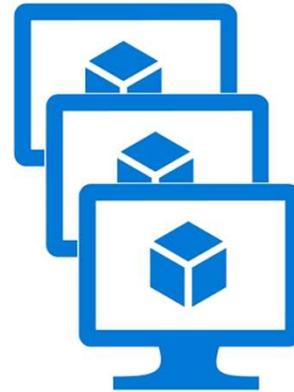
88

5. Create Session Hosts

- Created in the Host Pool
- An updated Registration Key is needed !
- Region can be different compared to HostPool



Image
Virtual Machine



Cloned VMs

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89

6. Create Application Group

- Same region as Workspace and HostPool
- Two Types :
 - Desktop
 - Remote Application
- Assign here AAD Users or AAD Groups



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Outbound access for Virtual Machines

- Enable Outbound Access with Azure NAT Gateway after 30 September 2025 if the VM's need to have internet access with the applications running on the virtual Desktop

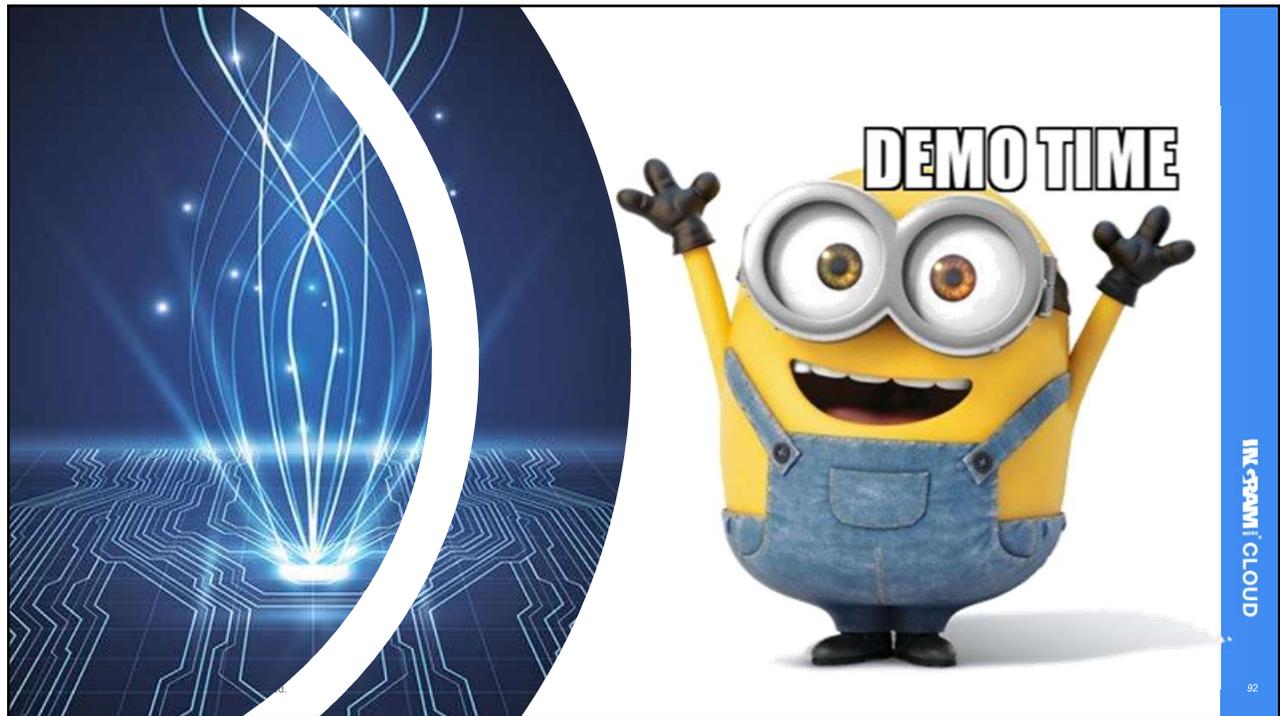
The default outbound access for virtual machines in Azure will be retired on 30 September 2025. After this date, all new virtual machines that will require access to the internet will need to use one of the explicit outbound connectivity methods:

- Azure NAT Gateway
- Azure Firewall
- Azure Load Balancer outbound rules
- Directly attached public IP address

In this article, we will look at how you can create and use an Azure NAT Gateway for outbound access for your virtual machine.

<https://azure.microsoft.com/en-us/updates?id=default-outbound-access-for-vm-in-azure-will-be-retired-transition-to-a-new-method-of-internet-access>

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AVD/Windows 365 Windows App

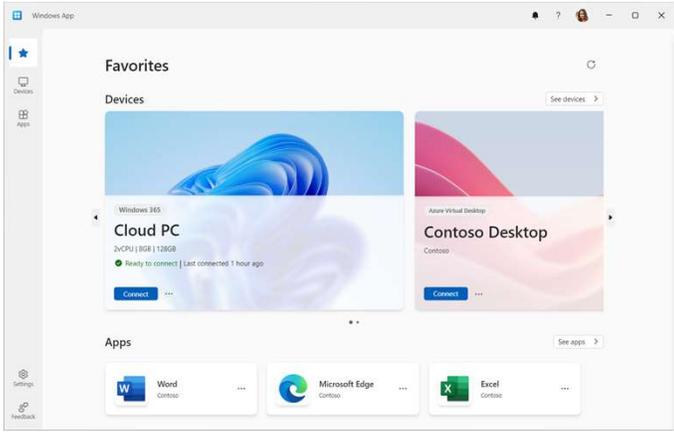
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Windows App

- New Client for Secure Connections to Windows 365, AVD, Remote PC's
- <https://aka.ms/WindowsApp>
- Available for:
 - Windows
 - macOS
 - iOS/iPadOS
 - Android/Chrome OS
 - Web Browsers
- New Features
 - Multi Monitor Support
 - Custom Resolution



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94

What's New ?

With the general availability of Windows App, you'll see enhancements designed to make accessing and managing Windows resources even more seamless. These updates bring new features and improvements to your experience across all major platforms:

- **Device and app actions:** Simplify device management with a variety of integrated actions unique to supported solutions.
- **Support for Windows 365 Frontline Cloud PCs:** Enjoy extended compatibility for specialized use cases.
- **In-app feedback:** Windows 365 and Azure Virtual Desktop users can easily provide feedback within the app.
- **Account switcher for Microsoft Entra ID:** iOS and macOS users can take advantage of easy account switching when using a Microsoft Entra account.
- **Relayed Remote Desktop Protocol (RDP) Shortpath:** Experience improved connectivity and performance for remote sessions. For more information, see [Relayed RDP Shortpath for public networks now available](#).

<https://techcommunity.microsoft.com/blog/windows-itpro-blog/windows-app-now-available-on-all-major-platforms/4246939>

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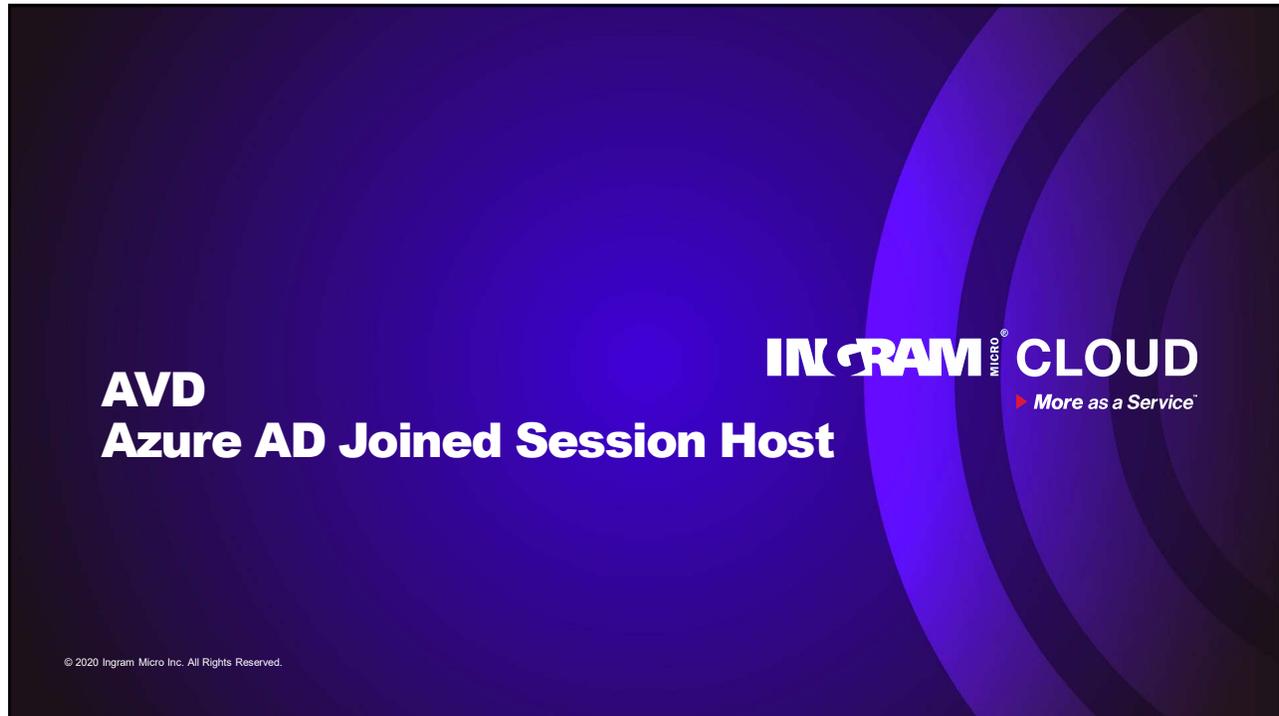
More Information

- Download Page
 - [Windows App - Free download and install on Windows | Microsoft Store](#)
- Get Started with Windows App
 - <https://learn.microsoft.com/en-gb/windows-app/get-started-connect-devices-desktops-apps>
- Introduction Video
 - <https://youtu.be/jOXU59VbKOc>



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Azure AD Joined Session Host

- No Active Directory Needed
- Attention :
 - 1) HostPool > RDP Properties > Advanced : Add: **targetisaadjoined:i:1**

Connection information Session behaviour Device redirection Display settings **Advanced**

RDP Properties ⓘ

```
targetisaadjoined:i:1;drivestoredirects:*;audiomode:i:0;videoplaybackmode:i:1;redirectclipboard:i:1;redirectprinters:i:1;devicestoredirects:*;redirectcomports:i:1;redirectsmartcards:i:1;usbdevicestoredirects:*;enablecredsspsupport:i:1;redirectwebauthn:i:1;usemultimon:i:0;enablersaadauth:i:1;screenmodeid:i:1;smart sizing:i:1;dynamicresolution:i:1
```

- 2) Resource Group > Access Control > Add > Add Role Assignment
 - Virtual Machine Administrator Login
 - Virtual Machine User Login
 - Assign ONE OF BOTH to a User or Group

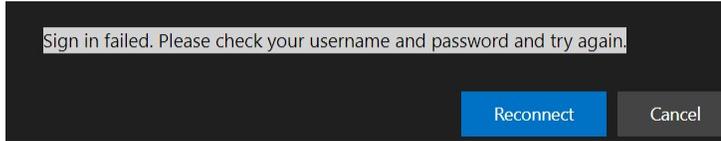
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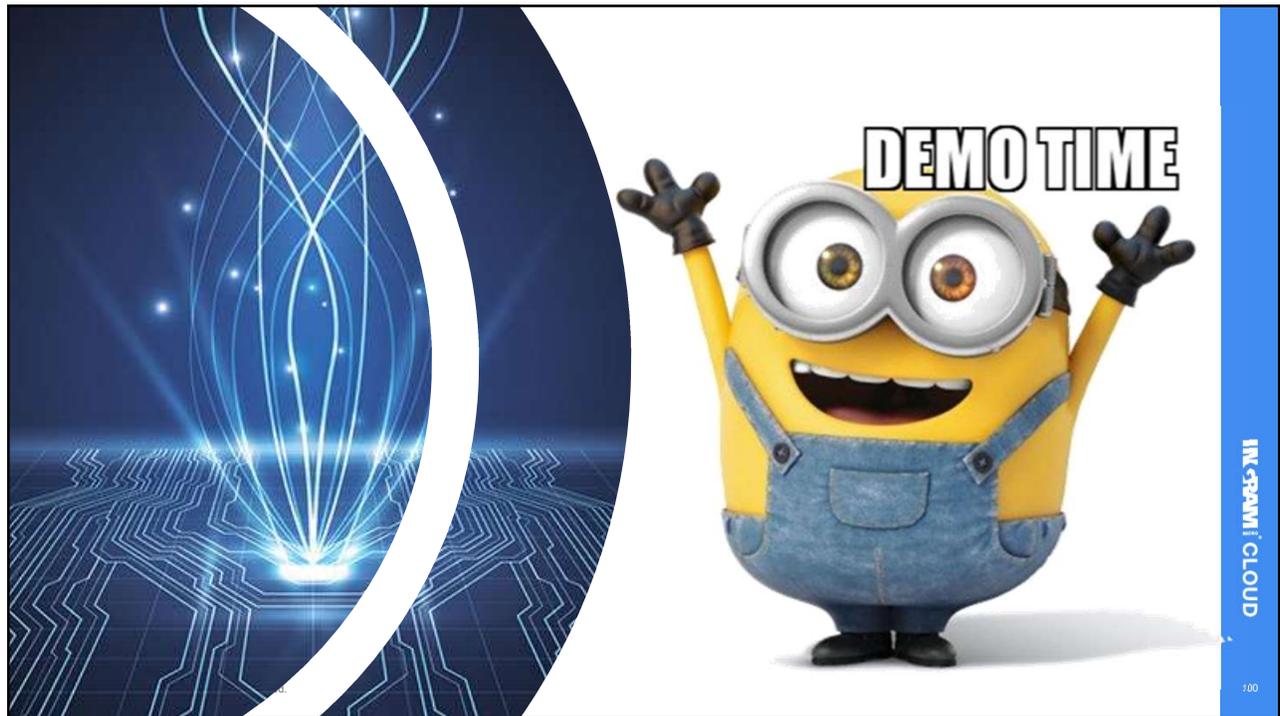
98

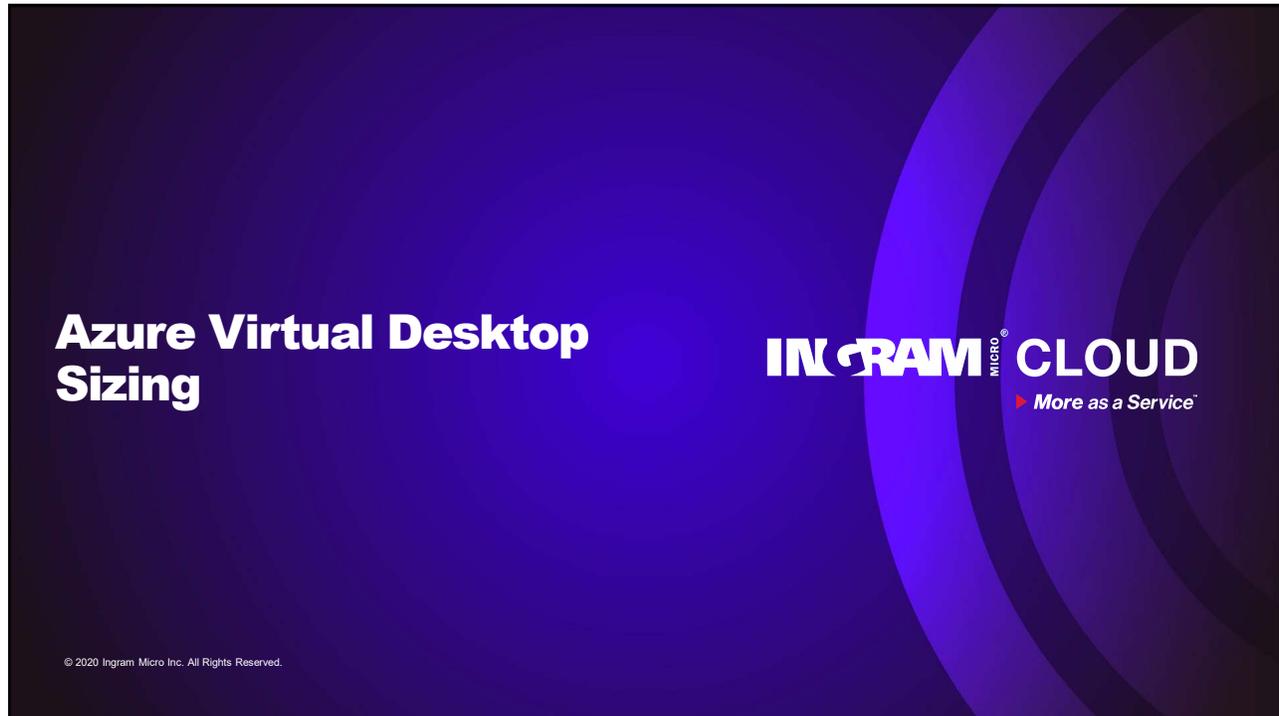
Verify Settings if this message is displayed



<https://learn.microsoft.com/en-us/azure/active-directory/devices/howto-vm-sign-in-azure-ad-windows#configure-role-assignments-for-the-vm>

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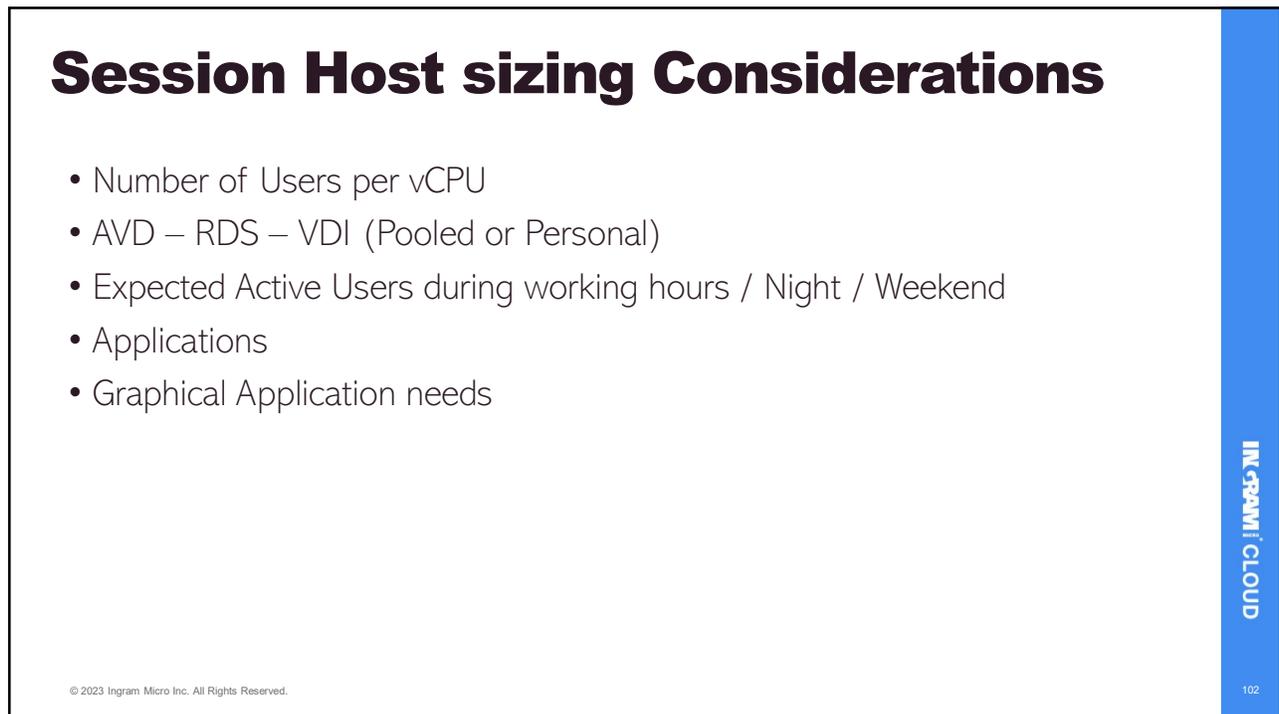


Azure Virtual Desktop Sizing

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Session Host sizing Considerations

- Number of Users per vCPU
- AVD – RDS – VDI (Pooled or Personal)
- Expected Active Users during working hours / Night / Weekend
- Applications
- Graphical Application needs

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102

Microsoft Recommends

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	Minimum VM configuration	Profile container storage minimum
Light	6	2 vCPUs, 4 GB RAM, 30 GB storage, Windows 10, F25_v2	30 GB
Medium	4	4 vCPUs, 8 GB RAM, 60 GB storage, Windows 10, F45_v2	30 GB
Heavy	2	8 vCPUs, 16 GB RAM, 120 GB storage, Windows 10, F45_v2	30 GB
Power	1	6 vCPUs, 56 GB RAM, 340 GB storage, Windows Server 2019, NV	30 GB

<https://docs.microsoft.com/en-us/windows-server/remote/remote-desktop-services/virtual-machine-recs>

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Users Per Core

Power User	Medium User	Task Worker
1 User / Core	2 Users / Core	3 Users / Core



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Price per User per Month

**3 USERS PER CORE
12 USERS**

	RDS for 12 Users in Azure	RDS per User in Azure	AVD for 12 Users in Azure	AVD per User in Azure
D4S (4 Cores) / 1 year RI (24/7)	€ 252,53	€ 21,04	€ 113,06	€ 9,42
TOTAL / User		€ 21,04		€ 9,42

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Price per User per Month

**3 USERS PER CORE
24 USERS**

	RDS for 24 Users in Azure	RDS per User in Azure	AVD for 24 Users in Azure	AVD per User in Azure
D8S v5 (8 Cores) / 1 year RI (24/7)	€ 470,85	€ 19,61	€ 205,41	€ 8,55
TOTAL / User		€ 19,61		€ 8,55

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Price per User per Month

**3 USERS PER CORE
24 USERS**

	RDS for 24 Users in Azure	RDS per User in Azure	AVD for 24 Users in Azure	AVD per User in Azure
D8S v5 (8 Cores) / 1 year RI (24/7)	€ 470,85	€ 19,61	€ 205,41	€ 8,55
RDS CAL		€ 5,85		
M365 BPremium		€ 18,60		€ 18,60
TOTAL / User		€ 44,06		€ 27,15

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Azure Virtual Desktop FSLogix Integration

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Microsoft acquires FSLogix to enhance the Office 365 virtualization experience
 Nov 19, 2018 | Brad Anderson, CVP, Microsoft 365 and Julia White, CVP, Microsoft Azure

[f](#) [t](#) [in](#) [p](#)

The way Microsoft 365 enables customers to shift to a modern desktop experience puts it at the heart of workplace transformation. A modern desktop with Windows 10 and Office 365 not only offers the most productive and most secure computing experience, it also saves IT time and money, and allows for a focus on driving business results. For many companies, their specific needs require a modern desktop be virtualized.

To help extend our virtualization capabilities and provide an even richer experience for Microsoft 365 customers, we are excited to announce the acquisition of [FSLogix](#).

FSLogix is a next-generation app-provisioning platform that reduces the resources, time and labor required to support virtualization. From small businesses to very large global enterprises across numerous industries, FSLogix solutions enhance customer experience and productivity, while reducing support requirements for IT departments.

In September 2018, we announced [Microsoft Windows Virtual Desktop](#) – a Microsoft 365 service that empowers customers to run a modern desktop experience on Azure. It is the only cloud-based service that delivers a multi-user Windows 10 experience that is optimized for Office 365 ProPlus and includes free Windows 7 Extended Security Updates. With Windows Virtual Desktop, you can deploy and scale Windows and Office on Azure in minutes, with built-in security and compliance.

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109

FSLogix Technologies

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.

110

Benefits

- Container
- Profile Container
- Office 365 Container
- App Masking
- Java Redirection



SMB Storage

Uses native Windows VHD capabilities—no hypervisor.

Very easy to deploy and manage.

Completely seamless end-user experience.

Works with other application management platforms.

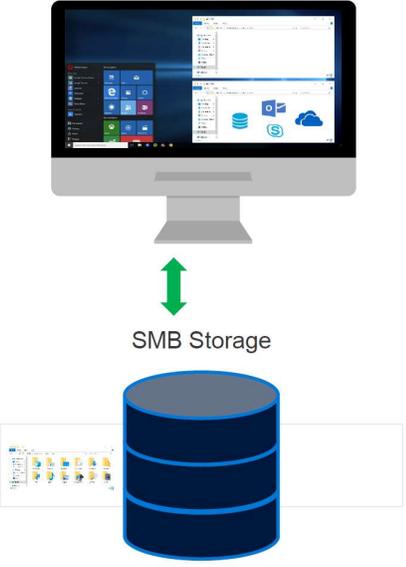
Easy to test, implement, and manage.

Reduces network and filesystem load.

111

Benefits

- Container
- Profile Container
- Office 365 Container
- App Masking
- Java Redirection



SMB Storage

Places entire user profile in network-based container.

Extremely fast logon times.

Virtually eliminates profile corruption.

Works alongside existing User Environment Management platforms.

112

User profile disks versus FSLogix Profile Containers

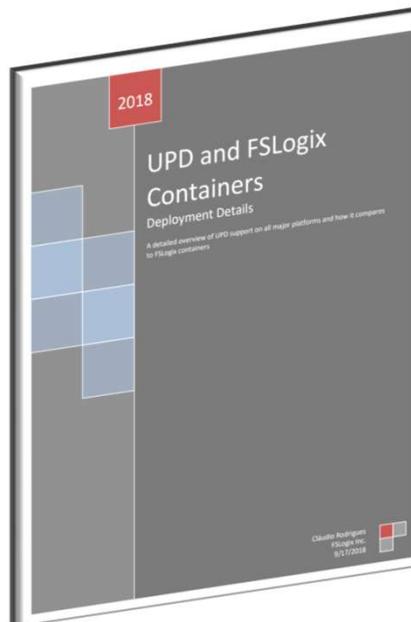
Feature	User Profile Disks (UPD)	FSLogix User Profile Containers
Low Integrity Application Support (Office, Acrobat, Internet Explorer)	No	Yes
Migrate Existing Profiles	No	Yes
Office 365 Support	No	Yes
Roam Windows Search dB	No	Yes
Ondrive Cache Container	No	Yes
OST-Files	?	Yes
Concurrent Access to Profile	No	RW + RO

<https://docs.fslogix.com/display/FA26/Microsoft+UPD+vs+FSLogix+Profiles>

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113

FSLogix Containers Documentation



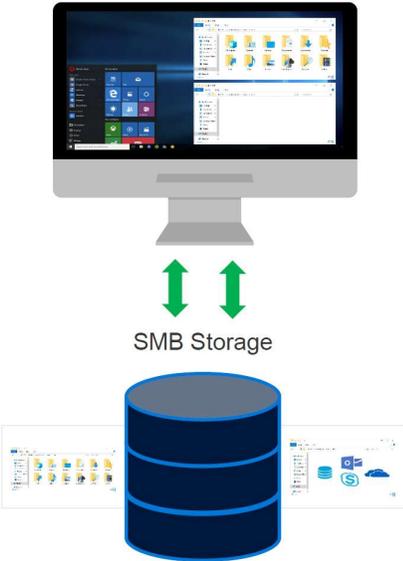
<https://interact.sharefile.com/public/share/web-se0d304c096fa4ef4ad68f08770372d78>

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114

Benefits

- Container
- Profile Container
- Office 365 Container**
- App Masking
- Java Redirection



Places Office 365 cache data in network-based container.

Enables roaming of Outlook OST, OneDrive cache, Windows Search, and more...

Office apps have native performance and behavior.

Works alongside other profile management platforms.

115



FSLogix Office 365 Container Product Overview

David G Young Jr – Architect/Product Champion

July 2016 Engineering the Enterprise Class Workspace

<https://interact.sharefile.com/public/share/web-se0d304c096fa4ef4ad68f08770372d78>

116

Benefits

- 🗄️ Container
- 🌐 Profile Container
- 🔗 Office 365 Container
- 🗄️ App Masking
- 📄 Java Redirection



Application Management without sequencing, snapshotting, packaging, or virtualization.

All apps installed in base image.

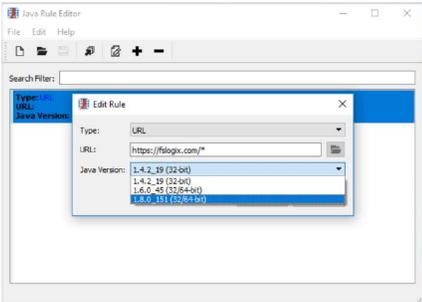
- Only apps a user is entitled to are revealed.
- App entitlements can be changed in real time.
- Works with fonts, plugins, and more...
- Excellent app compatibility

Massively reduce the number of gold images that must be maintained

117

Benefits

- 🗄️ Container
- 🌐 Profile Container
- 🔗 Office 365 Container
- 🗄️ App Masking
- 📄 Java Redirection



Securely collocate multiple version of Java on same base image

Run each app or website with specific version of Java required for full functionality

Uses FSLogix App Masking to hide unused versions of Java when not needed

118

FSLogix Agent Installation

- <https://go.microsoft.com/fwlink/?linkid=2084562>
- Aka.ms/fslogix



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**Office 365 / Microsoft 365
on Azure Virtual Desktop**

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What is Shared Computer Activation ?

SCA is used for situations where multiple users share the same computer and where the users are logging in with their own account.



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SCA with Microsoft 365 Business Premium

- Normally, Office 365 can be Activated on a limited N° of devices (5)
- Microsoft 365 Business Premium can now be activated on shared computer activation > No Limit !
- <https://techcommunity.microsoft.com/t5/Microsoft-365-Business-Blog/Shared-Computer-Activation-for-Office-in-Microsoft-365-Business/ba-p/472994>

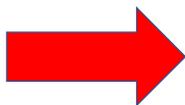
Verify that shared computer activation is enabled for Office 365 ProPlus

Here are two ways that you can check whether shared computer activation is enabled on the computer that has Office 365 ProPlus installed.

- Open any Office 365 ProPlus program, such as Word. Go to **File > Account > About Word** (or whatever the name of the app is). On the second line from the top, underneath the MSO version number, you should see **Shared Computer Activation**, instead of a Product ID, like in the following screenshot.



- Use Registry Editor, and go to **HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Office\ClickToRun\Configuration**. There should be a value for **SharedComputerLicensing** with a setting of 1.



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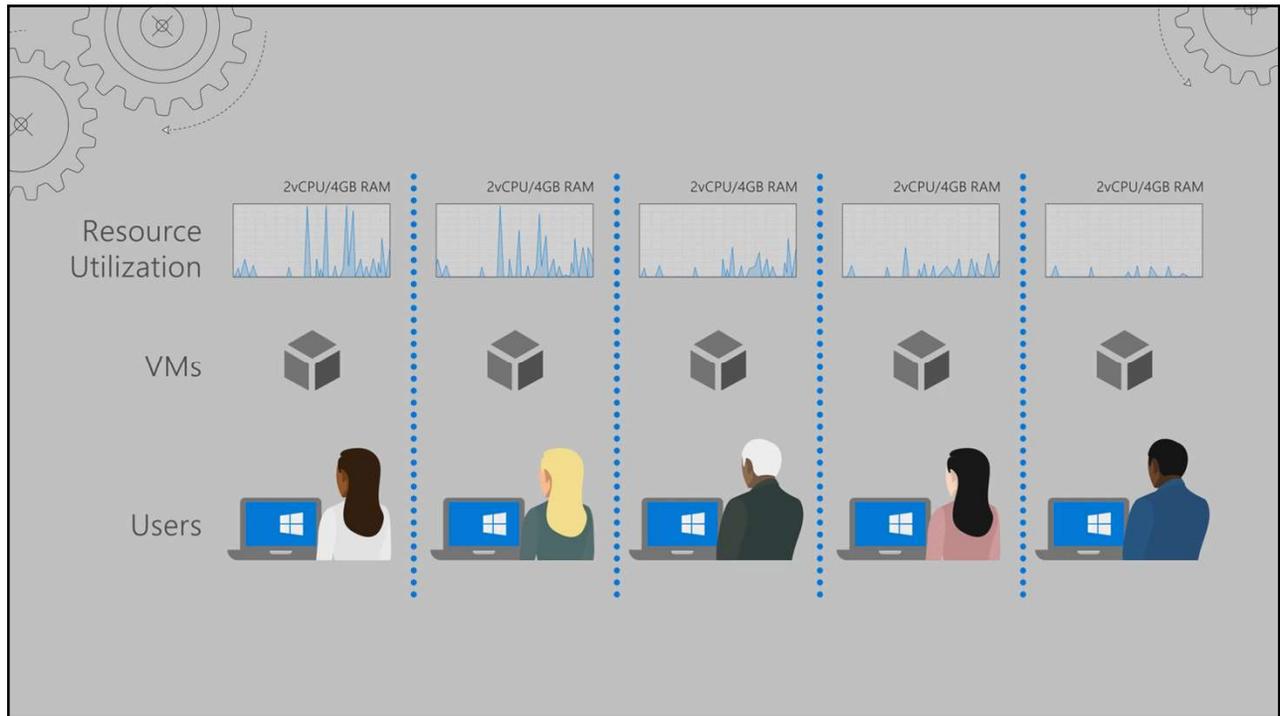
122

AVD Load Balancing

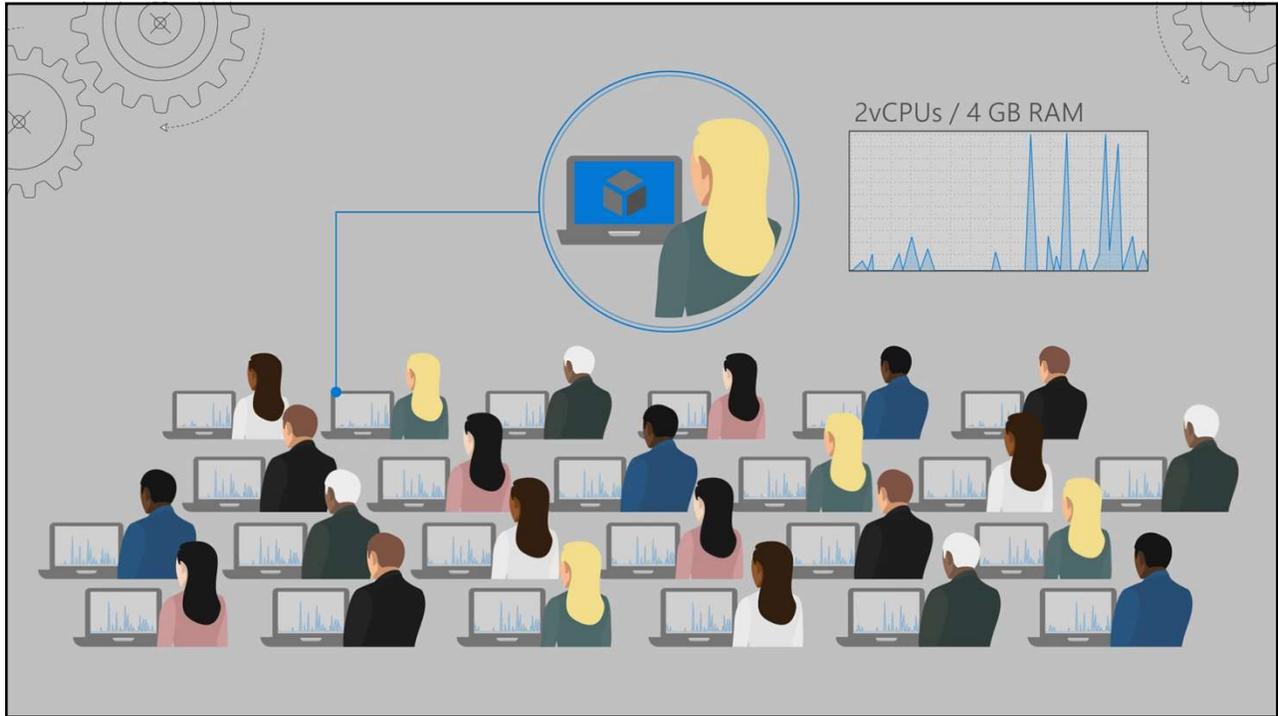
INGRAM^{MICRO} **CLOUD**
▶ *More as a Service*

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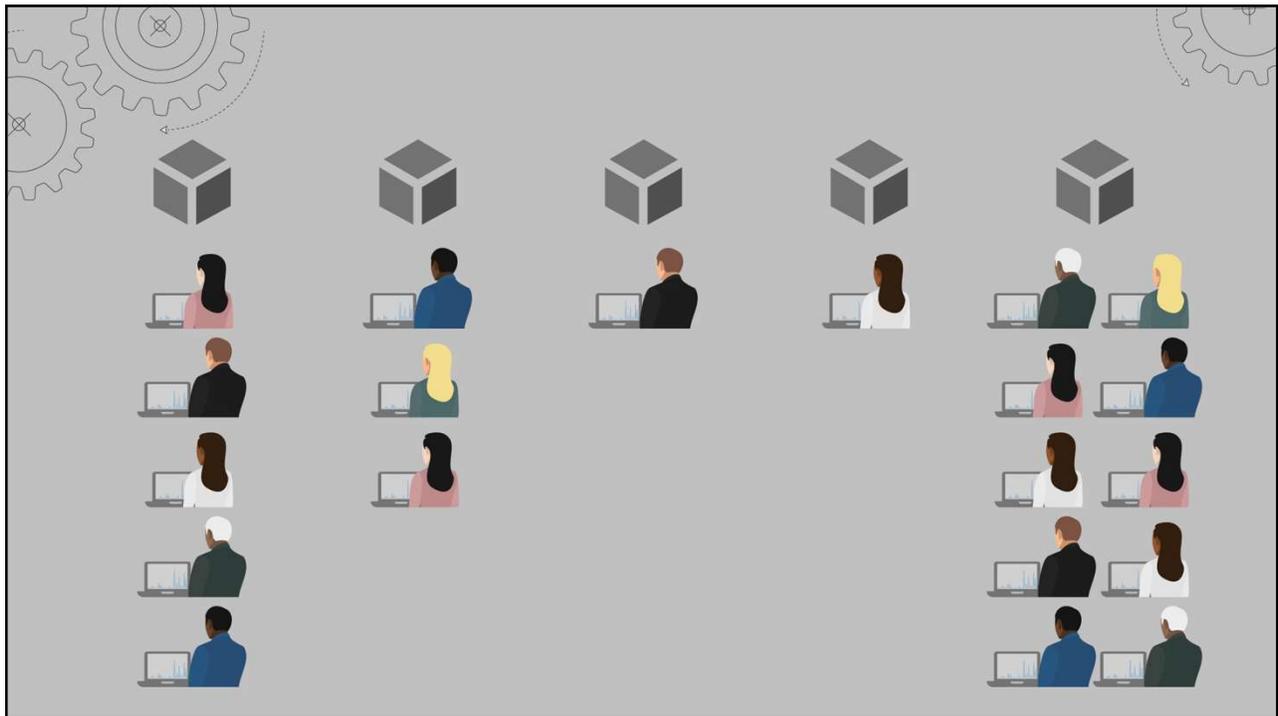
123



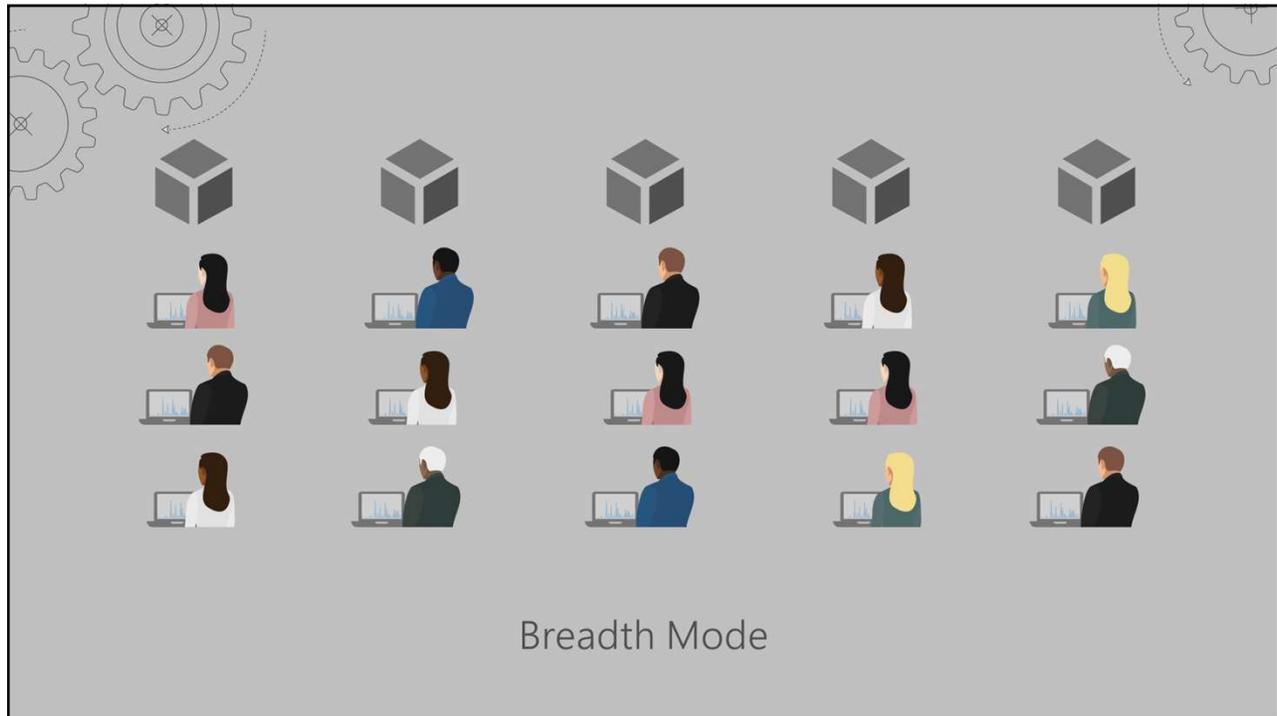
124



125



126



127

Load Balancing Algorithm Configuration

- At Host pool level
- During Creation
- HostPool > Properties

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128

WVD Autmatically Scaling (14h00)

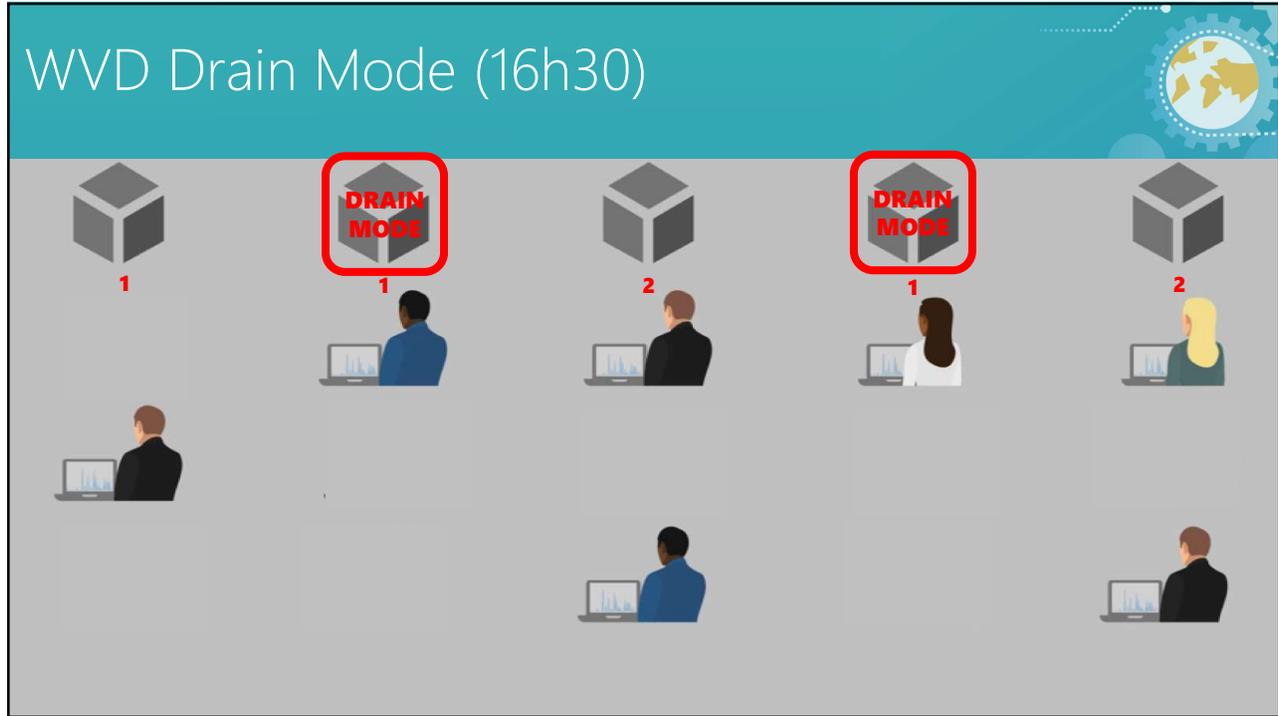
The diagram illustrates a fully scaled WVD environment at 14:00. It features a teal header with the text "WVD Autmatically Scaling (14h00)" and a globe icon. Below the header, there is a grid of 20 user icons, each representing a user at a workstation. Each workstation is depicted with a laptop displaying a bar chart and a cube icon above it. The users are arranged in four rows and five columns, with each icon representing a distinct user profile.

129

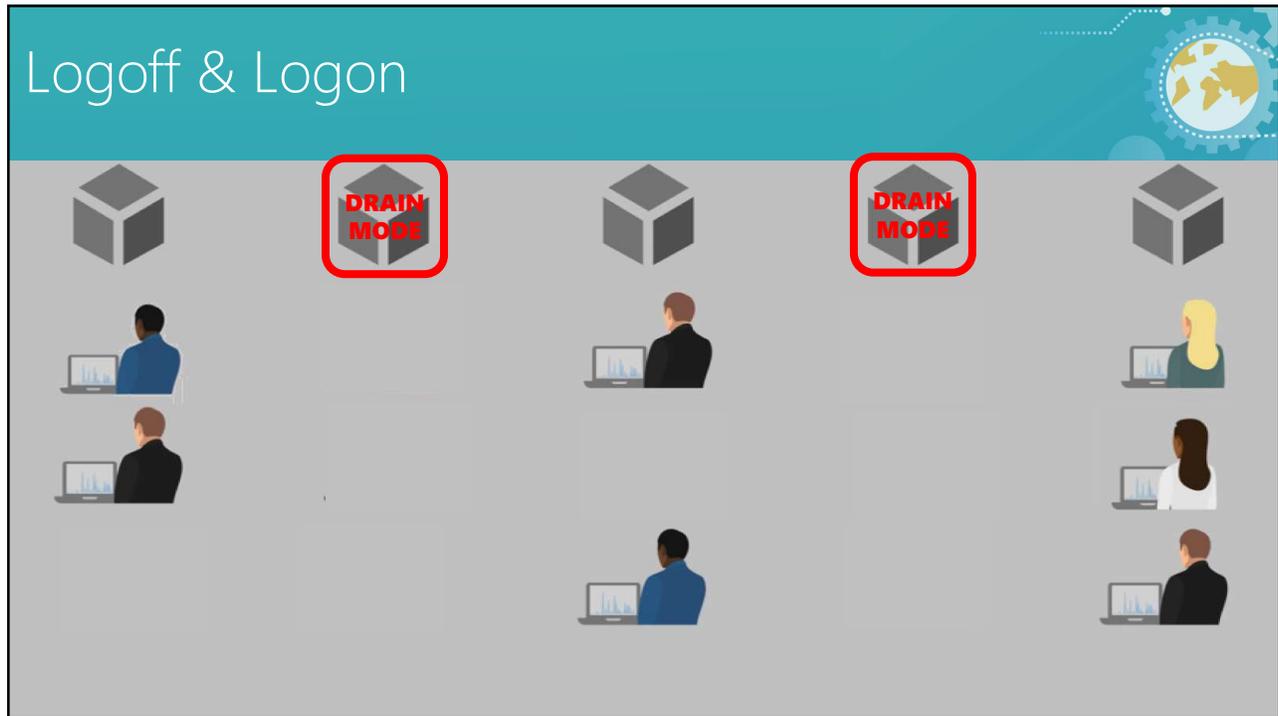
WVD Autmatically Scaling (14h00-16h30)

The diagram illustrates a scaled-down WVD environment during the period 14:00-16:30. It features a teal header with the text "WVD Autmatically Scaling (14h00-16h30)" and a globe icon. Below the header, there is a grid of 8 user icons, each representing a user at a workstation. Each workstation is depicted with a laptop displaying a bar chart and a cube icon above it. The users are arranged in two rows and four columns, with each icon representing a distinct user profile.

130



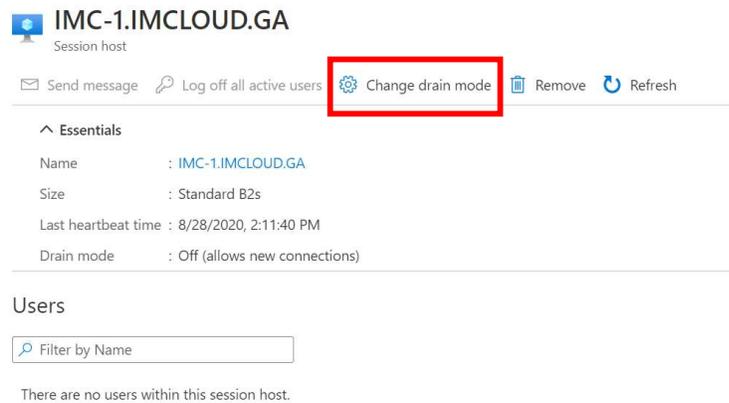
131



132

Drain Mode Configuration

- At Session host Configuration



IMC-1.IMCLOUD.GA
Session host

Send message Log off all active users **Change drain mode** Remove Refresh

^ Essentials

Name : IMC-1.IMCLOUD.GA
Size : Standard B2s
Last heartbeat time : 8/28/2020, 2:11:40 PM
Drain mode : Off (allows new connections)

Users

Filter by Name

There are no users within this session host.

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133

Autoscale for Azure Virtual Desktop

- Tool uses Azure Automation and Azure Logic App

<https://docs.microsoft.com/en-us/azure/virtual-desktop/set-up-scaling-script>



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134

Azure Virtual Desktop What is New ?

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More as a Service™



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135

AVD Watermarking



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<https://learn.microsoft.com/en-us/azure/virtual-desktop/watermarking>

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136

Windows 7 Not supported anymore

- Windows 7 Support ended on 10-01-2023



Operating system	User access rights
<ul style="list-style-type: none"> • Windows 11 Enterprise multi-session • Windows 11 Enterprise • Windows 10 Enterprise multi-session • Windows 10 Enterprise 	<p>License entitlement:</p> <ul style="list-style-type: none"> • Microsoft 365 E3, E5, A3, A5, F3, Business Premium, Student Use Benefit • Windows Enterprise E3, E5 • Windows VDA E3, E5 • Windows Education A3, A5 <p>External users can use per-user access pricing instead of license entitlement.</p>
<ul style="list-style-type: none"> • Windows Server 2022 • Windows Server 2019 • Windows Server 2016 • Windows Server 2012 R2 	<p>License entitlement:</p> <ul style="list-style-type: none"> • Remote Desktop Services (RDS) Client Access License (CAL) with Software Assurance (per-user or per-device), or RDS User Subscription Licenses. <p>Per-user access pricing is not available for Windows Server operating systems.</p>

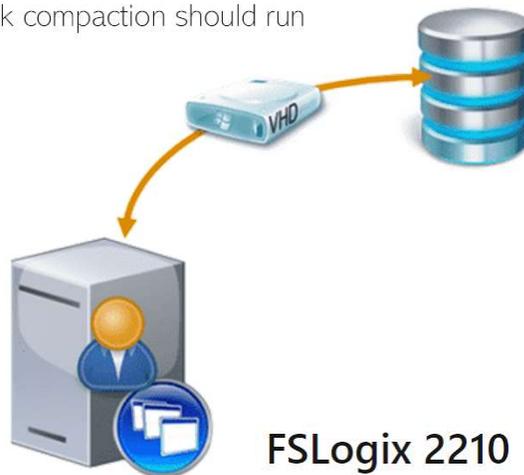
<https://learn.microsoft.com/en-us/azure/virtual-desktop/prerequisites#operating-systems-and-licenses>

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137

FSLogix VHD-Disks compaction

- Decrease the amount of storage a user's container is using
- During the sign-out phase, disk compaction should run



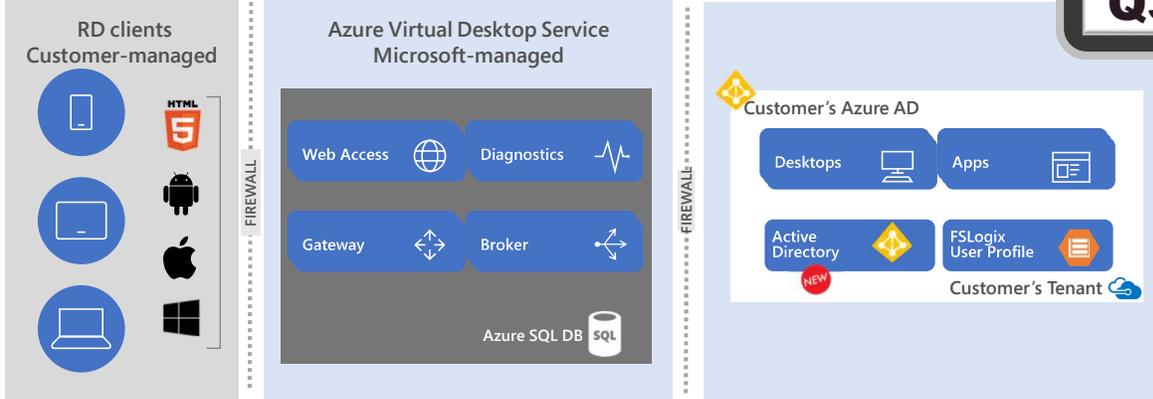
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138

Azure Virtual Desktop : Active Directory Optional !





RD clients
Customer-managed

Azure Virtual Desktop Service
Microsoft-managed

Customer's Azure AD

Desks Apps

Active Directory ^{NEW} FSLogix User Profile

Customer's Tenant

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<https://docs.microsoft.com/en-us/azure/virtual-desktop/deploy-azure-ad-joined-vm>

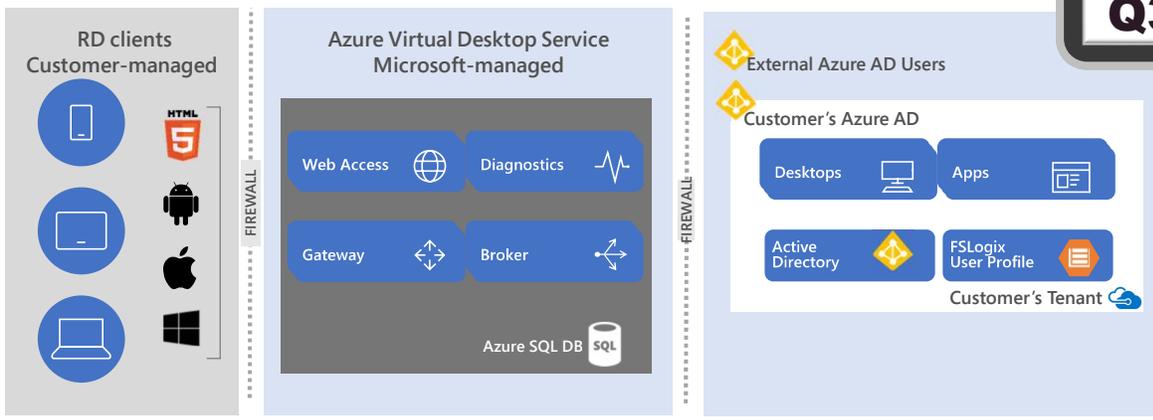
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- **Using your own Active Directory is possible but not needed anymore (public preview since 07-2021)** ^{NEW}
- **Using FSLogix User Profiles is recommended but not needed**

139

Azure Virtual Desktop : External Users ^{NEW}





RD clients
Customer-managed

Azure Virtual Desktop Service
Microsoft-managed

External Azure AD Users

Customer's Azure AD

Desks Apps

Active Directory ^{NEW} FSLogix User Profile

Customer's Tenant

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Additional Cost will Apply

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- **External Azure AD Users can be given access to Remote Applications and Remote Desktops running in your Tenant* (New since July 15, 2021)** ^{NEW}

140

Azure Virtual Desktop : Remote App Streaming

ISV

App as a SaaS solution

<https://learn.microsoft.com/en-us/azure/virtual-desktop/remote-app-streaming/licensing>

- External (B2B) Identities not supported yet
- External Users created in own Tenant
- Guest Accounts not supported

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141

AVD Remote App Streaming NEW

- Special Promo effective from July 14, 2021 to December 31, 2021
 - No Licensing Cost for External Users ONLY (Infrastructure Cost same as before)
- New per-user Pricing effective on January 1, 2022

	Apps Only <small>(from January 1, 2022)</small>	Apps & Desktops <small>(from January 1, 2022)</small>
External Users	\$5.50	\$10.00
Internal Users	Same licensing as before : - Windows 10 Enterprise - Microsoft 365 BP, E3, E5	Same licensing as before : - Windows 10 Enterprise - Microsoft 365 BP, E3, E5

<https://azure.microsoft.com/en-us/blog/azure-virtual-desktop-the-desktop-and-app-virtualization-platform-for-the-hybrid-workplace/>

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142

SSO & Passwordless Authentication

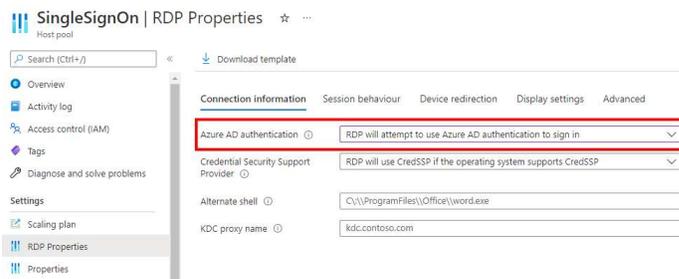
- Today in Public Preview
- SSO for Azure AD Joined SessionHosts
- SSO for Hybrid Azure AD Joined SessionHosts
- Passwordless Authentication using Windows Hello
- Passwordless inside the session (Only Windows Client)
- FIDO2 Keys support



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<https://techcommunity.microsoft.com/t5/azure-virtual-desktop-blog/announcing-public-preview-of-ss0-and-passwordless-authentication/ba-p/3638244>

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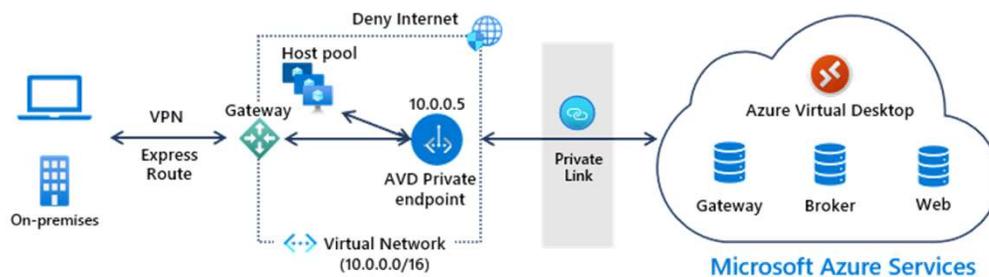
143

Private Endpoint + Private Link

- Information to remain on trusted private network
- No communications over Public Internet
- Azure Virtual Desktop services reached over Azure backbone network



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<https://techcommunity.microsoft.com/t5/azure-virtual-desktop-blog/new-ways-to-optimize-flexibility-improve-security-and-reduce/ba-p/3650895>

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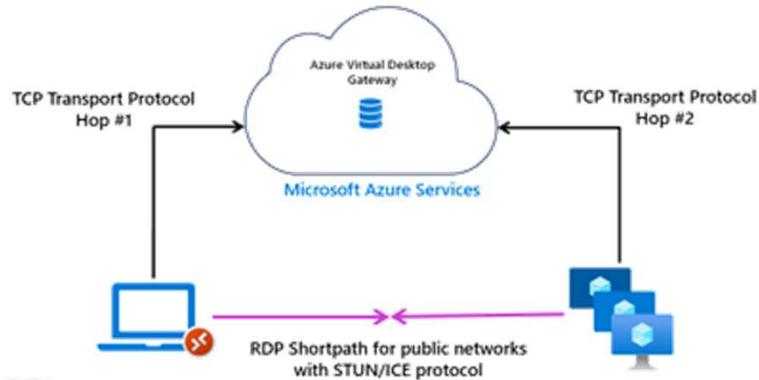
144

RDP Shortpath for public networks

GA

2022
Q3

- Direct UDP connection between Client and SessionHost
- Using Simple Traversal Underneath NAT + Interactive Connectivity Establishment (STUN/ICE)

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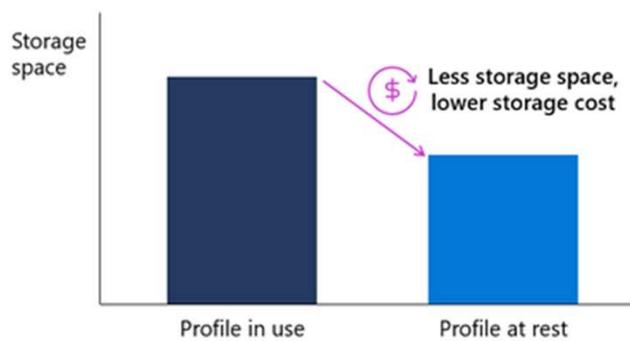
145

FSLogix Automatic Storage Savings

PREVIEW

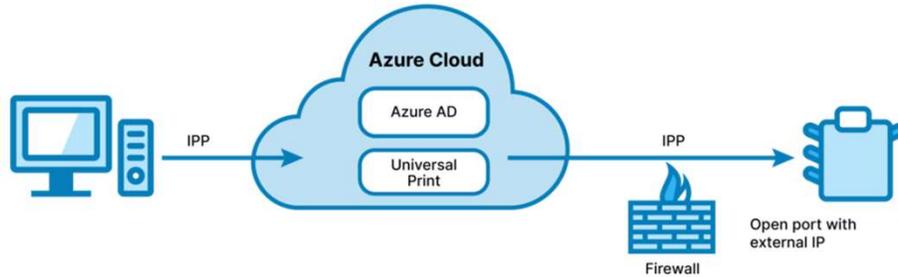
2022
Q3

- Unused space in FSLogix VHD(X) is reclaimed at logoff

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146

Microsoft Universal Print



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147

MS Intune and Multi-Session in AVD



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<https://learn.microsoft.com/en-us/mem/intune/fundamentals/azure-virtual-desktop-multi-session>

148

AVD QuickStart

- Simplifies and automates the WVD deployment process
- Deploy full WVD environment

AADDS

WVD Configuration

FSLogix and Shared Storage

Azure Automation



Welcome to the WVD QuickStart!

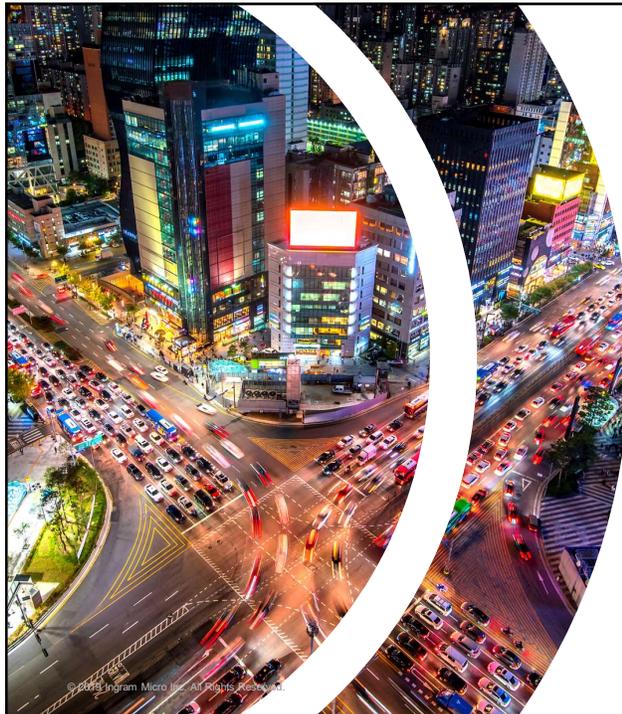
Windows Virtual Desktop (WVD) is a desktop and app virtualization service that runs on Microsoft Azure. Windows Virtual Desktop can be accessed from many client devices with applications for Windows, MacOS, iOS, Android, and Linux. You can also use most modern browsers (that support HTML5) to access Windows Virtual Desktop-hosted experiences, all allowing you to access your hosted remote desktop and (remote) applications. New to WVD? Check out the Microsoft Learn module on WVD or the overall WVD documentation for more information.

<https://wvdquickstart.com>

<https://techcommunity.microsoft.com/t5/windows-virtual-desktop/introducing-the-windows-virtual-desktop-quickstart/m-p/1589347>

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149



Wrap-Up

- Remote Desktop : Historical Overview
- Remote Desktop : Challenges
- Azure Virtual Desktop
- AVD : How does it work ?
- AVD : Requirements
- AVD : Prepare your Environment
- AVD : Components
- AVD : Build your POC
- AVD : Sizing
- AVD : FSLogix Integration
- Shared Computer Activation
- AVD : Load Balancing
- AVD Value Added Solutions
- AVD Roadmap

150

Connected Workplace
Together We Achieve More

Work together, work smarter and stay productive, from anywhere with our comprehensive suite of collaboration apps, digital experiences, and virtual desktops, designed to help you do more.

- Collaboration Apps**
Productivity Suite, conferencing
- Virtual Desktops**
Remote Work, Desktop Virtualization, OS
- Employee Experience**
Workflow insights, resources, learning

+21%
Virtual Desktop market CAGR growth by 2030

+50%
Team collaboration software growth by 2030.

57%
Reason for digital investments : Employee Experience

Connected Workplace

Windows 365 and Azure Virtual Desktop Story Telling
SUBSCRIBE HERE

Azure Virtual Desktop : Setup a POC
SUBSCRIBE HERE

Azure Virtual Desktop : Advanced Topics
SUBSCRIBE HERE

EX + CX = TX
Employee Experience + Customer Experience = Total Experience

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151

Questions ?

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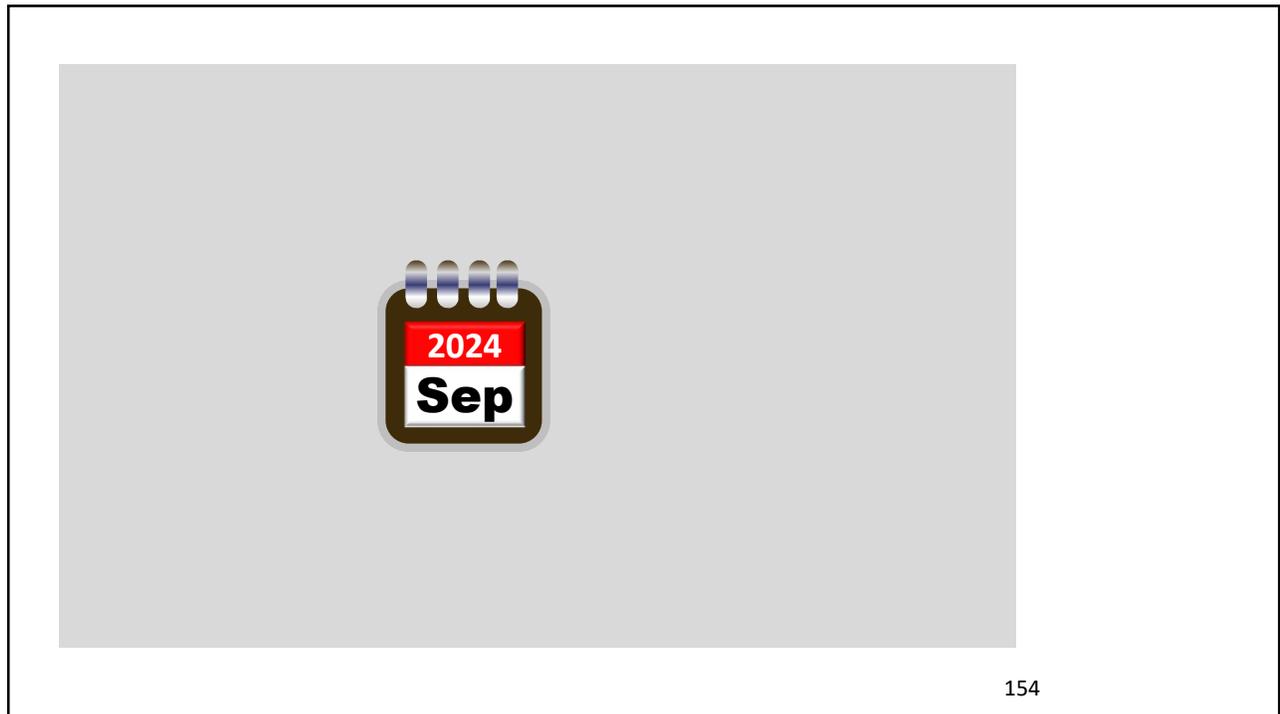
Micro Inc. All

152

152



153



154