

From Terminal Server to Windows Virtual Desktop

a 20 Year Journey

1998

Windows NT 4.0 Terminal Server

Microsoft releases Windows NT 4.0 Terminal Server edition with built-in multi-user expansion module (MultiWin) licensed from Citrix



1999

Windows 2000 Server Family

Windows 2000 Server Family based on NT is released with multi-user capabilities integrated into the kernel and Terminal Services available as a standard feature

- Printer and clipboard redirection and remote session monitoring is introduced.
- Terminal Services licensing is introduced: Windows 2000 client devices are free, all others require a Terminal Services Client Access License (TS-CAL).
- RDP (Remote Desktop Protocol) is refined with bitmap caching and API is created.



2001

Windows Server 2003 & Windows XP

Windows Server 2003 and Windows XP are launched with improved Terminal Server capabilities

- Terminal Server licensing is no longer free for non-Windows 2000 client devices.
- Windows XP is a desktop operating system based on NT and supports single user session RDP connections.
- Windows Server 2003 with Terminal Services role supports multiple concurrent users like NT 4.0 and Server 2000.
- Many RDP improvements are introduced including local drives and audio redirection, admin tools, group policies, WMI provider, and much more.



2003–2007

Terminal Server based desktop sessions grow in popularity

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- On-premises deployments run Windows Server 2003 and virtual desktops are served via Terminal Services to both local and remote users.
- Hosting providers leverage Windows Server 2003 to host virtual desktop sessions for customers in data centers.
- Licensing is provided via the Microsoft SPLA program for the Server operating system and Terminal Services Subscriber Access Licenses (TS-SAL).

2007

Desktop OS streaming with VECD

Microsoft modifies its desktop OS licensing terms with VECD (Vista Enterprise Centralized Desktop)

- Allows Windows desktop OS virtual machines (Vista and XP) to be streamed to a local device (e.g. PC or thin client).
- For hosting service providers there is a catch. Hardware cannot be shared among customers under the new licensing terms. Each customer organization must have its own dedicated hardware.
- Customers must purchase VECD licenses and maintain an agreement directly with Microsoft. Service Providers cannot resell VECD licenses.
- Licensing terms make single-user VDI desktops very expensive as they cannot benefit from service providers' economies of scale.



Windows Vista

2008

Windows Server 2008

Windows Server 2008 is released and Terminal Services is renamed to Remote Desktop Services (RDS)

- RDS becomes more robust with great deployment flexibility and scalability.
- There are now RDS roles that can be deployed in a highly available, redundant manner to create large deployments with users automatically load-balanced across multiple RD Session Hosts.



Windows Server 2008

2009

VDI Goes Mainstream

VMware introduces VMware View 4.0, a VDI product that allows one-to-one user to desktop assignment

- To address performance challenges and user isolation concerns, this new technology allows each user to have their own dedicated desktop virtual machine.
- Windows XP and Vista are supported operating systems with VMware View.
- Although the technology and use-cases are strong, Microsoft's licensing restrictions on multi-tenant hosting environments for desktops make it very expensive due to dedicated hardware requirements.



2010

VECD is replaced with Virtual Desktop Access (VDA) license

Microsoft retires VECD and replaces it with a new license program for streaming desktops

- Customers with Software Assurance (SA) can stream desktops from a data center at no additional charge.
- Those without Software Assurance can purchase a per-device VDA (virtual desktop access) license.
- Dedicated hardware limitation is still in place, making hosting of dedicated virtual desktops an expensive proposition.
- Customers must still purchase the VDA license and have an agreement directly with Microsoft, not the Service Provider.

2012

Windows Server 2012

Microsoft releases Windows Server 2012 with significant improvements to RDS scalability and a new management interface via the Server Manager rather than individual administrative tools for each RDS role as in previous versions of Windows Server.



2014–2016

Azure RemoteApp

Microsoft launches and eventually discontinues a platform-as-a-service (PaaS) product called Azure RemoteApp (ARA) to host RDS RemoteApps in Azure.



2016

Windows 10 Enterprise in CSP

Microsoft launches Windows 10 Enterprise subscription via CSP program

- Qualified Multi-tenant Hosters (QMTH) program participants can now host and stream Windows 10 Enterprise desktops (e.g. Windows 7 and 10) without being subject to the dedicated hardware requirement for each customer.
- CSP resellers can now purchase Windows 10 Enterprise subscription licenses through the CSP program and resell these licenses to customers as part of their services – maintaining the billing relationship with the customer, unlike with VECD and VDA.
- Customers with existing Windows 10 Enterprise with active Software Assurance or Windows 10 Enterprise E3/E5 via CSP can run desktops VMs in Azure and with qualified multi-tenant hosters (QMTH).



2017

Remote Desktop Modern Infrastructure (RDmi)

Microsoft announces Remote Desktop Modern Infrastructure (RDmi) product at Inspire 2017

- RDmi represents significant evolution of the RDS product. RDS infrastructure roles (e.g. gateway, connection broker, etc.) are moved from domain-joined VMs to standalone Webapps.
- RDmi promises to be a scalable, non-ADDS dependent set of Webapps that will finally enable service providers to cost effectively deliver virtual desktops from a multi-tenant control plane.



2018

Windows Virtual Desktop (WVD)

Microsoft announces Windows Virtual Desktop (WVD) at Ignite 2018

- RDmi project evolves into WVD.
- WVD is an Azure hosted, Microsoft managed control plane replacing all RDS infrastructure roles that traditionally run on Windows servers.
- New operating system called Windows 10 Enterprise multi-session promises to bring parity to the end-user desktop experience across all physical and virtual Windows 10 devices.
- Microsoft acquires FSLogix, a user profile management technology that removes many challenges related to Windows profiles in virtual desktop environments.



2019

WVD Public Preview and General Availability

Microsoft opens WVD preview to the public and releases Windows 10 Enterprise multi-session

- Licensing virtual desktops is now super simple – all that's needed is a Windows 10 Enterprise subscription under any licensing program. This license includes the use of WVD management service hosted in Azure and managed by Microsoft at no charge.
- Windows 10 Enterprise VMs are used to serve virtual desktops. Pooled and personal desktops are supported.
- Desktop VMs run in customer's Azure subscription and consume storage, compute and networking resources.
- WVD is an Azure-only service and so is the Windows 10 Enterprise multi-session operating system. On-premises deployments of virtual desktops still require the use Windows Server operating system (e.g. 2016 and 2019) with RDS licensing.
- Newly released Windows Server 2019 no longer supports Office 365 ProPlus – the most popular set of applications running in virtual desktops. Microsoft is clearly signaling to the market that future virtual desktop deployments will be using WVD and running in Azure.

