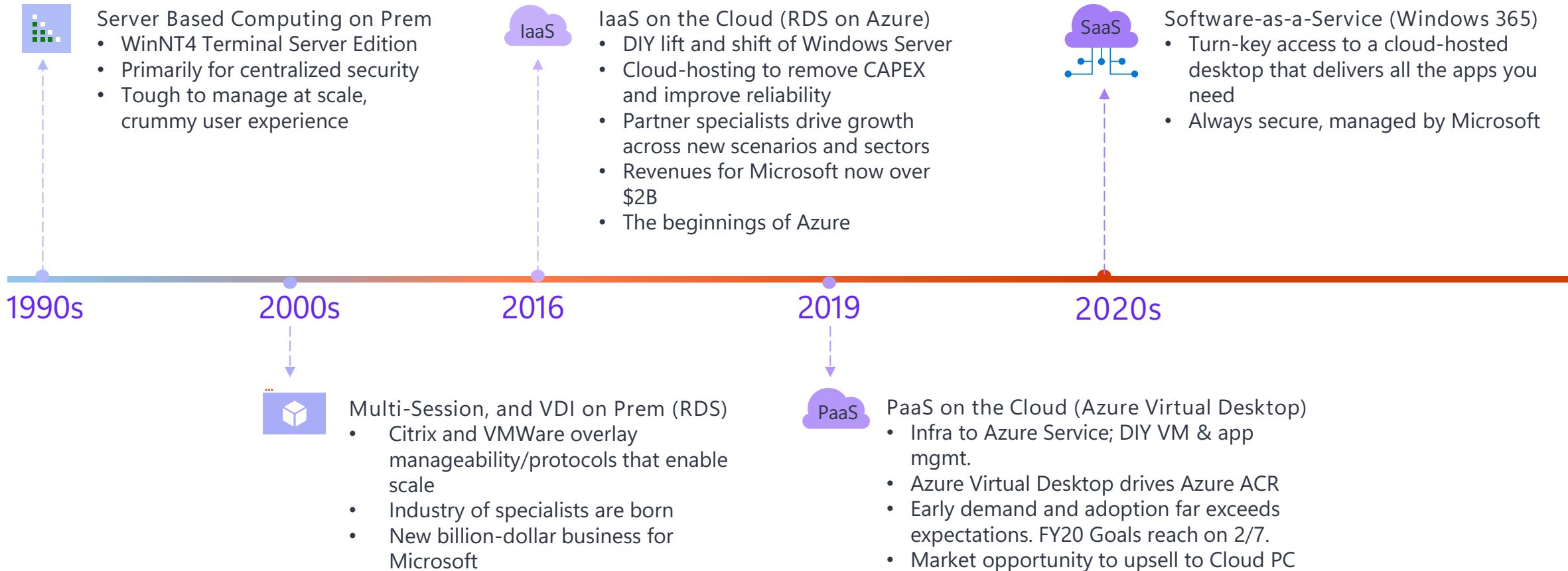


Microsoft
virtualization solutions

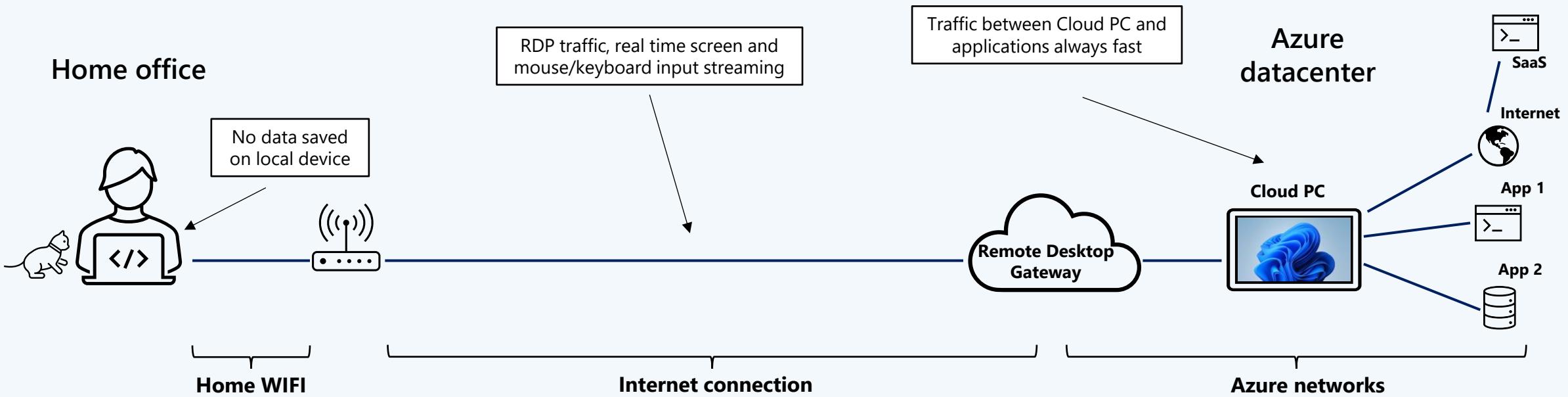


History of Microsoft desktop virtualization





User experience



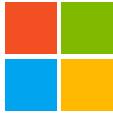


Azure Virtual Desktop



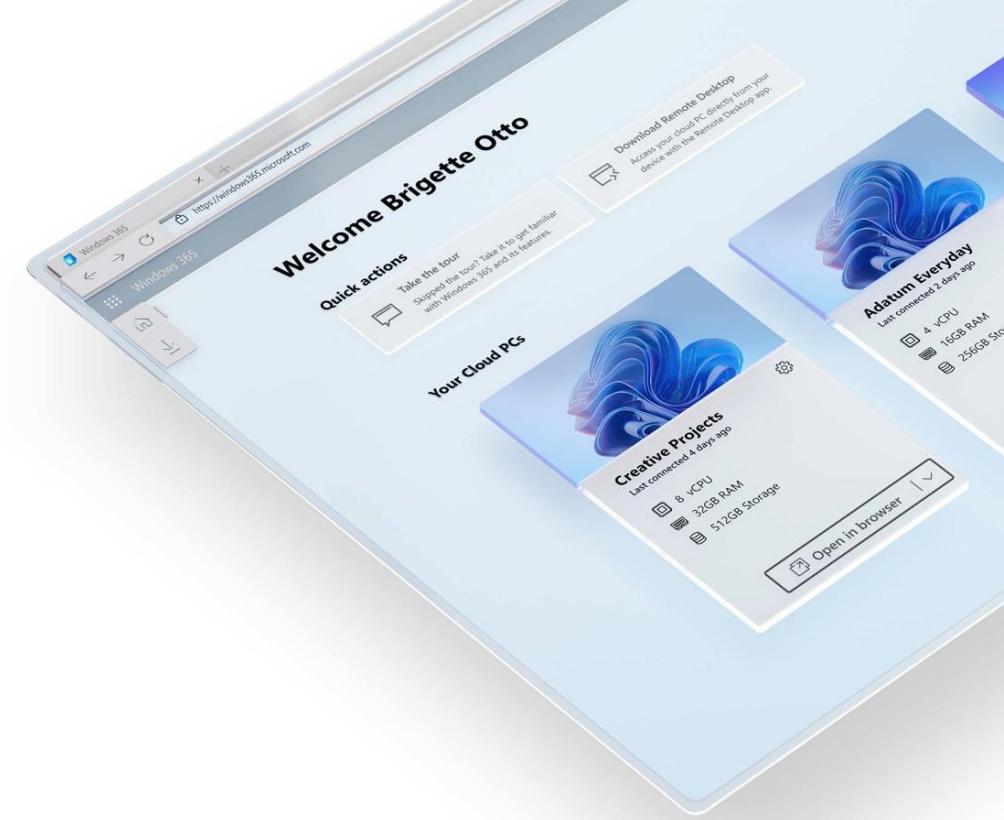
Windows 365

Virtualization use cases

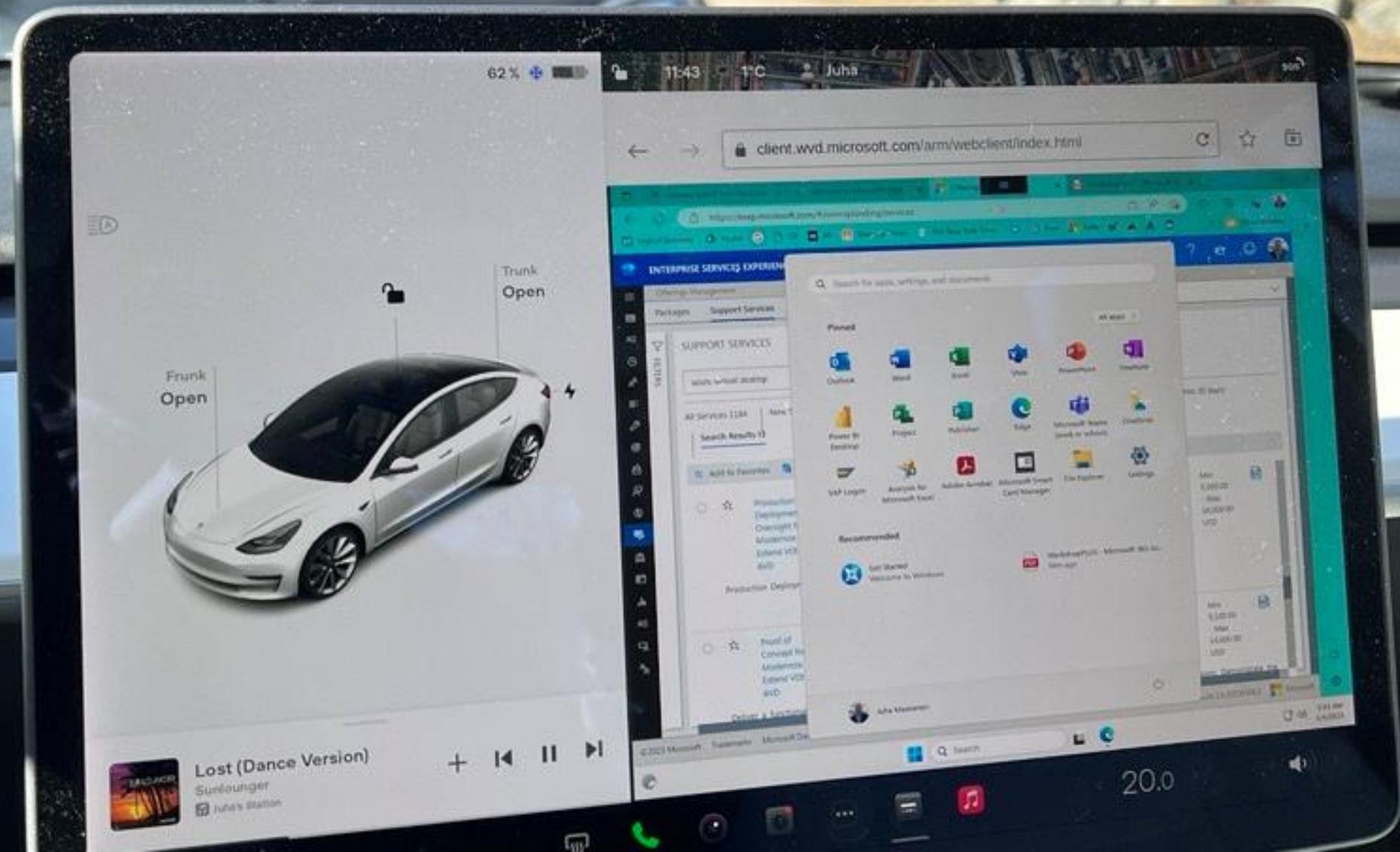


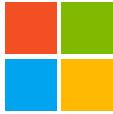
Use cases for virtualization

- Use any client device for work
- Securely deliver applications and desktops to anywhere
- Requirement for high capacity workstations
- Shared device environments like healthcare, schools, factories etc.
- Consultants, external workforce, etc.



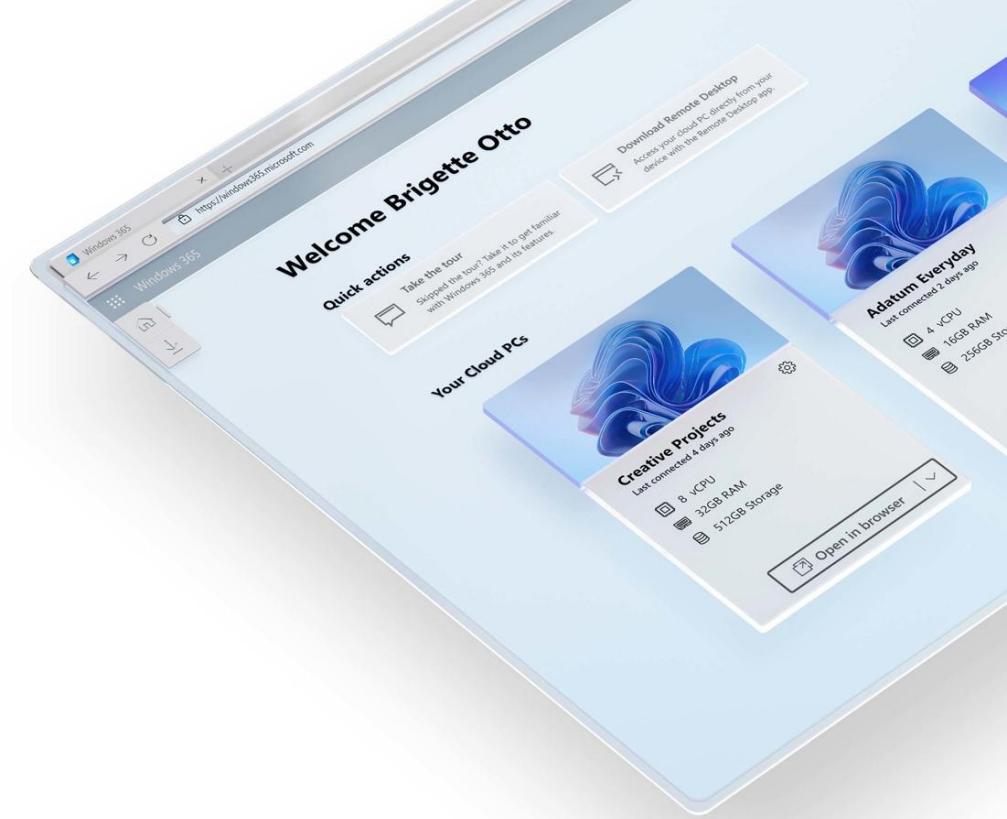






Use cases for virtualization

- Simplify and modernize endpoint management
- Delivering legacy/complex applications into modern desktops
- Test & development scenarios
- Improve performance and reliability
- Instantly recover from **any** operating system related crisis





Cloud PC restore

- Cloud PC's can be instantly restored from storage based snapshot regardless of the OS state
- Multiple restore points available, both long term and short term
- Admin can restore thousands of Cloud PC's with few clicks
- Self-service restore also available for end user

Home > Devices | Windows > Windows | Windows devices >

Bulk device action

Basics Devices Review + create

OS * Windows

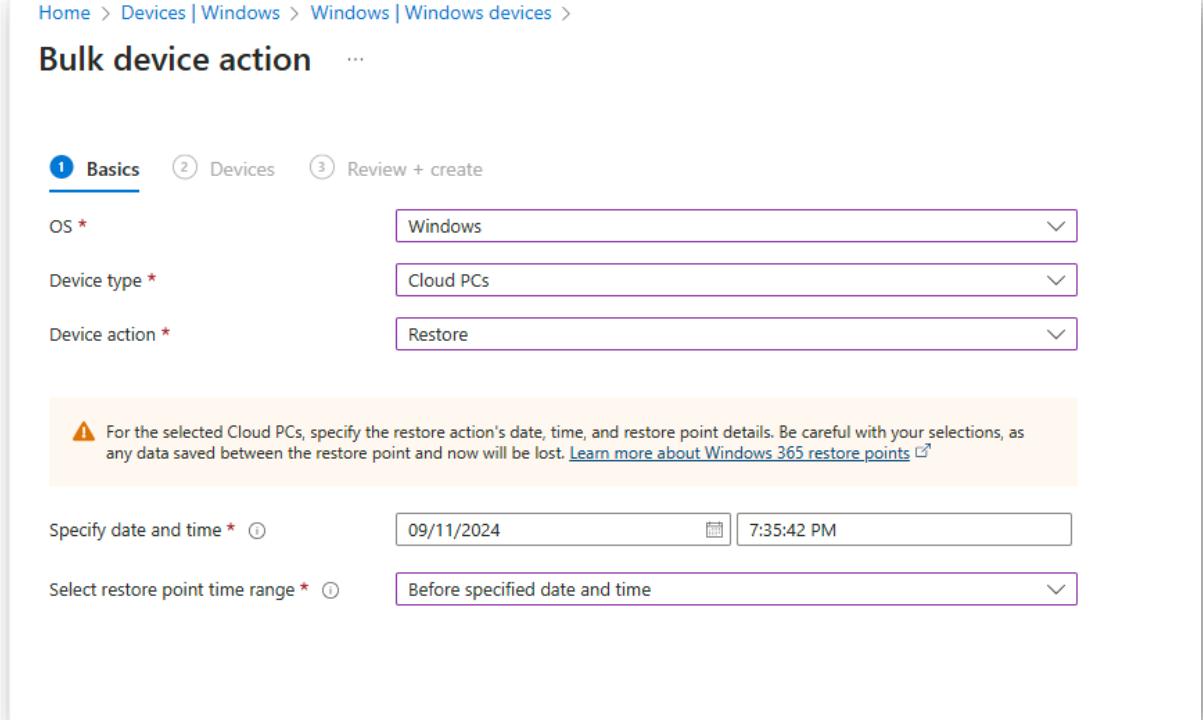
Device type * Cloud PCs

Device action * Restore

⚠️ For the selected Cloud PCs, specify the restore action's date, time, and restore point details. Be careful with your selections, as any data saved between the restore point and now will be lost. [Learn more about Windows 365 restore points](#)

Specify date and time * 09/11/2024 7:35:42 PM

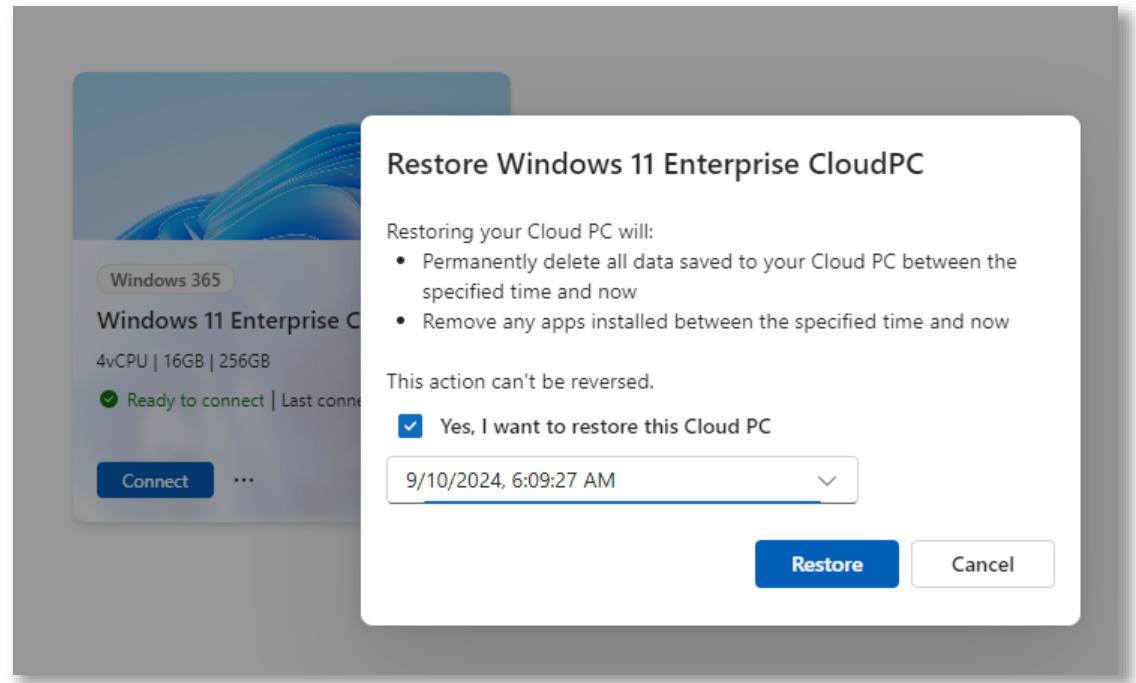
Select restore point time range * Before specified date and time





Cloud PC restore

- Cloud PC's can be instantly restored from storage based snapshot regardless of the OS state
- Multiple restore points available, both long term and short term
- Admin can restore thousands of Cloud PC's with few clicks
- Self-service restore also available for end user





User experience comparison

Traditional laptop

- Low CPU clocks to save energy
- Small form factor, limited cooling and power supply
- Network performance limited by current internet connection
- Client device shutdown also stops all running applications
- Performance specified and locked during assembly

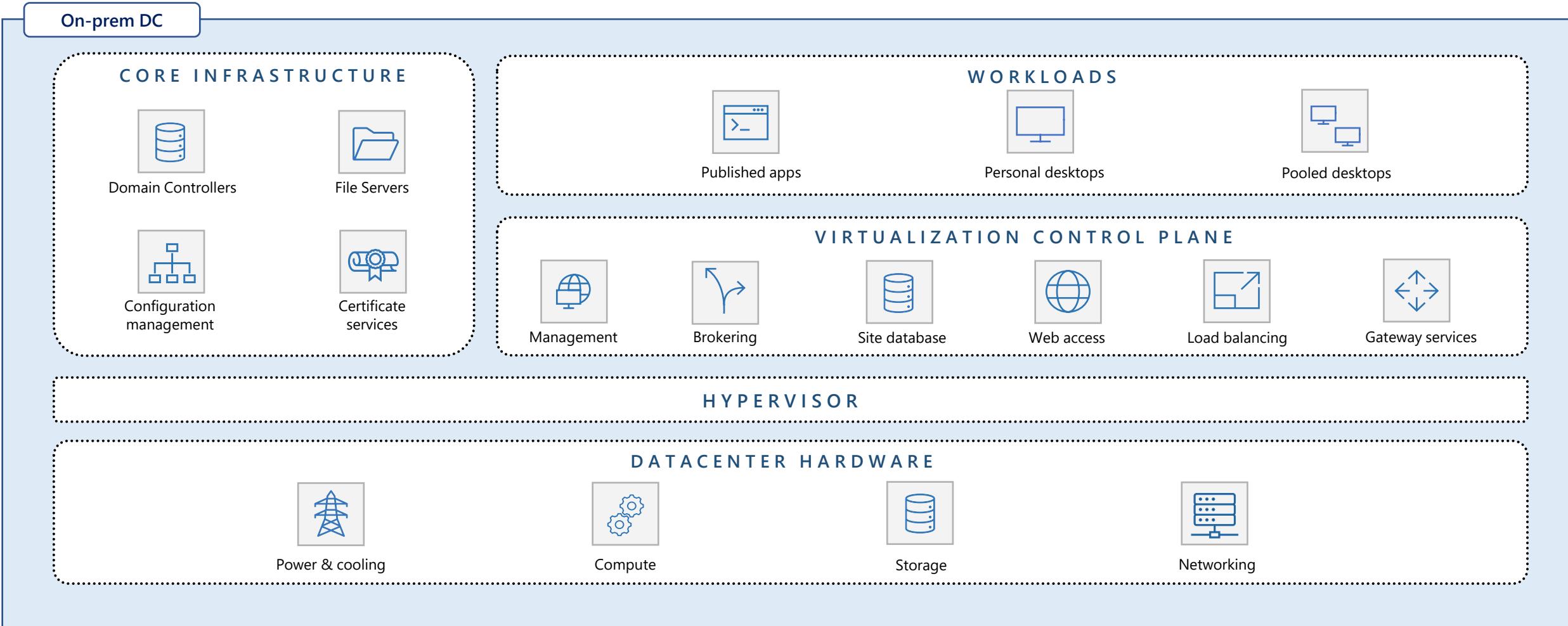
Cloud PC

- Server CPU's can run at max power all the time without issues
- Runs in Azure datacenter with server grade cooling and power supply
- Always connected to super fast datacenter networks
- Applications can run in the background even if the client device is shut down
- Performance can be changed when needed

Architecture

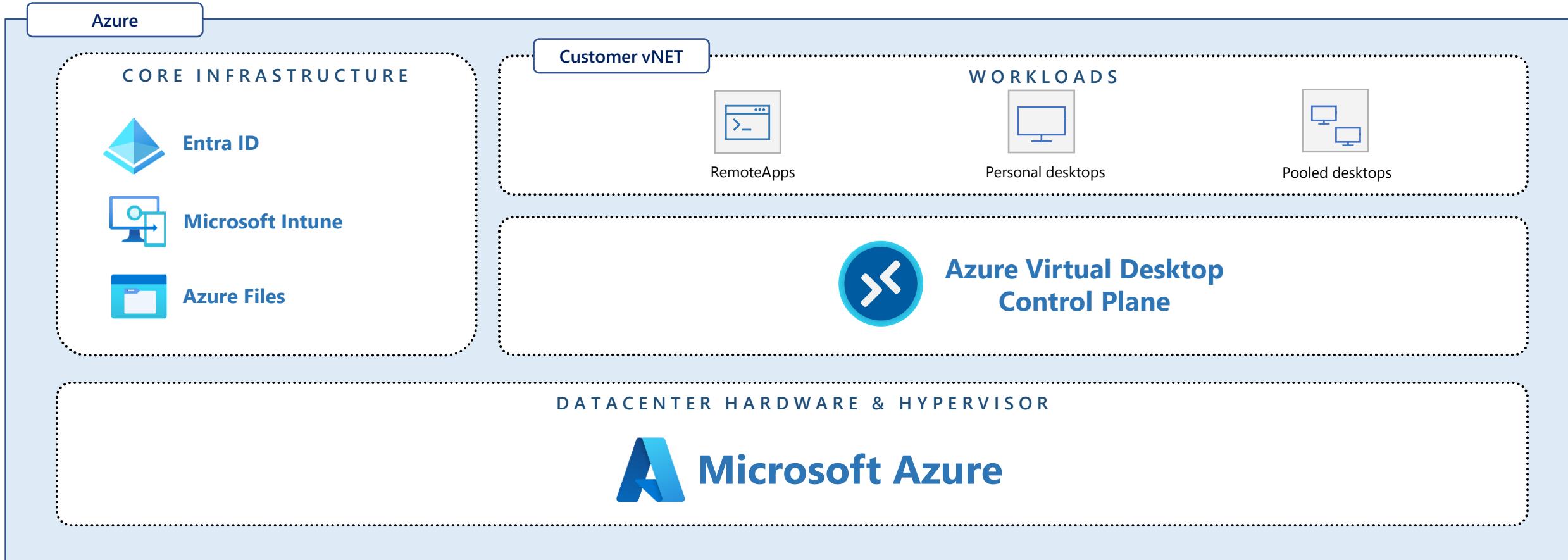


Traditional on-prem architecture



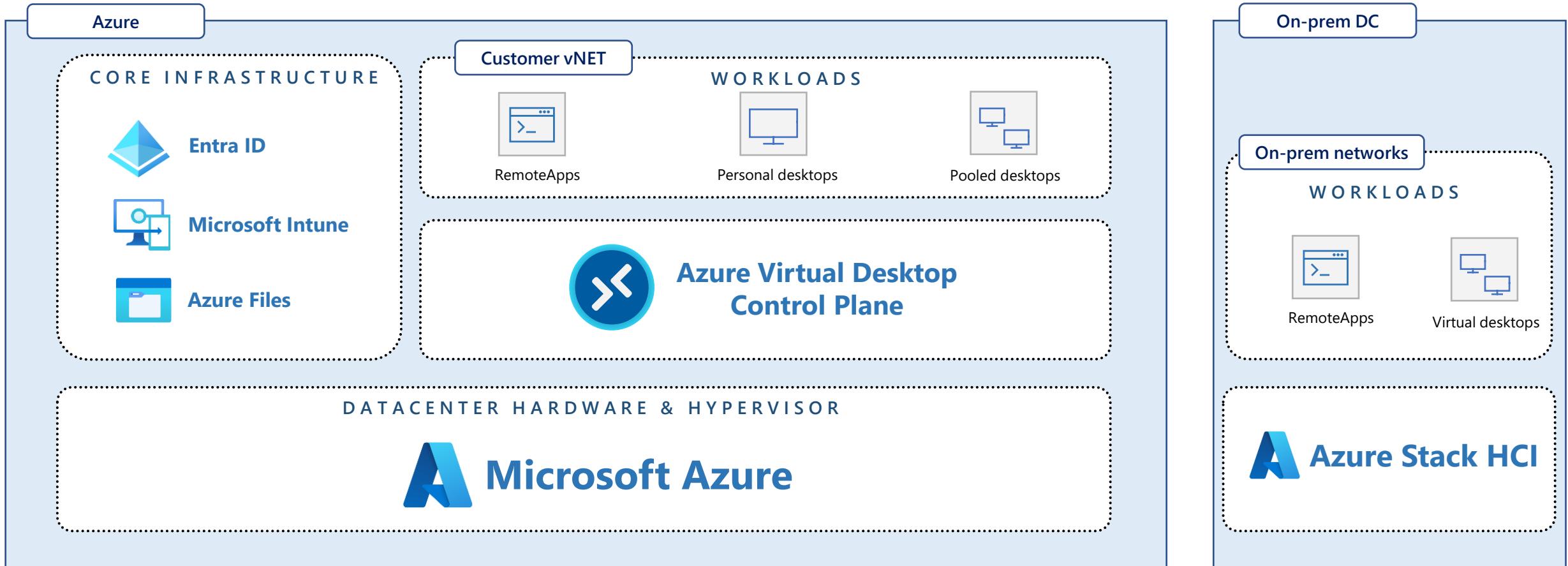


Azure Virtual Desktop architecture



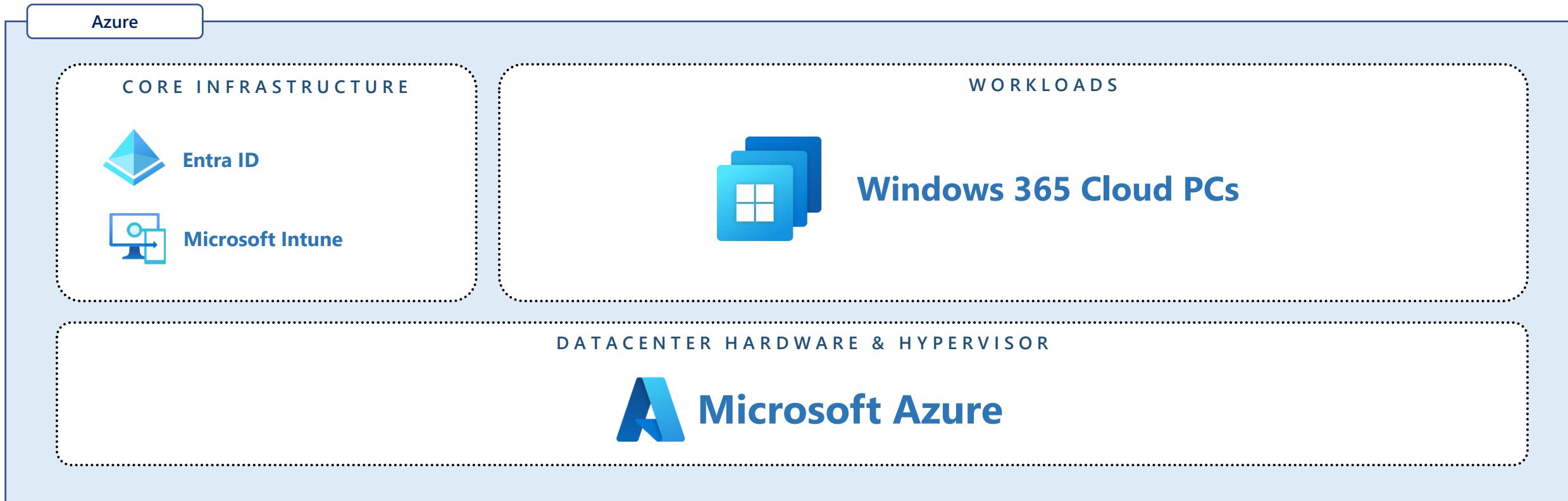


Azure Virtual Desktop with on-prem architecture





Windows 365 architecture





Windows 365 or Azure Virtual Desktop?

Windows 365

- Highly automated **SaaS** solution
- Managed from Microsoft Intune
- No virtualization skills required
- Infrastructure managed by Microsoft
- Personal machines
- Self-service driven
- License based pricing
- Boot to cloud, Switch etc.

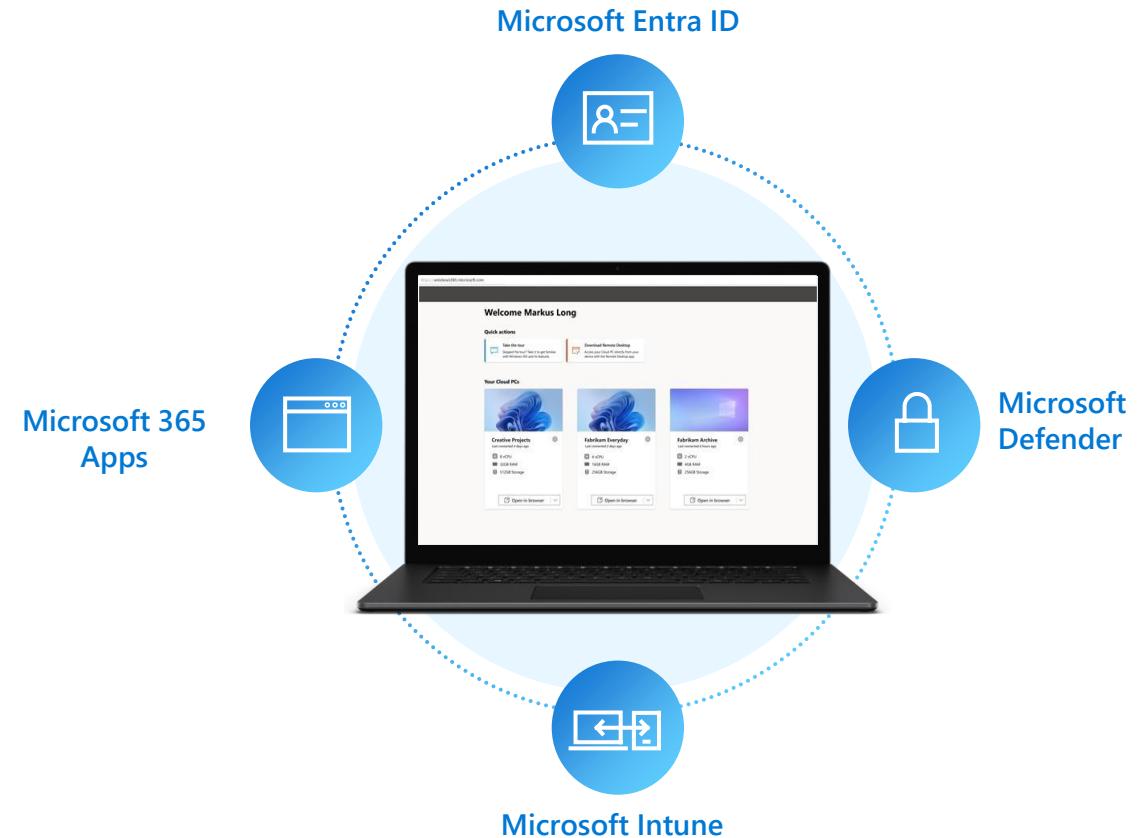
Azure Virtual Desktop

- Highly customizable **PaaS** solution
- Managed from Azure Portal
- Requires Azure infrastructure skills
- Control plane managed by Microsoft
- Personal and shared machines
- Administrator driven
- Each Azure component billed separately
- On-prem support with Azure Stack HCI



Why to use cloud based virtualization

- Most of the complex deployment work already done by Microsoft
- Tightly integrated into other M365 services
- Support for cloud native deployments
- Scales to any environment
- Basic infra/desktop skills are sufficient
- Available as **PaaS** or **SaaS** solution
- Open API's for partner solutions
- Dramatically simplify licensing





Traditional licensing

Physical desktops

Microsoft 365 license

Windows 11

Office

Security

Virtual desktops

Windows Server licenses

RDS CAL's

Gateway / LB licenses

SSL Certificates

Capacity

3rd party virtualization
licenses



Licensing in Azure

Physical desktops

Virtual desktops

Microsoft 365 license

+

Capacity

Includes Entra ID, Windows operating system, virtualization rights, Intune management, Office products, security features etc. (F3, E3, E5)

Either individual **Azure components** or **Windows 365 license** which brings capacity

Design principles



Shoot for the north star and then work back

Starting Point

Identity	Network	Images	Operating System	Updates	Apps Deployment	User Data
<ul style="list-style-type: none">• Active Directory• Hybrid Join• RADIUS MFA	<ul style="list-style-type: none">• ANC• vNets, NSGsFirewalls, Privatelink, etc	<ul style="list-style-type: none">• Custom images	<ul style="list-style-type: none">• Windows 10• Windows Server	<ul style="list-style-type: none">• Windows Update• WSUS	<ul style="list-style-type: none">• SCCM• Group Policy• Scripts• Custom Images	<ul style="list-style-type: none">• Home drives• Network shares• Local drives

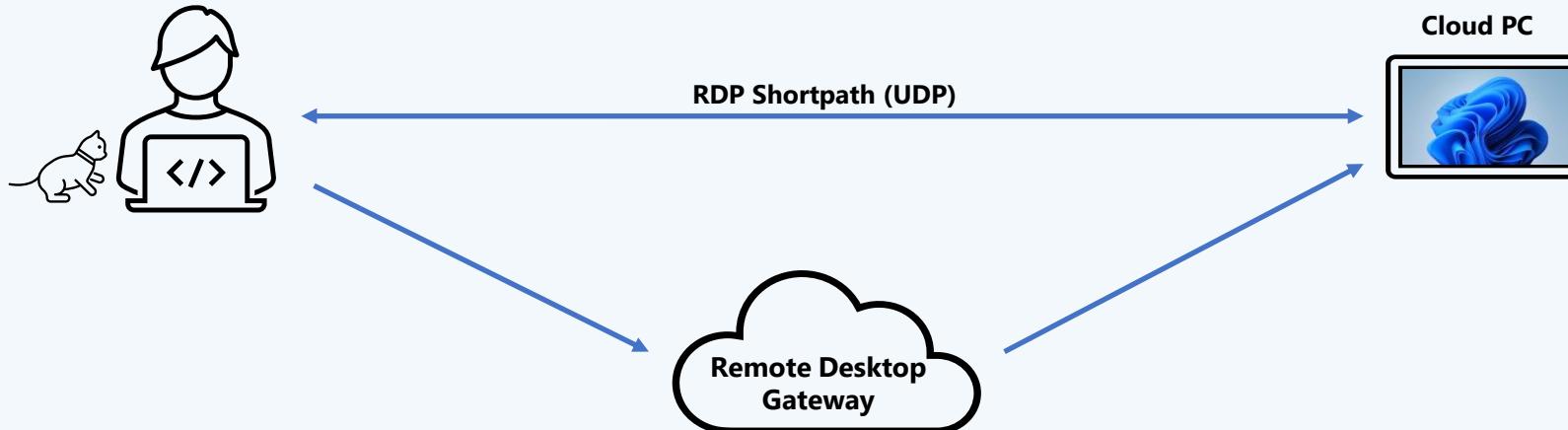
Recommendation

<ul style="list-style-type: none">• Entra joined• Windows Hello• FIDO2• Passwordless• SSO	<ul style="list-style-type: none">• MS hosted networks (SaaS)• Zero Trust alignment (Entra Private Access)	<ul style="list-style-type: none">• Gallery images	<ul style="list-style-type: none">• Windows 11	<ul style="list-style-type: none">• Intune WUfB• Autopatch (SaaS)	<ul style="list-style-type: none">• MS Store apps• Intune win32 apps• AppAttach	<ul style="list-style-type: none">• OneDrive for Business• Edge Sync• Azure Files
---	--	--	--	---	---	---



Make sure your network supports RDP shortpath

- Direct UDP based connection between Cloud PC and client device
- RDP Shortpath increases performance and reduces latency
- More resilient to packet loss and other network disturbances
- Enabled by default if network conditions allow outbound UDP traffic
- Ensure outbound connectivity from virtual desktop subnet is optimal





Optimization of RDP traffic

- RDP traffic is latency sensitive, high volume, real time traffic and needs special treatment in customer network
- Prefer local egress for RDP traffic
 - Directly out of Azure vNet
 - Directly out of local network on client side
- Bypass proxies
 - Not designed for real time traffic
 - Likely to cause performance impact
 - Adds latency
 - Can be single point of failure
- Bypass VPN/SWG tunnels
- Bypass TLS inspection as it's pointless for RDP traffic



Which region?



Rakentaminen | Vihdin datakeskuksen työt alkavat: Microsoftille myönnettiin rakennuslupa



Microsoftin datakeskusta suunnitellaan Rostin yrityspuistoon, joka sijoittuu Etelä-Nummelaan Vanhan Turuntien ja moottoritien väliin. Kuva otettu Kattilamäentien sillalta. ESSI HARJU

Datakeskuksen rakennuslupa myönnetään aloitusoikeudella vakuutta vastaan.

Microsoftin Espoon datakeskuksen rakennustyöt alkamassa syyskuussa

Datakeskus | Microsoftin datakeskukselle Espooseen myönnettiin rakennuslupa.



Havainnekuva Microsoftin datakeskuksesta Espoossa. Kuva: Microsoft Finland, Olla architecture

Kuuntele juttu

Lasse Kivinen HS

23.8. 13:59



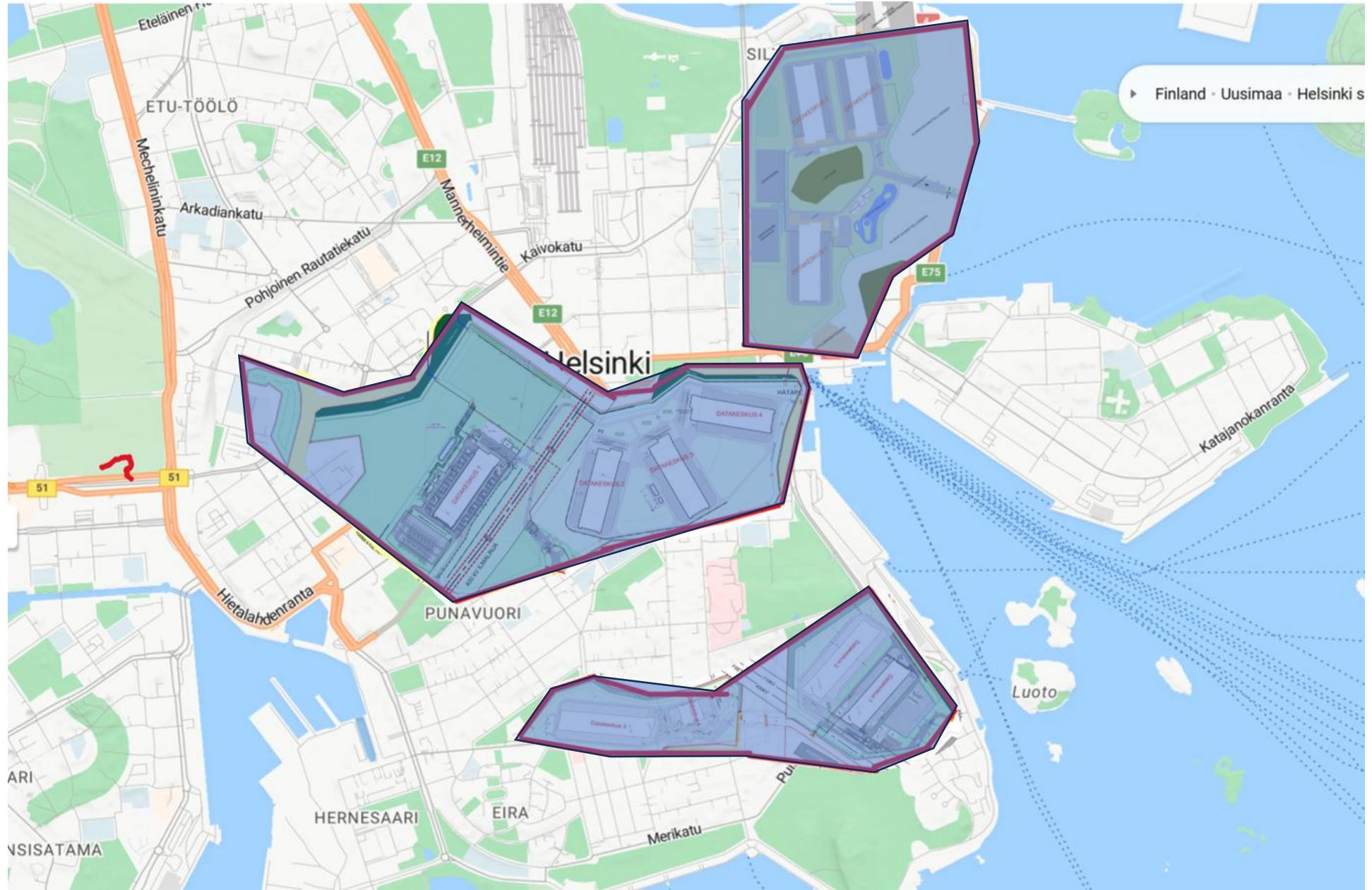
Lue tiivistelmä

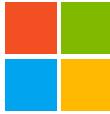
- Espoon ympäristö- ja rakennuslautakunta myönsi Microsoftin datakeskukselle rakennusluvan.
- Microsoft rakentaa kolme datakeskusta Uudellemaalle, joista kaksi on jo saanut rakennusluvan.
- Datakeskusten käyttö voi alkaa vuoden 2027 aikana.

[Sulje ^](#)

MICROSOFTIN hankkeet rakentaa kolme datakeskusta Uudellemaalle nytkähtivät eteenpäin, kun Espoon ympäristö- ja rakennuslautakunta myönsi torstaina 22. elokuuta rakennusluvan Microsoftin Espoon datakeskukselle.





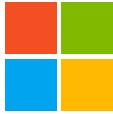


Which region?

- For best Windows user experience, place Cloud PC's as close to the end user as possible
- For the best application performance, place Cloud PC's as close to the application backend infrastructure as possible
- Certain resources might not be available in all regions
- Moving Cloud PC's to different region takes only few clicks in Windows 365



What's new?



Windows 365 recent feature updates



Seamless user experience

- Web client enhancements (HW decode)
- Shortpath (UDP) for managed networks
- Windows 365 web client enhancements , including location redirection, camera redirection, special keys (public preview)
- Calling redirection via MMR for telephony apps (public preview)
- Support for UDP TURN connectivity
- Windows 365 higher configuration (16vCPU) SKUs
- Windows 11 23H2 released, day 1 support with gallery images
- Windows App
- Windows 365 Boot & Switch support for US Gov
- Graphics remoting enhancements for quality (AVC mixed mode) and throughput (HEVC/h.265)
- Manage redirections for Cloud PCs on Android devices
- Windows 365 Cloud PC gallery images use new Teams VDI



Security and reliability

- Support for Microsoft Intune Endpoint Privilege Management (EPM)
- Ability to assign Microsoft Intune tamper protection policy
- Microsoft Purview Endpoint Data Loss Prevention (DLP) support
- GCC simplified Azure Network Connection (ANC) configuration
- GCC purchase and deploy Windows 365 Cloud PCs into Azure Commercial cloud
- Region expansion: Sweden Central, South Africa North
- Azure Tag for Microsoft Intune, Citrix on Windows 365
- Azure Network Connection (ANC) requires least amount of privileges
- Disk Encryption with Microsoft Purview Customer Key (BYOK) (preview)
- Windows 365 Customer Lockbox
- Integrate audit logs into Log Analytics
- Watermarking and screen capture protection can be configured using Microsoft Intune Settings Catalog
- RBAC Microsoft Intune scope tags for support for Windows 365 workloads (public preview)
- One-way clipboard redirection control (general availability)
- Microsoft Intune mobile application management (MAM) support for iOS and Android (private preview)
- Security baseline updates



Full control over configuration

- Ability to move a Cloud PC to a new virtual network or region
- User-driven Cloud PC reset
- Resize and downsize including group-based licensing
- Bulk action reporting (public preview)
- Worldwide support for resizing via step-up licenses
- Concurrency report for Windows 365 Frontline (public preview)
- Utilization insight reports (public preview)
- Connection quality reports (public preview)
- Connectivity report (public preview)
- IT admin alerts on Cloud PC that aren't available (public preview)
- Cloud PC recommendations report
- Cloud PC maintenance windows (public preview)
- Alerting for concurrency for Windows 365 Frontline (public preview)
- Concurrency buffer to enable temporary shift overlap
- Windows 365 GPU-enabled Cloud PCs for Windows 365 Enterprise and Windows 365 Frontline
- Windows 365 Cross-region Disaster Recovery



Windows 365 fully integrated

- Motorola Thinkphone integration
- New Microsoft Teams app integration with Windows 365
- HP Anyware for Windows 365 (HP Anyware previously Teradici) (public preview)
- Support for Omnissa Horizon and Windows 365 Enterprise integration (Omnissa Horizon previously VMware Horizon)



Azure Virtual Desktop recent feature updates



Seamless user experience

- New web client UI
- Symmetric NAT support for RDP Shortpath
- Access OneDrive for Business files with RemoteApp deployments (public preview)
- Directly link to Azure Virtual Desktop resources with new URI schemes
- Calling redirection via MMR for telephony apps (public preview)
- Windows App, new unified client
- New Microsoft Teams with integrated VDI optimizations
- Graphics remoting enhancements for quality (AVC mixed mode) and throughput (HEVC/h.265)



Better security & reliability

- Azure Confidential Compute VMs
- Azure Private Link
- Apply a watermark to the session
- Single sign-on (SSO)
- In-session passwordless authentication
- Microsoft Purview Endpoint Data Loss Prevention (DLP) support
- Tamper protection support
- One-way clipboard redirection
- Ability to apply policy to require 15-minute sign-in frequency (public preview)
- Microsoft Intune mobile application management (MAM) support for iOS and Android



Easy manageability

- Azure Virtual Desktop Insights admins can migrate to Azure Monitor Agent
- Azure Virtual Desktop ADMX available in Microsoft Intune administrative templates and Settings Catalog
- AutoScale for Personal Desktop
- Hibernate support for autoscale (public preview)
- Custom image templates
- Enhanced Overview page in Azure portal with new links and content references
- FSLogix agent included in Windows 11 and Windows 10 multi-session images
- FSLogix ADMX available in Microsoft Intune administrative templates and Settings Catalog
- Ability for Admins to invoke Restart, Start, Stop actions from Admin portal
- Watermarking and screen capture protection can be configuring using Intune Settings Catalog
- FSLogix support for new Microsoft Teams
- Autoscale and start VM on Connect for HCI (public preview)
- Configure Shortpath settings in Azure Virtual Desktop portal
- Connection Reliability tab in Azure Virtual Desktop Insights



Deployment flexibility

- Azure Virtual Desktop for Azure Stack HCI
- Autoscale & Start VM on Connect support for Azure Stack HCI (public preview)
- Guided experience to create custom image in Azure portal
- MSIX app attach packages can now be applied to multiple host pools simultaneously, entitled per user, and Microsoft Entra joined supported
- Select images from shared and community galleries in host pool creation
- New and trial customers can leverage QuickStart Center to find easier ways to deploy Azure Virtual Desktop.
- Azure Extended Zones support (public preview)



Windows App



Access your Windows on any device, anywhere.

The image displays three views of a Windows app interface, likely from the Microsoft 365 mobile or desktop app, demonstrating how users can access their Windows environment from multiple devices.

Left View (Desktop):

- Top Bar:** Shows a bell icon, a question mark icon, a user profile picture, and window control buttons (minimize, maximize, close).
- Left Sidebar:** Includes icons for Favorites (star), Devices (monitor), and Settings (gear). A "Windows App" icon is at the top left of the sidebar.
- Section Headers:** "Apps" and "Devices".
- Contoso Financial Corp.:** A section header under "Devices".
- Cloud PC Options:** "Contoso north" and "EU west".
- App Cards:** Word (blue card), Excel (green card), OneNote (purple card), and Word (light blue card).
- Bottom Icons:** Favorites (star), Devices (monitor), and Apps (grid).

Middle View (Mobile Phone):

- Top Bar:** Shows the time (10:28) and battery level.
- Title Bar:** "Favorites".
- Section Headers:** "Devices" and "Apps".
- Device Cards:** "My Cloud PC" (8vCPU | 32GB | 512GB), "Contoso full desktop - Alice" (Contoso north), and "Contoso CPC US West" (GPU Standard).
- App Cards:** Word, Outlook, Excel, Teams, and PowerPoint.
- Bottom Icons:** Favorites (star), Devices (monitor), and Apps (grid).

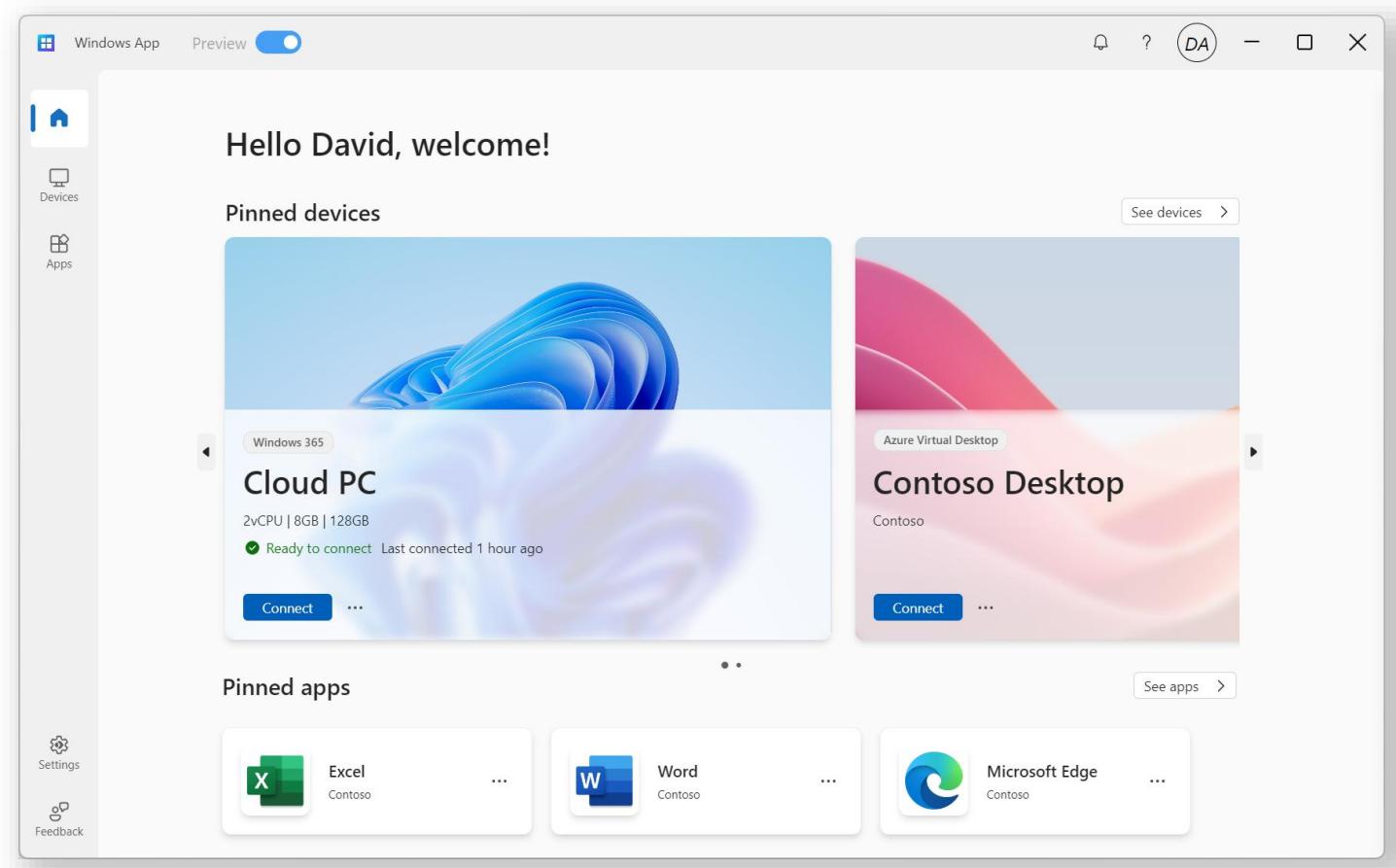
Right View (Tablet):

- Top Bar:** Shows the time (10:28) and battery level.
- Title Bar:** "Favorites".
- Section Headers:** "Devices" and "Apps".
- Device Cards:** "My Cloud PC" (8vCPU | 32GB | 512GB).
- App Cards:** Word and Excel.
- Bottom Icons:** Favorites (star), Devices (monitor), and Apps (grid).



Windows App

- Generally available now!
- Redesigned client to access:
 - Windows 365
 - Azure Virtual Desktop
 - Remote Desktop Services
 - Remote PCs
- Available for all major platforms
- Android version in public preview





New Teams for virtualized environments

- Generally available today!
- Teams in VDI has been re-architected from the ground up
- Provides new features, performance improvements, auto updating and streamlined support
- **WebRTC** replaced by **SlimCore** which is native media engine in Teams desktop client
- Microsoft keeps SlimCore evergreen on the user's client device
- Whenever you update new Teams on the virtual desktop, Microsoft updates the media engine transparently and automatically for the user
- Better experience guaranteed by avoidin newer Teams versions interacting with outdated stacks in Host/Client
- New features can be introduced to Teams without upgrading your VDI infrastructure



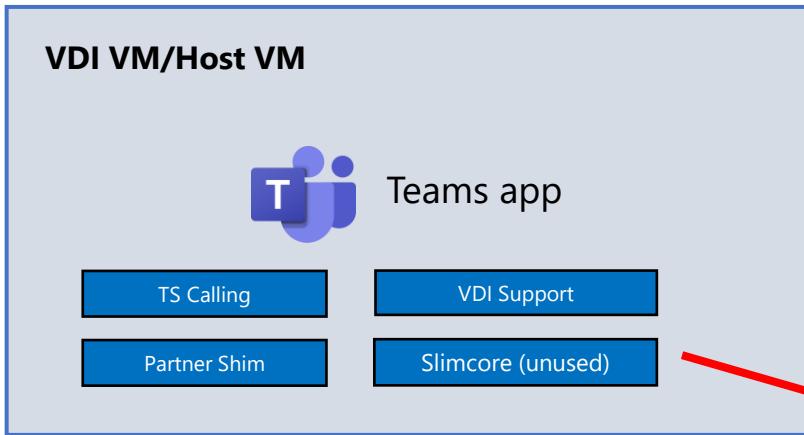
New Teams for virtualization

- New client-side plugin (**MsTeamsPlugin.dll**) responsible for virtual channel establishment with Teams on the Server
- Plugin included in Windows App and Remote Desktop clients
- Teams in VDI host will send instructions for the specific media engine version that it needs and the plugin will do the rest:
 - Plugin will contact Microsoft's public CDN, download an MSIX package and automatically register it on the user's device.
- Whenever you upgrade Teams on the Server, a new media engine version will be deployed on the client
- No more upgrades required on your VDI stack
- Plugins are backward and forward compatible with SlimCore versions, and Plugins will clean up unused or obsolete SlimCore versions as well

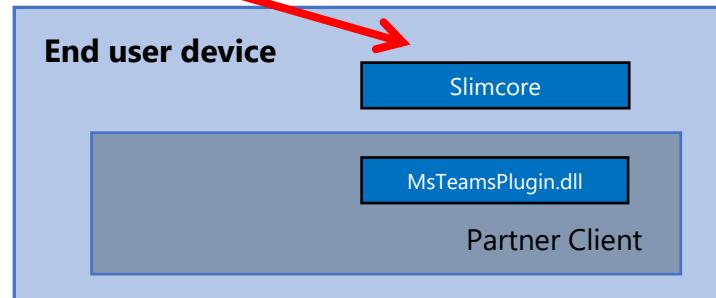
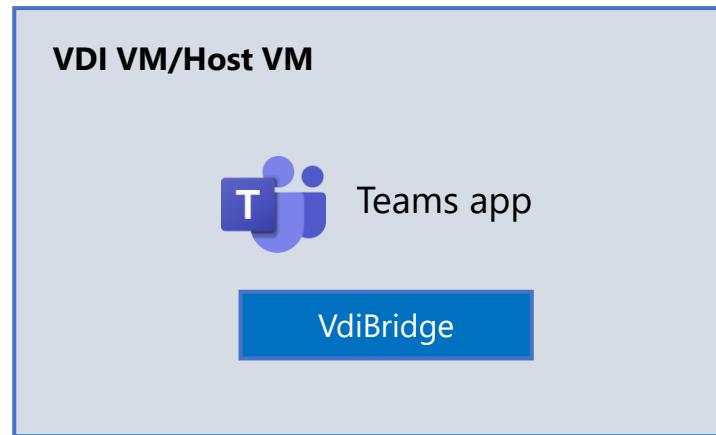


New Teams for virtualization

VDI 1.0 (WebRTC based)



VDI 2.0 (Slimcore based)



SlimCore

- Updates every 2-4 weeks
- Managed by Microsoft
- Vendor independent
- Auto-updates

MsTeamsPlugin.dll

- Small piece of code
- Doesn't change often
- Highly stable
- Vendor dependent



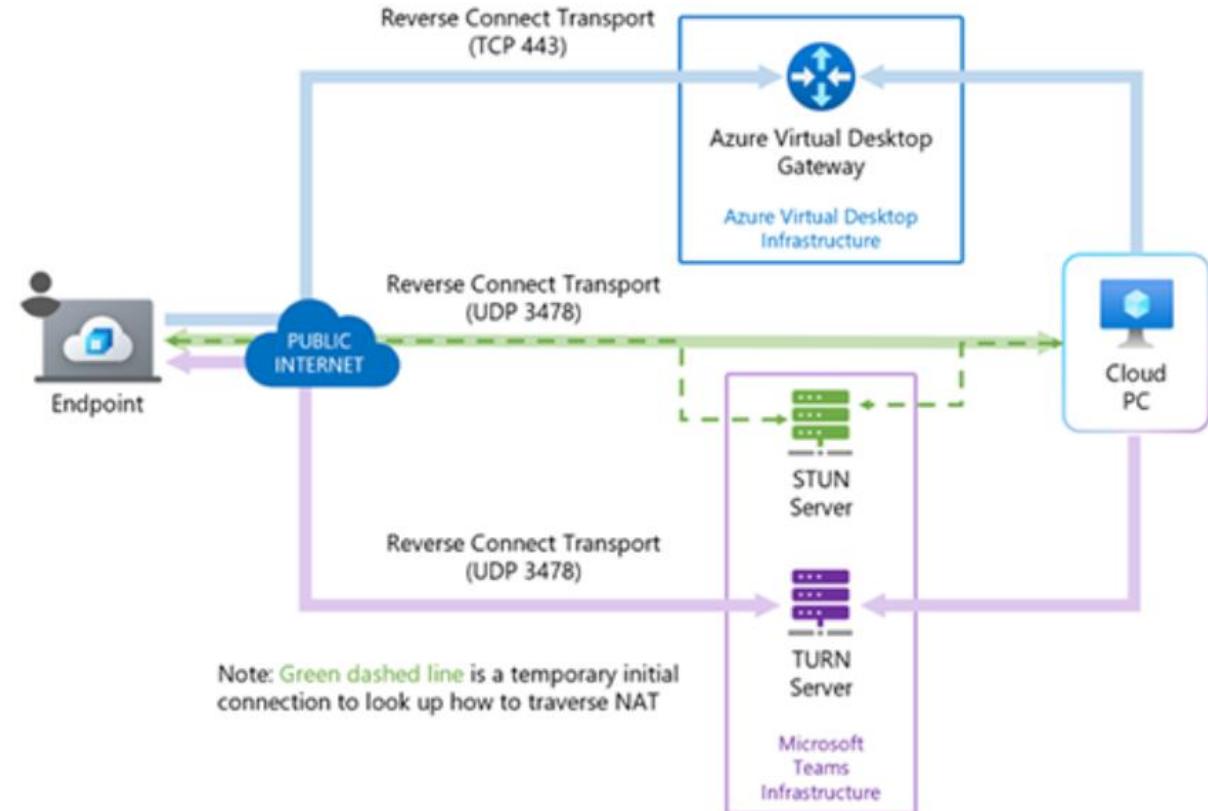
New features provided by SlimCore

- Gallery view 3x3 and 7x7
- Custom meeting backgrounds
- 1080p video feed
- Include computer sound while sharing screen
- Hardware acceleration on the endpoint
- Presenter mode
- Teams Premium support
- Noise suppression
- Quality of service
- etc



Relayed RDP Shortpath now available

- Allows UDP connections via relays using the Traversal Using Relays around NAT (TURN) protocol
- TURN enables indirect connection by relaying traffic through an intermediate server when a direct connection is not possible
- TURN is an extension of Simple Traversal Underneath NAT (STUN)



What's new in Windows 365



Windows 365 GPU generally available

- Available in three different sizes
 - Windows 365 GPU Standard
 - Windows 365 GPU Super
 - Windows 365 GPU Max
- Available for Enterprise and Frontline licenses
- All GPU enabled Cloud PC's will include additional high performance ephemeral disk for temporary files
- Connected into high speed, 10 Gbps networks to support large data transfers



Windows 365 GPU generally available

vCPU	Memory (GB)	Storage (GB)			GPU vRAM
2	4	64	128	256	-
2	8	128		256	-
4	16	128	256	512	-
8	32	128	256	512	-
16	64	512		1024	-
4	16		512		8
8	56		1024		12
16	110		1024		16



Cross region disaster recovery

- Cross region disaster recovery provides quick and easy method to make your environment more resilient against regional failures
- VM storage is replicated into another region and Cloud PC's can be quickly started if there is an issue in primary region
- Can be enabled with one click from Windows 365 user settings pane

▲ Cross region disaster recovery configuration (optional)

Protect Cloud PCs during regional outages. Before configuring, purchase and assign Windows 365 Cross-region Disaster Recovery licenses to users. Cross-region disaster recovery can't be configured for Frontline or Government Cloud PCs. [Learn more about cross region disaster recovery](#)

Enable cross region disaster recovery Yes

⚠ Ensure users are assigned Windows 365 Cross-region Disaster Recovery licenses. Licenses are required for protection to be enabled. [Learn more about cross region disaster recovery](#)

Network Type * Microsoft Hosted Network Azure Network Connection

Geography *

Region *



Purview Customer Key for Windows 365

- Cloud PC disks, snapshots, and images are encrypted at rest with customer-managed keys instead of Microsoft-managed keys
- Now generally available
- Supplied by you and managed using Azure Key Vault

The screenshot displays two windows related to Cloud PC encryption.

Main Status Window: Shows the "Cloud PC encryption type" status. It indicates that data is always encrypted at rest using platform-managed keys and mentions compliance obligations for controlling root key. A warning message states: "Your service encryption type has changed. Existing Cloud PC encryption status". Below this, it shows counts for "Microsoft managed key" (1541) and "Microsoft Purview Customer Key" (18). A "Configure" button is visible.

Configuration Dialog: Titled "Configure encryption type", it explains that the default service encryption type is configured by Microsoft support. It allows re-encrypting existing Cloud PCs. The "Service encryption type" dropdown is set to "Microsoft Purview Customer Key". The "Encryption type for existing Cloud PCs" section contains two options:

- Microsoft managed key: "Microsoft managed key applies server-side encryption using Azure."
- Microsoft Purview Customer Key: "Customer Key helps you meet regulatory or compliance obligations for controlling root keys."

A red box highlights the "Encrypt existing Cloud PCs" button at the bottom right of the dialog.

What's new in Azure Virtual Desktop



What's new in Azure Virtual Desktop

- Run AVD workloads in on-prem datacenters by utilizing Azure Stack HCI
- Microsoft Purview forensic evidence is now compatible with Azure Virtual Desktop
- Clipboard transfer direction in Azure Virtual Desktop is now available
- Support for FIDO devices and passkeys on macOS and iOS is now available

Future

Microsoft Ignite

Come join me at #MSIgnite!

Online:
aka.ms/ignite
November 19–21, 2024 CT

In Chicago:
Optional Pre-day: November 18, 2024 CT
Event dates: November 19–22, 2024 CT

