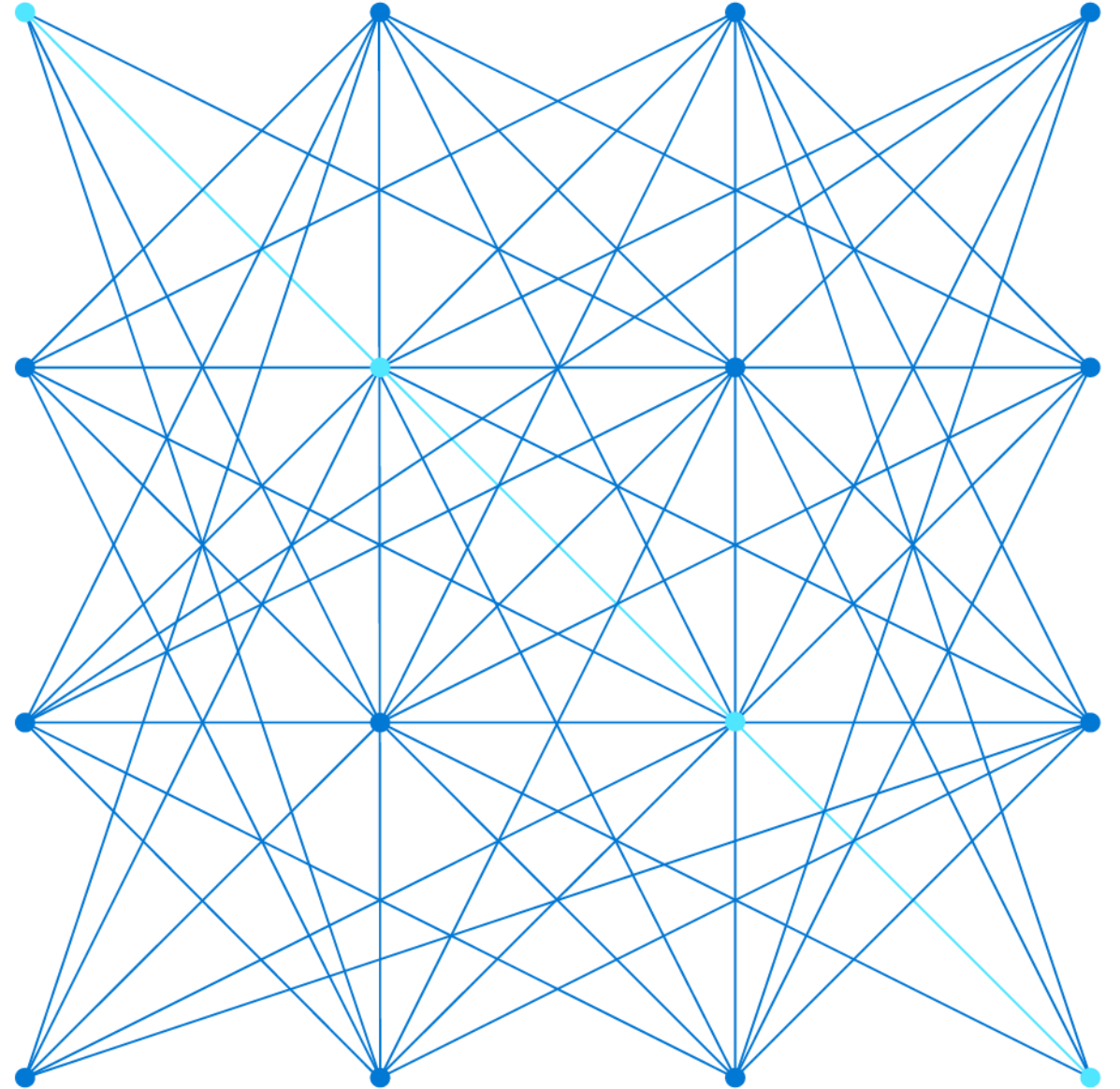




Azure Virtual Desktop

Sales Guide



Virtualization can address a broad range of **business needs**



Security and regulation

Financial Services
Healthcare
Government



Flexible workforce

Mergers and acquisition
Short term employees
Contractor and partner access

BYOD and mobile
Call centers
Branch workers



Specialized workloads

Design and engineering
Legacy apps
Software dev test

Azure Virtual Desktop is Microsoft's virtualization service and delivers **compelling value**

Azure Virtual Desktop



Best User Experience



Enhanced Security



Simplified Management



Azure
Standardized, Global, & Secure



Superior Economics
Cost effective, Flexible, & Opex



Strong Partner Ecosystem
Extensive, Integrated, & Experienced

Content Navigator

[User Experience Pillar Details](#)

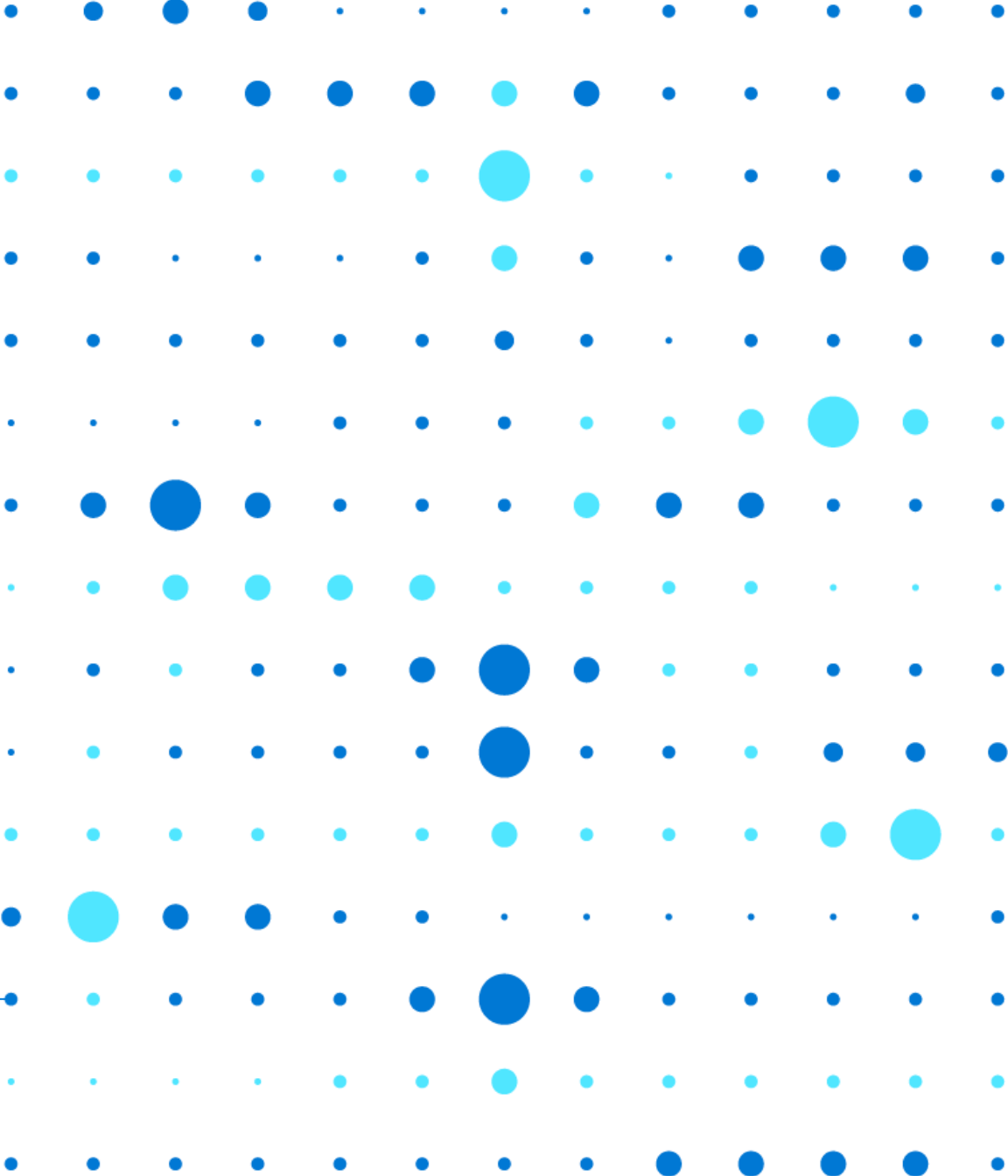
[Security Pillar Details](#)

[Management Pillar Details](#)

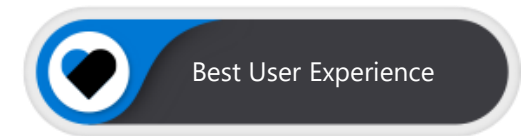
[Partner Pillar Details](#)

[Economics Pillar Details](#)

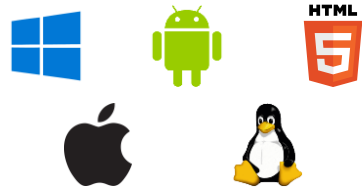
[Azure Details](#)



Best virtualized end-user experience



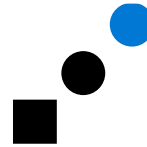
Platform of your choice



- Connect from any device of your choice (Windows, MacOS / iOS, HTML5, Android, Linux*)

* Coming soon

Windows differentiation



- Like-local Microsoft Windows experience
- Extensive support for devices

Enhanced protocol



- Support for Windows Hello for Business
- Dynamically adapting bandwidth utilization

Containerized user profiles



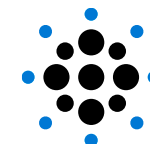
- Containerized User Profiles (FSLogix) with fast VHD load times

Native Office 365 performance



- Uncompromised Office 365 email and calendar performance, real-time Outlook search
- Persistent and non-persistent environments

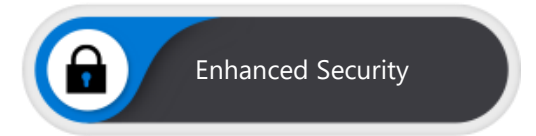
Teams Enhancements



- Best conferencing and media experience
- Multimedia redirection capability, high-performance, low latency audio & video calling

Microsoft 365 apps for enterprise also supported on Windows Server 2019 (with OneDrive files-on-demand capabilities)

Enhanced security with simplified configuration



Azure AD security services



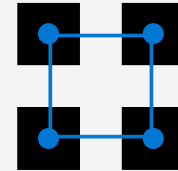
Sophisticated security services easily configured through Azure AD (e.g. MFA, CA).

Reduced attack surface



Reverse connect technology eliminates the need to open inbound ports to the VMs.

Granular access control



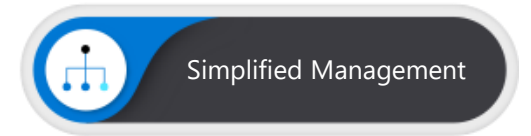
Multiple admins can be assigned role-based access control.

Isolated user sessions

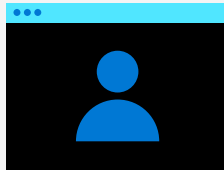


Isolated user sessions in both single and multi-session environments.

Efficient and simplified management

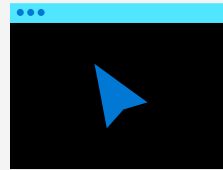


User experience management



- One service supports both desktop and RemoteApp experience.
- Flexible user experience through a single host pool, with multiple app groups.
- Familiar Azure AD credentials to access Azure Virtual Desktop resources.

VM management



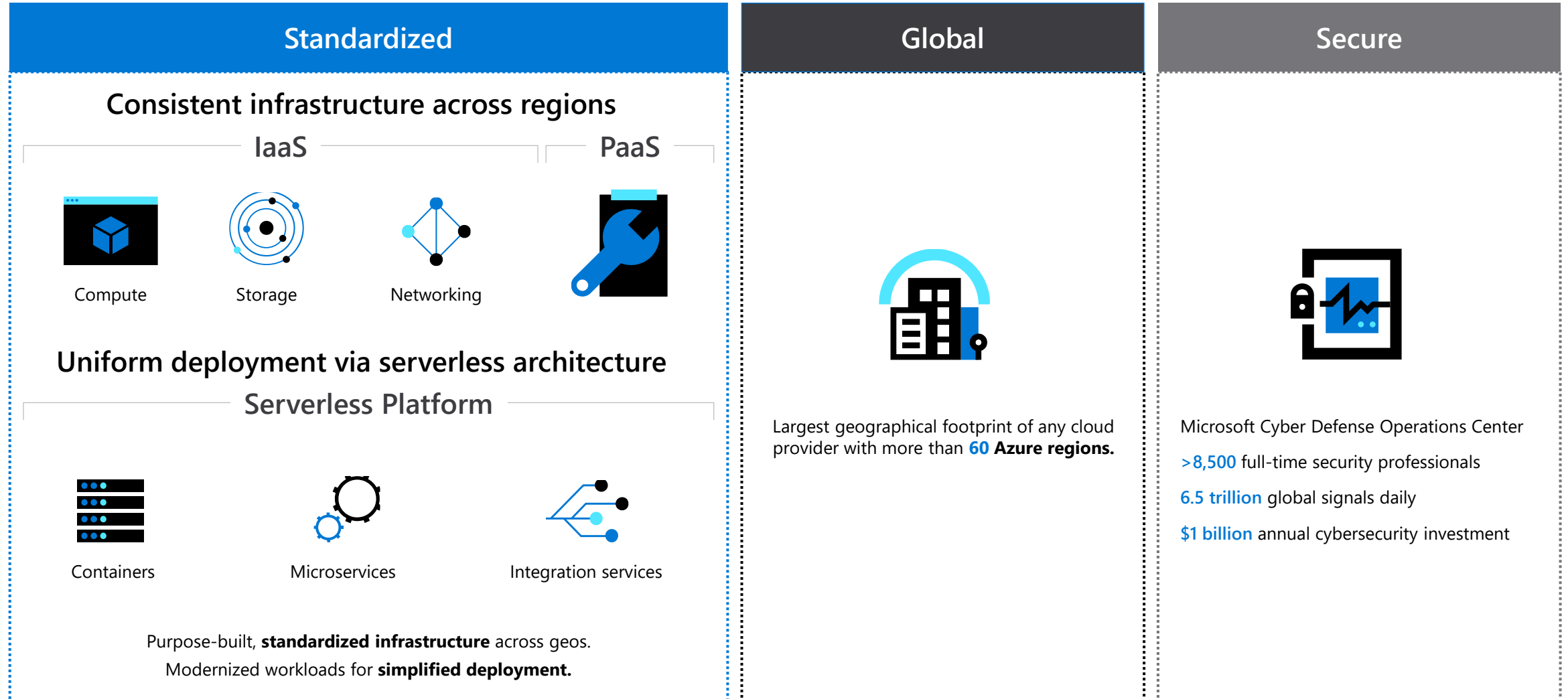
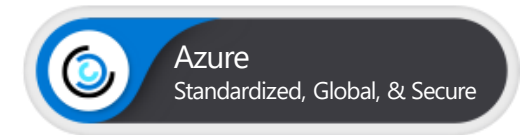
- Multiple tools for automated VM deployment.
- Enhanced OS/App update tools.
- Disaster Recovery with integrated Azure Site Recovery.

Azure Virtual Desktop service management

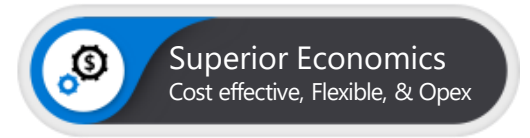


- Simplified and effective troubleshooting using advanced diagnostic service.
- Third-party value-added services enabled by APIs.


Built on Azure: standardized, global, and secure cloud



Superior economics from significant cost savings




Infrastructure ~70%* savings




- Windows 10/Windows 11 experience at multi-session cost
- Cost effective compute and storage
- Flexible network provisioning
- Best value compute rate
- Opex spend aligned to business usage

Licensing ~60%* savings



- Azure Virtual Desktop management service included with the licenses you already own
- Savings on RDS CAL with multi-session deployment
- 3-year Windows 7 ESU included

Labor ~60%** savings



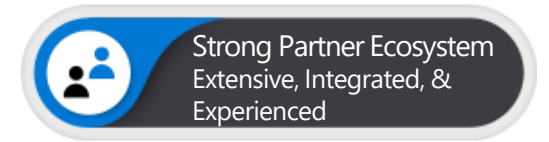
- Lower labor cost because compute and storage move to cloud
- Lower labor cost when you use PaaS services

Note: Infrastructure includes compute, storage (IaaS/PaaS), and networking.

*See [Example Scenario: Azure Virtual Desktop Economic Benefits](#).

** Industry analysis

Extensive partner ecosystem with strong Virtual Desktop expertise

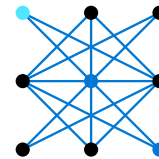


Azure Virtual Desktop approved providers



- Citrix and VMware provide value add to Azure Virtual Desktop (e.g. hybrid deployment management).
- Windows 10/11 Enterprise multi-session is also available with Citrix and VMware management planes.
- Customer ultimately decides the management plane(s) of choice.

Azure Virtual Desktop value-added partners



Services partners

[Advanced Specialized partners](#)

- Azure Virtual Desktop customers have access to a broad software/services partner network with expertise in:
 - customer environment assessment
 - diagnostics & end user experience monitoring
 - application layering
 - management
 - printing
 - app compatibility assessment/remediation

Detail on **Azure Virtual Desktop value** drivers follows (“double-click”)

Azure Virtual Desktop



Best User Experience



Enhanced Security



Simplified Management



Azure

Standardized, Global, & Secure



Superior Economics

Cost effective, Flexible, & Opex

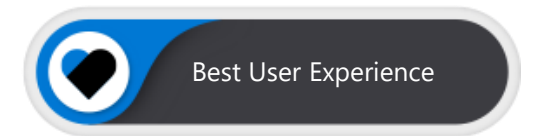


Strong Partner Ecosystem

Extensive, Integrated, & Experienced

Best virtualized end-user experience

Platform of choice



Azure Virtual Desktop allows users to connect from any device of their choice.

User Experience Benefits

Local and remote UI is optimized for the various form factors across all supported platforms: Windows, macOS, iOS, HTML5, and Android.

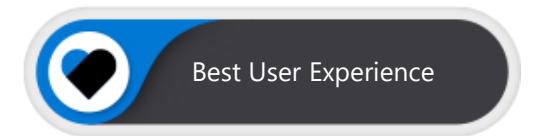
Windows experience is indistinguishable from native.

MacOS client provides integrated RemoteApp experience.

iOS, Android, and HTML5 clients provide immersive RemoteApp experience.

Best virtualized end-user experience

Differentiated Windows experience



Windows devices deliver the best Azure Virtual Desktop experience for end users.

User Experience Benefits

Like-local Windows experience (integrated Start Menu, task bar, action center, App Switcher).

Extensive support for devices.

Multiple monitor support (max 16 monitors with up to 8k x 8k resolution each).

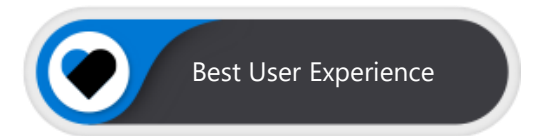
RemoteApp indistinguishable from local apps.

Integration with accessibility tools (e.g. Jaws).

Support for third-party extensions.

Best virtualized end-user experience

Enhanced Azure Virtual Desktop / remote desktop protocol



RDP enhancements deliver the optimized Azure Virtual Desktop experience for end users.

User Experience Benefits

Support for Windows Hello for Business and smartcard authentication.

Dynamically adapting bandwidth utilization.

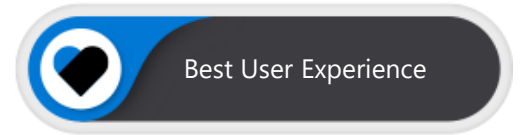
Devices and resources redirection (camera, printers, multi-touch, pen, time zone, clipboard).

Dynamic resolution and scaling.

Better user experience with graphics optimized with mixed-mode encoding (clear text code for text and H.264 for video).

Best virtualized end-user experience

Containerized user profiles enable fast VHD load times.

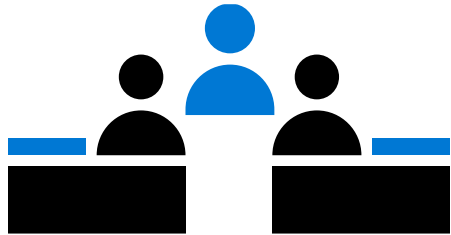


End users receive seamless Office 365 experience.

Azure Virtual Desktop

Containerized profiles

User profiles



Placed into a VHD container that is stored on Azure.

- Dynamically attached at user logon.
- Content appears to be in its native location.

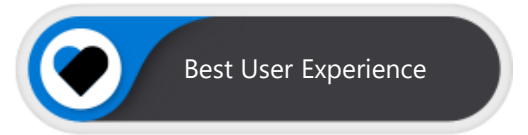
User experience benefits



Achieves extremely fast logon times.
Uses native Windows VHD capabilities
– no hypervisor.

Best virtualized end-user experience

Outlook Enhancements, OneDrive, and desktop search improvements



End users get native Office 365 performance and behavior in both non-persistent and persistent virtual environments.

Azure Virtual Desktop



Deploy cached Exchange mode in virtual environments.

Cached mode improvements:

- ✓ Syncing of Inbox prior to Calendar for faster startup experience
- ✓ Admin option to reduce calendar sync window
- ✓ Reduce the number of folders that are synced by default*

Windows Desktop Search index is now per-user and can be persisted with the user profile.

Reliable OneDrive syncing in non-persistent environments.

OneDrive Files-on-Demand capabilities.

User Experience Benefits



Uncompromised Office 365 email and calendar performance.

Real-time Outlook search.

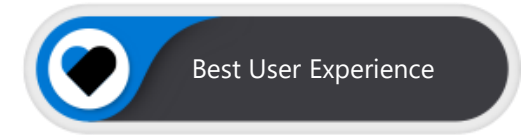
Speedy, persistent, per-user Windows Desktop search.

Seamless Office 365 co-authoring and collaboration in non-persistent environments.

* Coming soon

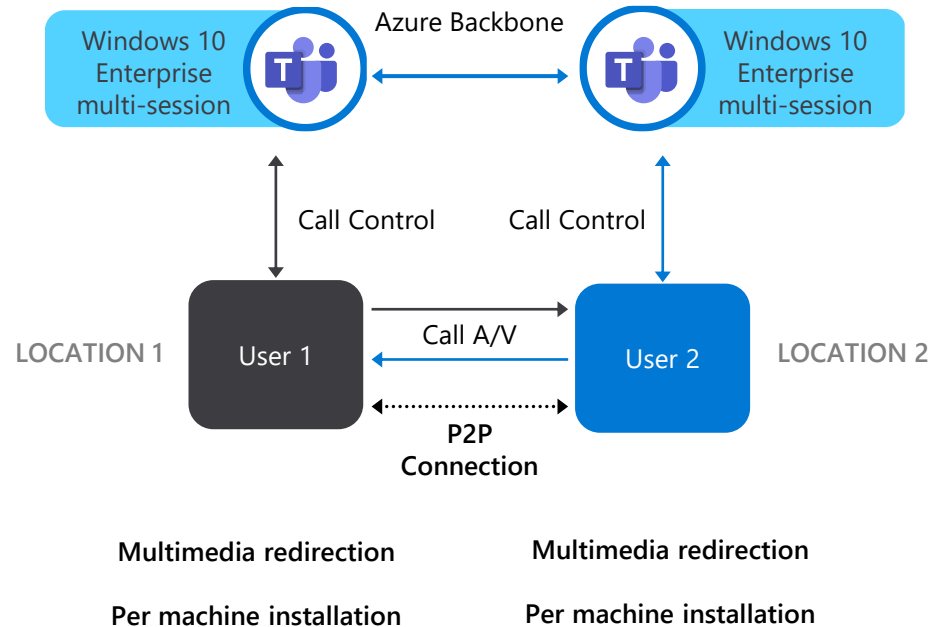
Best virtualized end-user experience

Teams enhancements



Microsoft Teams provides end users with better conferencing and media experience.

Teams on Azure Virtual Desktop – with enhancement



User Experience Benefits

Less network bandwidth compared to USB camera redirection.

Increased video framerates, up to 30 fps.

Enhanced UI for ease of use in virtualized environments.

Ability to redirect multiple cameras.

High-performance, low latency audio & video calling.



Azure Virtual Desktop



Best User Experience



Enhanced Security



Simplified Management



Azure

Standardized, Global, & Secure



Superior Economics

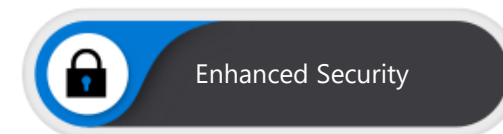
Cost effective, Flexible, & Opex



Strong Partner Ecosystem

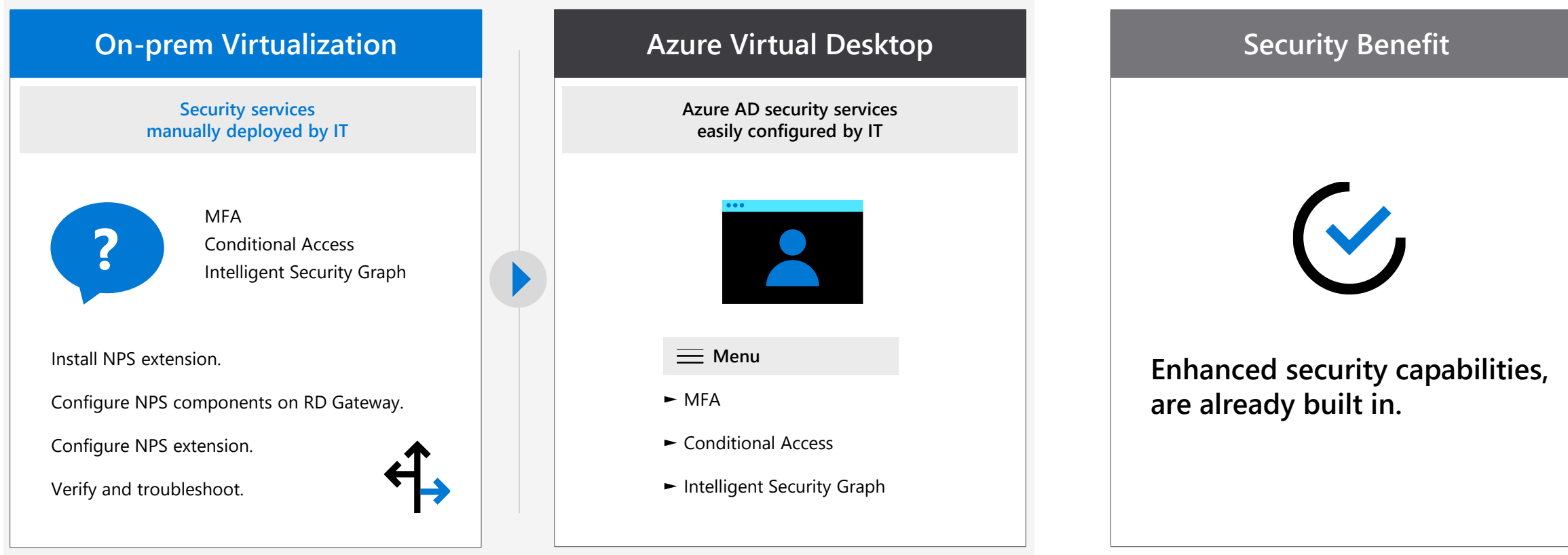
Extensive, Integrated, & Experienced

Enhanced security with simplified configuration Azure AD security services are readily available.



Customer Scenario – Moving from on-prem virtualization to Azure Virtual Desktop.

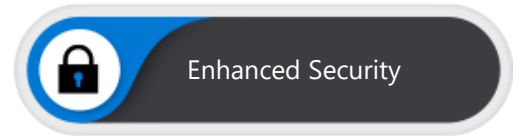
- Azure Virtual Desktop customers can readily utilize sophisticated Azure AD security services via built-in integration.



Note: With Azure Virtual Desktop on Azure AD, admin can set up Conditional Access (CA) controls once and then easily expand that CA to other applications.

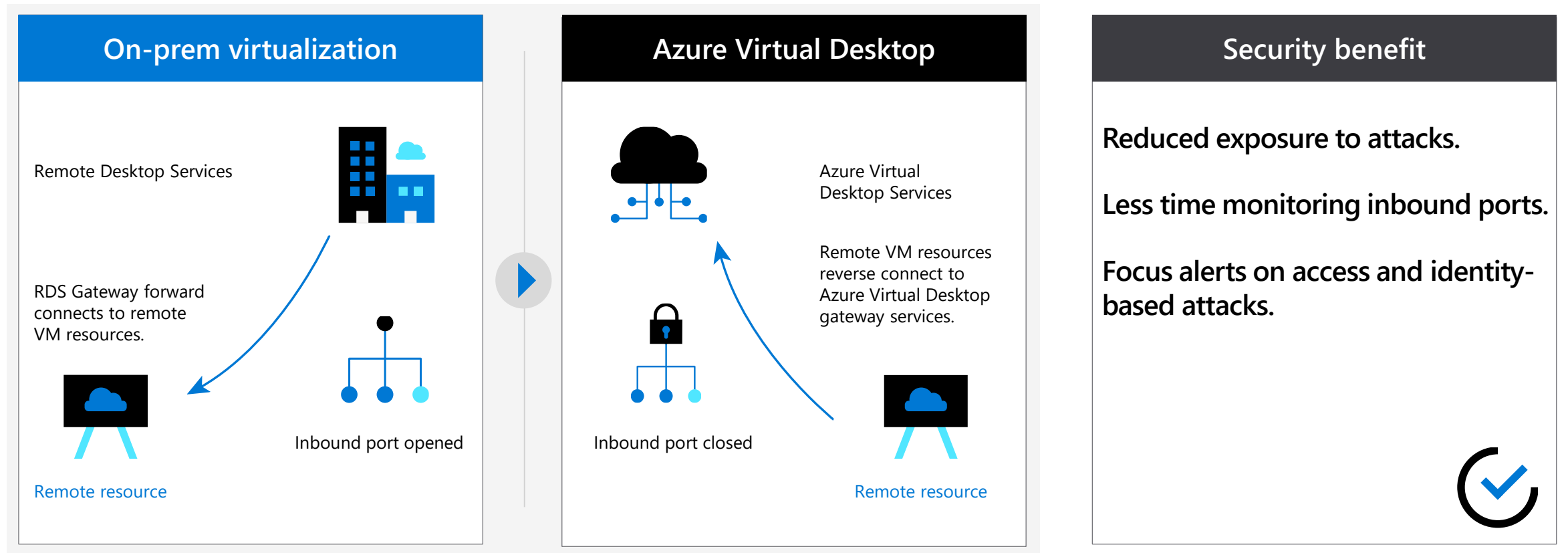
Enhanced security with simplified configuration

The attack surface is reduced, compared to on-prem.



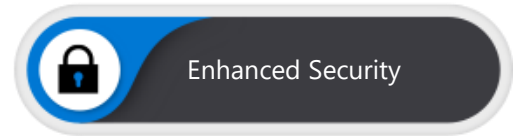
Customer Scenario – Moving from on-prem virtualization to Azure Virtual Desktop.

- Reverse connect eliminates the need to open inbound ports, reducing the attack surface.



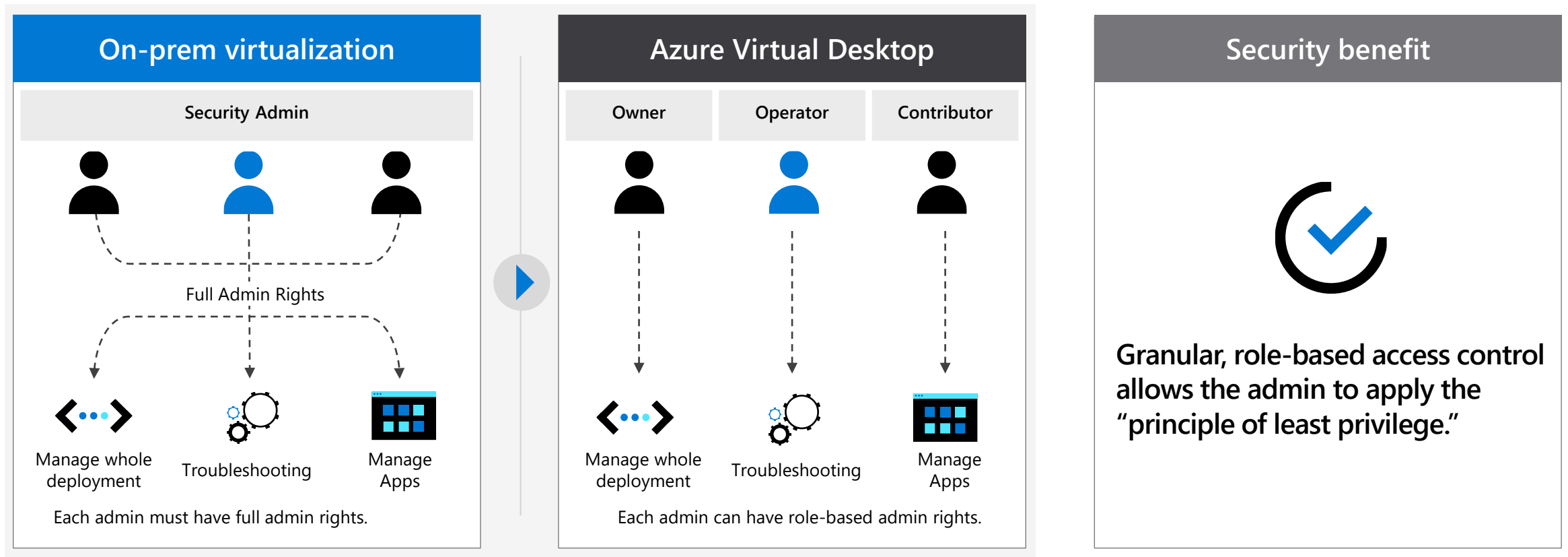
Enhanced security with simplified configuration

Granular access control enables role-based administration.



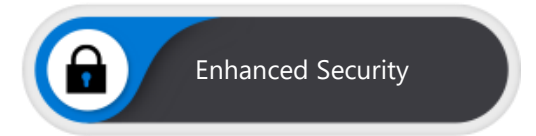
Customer Scenario – Moving from on-prem virtualization to Azure Virtual Desktop.

- Azure Virtual Desktop role-based access control enables delegation of admin rights at granular level.



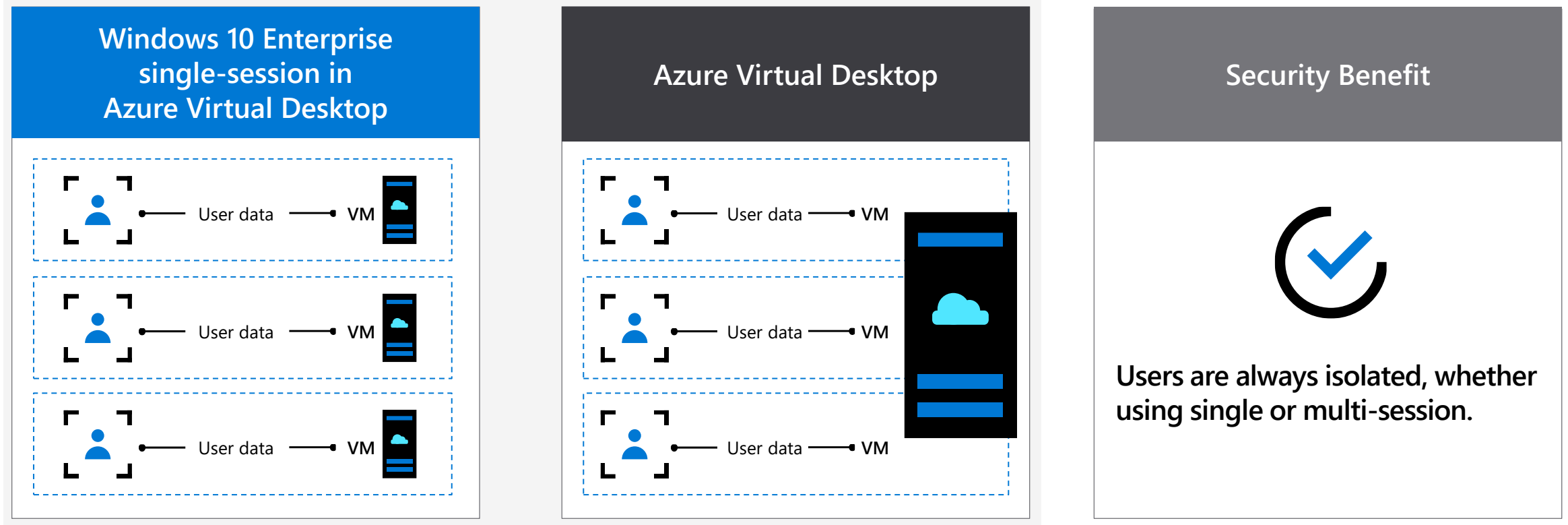
Enhanced security with simplified configuration

User sessions are isolated.



Customer Scenario – Deploys both Windows 10/Windows 11 Enterprise single-session and multi-session in Azure Virtual Desktop.

- Azure Virtual Desktop ensures user isolation in both single and multi-session environment.



Azure Virtual Desktop



Best User Experience



Enhanced Security



Simplified Management



Azure
Standardized, Global, & Secure



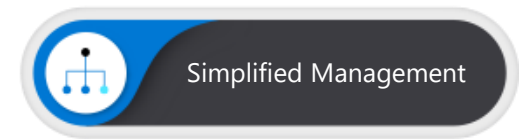
Superior Economics
Cost effective, Flexible, & Opex



Strong Partner Ecosystem
Extensive, Integrated, & Experienced

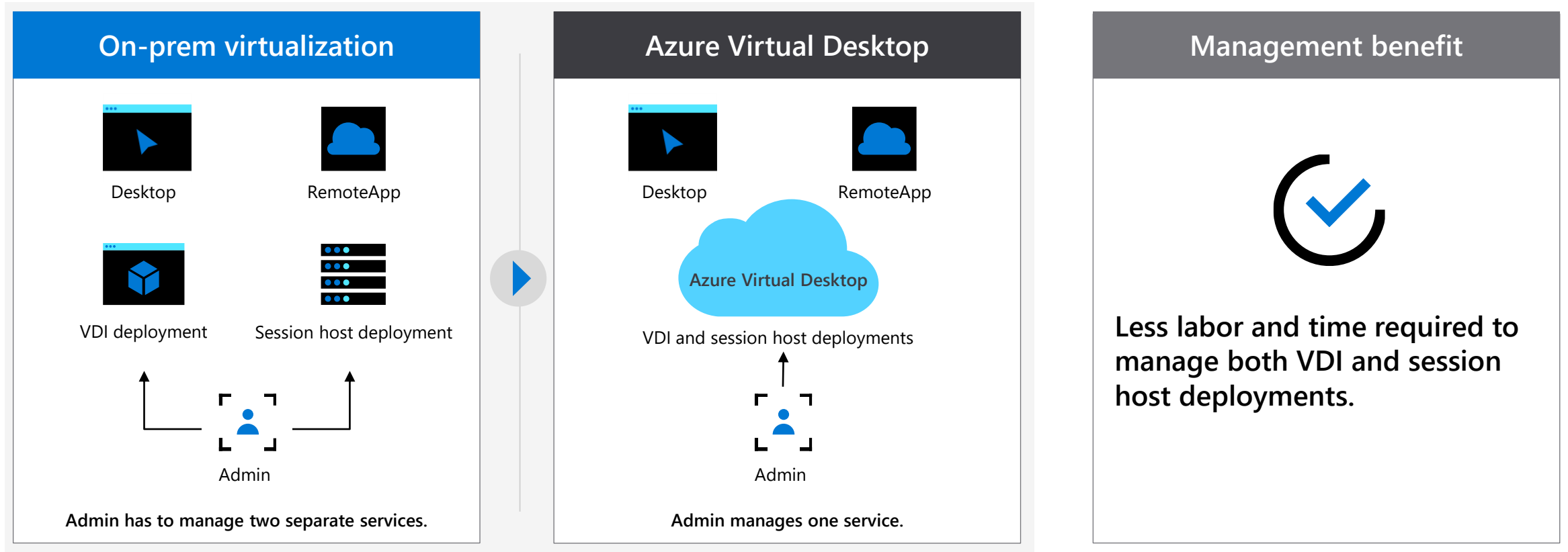
Efficient and simplified management

One service supports both desktop and RemoteApp experience.



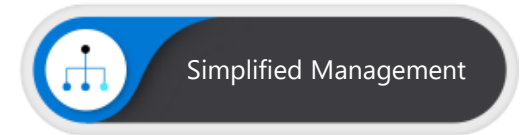
Customer Scenario – From on-prem virtualization to Azure Virtual Desktop.

- Both desktop and RemoteApp are managed through one Azure Virtual Desktop service.



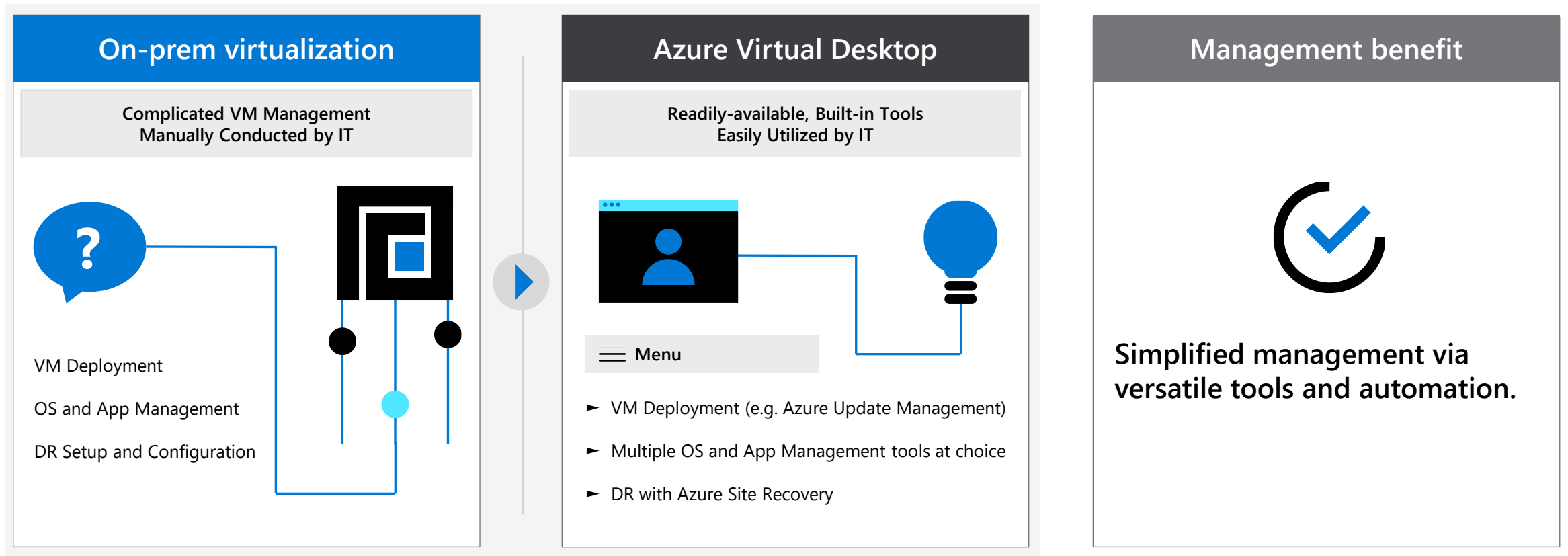
Efficient and simplified management

Readily-available VM management tools



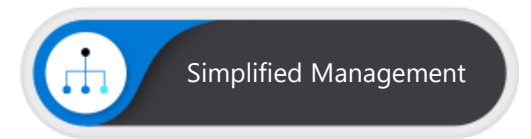
Customer Scenario – From on-prem virtualization to Azure Virtual Desktop.

- Azure Virtual Desktop customers can leverage a broad set of VM management tools via Azure Virtual Desktop and Azure.



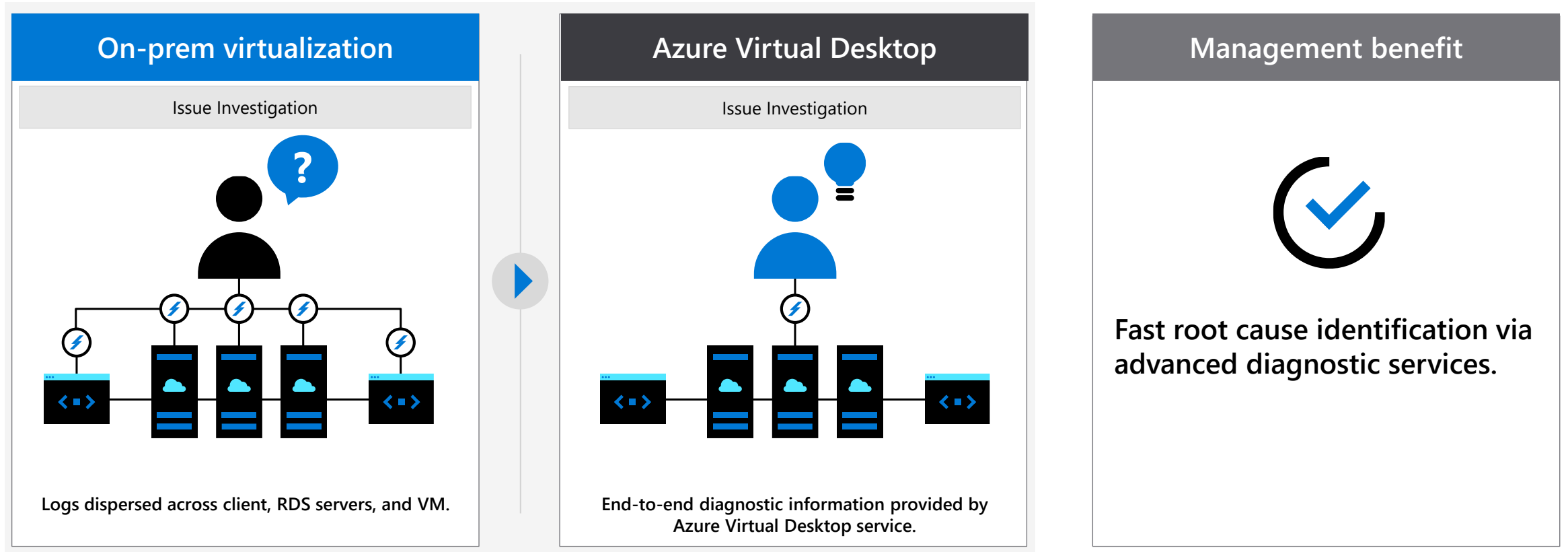
Efficient and simplified management

Simplified and Efficient Troubleshooting with Diagnostic Service



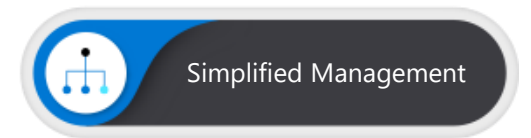
Customer Scenario – From on-prem virtualization to Azure Virtual Desktop.

- Advanced Diagnostic Service enables Azure Virtual Desktop customers to identify root cause and fix issues more efficiently.



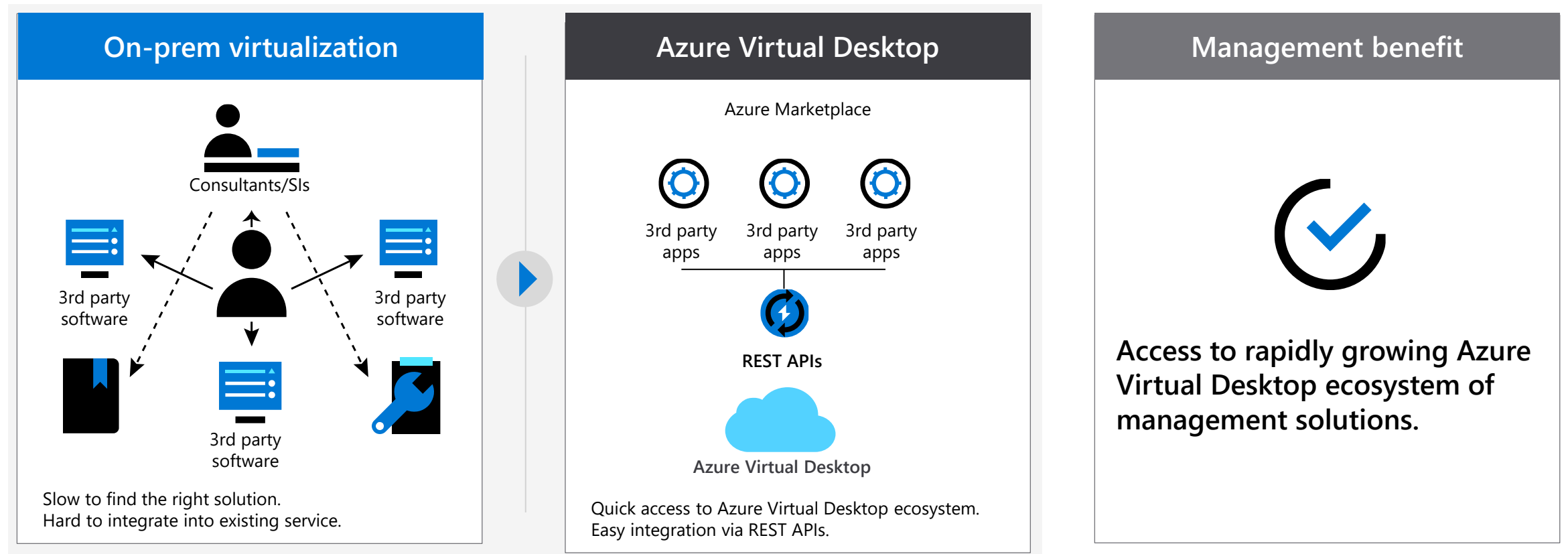
Efficient and simplified management

Extensive third-party value-added services enabled by APIs



Customer Scenario – From on-prem virtualization to Azure Virtual Desktop.

- Azure Virtual Desktop customers have access to best-of-breed management solutions, including third-party apps.



Azure Virtual Desktop



Best User Experience



Enhanced Security



Simplified Management



Azure
Standardized, Global, & Secure

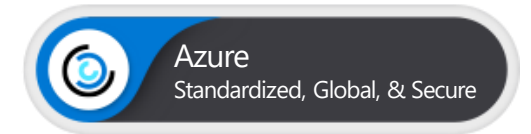


Superior Economics
Cost effective, Flexible, & Opex







Strong Partner Ecosystem
Extensive, Integrated, & Experienced

Built on Azure: Standardized, global, and secure cloud





Standardized

Consistent infrastructure across regions


IaaS			PaaS
 Compute	 Storage		

Partner ecosystem across multiple sites

SI	ISV/IHV
Advanced Specialized partners	 

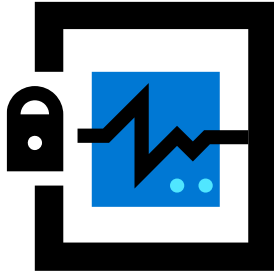
Purpose-built, standardized infrastructure across geos **300,000+** global partner ecosystem, leveraging consistent standards and IT architectures.

Global



Largest geographical footprint of any cloud provider with more than **60 Azure regions**.

Secure



Microsoft Cyber Defense Operations Center
>8,500 full-time security professionals
6.5 trillion global signals daily
\$1 billion annual cybersecurity investment

Azure Virtual Desktop



Best User Experience



Enhanced Security



Simplified Management



Azure
Standardized, Global, & Secure



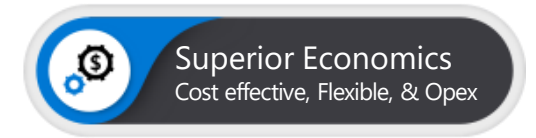
Superior Economics
Cost effective, Flexible, & Opex



Strong Partner Ecosystem
Extensive, Integrated, & Experienced

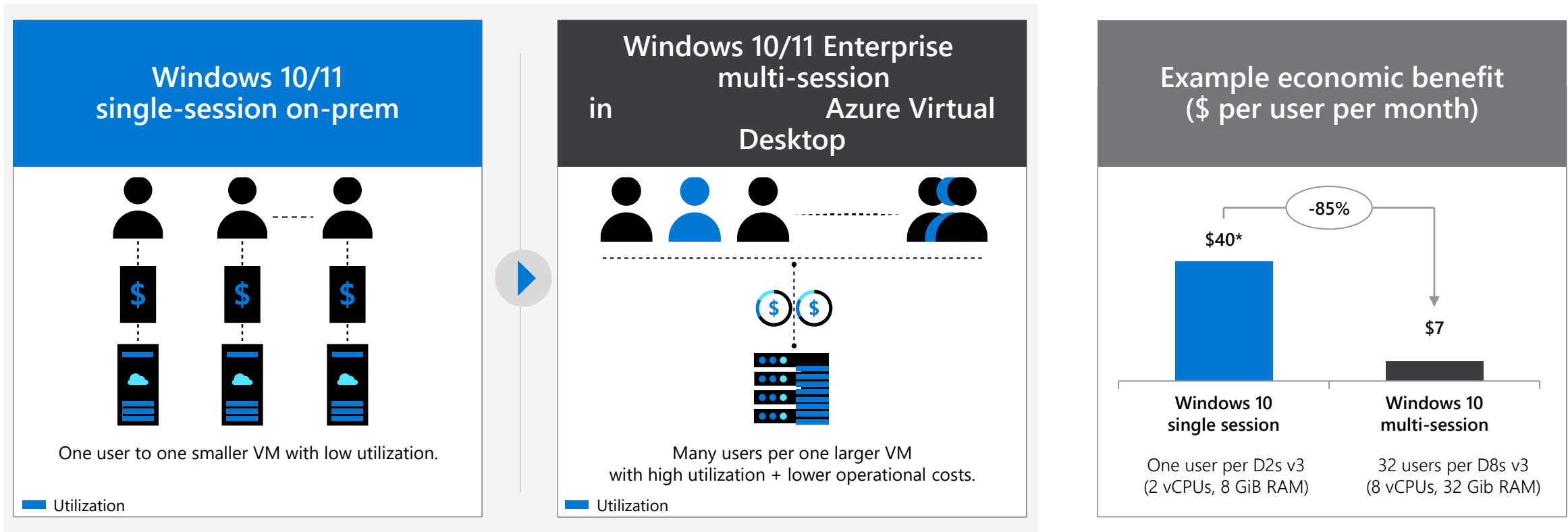
Cost-optimized infrastructure

Windows 10/11 experience at multi-session cost



Customer Scenario – From Windows 10/11 single-session on-prem to Windows 10/11 multi-session in Azure Virtual Desktop.

- Trade many small dedicated VMs for few large shared VMs (with higher utilization and lower operational costs).

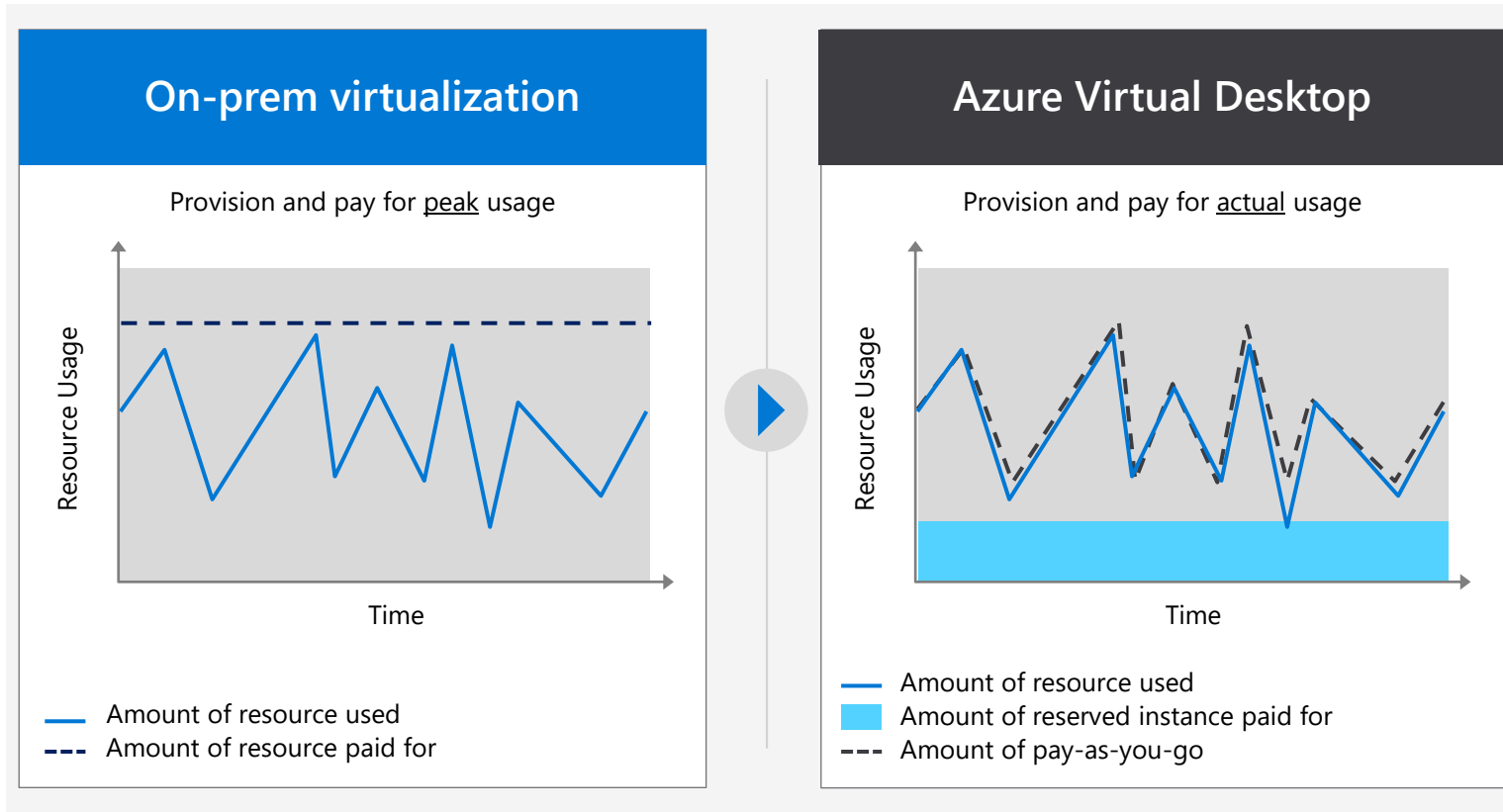


Note: Azure Virtual Desktop is the only way to run Windows 10/11 Multi-Session.

Note: Figures are illustrative and based on pre-configured assumptions; actual savings vary by user requirements and infrastructure configuration.

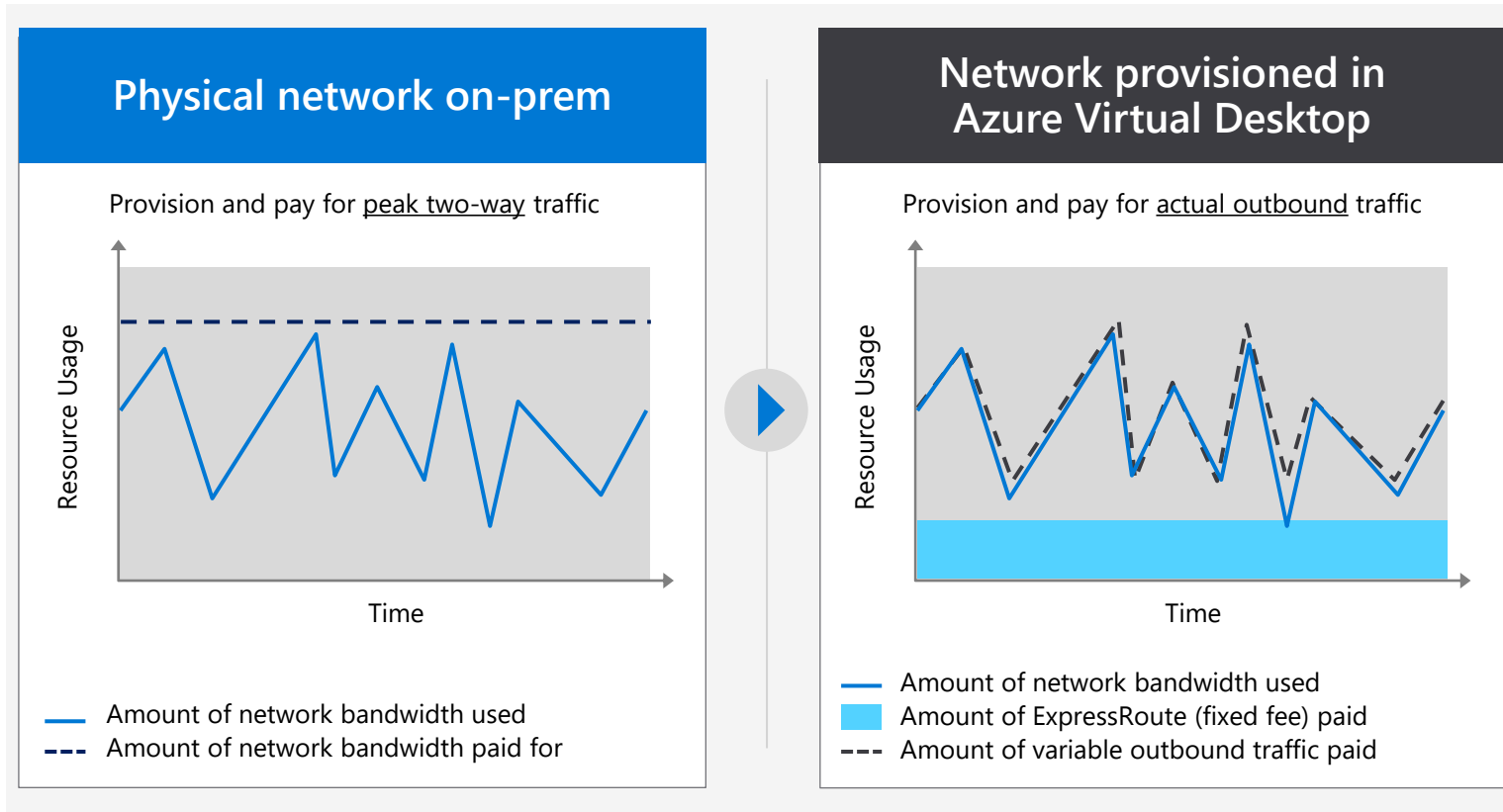
*The \$40 PUPM for single session cost is modeled for a common configuration: Windows 10 single-session in Azure Virtual Desktop starts at ~\$15 per user per month for 1 vCPU, 2 GiB RAM configuration.

Cost-effective compute and storage*



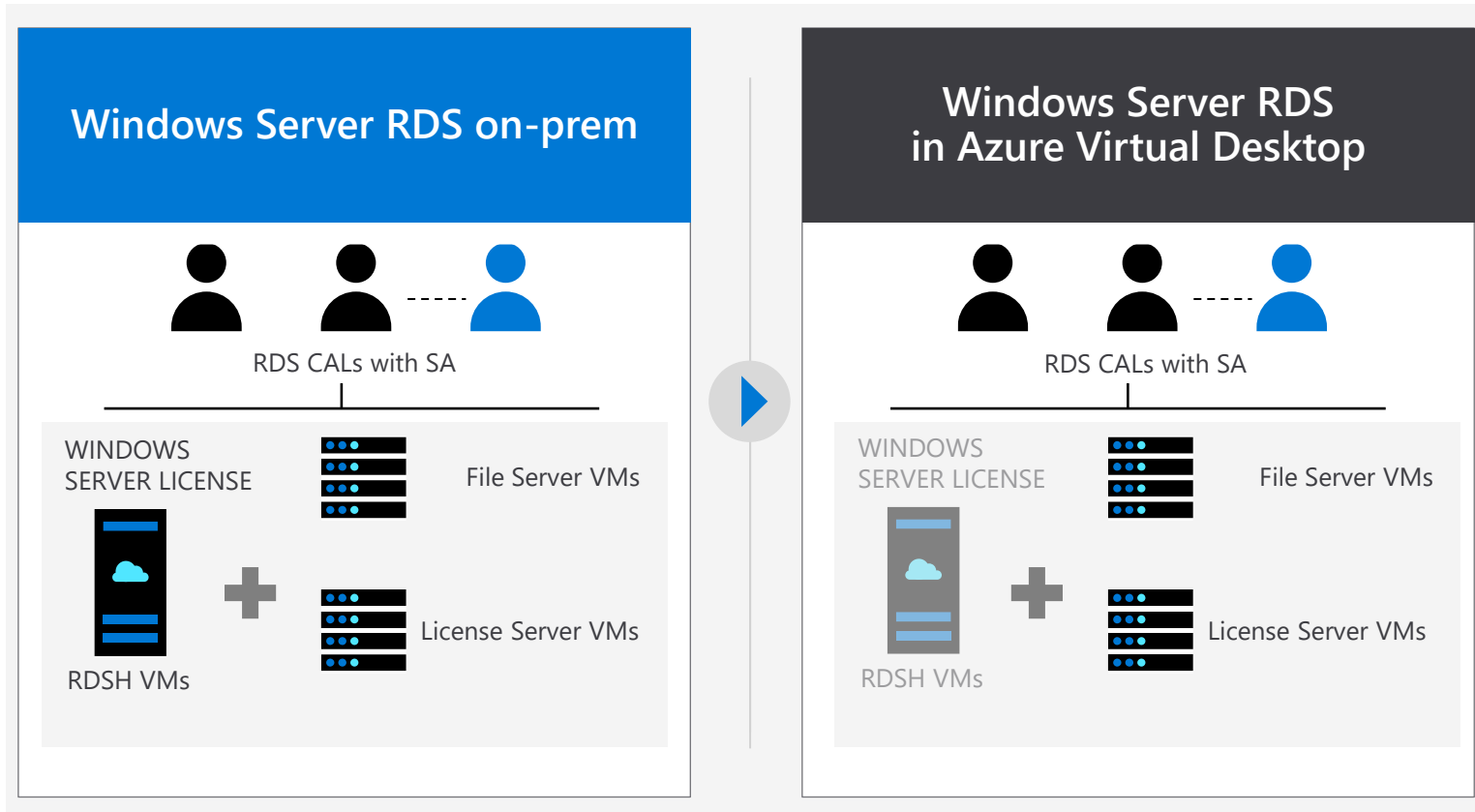
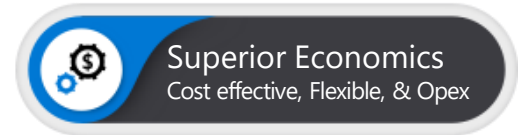
*When using Azure NetApp Files or Azure Files for storage, customers pay for actual consumed storage (vs. pay for fixed-sized disks).

Flexible network provisioning



Note: Customers can connect from on-prem physical networks to Azure virtual networks via two ways: Virtual Private Network (VPN) or ExpressRoute.
Note: Variable outbound traffic can be implemented via Virtual Network or ExpressRoute.

Best value compute rate

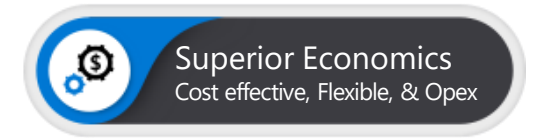


Note: Non-session host VMs still require Windows Server license (only if Azure Hybrid Benefits are not available).

Note: With Azure NetApp Files or Azure Files, customers also save the cost of Windows Server license and its hosting VM that would otherwise be required by File Server.

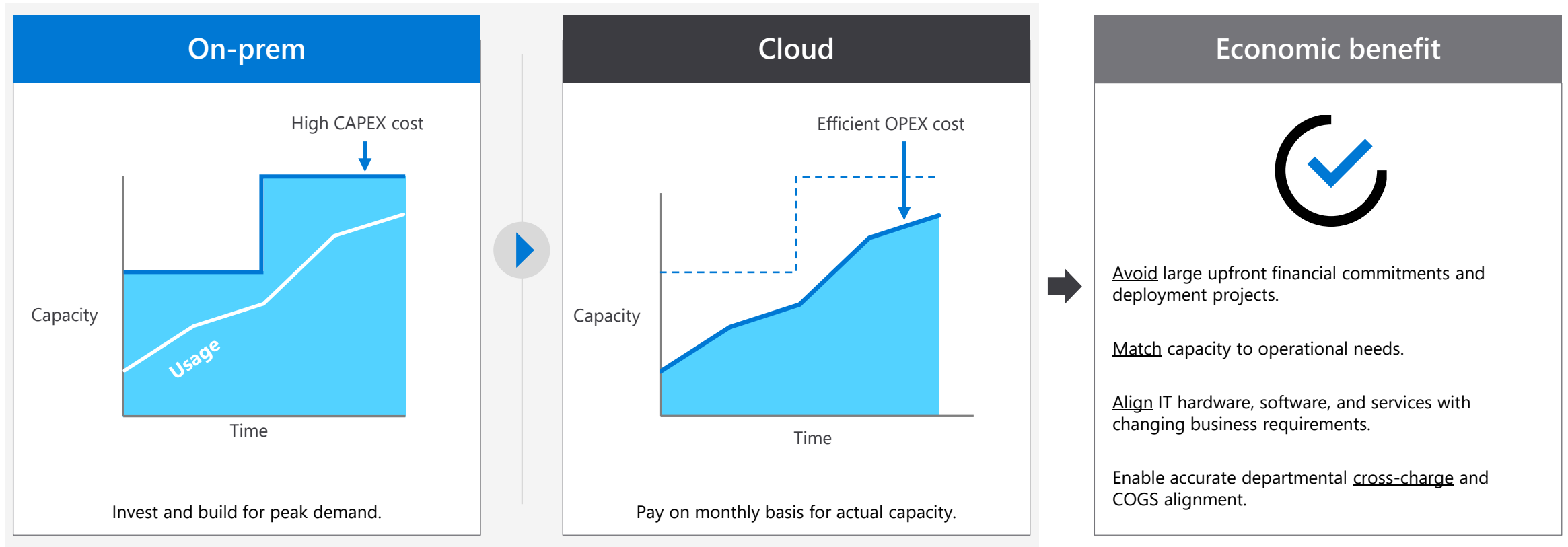
Cost-optimized infrastructure

Opex spend aligned to business usage



Customer Scenario – On-prem to Cloud.

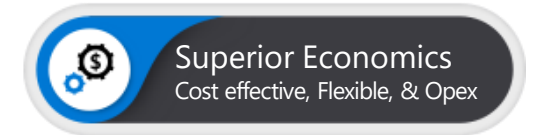
- From up-front Capex commitment to flexible Opex investment.



Note: Figures are illustrative and based on pre-configured assumptions; actual savings vary by user requirements and infrastructure configuration.

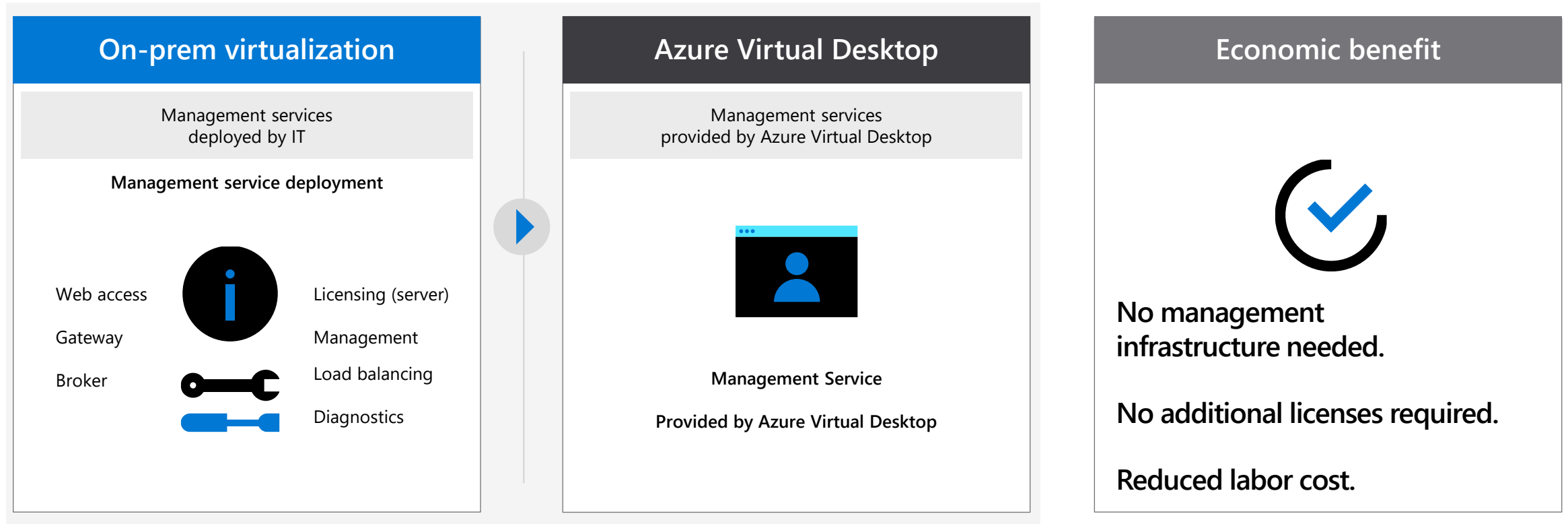
Cost-advantaged licensing

Management service included with the licenses you already own



Customer Scenario – From on-prem virtualization to Azure Virtual Desktop.

- Azure Virtual Desktop management service included with the licenses* most Microsoft customers own.
- Eliminate the infrastructure cost associated with on-prem management services.

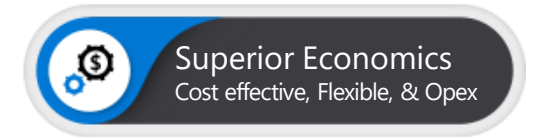


*See Appendix for Azure Virtual Desktop client licensing requirements, including specific SKUs.

Notes:

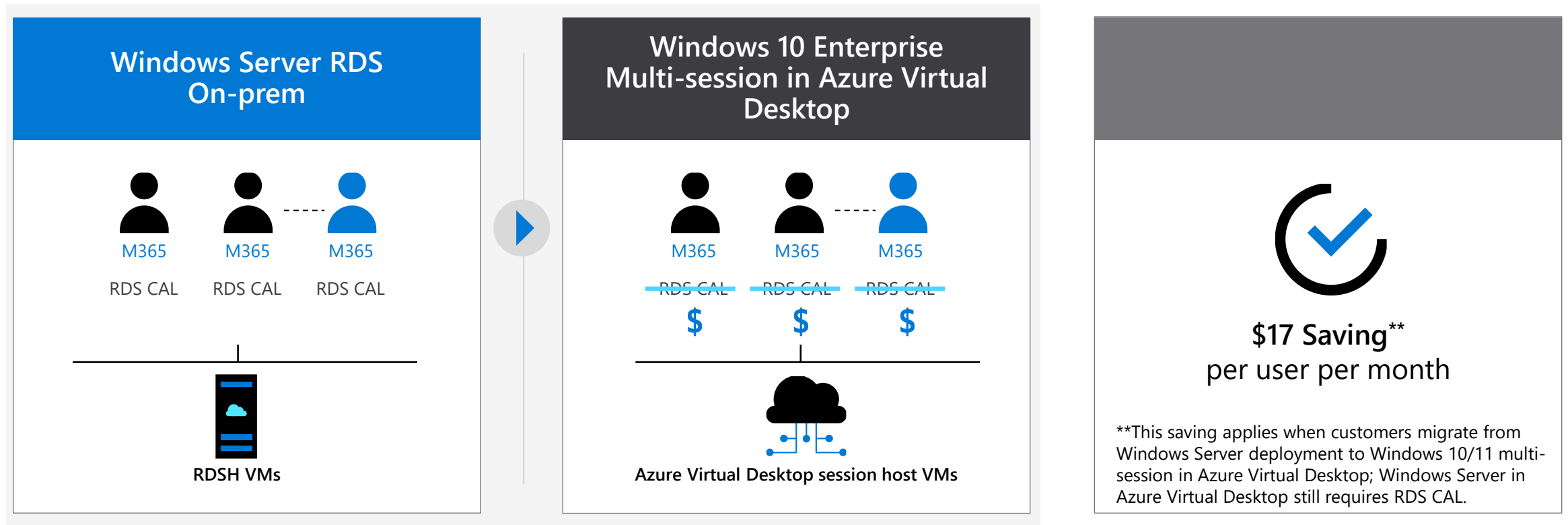
Figures are illustrative and based on pre-configured assumptions; actual savings vary by user requirements and current licensing position. Customers who require Citrix or VMware management services to meet their needs will incur additional cost.

Cost-advantaged licensing Savings on RDS CAL with multi-session deployment



Customer Scenario – From Windows Server RDS on-prem to Windows 10 Enterprise Multi-session in Azure Virtual Desktop.

- Save on RDS CAL when migrating from Windows Server RDS on-prem to Windows 10 Enterprise multi-Session* in Azure Virtual Desktop.



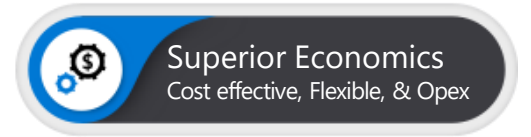
*Customers can leverage the license (e.g. M365 E3/E5, Win 10 E3/E5) they already own. See Appendix for a complete list of Azure Virtual Desktop licensing requirements.

Notes:

Figures are illustrative and based on pre-configured assumptions; actual savings vary by user requirements and current licensing position.

Customers need to fully refactor desktops and apps when migrating from Windows Server deployment to Windows 10 multi-session in Azure Virtual Desktop.

Reduced labor requirements



Lower labor cost because compute and storage move to cloud.

- Eliminate high overhead associated with managing on-premise infrastructure.
- Reduced labor cost due to increased automation in the cloud.



Lower labor cost when you use PaaS services.

- Azure Virtual Desktop delivered as an evergreen PaaS service, reducing your labor cost for managing and upgrading management plane.
- Simplified file storage management, leveraging fully managed NetApp Files service.

Azure Virtual Desktop



Best User Experience



Enhanced Security



Simplified Management



Azure
Standardized, Global, & Secure

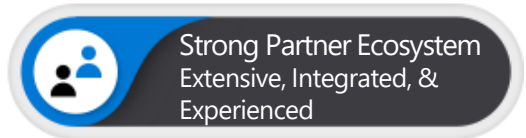


Superior Economics
Cost effective, Flexible, & Opex



Strong Partner Ecosystem
Extensive, Integrated, & Experienced

Extensive partner ecosystem



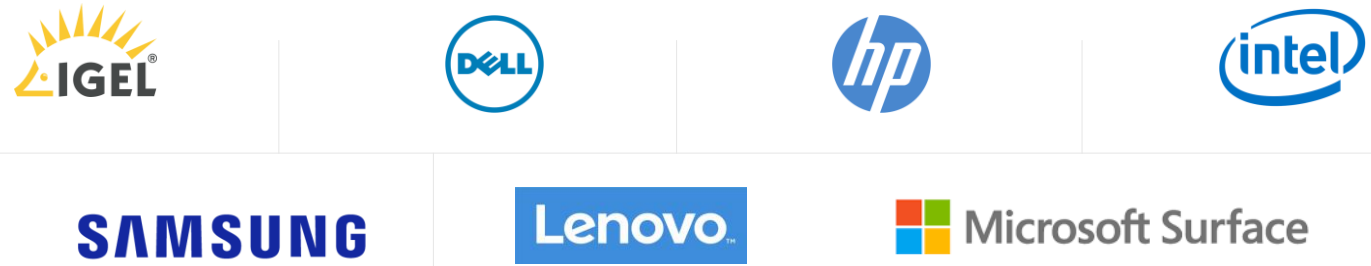
Azure Virtual Desktop approved providers



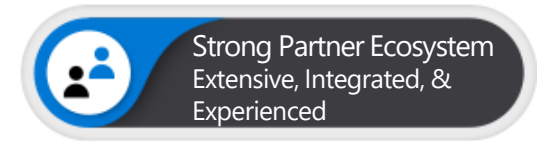
Services partners

[Advanced Specialized partners](#)

Azure Virtual Desktop hardware partners

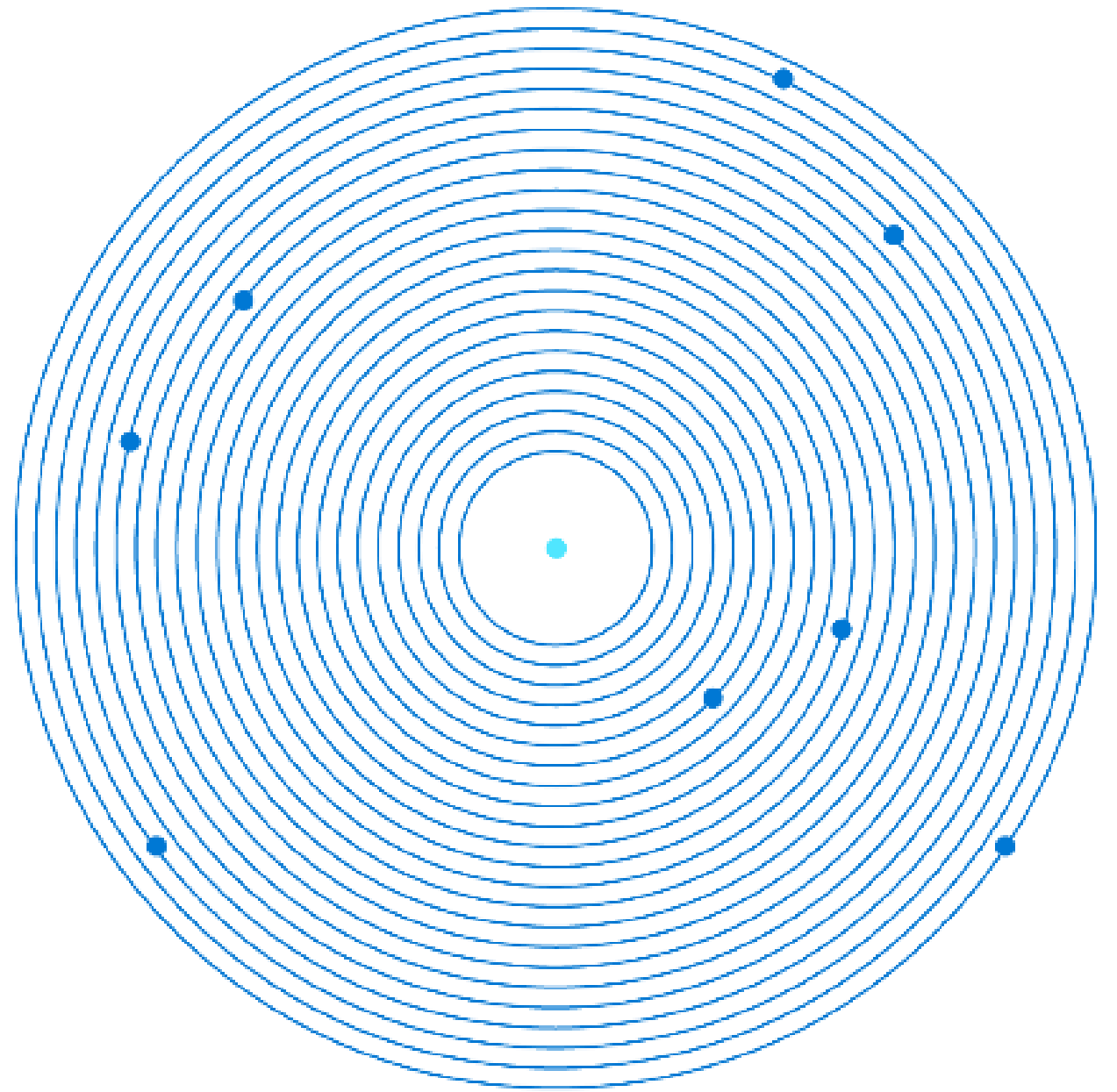


Strong expertise in Virtual Desktop deployment and management



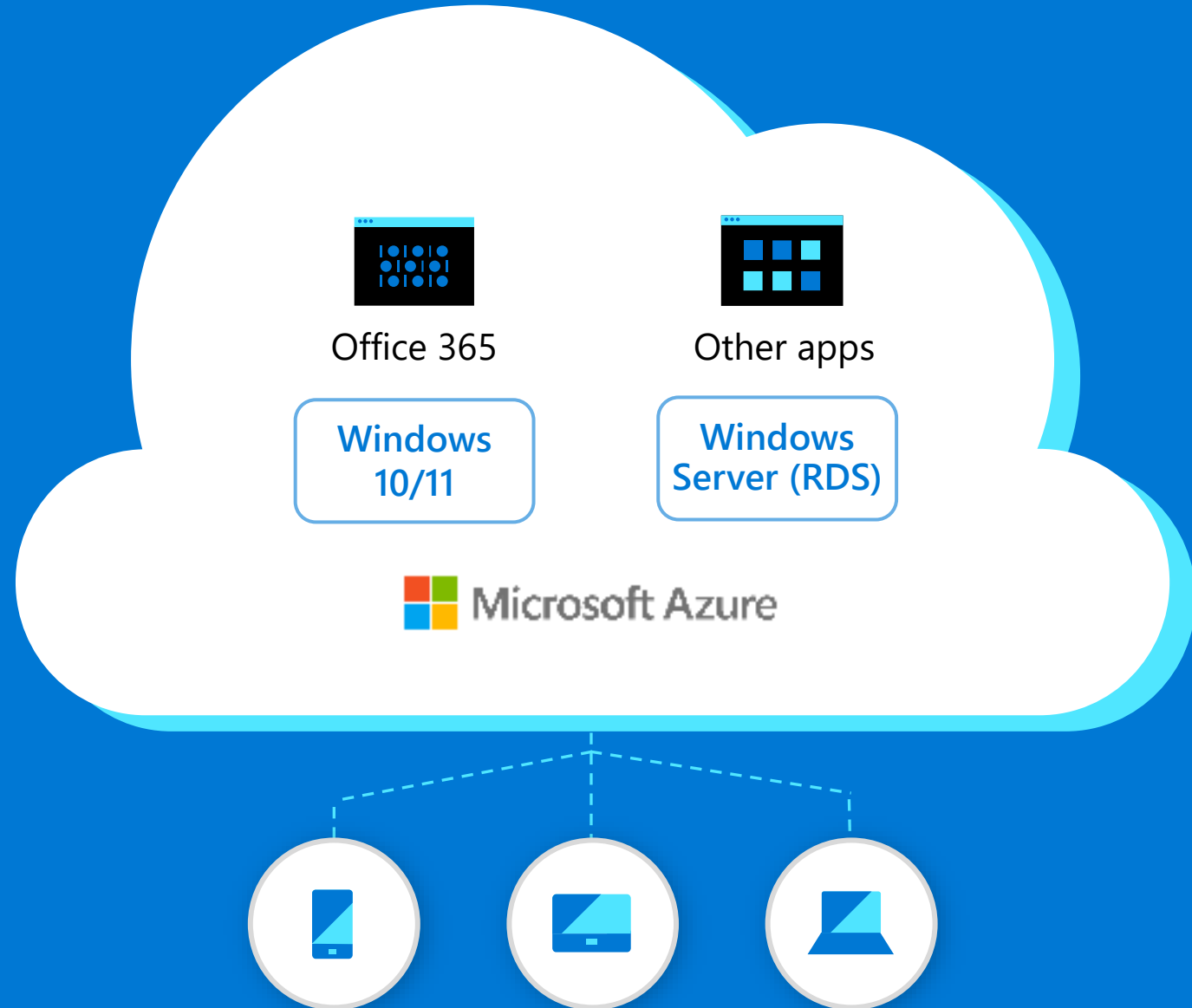
Category	Description	Partner Solution Examples	Delivery Mechanism
Customer environment assessment	Assess resource utilization of apps/users/OS, baseline user experiences and recommend sizing for Azure Virtual Desktop.	<ul style="list-style-type: none"> Lakeside Liquidware ControlUp 	<ul style="list-style-type: none"> Azure Migrate GPS
Diagnostics & end user experience monitoring	Assess, monitor, and manage end user experiences with GUI enabling reactive troubleshooting as well as predictive troubleshooting leveraging AI/ML.	<ul style="list-style-type: none"> Lakeside Liquidware ControlUp RDPSoft Sepago 	<ul style="list-style-type: none"> Azure Marketplace
Application layering	Enable dynamic provisioning of apps during boot/logon time based on user profile.	<ul style="list-style-type: none"> Liquidware Citrix's Unidesk 	<ul style="list-style-type: none"> Azure Marketplace
Management	Deployment and configuration.	<ul style="list-style-type: none"> Active Cypher CloudVae CloudJumper Nerdio PTG Ubikite 	<ul style="list-style-type: none"> Azure Marketplace
Printing	Remove the need for print server infrastructure.	<ul style="list-style-type: none"> Uprint ThinPrint 	<ul style="list-style-type: none"> Azure Marketplace
App compat assessment/remediation	Assess app compatibility for layering new packaging.	<ul style="list-style-type: none"> Cloudhouse Citrix's Unidesk Numecent Liquidware Rimo3 	<ul style="list-style-type: none"> Azure Marketplace

Appendix



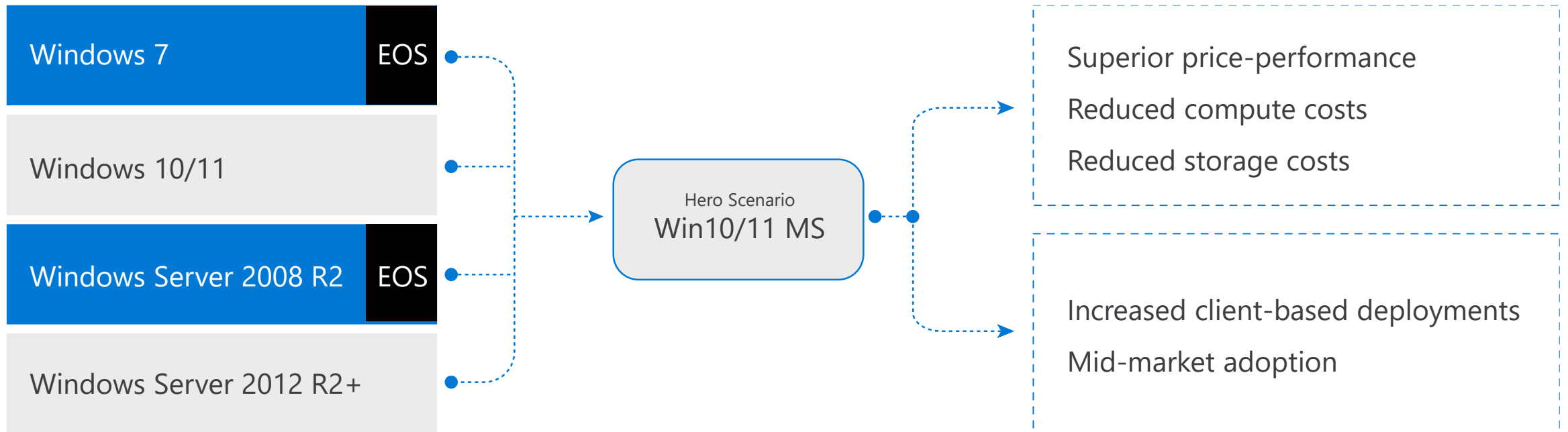
Azure Virtual Desktop

Secure virtual desktop and app experience, delivered on Azure.



The **ONLY** multi-session Windows 10/11 experience

Multiple users active simultaneously on the same VM.
Each user's data is isolated from every other user.



Application compatibility and user experiences **vary** between **server** and **client** OS.

Azure Virtual Desktop architectural overview

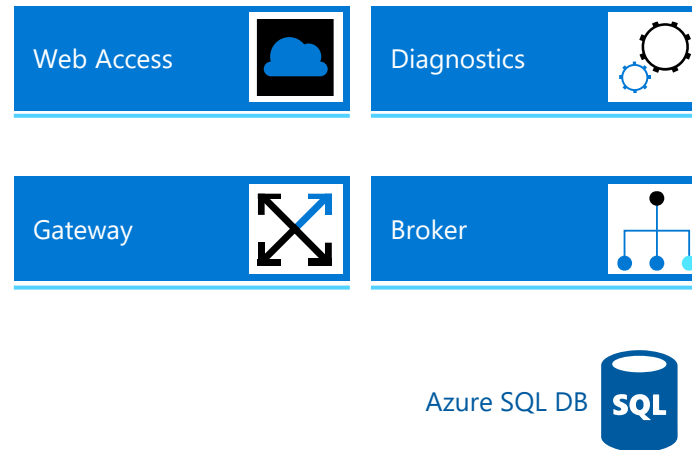
3 BIG PIECES

Clients Customer/partner-managed



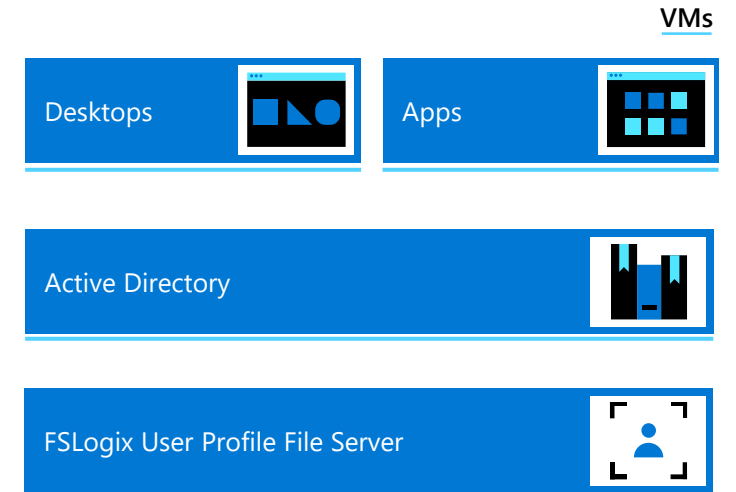
FIREWALL

Azure Virtual Desktop Microsoft-managed

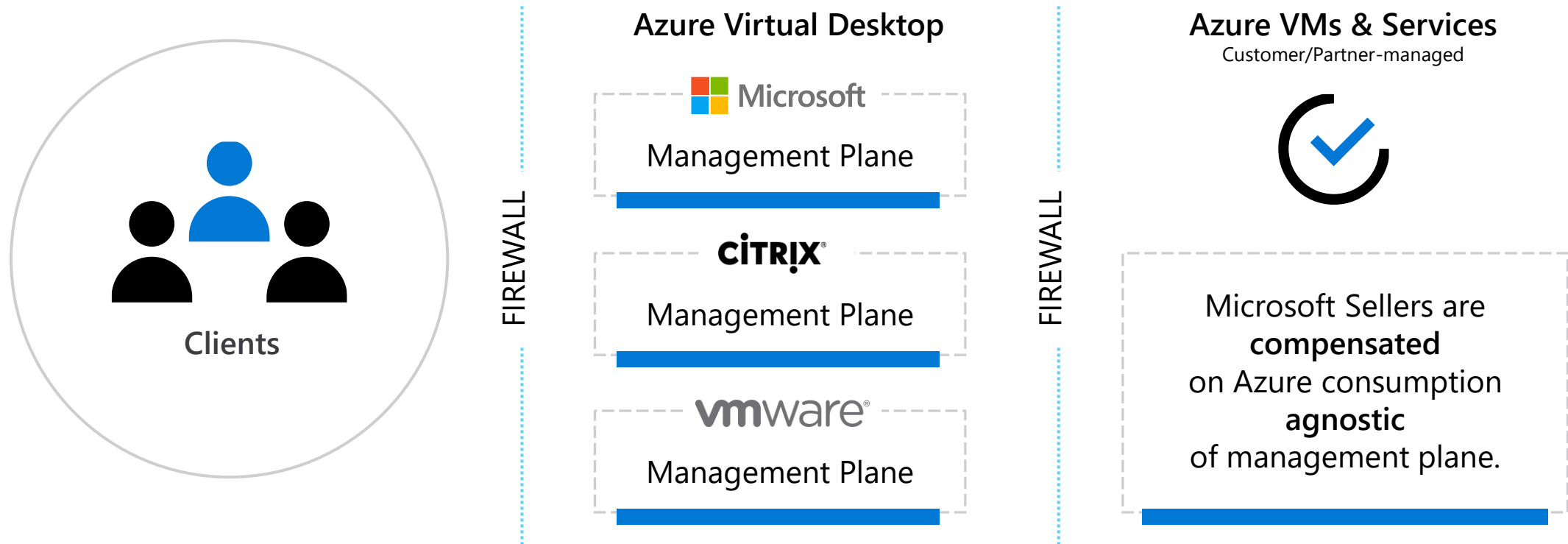


FIREWALL

Azure VMs & services Customer/partner-managed



Citrix & VMware integration



- Citrix and VMware provide value add to Azure Virtual Desktop (e.g. hybrid deployment management).
- Windows 10/11 multi-session is also available with Citrix & VMware management planes.
- Customer ultimately decides the management plane(s) of choice.

Many customers are already **eligible** for Azure Virtual Desktop

Azure Virtual Desktop Licensing Requirements

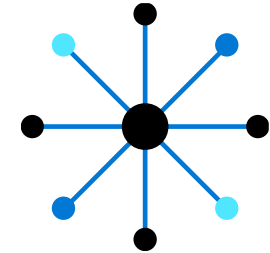
CLIENT

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

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



SERVER



Customers are eligible to access Windows Server 2012 R2 and newer desktops and apps if they have an RDS CAL license with active Software Assurance (SA).

*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.

All discounts and benefits of Azure apply to Azure Virtual Desktop.

Virtualization endpoints only
Burst-to-Azure (cloud)

Brand new virtualization environment
Lift and shift

Azure Virtual Desktop
Lift and shift, and modernize

Azure hybrid
user benefit


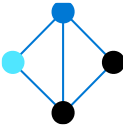
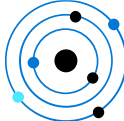







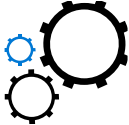
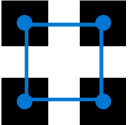

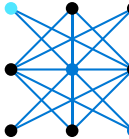
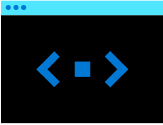
Azure consumption-based
incentive programs

CSP margins
& rebates

Reserved
instances

DPOR

Azure enhances productivity

Infrastructure	Data	Code
<p>Compute </p> <p>Networking </p> <p>Storage </p>	<p>SQL DB  PostgreSQL  MySQL </p> <p>MariaDB  Redis Cache  Cosmos DB </p>	<p>Containers  Microservices  Integration services </p> <p>Event-driven  AI  Web & Mobile development </p>
<p>Azure IaaS offers a purpose-built, flexible IT infrastructure designed to fit your company's needs.</p>	<p>Intelligent</p> <ul style="list-style-type: none">• Intelligent protection• Intelligent performance <p>Flexible</p> <ul style="list-style-type: none">• Hyperscale• Elastic scaling• Resource governance <p>Trusted</p> <ul style="list-style-type: none">• Always encrypted (secure enclave)• Business continuity, HA/DR• Industry compliance certifications• Enterprise security isolation	<p>Azure is a turnkey delivery platform for modern applications that offers a broad range of managed services for all application scenarios, allowing you to choose the best approach for your cloud-native applications.</p>

Unified Management • Security • Governance • Tools • DevOps

Microsoft is your **trusted technology partner**

Trusted business partner

Microsoft mission

"Empower every person and every organization on the planet to achieve more."

—**Satya Nadella**, Microsoft CEO

October 2018

"No customer wants to be dependent on a provider that sells them technology on one end and competes with them on the other. Getting this equation right is key to their success going forward. **Microsoft is uniquely positioned to help.**"

Trusted innovation partner

Shared IP Innovation Principles:

Microsoft's policies give customers peace of mind and clarity when innovating with us.

Azure IP Advantage:

Microsoft offers best-in-industry protection against IP risks.



Patent pick



Uncapped indemnification



Springing license

Microsoft is committed to Azure Virtual Desktop as the **future of the Windows platform.**

1 Broad availability and rapid global rollout of the Azure Virtual Desktop service.

2 Compelling infrastructure and licensing pricing to end customers.

3 Plan to support wide range of devices, including mobile and thin client running other operating systems.

4 Rapid innovation/integration with Microsoft and Azure products (e.g., Teams, Microsoft Defender ATP).

5 Wide partner ecosystem to build on/integrate with Azure Virtual Desktop.



Thank you.