



MSP Foundations

Day 1

Today's Agenda

1

Nerdio Optimization Journey

2

Why move to the cloud?

3

Pricing best practices

4

Packing your cloud offering

5

AD User Management

6

Exchange Online management

7

Microsoft Intune policy management

8

Policy & CIS baselines

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Enrollment strategies

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Security for Modern Work

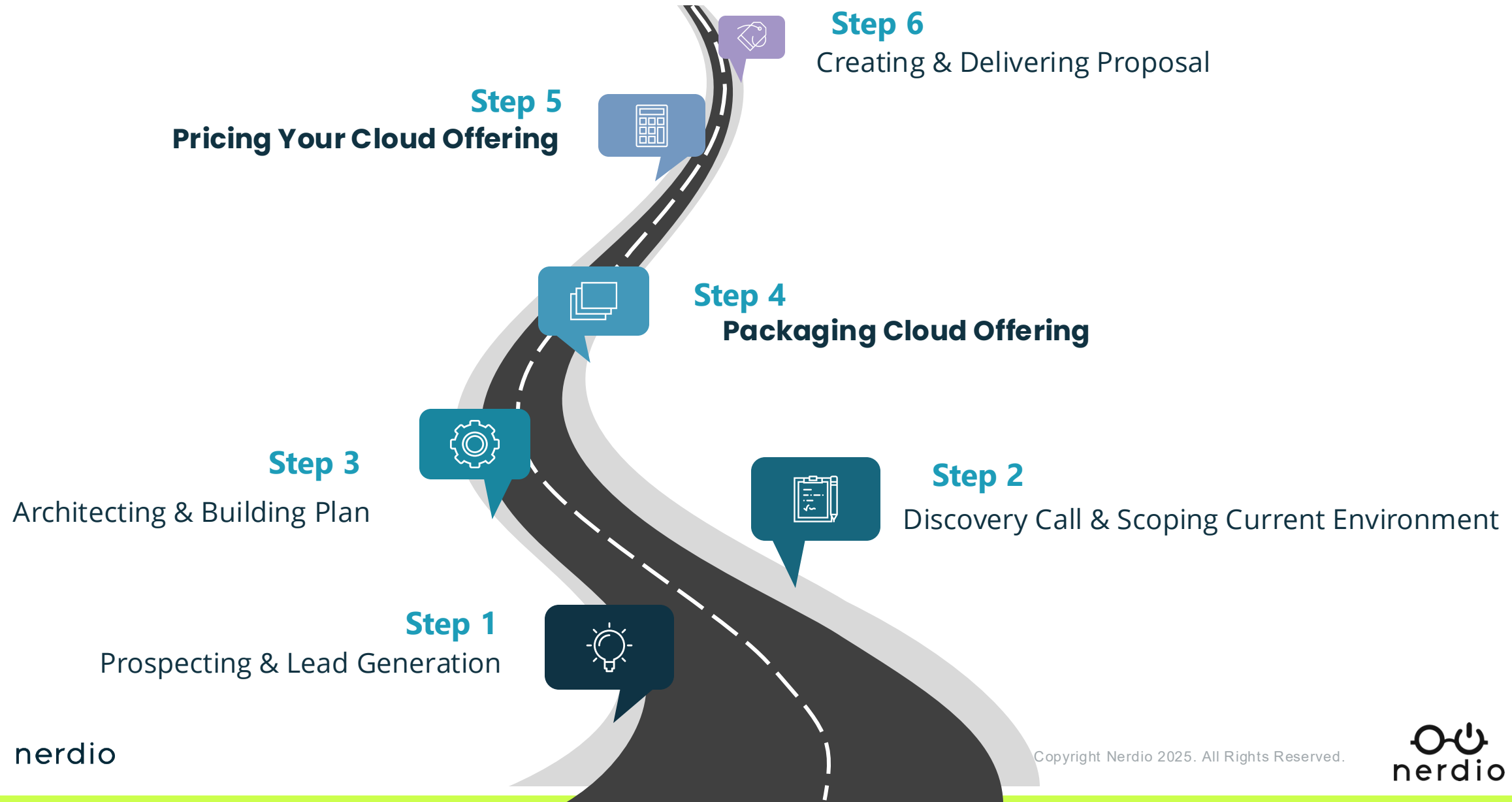
11

Unified Application Management

12

Reception!

Traditional MSP Sales Cycle



Nerdio Cloud Sales Certification



https://nerdio.co/Nerdio_MSP_Certifications



Goal #1

Discover the value of Modern Work and how to implement effective strategies



Goal #2

Discover Important cloud sales strategies and configuration details.



Goal #3

Why and how the cloud will work for you and your clients



Who is Nerdio?



Nerdio's evolution

2018

Nerdio for Azure

- Empower MSPs to build cloud practices in Azure with RDS
- WVD Private Preview

2019

Nerdio for Azure & WVD

- WVD Public Preview and GA
- Nerdio supports AVD on day 1 of GA

2020

Nerdio Manager for AVD

- Ultimate AVD deployment, AVD management, & auto-scaling for IT Pros

2021-
2023

Nerdio Manager for MSP

- Unified management platform for DaaS & physical endpoints
- Windows 365 Cloud PC launch partner
- Intune integration

2024+

Nerdio Manager for MSP

- Beginning the journey into Modern Work with Intune
- Expand on Microsoft 365 management



Nerdio's Mission

Nerdio's mission is to empower MSPs to build successful cloud practices with Microsoft offerings.

A photograph of Satya Nadella, CEO of Microsoft, is the background for the slide. He is a bald man with glasses, wearing a dark suit and a light blue shirt. He is seated and looking slightly to his left with a thoughtful expression. The image has a dark teal overlay.

66

“Longevity in this business is about being able to reinvent yourself or invent the future. Our industry does not respect tradition. It only respects innovation.”

SATYA NADELLA
CEO OF MICROSOFT



AVD: A virtual desktop revolution



Azure Virtual Desktop

WHAT IS AVD?

A set of technologies that allow an individual to “stream” his/her own Windows 10/11 desktop to any device in any location.



USE CASES

Easy access:

- Remote access from anywhere.

Scalability and speed:

- Quickly launch or tweak of infrastructure in minutes.

Cost control:

- Drive budget consistency & planning.

Simplification:

- Removes additional technology.

Nerdio's key AVD management features



Host Pool
Management



Session Host
Auto-Scaling



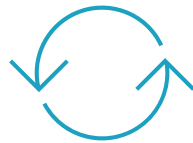
Custom
RBAC Roles



AVD Cost
Estimator



Backup and
Restore



AVD Lifecycle
Image Management



User Profile
Management



PowerShell
Scripting

Why AVD remains important

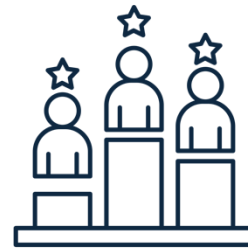
AVD remains a vital asset for MSPs due to its ability to deliver robust, scalable, and secure virtual desktop solutions to increasingly diverse and distributed workforces.



**Robust &
scalable**



**Simplified IT
management**



**Competitive
advantage**



The shift: More than AVD

What is Modern Work?

Modern Work focuses on using technologies such as **Microsoft 365** to **enhance** productivity, collaboration, and security for a **flexible** and **hybrid** workforce, enabling **seamless work from anywhere**.



Why Modern Work matters for you



Virtual desktops

Not always wanted or needed



Distributed workforce

Existing tools don't offer Modern Work management



Diverse environments

Protecting access to customer data and systems



Security is key

Managing Modern Work is vital for a strong posture



Return on investment

MSPs miss out on full M365 value, leaving money on the table

Windows 365

Windows 365 provides a **personalized**, **powerful**, **simple**, and **secured** full Windows 11 or Windows 10 experience

Also called CPC or “Cloud PC”

Under the hood, both AVD and Windows 365 leverage a similar set of Microsoft Cloud technologies.

Why use it?

- **Personalized** – All your apps, content, and settings, streamed from the Microsoft Cloud to any device
- **Powerful** – Scalable Cloud PCs bring the Windows 11 or Windows 10 experience to you, on any device.
- **Simple** – Provision and deploy Windows on a Cloud PC today, right from Microsoft Intune or at windows365.microsoft.com
- **Secured** – Enhancing the security benefits of Cloud PCs with new Windows 11 and Windows 10 security features

Windows 365

Windows 365 provides a **personalized, powerful, simple**, and **secured** full Windows 11 or Windows 10 experience

There are two versions -

Enterprise Cloud PCs are designed for organizations that have invested in Microsoft Intune and are using this powerful platform to manage their existing, physical Windows 10/11 desktops.

Business Cloud PCs are designed for individual users and very small businesses who typically go to their local Best Buy when they need a new PC.

The main difference?

- Enterprise requires an Intune license for each
- Enterprise require Entra or Hybrid joined (no Entra DS)
- Enterprise uses Windows 10 or 11 Enterprise version
- Business does NOT require Intune license
- Business are natively Entra-joined w/no AD or Entra DS
- Business uses Windows 10 or 11 Pro version

In most cases MSPs use Enterprise

Microsoft Intune

A set of technologies that securely manages identities, applications and devices (physical and virtual).

What is it?

Why use it?

- Included in most M365 plans.
- Augments RMM.
- Helps to consolidate MSP tools.

Microsoft Intune

A set of technologies that securely manages identities, applications and devices (physical and virtual).

What are MSPs using Intune for?

Eliminating Domain Controllers

- Small businesses that have servers onsite may no longer need them.

Replacing Group Policy

- Intune has now surpassed most of what you can do using legacy GPOs with Intune Configuration Policies.

Implementing Zero Trust

- Set policies to never trust and always validate when accessing corporate data (conditional access).

Endpoint Management

- Intune allows the MSP to offer RMM-like functionality out of the box.

Enabling Work-from-Anywhere

- Truly work from anywhere. Intune enables secure remote work without a use of a VPN client.

M365 Business Premium

December 2024

Office 365	Activity Reports	Adoption Score	Alert Policies	Audio Conferencing (free add-on)	Audit (standard)	Basic Mobility & Security
	Bookings	Briefing Email	Compliance Manager	Content Search	Data Loss Prevention	Defender for Office 365 Plan 1
	eDiscovery (standard)	Exchange Online Archiving	Exchange Online Plan 1	Information Protection for M365	Message Encryption (basic)	Microsoft 365 Apps for Business (with SCA)
	Microsoft 365 Mobile App	Microsoft Dataverse for Teams	Microsoft Forms	Microsoft Lists	Microsoft Search	Microsoft Teams
	Microsoft To Do	Microsoft Whiteboard	Office for the web (incl. Visio)	OneDrive for Business Plan 1	Planner	Power Apps for Office 365
	Power Automate for Office 365	Power Virtual Agents for Teams	Project & Roadmap View Access	Secure Score	SharePoint Online Plan 1	Stream for Office 365
	Sway	Viva Connections	Viva Engage	Viva Insights – Personal (basic)	Viva Learning (basic)	Webinars

M365 Business Premium

December 2024

Enterprise Mobility + Security

Application Management

Device Management

Endpoint Analytics

Information Protection

Intune Plan 1 for Business

Administrative Units

Advanced Security Reports & Alerts

App Proxy, including PingAccess

Entra ID Connect Health

Cloud App Discovery

Conditional Access

Custom Security Attributes (preview)

Customized Sign-in Page

Dynamic Groups

Enterprise State Roaming

External Identities

Microsoft Identity Manager

Multi-Factor Auth (MFA)

Password Protection

Passwordless Authentication

Self-Service Group Management

Self-Service Password Reset in AD

Self-Service Activity Reports

Service Level Agreement

Shared Account Password Roll-Over

Signle-Sign-On to other SaaS

SMS Sign-in

Temporary Access Pass

Terms of Use

Verified ID

Windows Autopilot

3rd Party MFA Integration

Entra ID Plan 1

M365 Business Premium

December 2024

Windows Pro

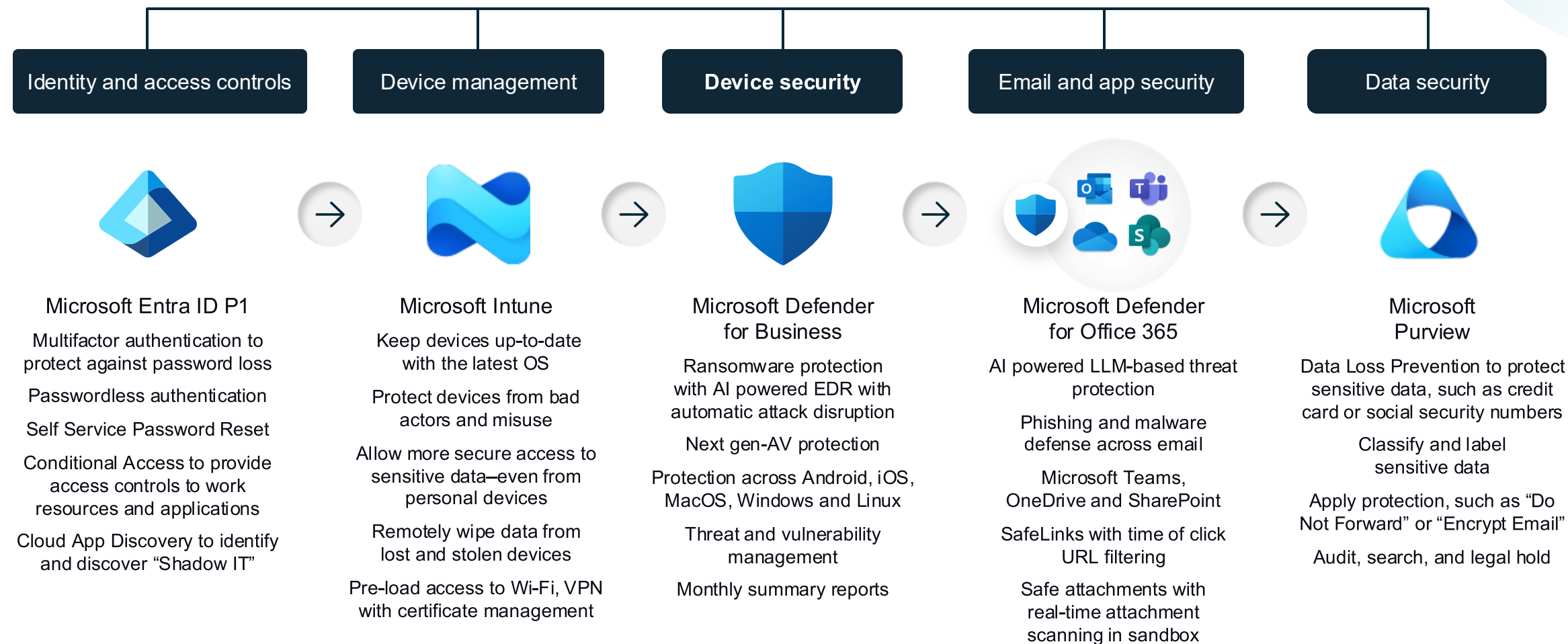
Universal Print	Application Control	Application Guard	AppLocker	Assigned Access	Windows Information Protection (retiring)	24 months support for Windows 11
Unbranded Boot	Microsoft Entra ID Join	BitLocker	BitLocker to Go	Cortana	Windows Update for Business	Windows Hello for Business
Power Automate Attended Desktop Flows	Defender Antivirus	Domain Join	Edge for Business	LAPS	Windows Conditional Access	Windows Firewall
Manage by MDM	Microsoft 365 Business Premium includes Windows Pro upgrade from earlier Pro versions plus Universal Print and Windows Autopatch					
Automated Investigations	Enhanced ASR	Threat Analytics	Block at First Sight	Mobile Threat Defense	Vulnerability Management (core)	
Cross-Platform Support	Next Gen Protection	Web Content Filtering	Endpoint Detection & Response	Tamper Protection		

Defender for Business

WHAT IS INCLUDED?

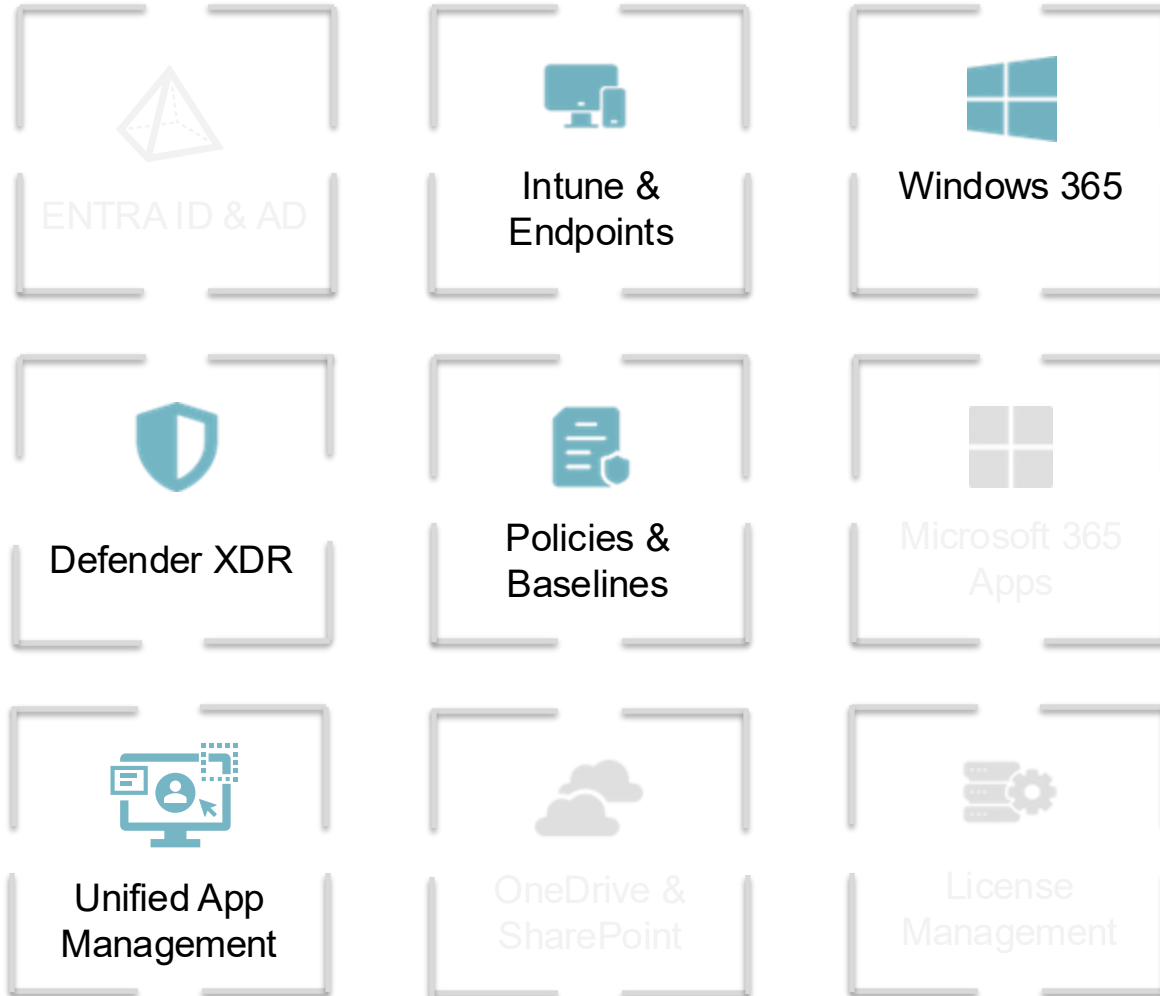
Layered Security

Microsoft Business Premium



Nerdio & Modern Work:

THE BEGINNING



Nerdio numbers

\$250M

Microsoft Azure
influenced revenue
for trailing 12 months

300+

New deployments
every month

320

Global employees
spanning 23
countries and
31 states

4.5

Average rating
on G2

65%

Average Azure cost
savings

1,000+

Channel
partners

4.5M +

Users worldwide

10K+

Customers

5.0

Rating on Azure
Marketplace

2018

Working closely with
Microsoft
Engineering



NERDIO WINS!





Nerdio Manager for MSP:

YOUR COMPLETE MICROSOFT MANAGEMENT TOOL





Envision a world where managing all Microsoft Cloud solutions is seamless and centralized....



Nerdio Manager for MSP

The ONLY complete
management platform for
Azure and Modern Work
technologies in the Microsoft
Cloud.

Microsoft 365 & Modern Work

Modern Work (M365)



ENTRA ID & AD



Intune &
Endpoints



Windows 365



Defender XDR



Policies &
Baselines



Microsoft 365
Apps



Unified App
Management



OneDrive &
SharePoint



License
Management





Nerdio Manager for MSP

Modern Work Capabilities

Console Connect	CIS Intune Policies
AD User Management	Vulnerability Management
SharePoint & OneDrive Settings Baselines	Exchange Online Settings Baselines
Microsoft Defender for Endpoint	Microsoft Teams Settings Baselines
Partner Center Integration	Unified Application Management (UAM)
User Onboarding/Offboarding	Secure Score Management
Intune Management	Configuration Drift Management
Entra ID Settings Baselines	Microsoft Defender for Cloud
Risky & Stale User Reports	Defender Settings Baselines
Windows 365 Management	Intune Settings Baselines
Group Templates	Multi-Tenant Microsoft Management

Nerdio Manager For MSP automates, simplifies, and optimizes virtual desktops in Azure

PRICE



Complete cost of Azure Infrastructure and Software Licensing



Best-Practices Recommendations on Ris, AHB



Per-user Azure cost reporting



Easy, wizard-driven cost estimates

DEPLOY



Overlay on top of existing deployments



Best practices configuration



Greenfield deployments



1- hour customer deployment

MANAGE



Alert and notification



Desktop, servers, backup and networking



RBAC with end-user portal



Performance and utilization monitoring



Intune policies, devices, and apps



MSIX AppAttach



User and sessions



Image creation and management



Approval workflow

OPTIMIZE



Performance optimization



Auto-Heal



Up to 75% in Savings



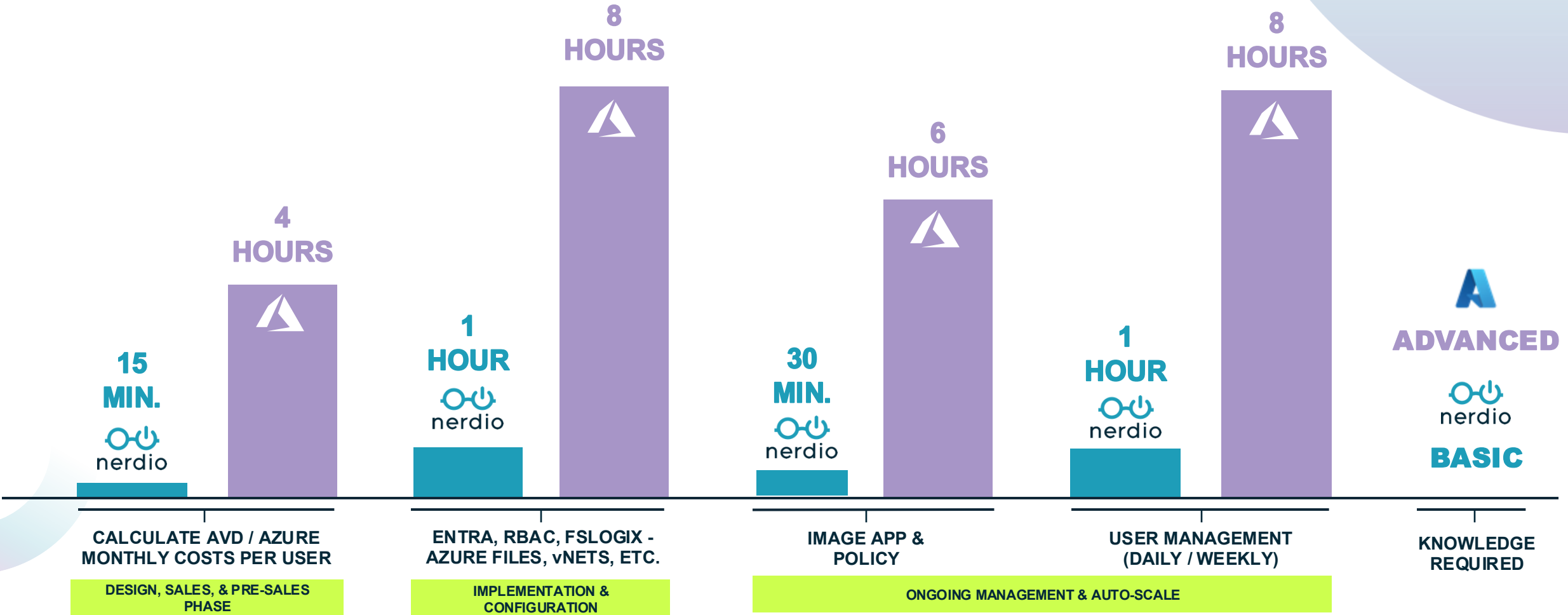
Auto-Scale



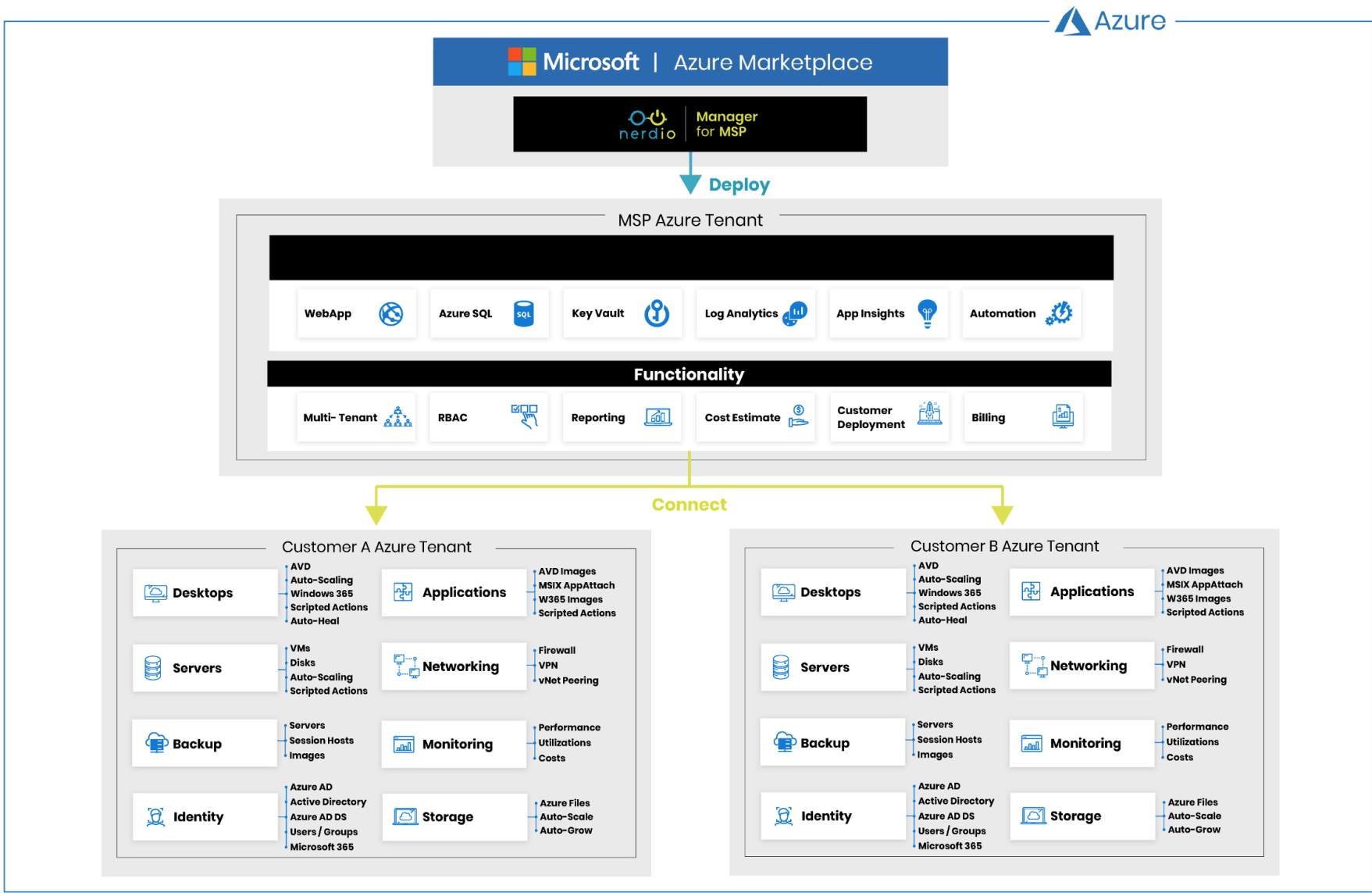
Cross-Tenant

Time savings comparison

Nerdio Manager vs Native Microsoft Azure



Nerdio Manager for MSP deployment architecture



Cost Reduction Strategies for Azure Virtual Desktop

	Azure Component Costs			Monthly Total	Per User Cost	%Savings
	Compute (VMs)	OS Disk (Storage)	FSLogix (Storage)			
Unoptimized	\$1006	\$79	\$160	\$1,245	\$38.91	\$N/A
#1 Auto-scale with Nerdio	\$541	\$79	\$160	\$780	\$24.38	38%
#2 3-Year Reserved Instances	\$387	\$79	\$160	\$626	\$19.56	50%
#3 Flip disk from SSD to HDD	\$387	\$24	\$160	\$571	\$17.84	55%
#4 FSLogix Auto-scale shrink 35%	\$387	\$24	\$102	\$513	\$16.03	60%

Total Savings	60%
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Assumptions

- Number of users: **32**
 - User type: **Duo** (2 users per CPU)
 - Session host VM size: **E4s_v5**
 - OS disk: **P10** (128 GB Premium SSD)
- FSLogix profile size: **20 GB**
 - FSLogix storage: **Azure Files Premium 1TB**
 - Hours in work week: **50**
 - Azure list pricing: **South Central US**

Why MSPs choose NMM

Because it is AWESOME!

BENEFITS



**EASE OF AVD DEPLOYMENT
AND MANAGEMENT**



**COST OPTIMIZATION
WITH AUTO-SCALING**



**SIMPLE & INTUITIVE
MULTI-TENANT INTERFACE**

WHAT MSPs SAY

*“By using Nerdio we were **able to shave days off an AVD environment setup** and also **reduce the amount of time** we have to spent managing and maintaining the environment as the automation processes do a lot for us.”*

*“Nerdio has been a game changer for our organization. The platform is user friendly and has reduced the time our engineers take to deploy any Azure workload. From 3 to 5 users to hundreds of users in very little time. **Even my three-year old knows how to use Azure by utilizing the automation that Nerdio offers.**”*



The MSP Optimization Journey

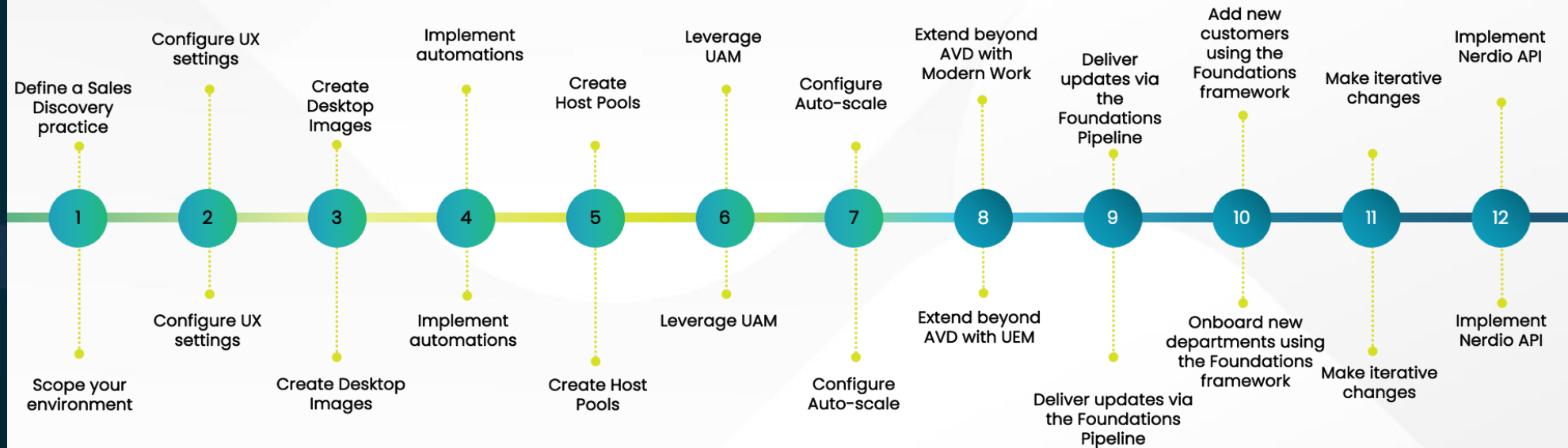
Version 2.0

Version 1

Learning & Development

The Nerdio Optimization Journey

MSP



Enterprise

Foundations

Optimizations

Environment types



Traditional environments

(On-prem/Legacy technology-dependent)

Traditional environments are dependent on legacy technologies and the workflows that support them.

Common legacy technologies include:

- SCCM
- Group Policy Objects (GPOs)
- Manual administration efforts
- One-to-one workflows
- Domain controllers
- File servers
- Exchange servers
- VPNs
- Fragmented endpoint management and endpoint security practices/tools

Environment types



Hybrid environments

(Deprecating legacy dependancies)

Hybrid environments are actively evolving toward a cloud-native posture. Legacy technologies are being retired and replaced.

- GPO and SCCM dependencies are transitioning to Microsoft Intune.
- Automations are being built to allow common tasks to scale.
- One-to-one workflows are evolving into one-to-many tools.
- Endpoint management and security tools and practices are being consolidated.
- Exchange and file servers are retired in favor of cloud-based solutions.
- VPN dependencies are being reduced.

Environment types

Cloud-native environments

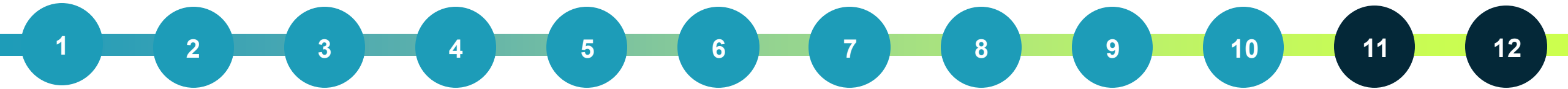
(Fully operationalized Microsoft Solution stack)

Cloud-native environments leverage the modernized Microsoft cloud solution stack to meet the needs of the organization.

- Microsoft Intune and Microsoft Defender are fully operationalized for modern endpoint management.
- A fully realized and scalable suite of automations is implemented and evolves with business needs.
- Workflows are modernized by using Microsoft solutions as a central anchor.
- VPNs to access company resources are deprecated.
- The user experience is fully administered and served using cloud-based solutions.

The MSP Optimization Journey

The steps to a cloud-native posture.



Unify endpoint management

Define what an ideal endpoint looks like and capture this definition in policies to drive consistency and scale for configuration and ongoing management.

1

MSP

- Configure AD User Management in Nerdio Manager
- Enable Exchange Online Management
- Enable Intune in Nerdio Manager
- Configure Microsoft Intune device policies
- Implement Windows Update for Business
- Implement policy backups
- Group policies into Policy Baselines
- Assign policies and Policy Baselines to groups
- Join endpoints to Intune
- Use Tenant Monitoring to assess current posture
- Use Solution Baselines to adjust Microsoft 365 solutions
- Use reporting to track and solve for drift
- Implement Console Connect

Unify application management

Identify the application needs in your ecosystem – both generally applicable applications and applications specific to smaller segments. Then use policies to automate installation and ongoing updates.

2

MSP

- Connect private application repositories to package and deploy your own unique applications or deploy applications from public repositories.
- Create Unified Application Management (UAM) policies in Nerdio Manager to centralize the deployment of your application portfolio.
- Implement maintenance windows to automate application updates.
- Solve for unique needs between customers by assigning applications only where they're needed.

Scope for DaaS solutions

Use data to drive decisions when selecting the Microsoft VDI solution and infrastructure for your use case(s).

3

MSP

- Define a consistent discovery process for your Sales team.
- Develop packages and plays built on your tech stack.
- For existing traditional environments, use user behavior details, logs and reports to scope.
- For existing Azure environments, scope by combining user behavior details with data collected via Nerdio Tenant Monitoring.
- For new environments (greenfield), work with application developers to scope based on anticipated user and system needs.

Implement Windows 365

Centralize and create configurations for scale and simplified management of Windows 365 Cloud PCs.

4

MSP

- Use the outcomes from your scoping exercise to make data-driven decisions on cloud PC sizes.
- Create Windows 365 network connections
- Create Windows 365 provisioning policies
- Create Windows 365 user settings
- Configure restore point capture
- Deploy Cloud PCs
- Assign users Windows 365 licenses

AVD: Configure User Experience Settings

Create centralized configurations for FSLogix and RDP settings to define the user experience when accessing AVD hosts.

5

MSP

- Create centrally managed FSLogix profiles to enable user profile routing for host pools.
- Create centrally managed RDP settings profiles to define behaviors for user sessions.

AVD: Implement Image Lifecycle Management

6

Use image source virtual machines for testing outside of production. Automate ongoing OS updates and more with scheduled image generation. Avoid costly recovery motions by leveraging image versioning.

MSP

- Create image source virtual machines to consolidate common update and management tasks.
- Reduce recovery motions for restoring environments with image versions.
- Automate updates to cascade throughout your host pool ecosystem.

AVD: Implement Automations

Leverage Scripted Actions to automate common functions on image source virtual machines, production hosts, and your Azure tenant.

7

MSP

- Create and/or connect GitHub repositories to create an automation toolbox.
- Leverage automations you've already built or create new automations in Nerdio Manager.
- Group individual scripts to run together to consolidate task management.
- Generalize scripts and use variables for specific outcomes based on the customer account running the script.

AVD: Configure Host Pools

Create and/or connect workspaces, host pools and hosts to centralize the management of your AVD ecosystem.

8

MSP

- Use the outcomes from your scoping exercise to make data-driven decisions on host pool experience types.
- *Refine resource utilization by defining session limits and load balancing.*
- *Create host pools and session hosts to deliver virtual desktops to end users.*
- *Optimize host pool properties.*
- *Leverage Nerdio Azure Business Reviews to identify areas to save on cost or enhance user experiences.*

AVD: Extend UAM policies to cloud endpoints

Use your unified application catalog to create Unified Application Management policies for cloud endpoints.

9

MSP

- Create deployment policies for:
 - AVD host pools
 - Personal AVD desktops
 - Azure servers

AVD: Implement Auto-scale

Use Auto-Scale to help control costs within your AVD environment

10

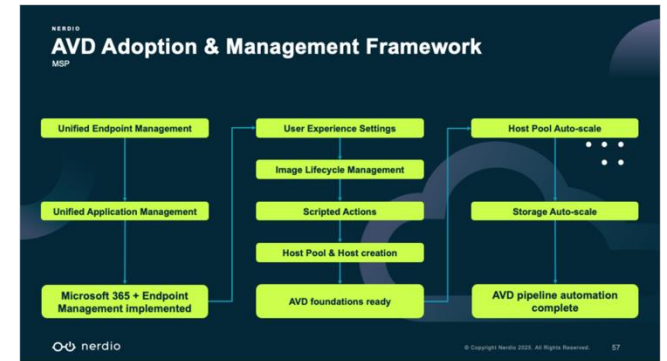
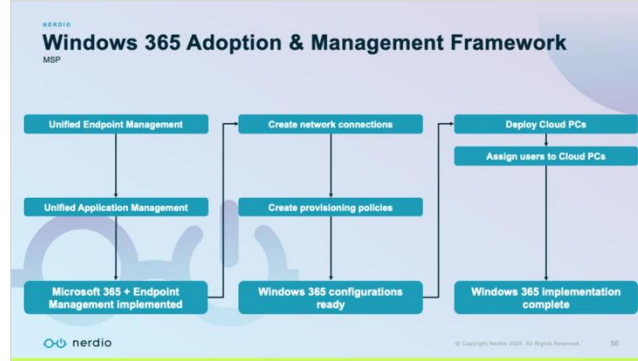
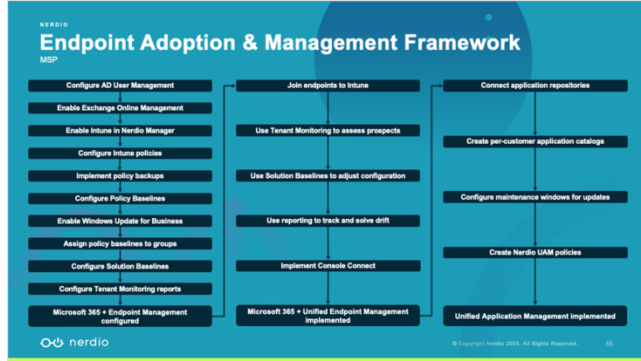
MSP

- Combine individual host pool configurations with Auto-scale profiles to centralize management.
- Add capacity (scale out) to meet waves of demand and reduce capacity (scale in) to reduce unnecessary costs.
- Combine Auto-scale with Desktop Images to automatically update production hosts.
- Refine your infrastructure selections for host pools by reviewing Nerdio Auto-scale history.
- Enable Auto-heal to detect and remediate broken hosts.
- Optimize your storage spend by leveraging Auto-scale for Azure Files Premium.

Manage via the Foundations frameworks

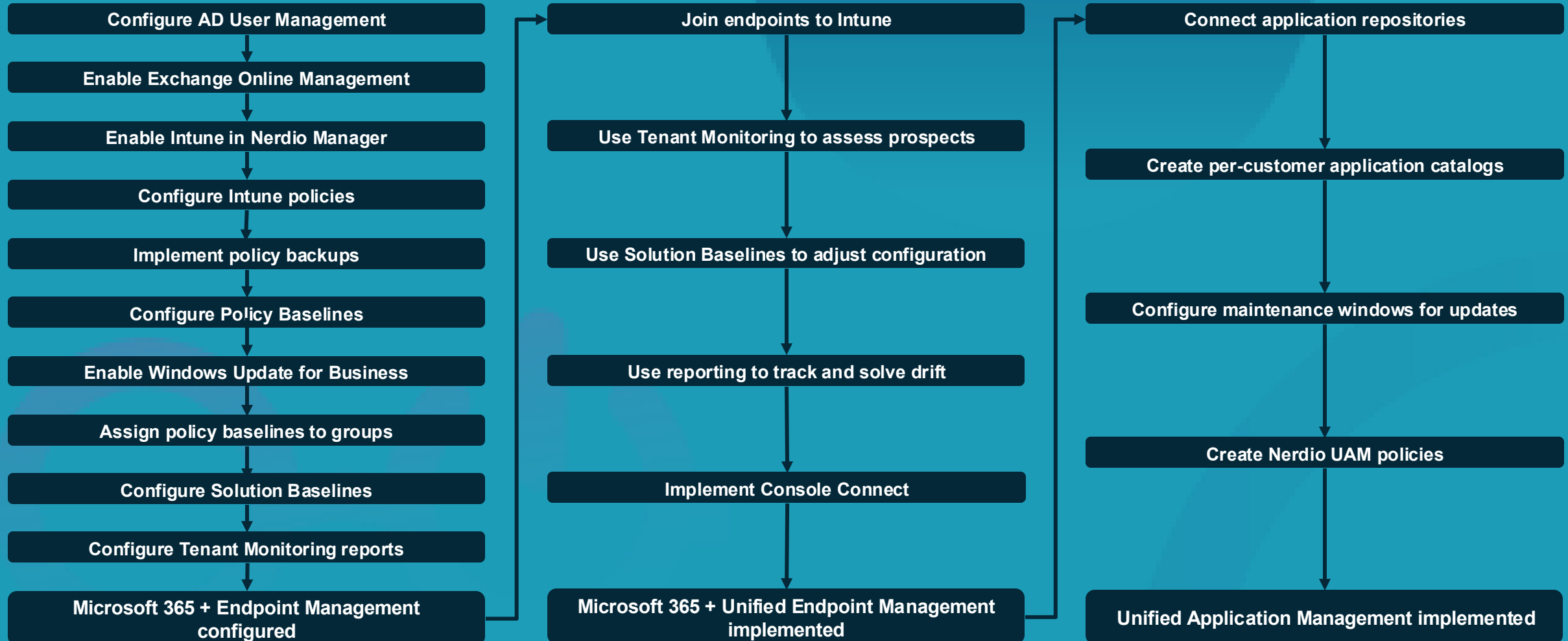
Endpoint Management, Windows 365 and Azure Virtual Desktop

11



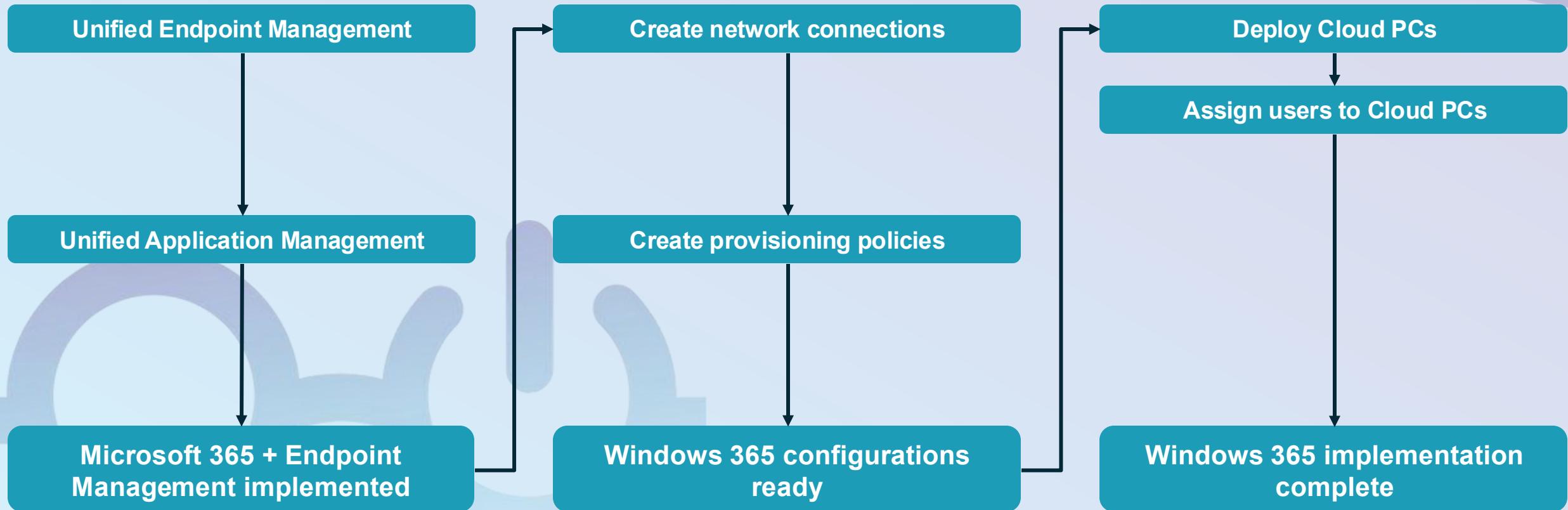
Endpoint Adoption & Management Framework

MSP



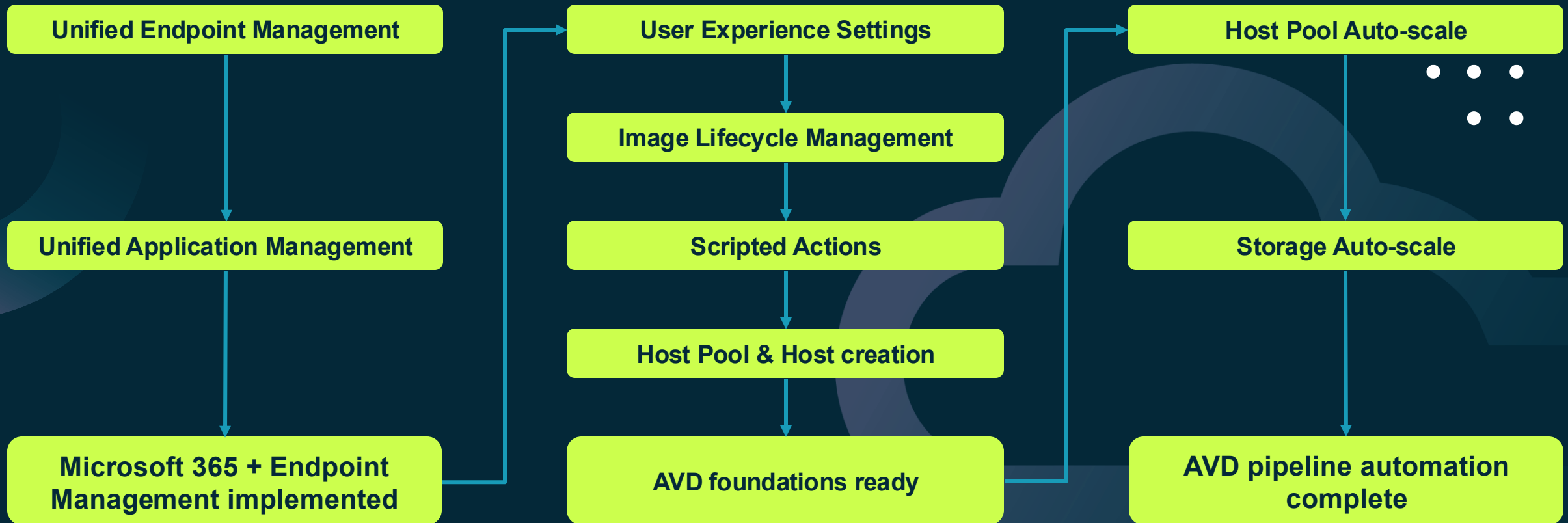
Windows 365 Adoption & Management Framework

MSP



AVD Adoption & Management Framework

MSP



Implement advanced optimizations

Take these advanced steps to optimize and advance your cloud practice

12

- Extend further into your tech stack with Nerdio API.
- Harden your Nerdio Manager install.
- Continuously improve automations.



Why use the cloud?



SMB Computing in 2024

RAPID MARKET EVOLUTION



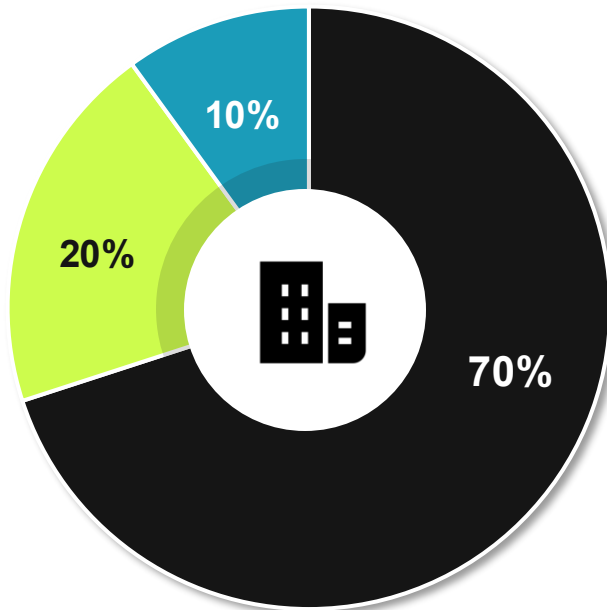
WORK IN OFFICE
(TRADITIONAL)



WORK ANYWHERE
(FULLY REMOTE)

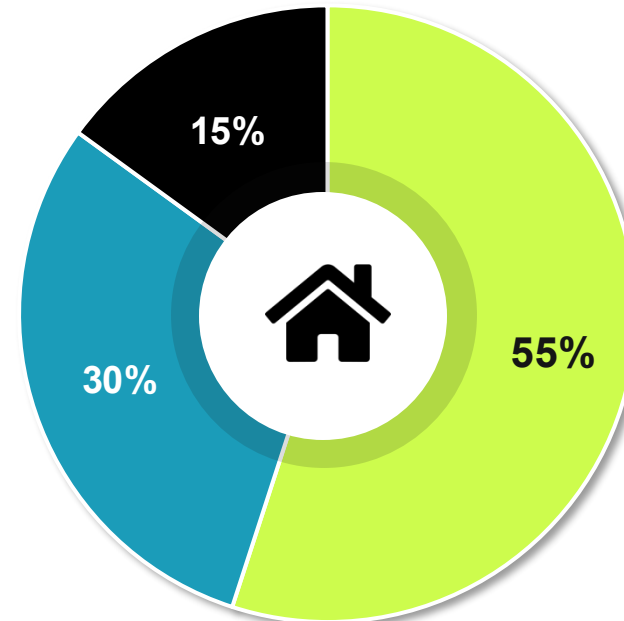


WORK IN OFFICE &
REMOVEDLY (HYBRID)



PRE-COVID WORK MODE

VS



TODAY'S WORK MODE

Security

Challenges

Hard to protect systems and data in a work from home environment.

Solution

- MS employs over 8,500 security experts that work 24/7.
- Modern work products keep data secure.
- Built-in security with Conditional Access and 2FA.

Scalability

Challenges

Solution

On-prem hardware isn't very upgradable or scalable. Which makes it hard to plan and budget, especially with shortages.

- Pay for just the right amount of compute and storage resources.
- Easily grow and shrink on the fly.
- Easier to budget and strategize for changes.

Costs

Challenges

Solution

Keeping IT costs low and predictable.
On-prem hardware requires continual
refreshes and costs \$ to support.

- Predictability – confidently budget
- CAPEX vs OPEX.
- No more hardware or real estate costs.
- Fewer servers to pay to support.

Productivity

Challenges

Solution

Need high and consistent performance with accessibility of systems for users from anywhere.

- Use any different CPU / RAM / Disk combination in Azure to build the right environment.
- Access the environment from any device, anywhere, at any time.

Availability

Challenges

Solution

Need services to be available. DR / BC is hard and expensive, esp with local threats (fire, power, outages, etc).

- MS enterprise level reliability built-in.
- Built-in DR / BC.
- Protected data centers & redundant setups.

Management

Challenges

Solution

Hard to securely manage multiple remote devices for staff with no corporate control over the user experience.

- Allow secure access to remote users on corporate and personal devices.
- Microsoft's Zero Trust rights help to keep the experience clean and consistent.
- Intune can create policies for applications, device settings and more.

Support

Challenges

Hard to support with technology changes, employee turnover, and specialized staff.

Solution

- Easier to stay up to date on AVD and Intune with Nerdio.
- Easier to learn and train using Nerdio -less technician expertise needed.
- Less staff needed with the automation, scripting and tools built into NMM.
- Fewer truck rolls

Why Azure?



TRADITIONAL DATACENTERS



1

- Rent a rack at your local datacenter.
- Buy hardware to mount to your racks.

2

- You fully manage your own rack.
- Replace hardware and manage maintenance windows and downtime.
- You build your own resiliency, backup and DR.

3

- If you need new hardware, you are responsible for procuring it, setting it up and planning around cutting over.
- You maintain and patch your own networking gear and hypervisors.

1

65+ Regions in Azure Globally

- Underwater fiber connecting all regions.
- Most regions have 3 or more datacenters.
- More datacenters than AWS and Google combined.

2

Microsoft Security

- Over 8500 security professionals work to secure Azure infrastructure.
- Shared Responsibility Model.

3

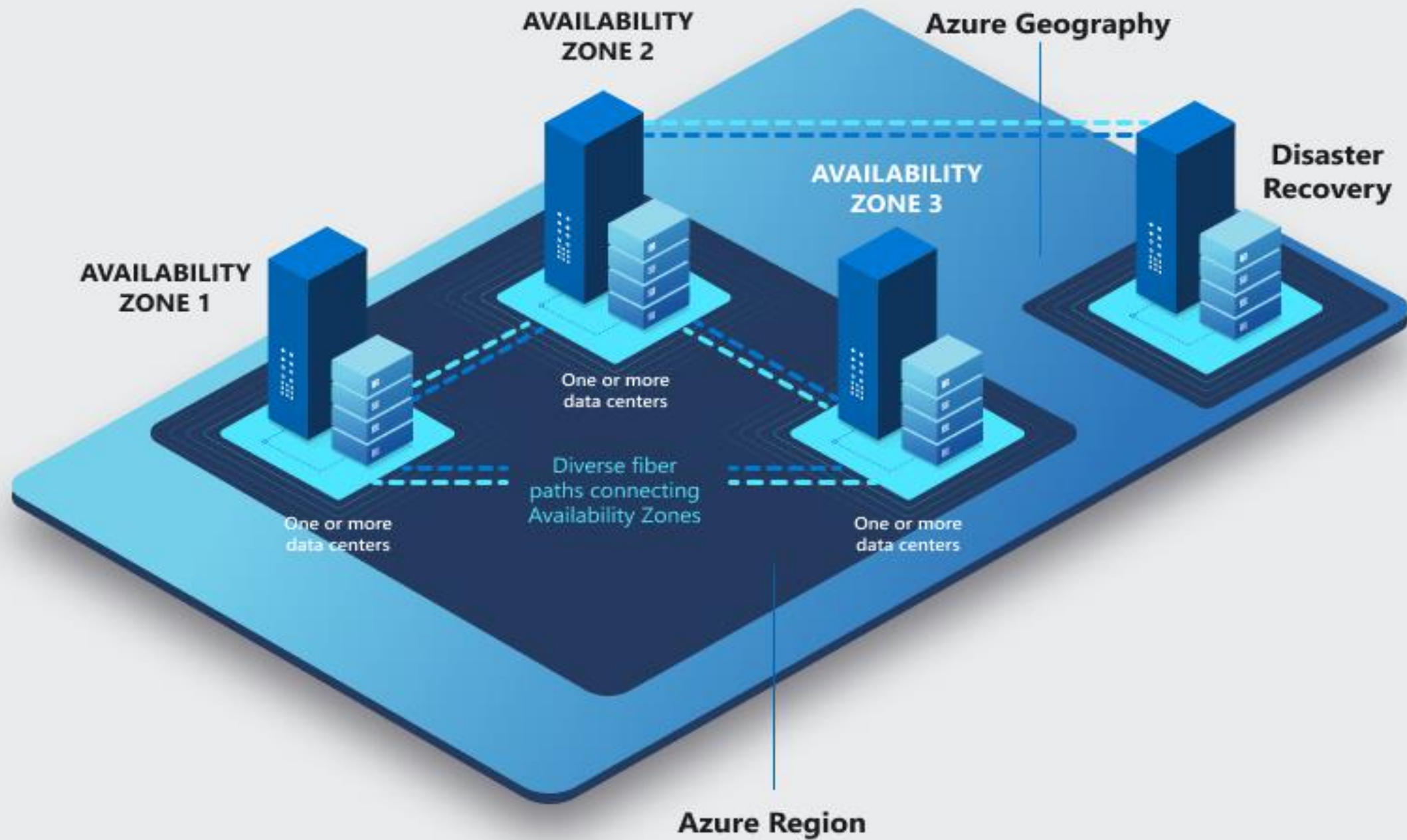
We already use Azure every day!

- M365 and Exchange
- XBOX Online
- Teams
- ChatGPT



AZURE REGIONS





Azure Datacenter Region North Europe Dublin

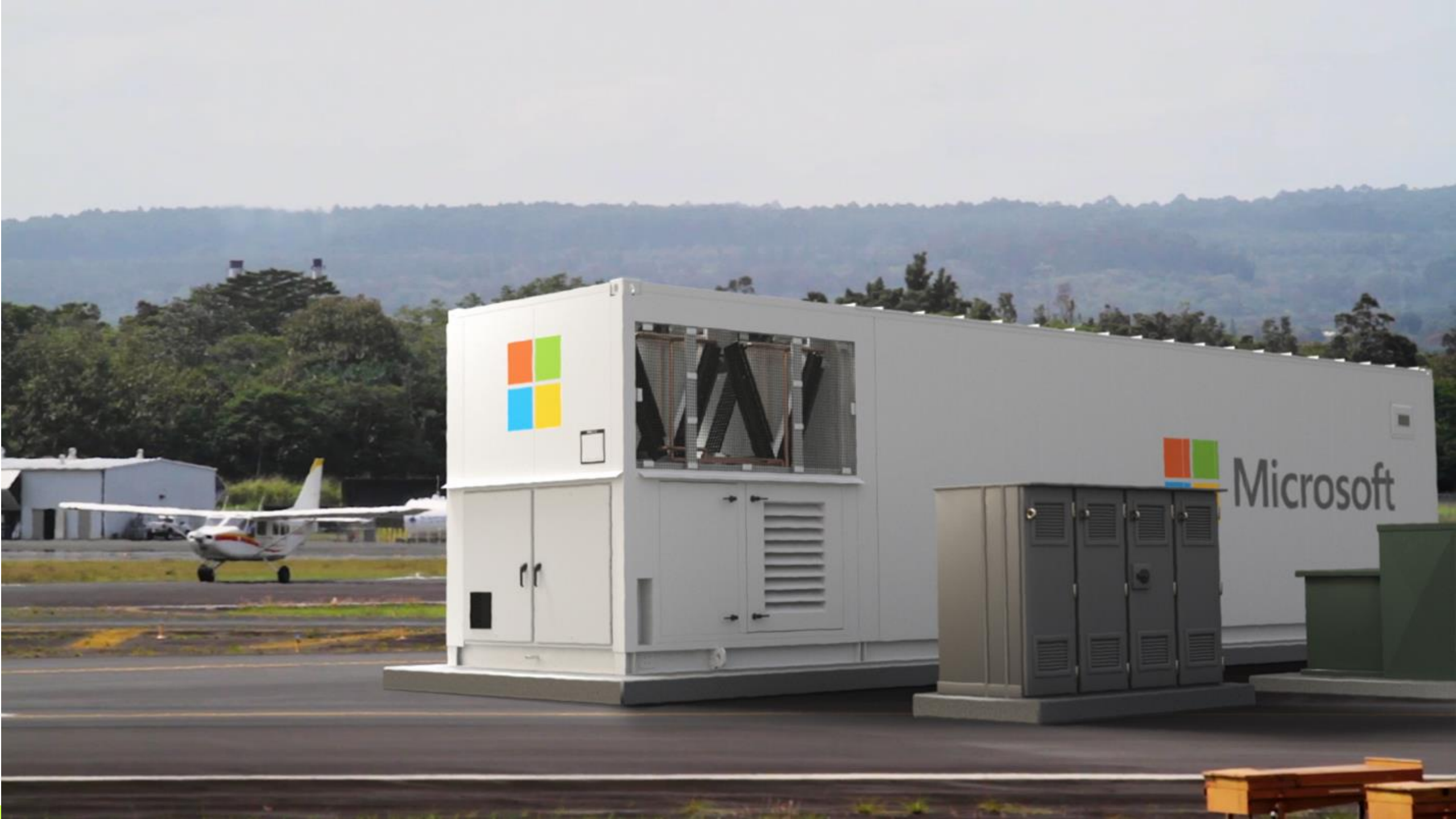
DB3,4,5

Future Campus works

DUB 07

DUB 08

DUB 06



**THE #1 CAUSE FOR PERFORMANCE ISSUES IN AZURE
ARE IOPS / LATENCY RELATED!**





Premium SSD

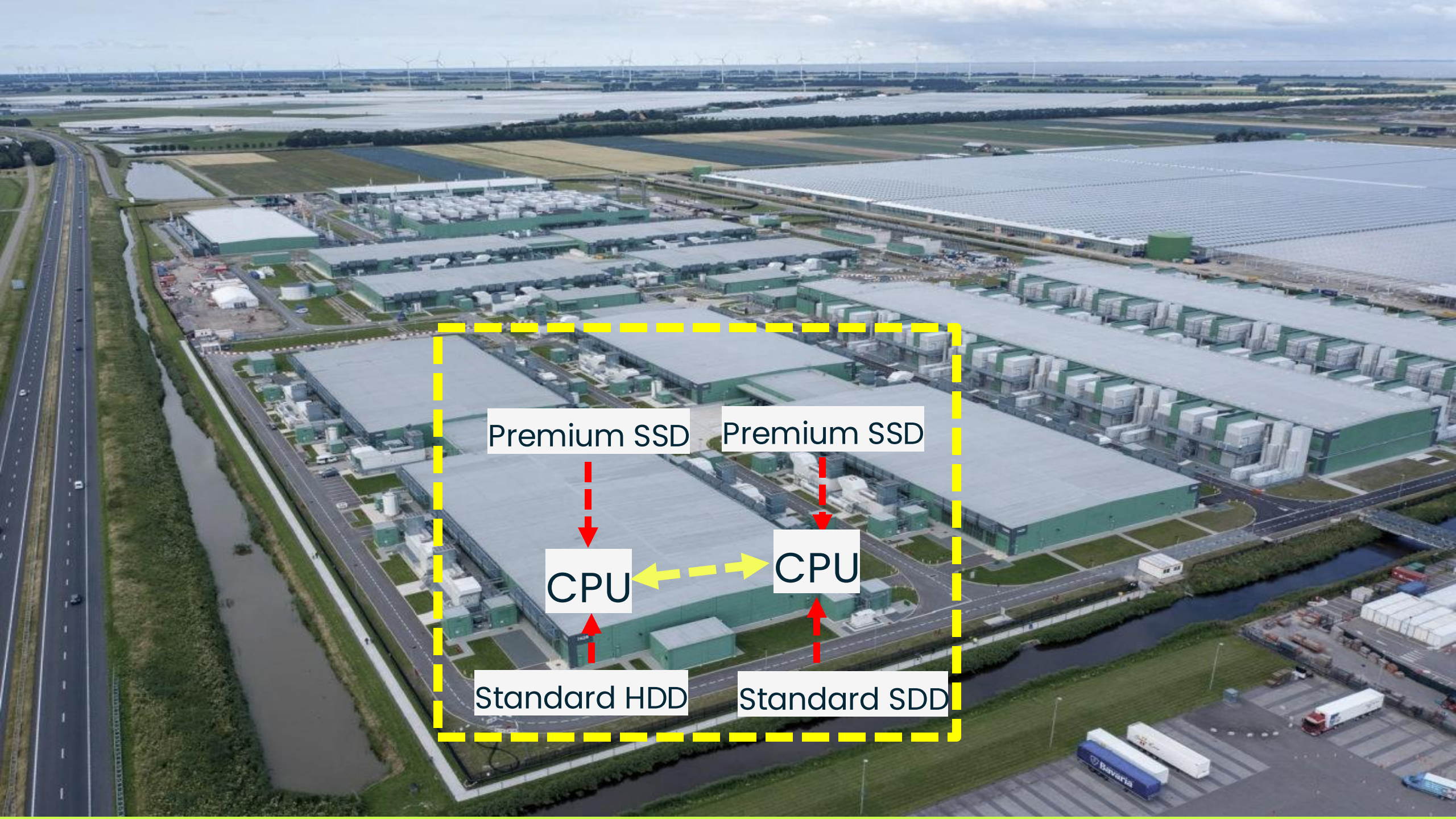
Standard HDD

Premium SSD

Standard SSD

CPU

CPU



Why Azure over other cloud solutions?

Your Customers are already using Microsoft

Pricing Fundamentals

3 important topics

We will cover 3 important topics that relate to pricing and quoting the cloud.



Azure Resources

You need to understand the various VMs, disks, and options.



Margins

Margin optimization is important for you and your client to save on costs.



Pricing

Understanding how to price is key to a successful cloud rollout.



Azure Infrastructure

*Before being able to quote or price an Azure environment,
you need to understand the nuance of Azure resources.*

VM Series - Families

Which one should you use?

A-Series, Bs-Series, D-Series, Dp-Series, E-Series, Ep_Series, F-Series, G-Series, H-Series, Ls-Series, M Series, Mv2-Series, NC-Series, ND-Series, NG-Series, NV-series

Bs	<i>Burstable</i>	2C 4GB, 2C 8GB, 4C 16GB, 8C 32GB About 56% Cheaper than D-Series, have threshold and builds credits
D	<i>Standard</i>	2C 8GB, 4C 16GB, 8C 32GB, 16C 64GB ... Balanced CPU and RAM
E	<i>Memory</i>	2C 16GB, 4C 32GB, 8C 64GB, 16C 128GB ... 8x More RAM than CPU. About 15% More Expensive than D
DI/F	<i>CPU</i>	4C 8GB, 8C 16GB, 16C 32GB, 32C 64GB ... 2x More CPU ratio than RAM. F series machines have non virtual cores
N	<i>GPU</i>	6C 55GB 4GB GPU, 12C 110GB 8GB GPU, 18C 220GB 16GB GPU, 36C 440GB 24GB GPU ... AMD CPU, nVidia RTX GPU

Which N sub-family do I choose?

N-series has four different offerings aimed at specific workloads, offering single, multiple, or fractional GPUs:

Family	Workloads	Series List
NC-family	Compute-intensive Graphics-intensive Visualization	NC-series NCads_H100_v5-series NCCads_H100_v5-series NCv2-series NCv3-series NCasT4_v3-series NC_A100_v4-series
ND-family	Large memory compute-intensive Large memory graphics-intensive Large memory visualization	ND_MI300X_v5-series ND-H100-v5-series NDm_A100_v4-series ND_A100_v4-series
NG-family	Virtual Desktop (VDI) Cloud gaming	NGads V620-series
NV-family	Virtual desktop (VDI) Single-precision compute Video encoding and rendering	NV-series NVv3-series NVv4-series NVadsA10_v5-series Previous-gen NV-family

• **'NC' sub-family is designed for compute-intensive workloads, such as AI and machine learning model training, high-performance computing (HPC), and graphics-intensive applications. (full GPU cards)**

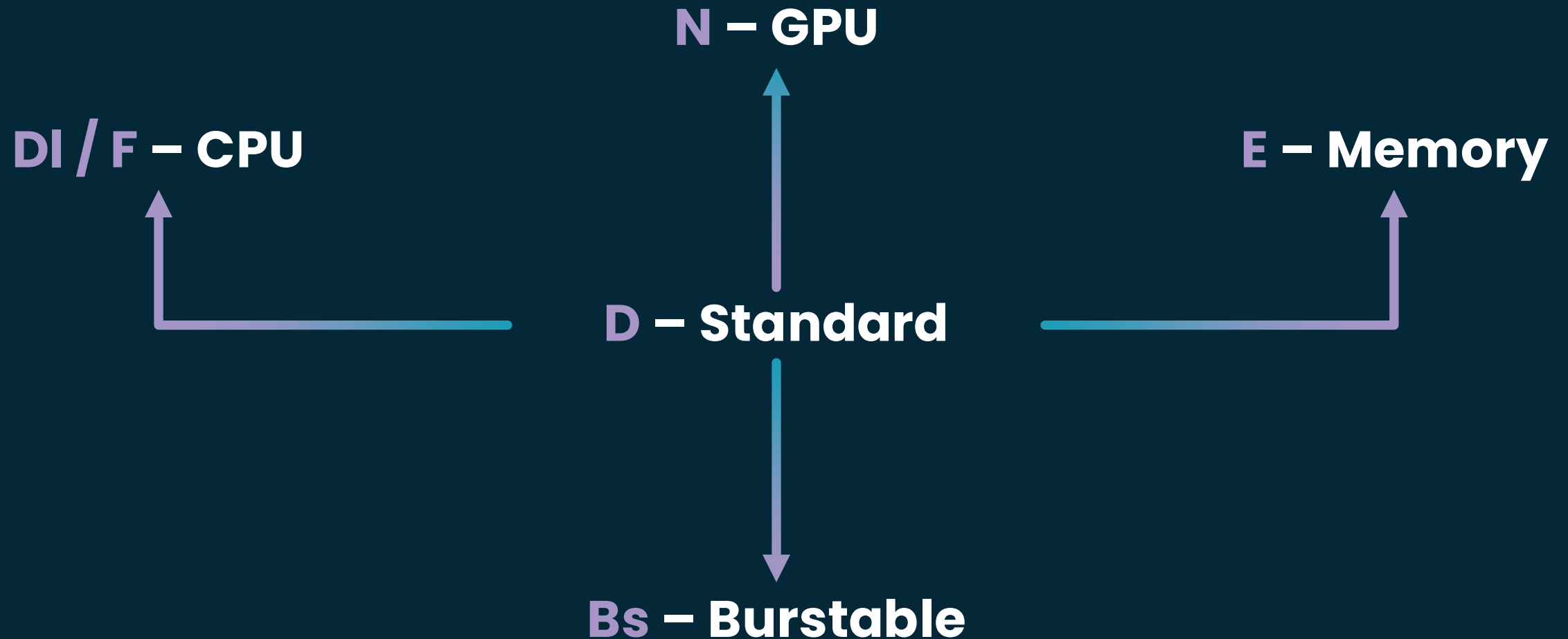
• **'ND' sub-family is designed for deep learning, AI research, and high-performance computing tasks that benefit from powerful GPU acceleration.**

• **'NG' sub-family is designed for cloud gaming and remote desktop applications.**

• **'NV' sub-family is designed for graphics-intensive applications such as graphics rendering, simulation, and virtual desktops. (shared card until NV36 – exclusive access)**

HOW TO PICK?

VM Series – Families

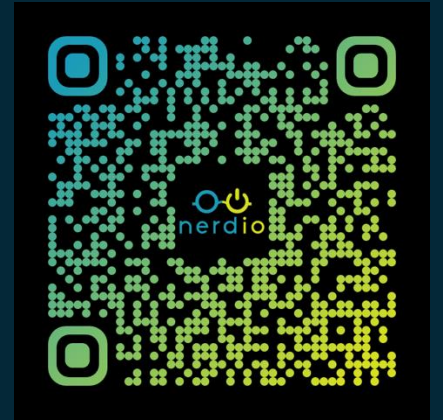


How To Read A VM Sku

D16ads_v6

D16as_v4

E8-4ads_v5



[VM Family] + [# of Cores] + [Attributes] + [Gen Version]

					2	8	32												
B	D	E	DI/F						a	d	s	-#		v3	v4	v5	v6		
Nv					4	16	64												

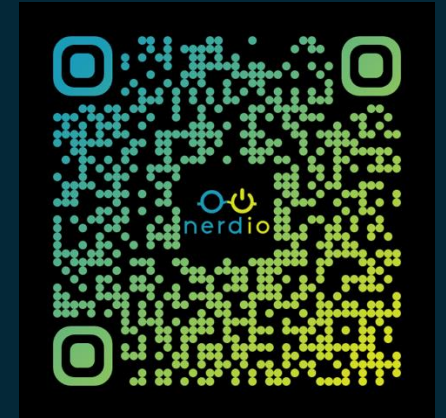
VM Family Legend

B – Burstable
D - Standard
E – Memory
DI/F - CPU
N - GPU

Attributes Legend

d - Has a local temp disk, used for EOSD, Page File, SQL Logs, etc
a - AMD CPU; AMD's have higher ACU than Intel
s - Compatible with Premium SSDs
-# - CPU constraint VM; ideal for SQL workloads where CPU is not needed but high memory is required. Avoid paying high SQL licensing cost based on lower

POP Quiz!



D4_v5

E8as_v4

D2s_v3

VM Family Legend

B – Burstable
D - Standard
E – Memory
D/F - CPU
Nv - GPU

Attributes Legend

d - Has a local temp disk, used for EOSD, Page File, SQL Logs, etc
a - AMD CPU; AMD's have higher ACU than Intel
s - Compatible with Premium SSDs
-# - CPU constraint VM; ideal for SQL workloads where CPU is not needed but high memory is required. Avoid paying high SQL licensing cost based on lower

Gen Version

v3 –Haswell Q3'15, Broadwell Q4'16
Skylake Q1'18, Cascade Q2'19, Icelake Q2'21

v4 –Cascade Q219, Icelake Q221,
EPYC 2 Q3'19 EPYC3 Q1'21

v5 – Icelake Q2'22, Q1'21

Why use the newer gen VMs?

CPU Selection matters.

- Even if you are utilizing an instance from the same underlying CPU manufacturer .

Example:

- Going from an Intel v4 VM in Azure to a v5 VM, can provide up to 24% better performance in overall performance on Microsoft applications including Teams.
- In addition, you can go from 32 to 36 users on a single VM; 12% more AVD users.

Think about the performance gains if you or your client were running on v3 and just moved to v6, the performance gains would be significant. In most cases gen to gen improvements are 25-30% range.

More often than not, newer VM's are the same cost or pennies difference. But offer better price & performance that often lowers your overall cost.



Pay Attention to IOPS!

Your workload is
only as fast as
your **lowest**
common
denominator!

VM Series Family

B2ms	2vCPU 8GB RAM	1920IOPS/22.5MB/s 4000IOPS/100MB/s max burst
D2s_v3	2vCPU 8GB RAM	3200IOPS/48MB/s 4000IOPS/200MB/s max burst
D2s_v5	2vCPU 8GB RAM	3750IOPS/85MB/s 10000IOPS/1200MB/s max burst
D4s_v5	4vCPU 16GB RAM	6400IOPS/145MB/s 20000IOPS/1200MB/s max burst
D8s_v5	8vCPU 32GB RAM	12800IOPS/290MB/s 20000IOPS/1200MB/s max burst

Storage

Disk Size	IOPS (Burst)	Throughput (Burst)	Price
P10 128 GB	500 (3,500)	100 MBps (170 MBps)	\$19.71
P15 256 GB	1100 (3,500)	125 MBps (170 MBps)	\$38.02
P20 512 GB	2300 (3,500)	150 MBps (170 MBps)	\$73.22
P30 1 TB	5000 (30,000)	200 MBps (1000 MBps)	\$135.17
P40 2 TB	7500 (30,000)	250 MBps (1000 MBps)	\$259.05
P50 4 TB	7500 (30,000)	250 MBps (1000 MBps)	\$495.57
P60 8 TB	16000 (30,000)	500 MBps (1000 MBps)	\$946.08

B series

Light workloads without constant use. Best for Domain Controllers, when not using AAD or Azure AD DS

D Series

Standard Azure VM with a 4 GB RAM to 1 vCPU ratio. Typically for File servers & app servers

E Series

Standard Azure VM with a 8 GB RAM to 1 vCPU ratio. Best for high memory usage workloads & AVD session hosts

N Series

GPU enabled VMs in Azure. Best for high graphics rendering workloads like Revit and AutoCAD

VM Selection

VM Size Averages***

- **Domain Controller (VM)**
 - 1-40 users = B2ms
 - 40-75 users = D2sv5
 - 75-200 users = D4sv5
- **File Server**
 - 1-15 users = D2sv5
 - 15-30 users = D4sv5
 - 30-60 users = D8sv5
 - 60-100+ users = D16sv5
- **AVD Pools**
 - 0-8 Users = E4sv5 or E4asv5
 - 8-15 users = E8sv5 or E8asv5
 - 15-25 users = E16sv5 or E16asv5
 - 25-40 users = 2x E16sv5 or 2x E16asv5
 - 40-60 users = 3x E16sv5 or 3x E16asv5

Microsoft Identity

What is Microsoft Identity?

Identity for MSFT is their Zero Trust model allowing and/or denying users access to resources based on who they are.

1. Entra ID (AAD)

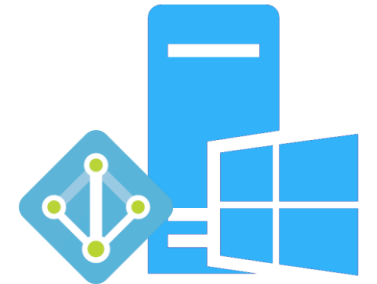
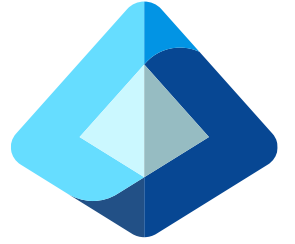
- This is the free service that is included with 365 and required for all Azure deployments.

2. Active Directory Domain Services (AD DS)

- This is a server (physical or virtual) running the Active Directory role.
- The role is free but an MSP must pay for the server components (RAM, CPU, Storage, OS License) and is responsible for backup & support (security, updates, troubleshooting, etc.).

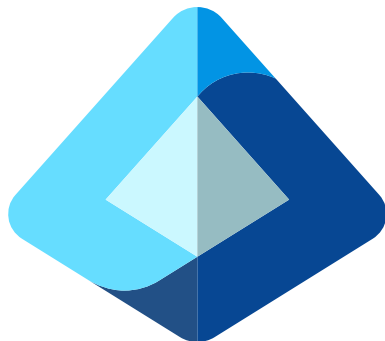
3. Entra ID Domain Services (AADDs)

- This is a serverless version (PaaS) of AD DS, delivered to the MSP as a service from MSFT.
- MSPs get less control than AAD but do not have to manage a server or Entra Connect.





Microsoft Entra Connect



One-Way Sync



Active Directory
Domain Services
(VM Domain Controller)

Entra ID

Microsoft Entra Domain Services

PROS

1. Full Featured Domain Controller
2. Maximum Flexibility, Lowest Cost
3. Multi Premise & Multi Cloud
4. No Migration or New Install of LOB Apps

CONS

1. Need to Patch/Backup/Maintain
2. Still need to deal with Entra Connect

PROS

1. Free to Use
2. Intune Management
3. Modern Cloud Auth

CONS

1. No Group Policy
2. No Kerberos
3. No Legacy Auth Support

PROS

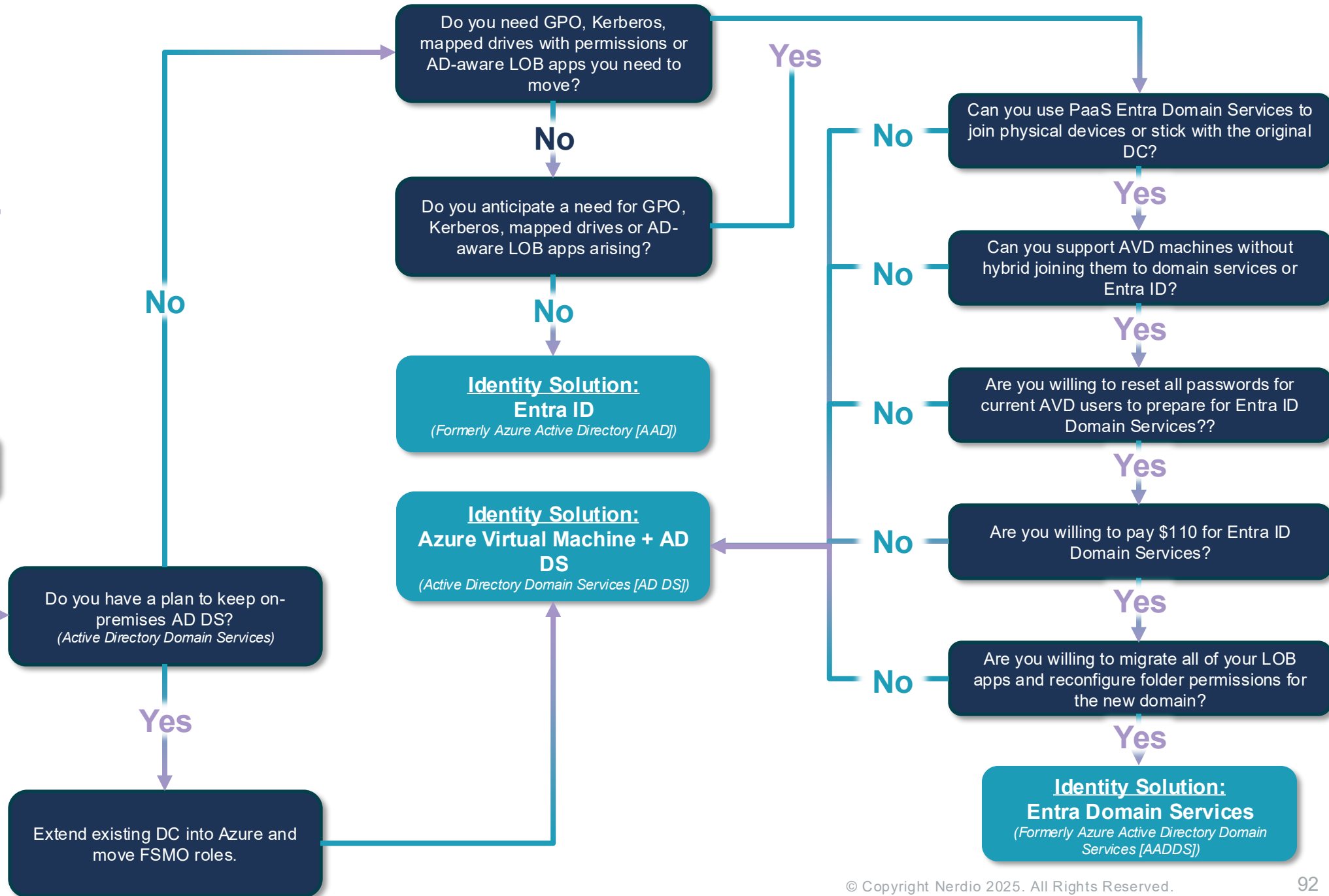
1. Almost Full Featured Controller
2. Managed GPO/Active Directory/DNS
3. MS Managed Replica Sets
4. MS Managed Patching/Backup

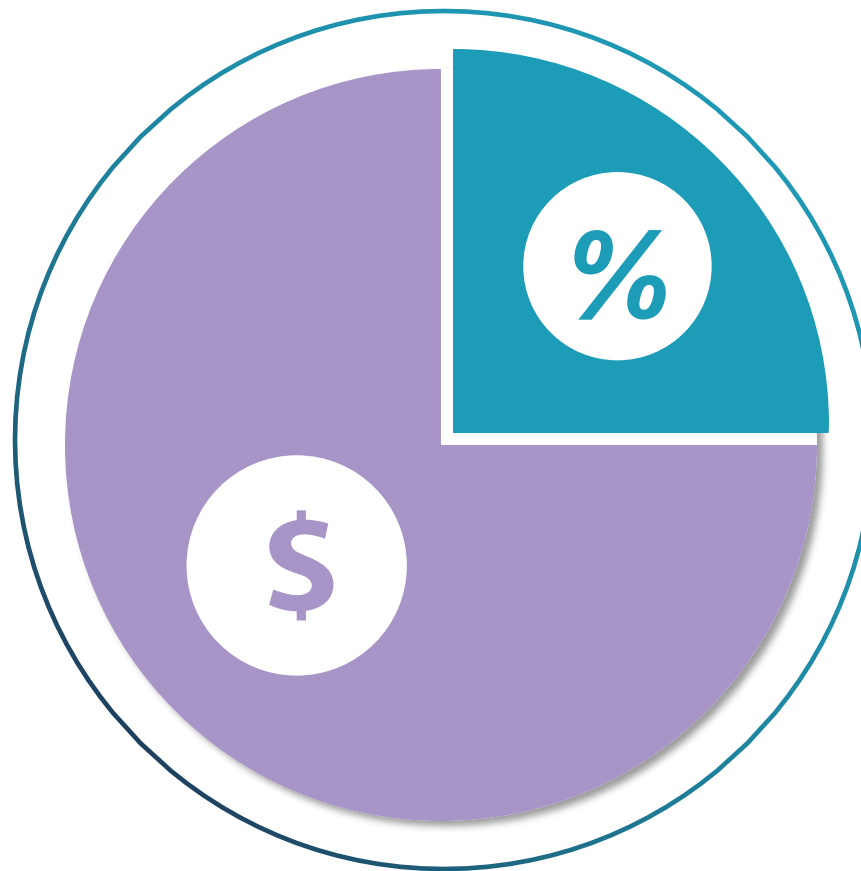
CONS

1. Multi-Region can be expensive for SMB
2. Domain Rebuild Required for LOB Apps

Identity Decision Tree

Start!





Margin Optimization

Many MSPs have limited knowledge before building an Azure practice, causing common pricing mistakes.

Margin optimization methods

1. USE COMPUTE RESERVATIONS

- Azure Reserved Instances.

2. LEVERAGE AZURE HYBRID USAGE

- CSP Software Subscriptions.

3. AUTO-SCALE WORKLOADS

- Resize or turn off when not in use.

What are the typical Azure Virtual Desktop costs?

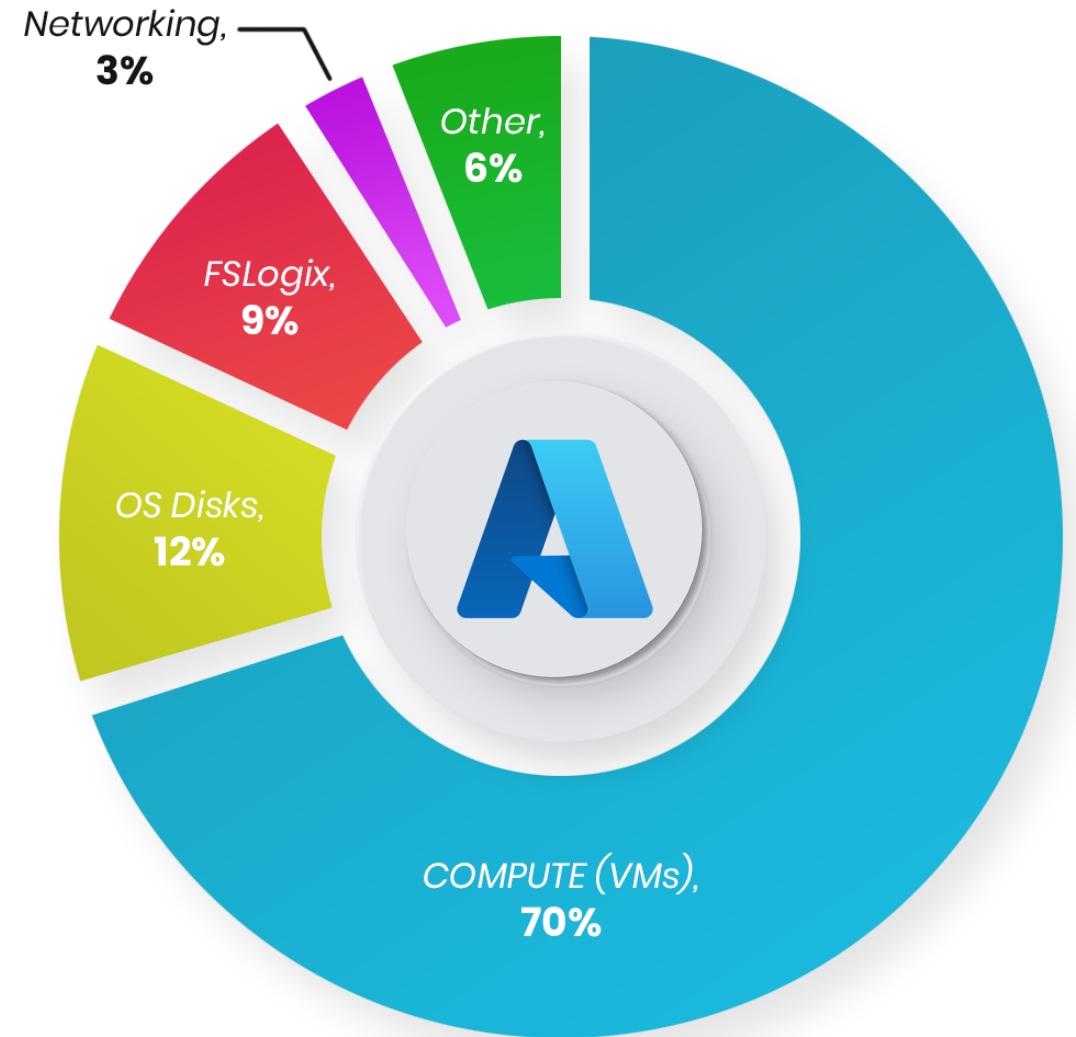
COMPUTE – 70%

OS DISKS STORAGE – 12%

FSLOGIX STORAGE – 9%

NETWORKING – 3%

OTHER – 6%




MARGIN OPTIMIZATION

Azure Reservations (aka Reserved Instances)

Margin impact: increase of
20%-57% of Azure **compute**
consumption

- ✓ Stops the base compute meter.
- ✓ 12- and 36-month terms.
- ✓ **Monthly** payments with no up-front payment.
- ✓ Cancel/return or reassign.
Cancellation fee: 12% (Not enforced)
- ✓ Region and VM family specific.

HERE'S THE MATH ON CANCELLATIONS

 Filter by title

Azure Reservations documentation

▼ Overview

What are Azure Reservations?

> Concepts

▼ How-to guides

> Determine what to purchase

> Buy reservations

> Permissions, View and Manage

> Utilization and cost reports

▼ Exchange and refund

Exchange and refund reservations

> Renew reservations

> Troubleshoot

> Reference

> Resources

Cancel, exchange, and refund policies


Azure has the following policies for cancellations, exchanges, and refunds.

Exchange policies

- You can return multiple existing reservations to purchase one new reservation of the same type. You can't exchange reservations of one type for another. For example, you can't return a VM reservation to purchase a SQL reservation. You can change a reservation property such as family, series, version, SKU, region, quantity, and term with an exchange.
- Only reservation owners can process an exchange. [Learn how to Add or change users who can manage a reservation.](#)
- An exchange is processed as a refund and a repurchase – different transactions are created for the cancellation and the new reservation purchase. The prorated reservation amount is refunded for the reservations that's traded-in. You're charged fully for the new purchase. The prorated reservation amount is the daily prorated residual value of the reservation being returned.
- You can exchange or refund reservations even if the enterprise agreement used to purchase the reservation is expired and was renewed as a new agreement.
- The new reservation's lifetime commitment should equal or be greater than the returned reservation's remaining commitment. Example: for a three-year reservation that's \$100 per month and exchanged after the 18th payment, the new reservation's lifetime commitment should be \$1,800 or more (paid monthly or upfront).
- The new reservation purchased as part of exchange has a new term starting from the time of exchange.
- There's no penalty or annual limits for exchanges.

Refund policies

- We're currently not charging an early termination fee, but in the future there might be a 12% early termination fee for cancellations.
- The total canceled commitment can't exceed 50,000 USD in a 12-month rolling window for a billing profile or

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HERE'S THE MATH ON CANCELLATIONS

If Microsoft were to enforce the 12% Penalty fee of remainder

D2as_v4 – 2 Core, 8GB RAM Virtual Machine

	1 months	2 months	3 months	4 months	5 months	...36 months
PAYG	\$ 70.08	\$ 140.16	\$ 210.24	\$ 280.32	\$ 350.40	\$ 2,522.88
3 Year RI	\$ 26.89	\$ 53.78	\$ 80.67	\$ 107.56	\$ 134.45	\$ 968.04
Money Saved	\$ 43.19	\$ 86.38	\$ 129.57	\$ 172.76	\$ 215.95	\$ 1,554.84
Value of 3 Year RI	\$ 968.04	\$ 941.15	\$ 914.26	\$ 887.37	\$ 860.48	\$ 26.89
12% Penalty	\$ 116.16	\$ 112.94	\$ 109.71	\$ 106.48	\$ 103.26	\$ 3.23

- ✓ The total amount of money saved by month 3 by Reserving that machine is **\$129.57**.
- ✓ At month 3 – Penalty is **\$109.71**, I've already saved enough to pay off my penalty!

- ✓ Stops the OS meter.
- ✓ Windows Server Sold in 8-core packs, SQL in 2-core packs.
- ✓ **Upfront** payments for SQL & Upfront for Windows Server.
- ✓ Monthly CSP Software Subscriptions coming soon.
- ✓ CSP Perpetual licenses **DO NOT** qualify for AHB.
- ✓ Unlike Reservations – There are no refunds for licenses purchased.

Margin Optimization (cont)...

Azure Hybrid Benefit

Margin impact: increase of 10%–49% of Azure **compute** consumption

Auto-scaling for Host Pools

Nerdio Auto-scaling

Margin impact: reduce overall Pay-g cost by stopping VMs when not in use.

- ✓ Allows host pools to grow to serve current demand.
- ✓ Shrink when additional capacity is not needed.
- ✓ Auto-heal broken hosts.
- ✓ Save costs by switching from SSD to HDD
- ✓ Ability to run alternate schedules.
- ✓ Customized scaling logic for host pools.

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Auto-scaling

AUTOSCALE TIMEZONE: (UTC-05:00) Eastern Time (US & Canada) ⓘ

Hosts will be provisioned based on the template for pool:

NAME PREFIX: AVD-Demo Prefix ⓘ

NETWORK: nw (aadds-subnet) ⓘ

DESKTOP IMAGE (TEMPLATE): Windows 10 (22H2) EVD + MS 365 Apps - G... ⓘ

VM SIZE (TEMPLATE): D4s_v5 (4C & 16GB @ \$0.22/hr retail) ⓘ

RUNNING OS DISK (TEMPLATE): P10 (128 GB Premium SSD @ \$0.03/hr retail) ⓘ

CUSTOM OS DISK SIZE (GIB): 128 ⓘ

STOPPED OS DISK TYPE: Standard HDD ⓘ

RESOURCE GROUP: NMM-SalesDemos-WinHart ⓘ

☒ Re-use host names ⓘ

☐ Automatically re-image used hosts ⓘ

Changes to the template will apply to newly created or re-imaged host VMs.

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Auto-scaling

Default schedule

Alternative schedule

PROFILE

Auto-scale profile: Custom ⓘ

1 HOST POOL PROPERTIES ⓘ

Session limit per host: 1 Maximum host pool sessions: 7

Load balancing: ⓘ

Breadth First ▲

Breadth First

Depth First

☐ Start on Connect

2 HOST POOL SIZING ⓘ

Active host defined as: AVD agent Available ⓘ

Base host pool capacity: 5 host(s) in the pool ⓘ

Min active host capacity: 1 host(s) in the pool ⓘ

Burst beyond base capacity: up to 2 extra host(s) in the pool ⓘ

nerdio

Auto-scaling

3 SCALING LOGIC ⓘ

Triggers (scale out on **ANY** condition, scale in on **ALL** conditions) ⓘ

Select autoscale trigger CPU usage ⓘ

Start or create (scale out) up to 1 host(s) if CPU utilization across all hosts exceeds 65 % for 5 minutes ⓘ

Stop or remove (scale in) up to 1 host(s) if CPU utilization across all hosts drops below 40 % for 15 minutes ⓘ

Select autoscale trigger RAM usage ⓘ

Start or create (scale out) up to 1 host(s) if RAM utilization across all hosts exceeds 80 % for 15 minutes ⓘ

Stop or remove (scale in) up to 1 host(s) if RAM utilization across all hosts drops below 40 % for 60 minutes ⓘ

+ add trigger

Scale in restrictions

Stop or remove (scale in) hosts only from: <any time> ⓘ

Scale in aggressiveness: High ⓘ

Scale in burst host selection: Host with fe... ⓘ

nerdio

Auto-scaling

4 ROLLING DRAIN MODE ⓘ

Off

5 PRE-STAGE HOSTS ⓘ

Off

6 MESSAGING ⓘ

Send a warning message to users on the host: before scaling in host

The message should say: ⓘ

Sorry for the interruption. We are doing some housekeeping and need you to log out. You can log in right away to continue working. We will be terminating your session in 10 minutes if you haven't logged out by then.

7 AUTO-HEAL BROKEN HOSTS ⓘ

On

Auto-scale can automatically attempt to repair "broken" session hosts by restarting them, running one or more scripted actions, and deleting/recreating them. It can make a few attempts to restart the host to try to get it back into operational state, then run scripted actions, and then either leave it alone or delete and re-create the host.

Host is broken if AVD agent status is:

Unavailable x

x

and

Has no active sessions

ⓘ

Number of restart attempts:

2

ⓘ

Minutes between restarts:

10

ⓘ

Run Scripted actions after restart attempts:

Select...

ⓘ

Unrecoverable hosts should be:

Removed and re-created

ⓘ

The Moral of the Story

01

Azure Hybrid Benefit

Purchase CSP Software Subscriptions to take advantage of AHB.

02

Purchase Reservations

The penalty if enforced is nothing to be afraid of. Numbers don't lie.

03

Utilize Nerdio Auto-scaling

Check current NMM clients for auto-scaling setup or visit our KB article on how to setup new ones.



PRICING

How to properly architect and price an AVD opportunity



Considerations when pricing

You need to be able to translate what client has and needs, to the Microsoft products and solutions - **not all clients are fits for AVD.**

- Some clients don't need infrastructure and can do just fine with SharePoint / OneDrive / Teams / Entra / Intune / Defender.
- The cool thing about NMM is that you can still use it to manage Azure / M365 clients without AVD.
- Augment existing tools by using NMM + Intune, Defender, App Management and Remote Control.

Considerations when pricing

01

Incorrect Identity Management

Identity management has a huge impact on pricing, especially in the SMB space.

02

Over-Spec

Over-spec and reap the rewards.

03

Instance Sizes

Selecting the correct instance size for the correct workload.

04

Licensing

Selecting the correct license(s) and method of purchase.

05

Fear of Reserved Instances

Worrying about lock-in and early termination fees.

The top 5 pricing mistakes

*MSPs make, whether they are
brand new or Azure veterans.*

Customer scenario

- *Let's build this scenario in the cost estimator!*


- 6 user CPA firm on the east coast
- Work long hours during tax season
- Two ageing on-prem servers— DC & App server (QuickBooks & File Storage)
 - Minimal resources needed for app, 2 cores 8GB RAM and 10GB storage + 300 GB file storage in use
- Microsoft 365 Business Premium
 - Some files already in SharePoint & OneDrive



COST ESTIMATOR



Let's price Azure!



www.getnerdio.com

1 Let's start with virtual desktops and physical devices information

 How many users will use virtual desktops?



 Will any of those users need dedicated personal desktops/Windows 365? 

 How many users have GPU pooled desktop needs? 

 We will assume rest of the users are pooled desktop users. 


DESKTOP



SIZING CONFIGURATION

 Pooled desktop #1 

Number of users:


Number of hours in a work week:



Host Instance size: 

User to CPU Core ratio:  

Number of hosts to remain available 24/7:

Number of hosts to scale-out:

☐ CIS hardened image 

 How many users will be leveraging Modern Work? These are Modern Work-only users; don't count users that you specified above for virtual desktops. 

DEDICATED VS. POOLED

Assume Pooled Unless...



Local Admin Access

User needs/wants to install their own applications



Resource Hog

Never enough compute

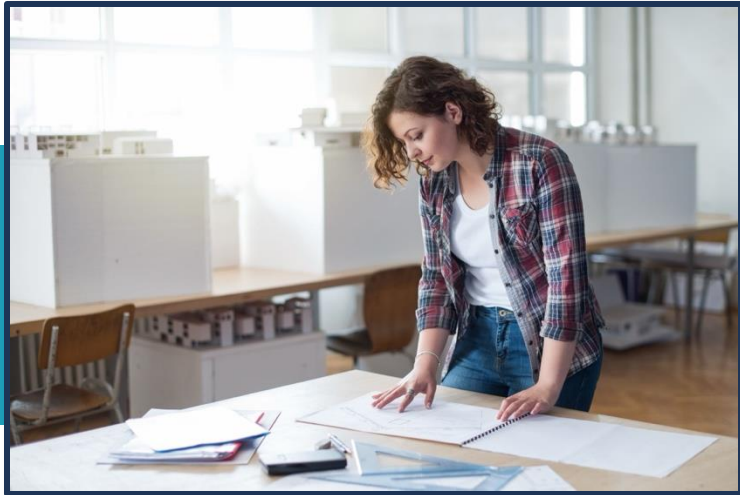


Application Restriction

Rarely certain applications will not work for Win10 multi-session (rare)

REGULAR VS. GPU

Assume Regular Hosts Unless...



Autocad

GPU desktops are great for Autocad and other engineering apps



Adobe cs

If you have users who run Adobe CS, GPU may be best



High-end video / streaming

If high-end video and streaming is needed, try GPU based machines for best results

COST ESTIMATOR

Let's price Azure!

www.getnerdio.com

1 Let's start with virtual desktops and physical devices information

How many users will use virtual desktops?

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DESKTOP

SIZING CONFIGURATION

Pooled desktop #1

Number of users:

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Host Instance size:



User to CPU Core ratio:



Number of hosts to remain available 24/7:

Number of hosts to scale-out:

☐ CIS hardened image








How many users will be leveraging Modern Work? These are Modern Work-only users; don't count users that you specified above for virtual desktops.



Nerdio cost estimator

2 SERVERS

SERVER	INSTANCE	OS DISK	DATA DISKS	APPLY AHB	APPLY RI
DC/File/App 	<div>Size</div> <div>D2s_v5 (2C & 8GB) ▾</div> <div>Running hours in a month</div> <div>730</div>	<div>OS</div> <div>Windows ▾</div> <div>Size</div> <div>E10 (128 GB Standard SSD) ▾</div> <div><input type="checkbox"/> CIS hardened image ⓘ</div>	<div>Data disk #1 </div> <div>P10 (128 GB Premium SSD) ▾</div> <div> </div>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 

Add server

Nerdio cost estimator

3 Licensing options

Select the right Microsoft 365 and/or Office 365 and/or Windows desktop licenses for running a virtual desktop environment in Azure. ?

	BUY OR OWN?	HOW MANY?		LICENSE	
<input type="checkbox"/> Microsoft 365	Already own licenses ▼	6	user licenses	Microsoft 365 Business Premium ▼	<input type="radio"/> Monthly <input checked="" type="radio"/> Annual +
<input type="checkbox"/> Defender for Endpoint	Purchasing licenses ▼	1	Hosts ▼	Microsoft Defender for Endpoint Plan 1 ▼	+
<input type="checkbox"/> Intune Remote Help	Purchasing licenses ▼	6	user licenses	Intune Remote Help ▼	+
<input type="checkbox"/> Windows desktop	Purchasing licenses ▼	6	user licenses	Windows 11 E3 ▼	+
<input type="checkbox"/> SQL Server	CSP Software Subscription - 1 Year ▼	20	cores	SQL Server Standard 2019 ▼	<input type="radio"/> Monthly <input checked="" type="radio"/> Annual +
<input type="checkbox"/> Office 365	Purchasing licenses ▼	6	user licenses	Office 365 E3 ▼	<input type="radio"/> Monthly <input checked="" type="radio"/> Annual +
<input type="checkbox"/> Other	Purchasing licenses ▼	1	licenses	Enter license name... \$ 1 per license ▼	+

Nerdio cost estimator

4 OTHER FEATURES

Will you be taking advantage of these other features?

FEATURE	DESCRIPTION		
Azure Hybrid Benefit (AHB)	Take advantage of Azure Hybrid Benefit (AHB)	<input checked="" type="radio"/> Annual <input type="radio"/> Triennial	CSP subscription (3 yea... ?
Reserved instances	Reduce compute costs with reserved instances from Azure	<input checked="" type="radio"/> 3 years <input type="radio"/> 1 year <input type="radio"/> No	?
In-region backup	Back up for all servers, desktops and Azure Files storage locations on a regular basis. more...	<input type="radio"/> Yes <input checked="" type="radio"/> No	?
Site-to-site VPN	Establish VPN between Azure and your location. VPN Gateway type: Basic	<input type="radio"/> Yes <input checked="" type="radio"/> No	?
Include hosting costs	Is this your first Nerdio Manager for MSP customer? Include PaaS costs of running this management portal in your Azure subscription.	<input type="radio"/> Yes <input checked="" type="radio"/> No	?
Entra Domain Services	Run Microsoft Entra Domain Services for scalable, high-performance, managed domain services	None	?
AD User Management	Include Hybrid Connection for managing AD users	<input type="radio"/> Yes <input checked="" type="radio"/> No	?
Additional storage	Additional Azure Files storage customer may need for something other than FSLogix profile storage. Tier: Premium Redundancy: LRS	0 GB	?

Nerdio cost estimator

5 COST ASSUMPTIONS



There are a handful of cost assumptions we make in our calculations. Pricing is based on East US region prices. Feel free to change any of the following assumptions.

ITEM	DESCRIPTION				
FSLogix Profile Size	Average size of users' FSLogix Profile Container file on Azure Files Premium storage. Redundancy: <input type="text" value="LRS"/>	<input type="text" value="Medium (10GB)"/>	<input type="text" value="10"/>	GB per user	?
Outbound connectivity	Access to public internet can be provided in multiple ways, each with different pricing. Choose which solution will be used for outbound connectivity. Type: <input type="text" value="NAT Gateway"/>	<input type="text" value="1"/>			?
Bandwidth	Estimated bandwidth usage for RDP connection, per-user-per-month. Typically it's \$1.00 for regular users and it's \$3.00 for graphically intensive users.	\$ <input type="text" value="1.5"/>		per user per month	?
Storage operations	Estimated standard storage usage per GB. For Standard storage only (S and E), does not apply to Premium (P).	\$ <input type="text" value="0.03"/>		per GB	?
Log Analytics Workspace	Store app insights and AVD diagnostics information. 5 GB of monthly data ingestion is free, up to 90 days of retention.	<input type="text" value="5"/>		GB data ingestion	
		<input type="text" value="30"/>		days retention	

Nerdio cost estimator

6 DISCOUNTS

Optionally, calculate discounts as part of your estimations.

ITEM	DESCRIPTION		
Azure CSP discount	Discount available to you as a Microsoft partner for Azure resources.	<input type="text" value="0"/>	% ?
CSP software discount	Discount available to you as a Microsoft partner for Microsoft 365/Office 365, Intune Remote Help, Windows desktop, SQL Server and Microsoft Defender licenses	<input type="text" value="0"/>	%
Windows 365 software discount	Discount available to you as a Microsoft partner for Windows 365 licenses	<input type="text" value="0"/>	%
Azure CSP discount for RI	Discount available to you as a Microsoft partner for Reserved Instances.	<input type="text" value="0"/>	% ?
Custom discount 	Apply a <input type="text" value="%"/> discount to the estimated total.	<input type="text" value="0"/>	%
Nerdio discount 	License discounts for Nerdio Manager for MSP	<input type="text" value="0"/>	%
Show discounts on results	Show discounts on the results page or hide if you are sharing the estimate with your customer.	<input checked="" type="radio"/> Yes <input type="radio"/> No	?

Nerdio cost estimator

7 MARKUP

Optionally, add your markup to the cost estimate. Markup will be tacked on to the per-user per-month cost.

NAME	DESCRIPTION		
Azure	Costs of all Azure resources, such as compute, disks, etc., will be increased by this percentage amount	<input type="text" value="50"/>	% ?
M365	Microsoft 365 license costs will be increased by this markup percentage	<input type="text" value="0"/>	% ?
Nerdio	Nerdio per-user per-month license costs will be increased by this markup percentage	<input type="text" value="50"/>	% ?
Show Markup on results	Show the markup on the results page or hide the markup if you are sharing the estimate with your customer.	<input type="radio"/> Yes <input checked="" type="radio"/> No	?

Nerdio cost estimator

COST ESTIMATES

\$97 per user

per month

\$235 one-time upfront

average across 6 users

Azure: \$470/month

O365: -

M365: -

Intune Remote Help: -

Windows desktop: -

Nerdio Manager for MSP: \$108/month

Total: \$578/month

AHB: \$235 one-time upfront

Estimate only. Actual costs may vary depending on usage, price changes and other factors.

All costs listed on this page are rounded up. [Turn off rounding](#)

Back

RESOURCES

6 Pooled desktops

Licenses	No	In-region backup	No
Site-to-site VPN	No	Azure Hybrid Benefit (AHB) - Windows server licenses	\$235
		8 cores, 1 packs	\$235
Reserved instances	3 years		

VM	INSTANCE SIZE	OS DISK	DATA DISKS	AHB (CSP SUBSCRIPTION (3 YEARS))
DC/File/App (three years reserved)	D2s_v5 (2C/8GB/Standard) 730 Hours running per month	128 GB (E10/Standard SSD)	Data disk #1 128 GB (P10/ Premium SSD)	Set 1 (2 of 8 cores)
Pooled desktop #1 (three years reserved)	E8s_v5 (8C/64GB/Standard)	128 GB (P10/Premium SSD)		

Nerdio cost estimator

AZURE COSTS BREAKDOWN



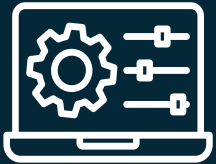
\$470 average per month

Estimate only. All costs listed on this page are per month. Actual costs may vary depending on usage, price changes and other factors.
All costs listed on this page are rounded up. [Turn off rounding](#)

Server compute	\$39	Server storage	\$44
Windows servers	\$39	Windows servers	\$44
Storage operations (Standard only)	\$6	Backup	-
Bandwidth	\$14	Site-to-site VPN	-
Desktops	-	Pooled desktops	\$293
		Pooled desktop #1: 1 hosts 50 hours/week, 1 hosts 118 hours/week, E8s_v5 (8C/64GB/Standard), 1.5 users-core ratio	\$293
GPU Pooled desktops	-	FSLogix profile storage	\$24
		100 GB, LRS	
Additional storage	-	Hosting	-
Entra Domain Services	-	Log Analytics Workspace	\$0
		Monthly data ingestion of 5 GB and retention for 30 days	
AD User Management	-	Outbound connectivity	\$50
		1 NAT Gateway	
Auto-scale savings	\$0	Discounts	
Pooled desktop #1: 1 hosts 50 hours/week, 1 hosts 118 hours/week, E8s_v5 (8C/64GB/Standard), 1.5 users-core ratio	\$0	Azure CSP discount	0%
		Azure CSP discount for RI	0%
Azure region	East US	If considering paying for RIs upfront	\$8,751 upfront and \$152 monthly
		Penalty paid to Microsoft if all RIs are canceled after one year	\$701
		Penalty paid to Microsoft if all RIs are canceled after 2 years	\$351
		See Microsoft's RI cancellation and exchange policies	

Choices YOU have to make

For your AVD best practices or client environments



Host pool setup

One large VM vs
multiple smaller VMs

It's generally better to use more smaller VMs, than a few large VMs because it is easier to manage and maintain.

COST

Smaller VMs are less expensive to run than larger VMs

LOAD BALANCING

It is easier to distribute users evenly across VMs

RESOURCE CONSERVATION

It is easier to shut down unused VMs to conserve resources (auto-scale)

REDUNDANCY

If something goes wrong on 1, or you need to perform maintenance, you have the others available

PERFORMANCE

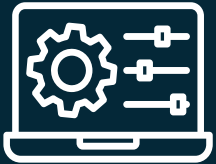
Smaller VMs CAN help eliminate bottlenecks or performance issues versus fewer larger VMs

FLEXIBILITY

Having more VMs to work with allows for flexibility in using auto-scale, RIs, and schedules

Choices YOU have to make

For your AVD best practices or client environments



Azure DC vs Entra DS

Which one is best for each situation?

It's generally better to use a Domain Controller in Azure vs Entra Domain Services – limitations of Entra DS below

INTUNE

No Intune enrollment (can have registered but not enrolled)

ADMIN CREDENTIALS

No Enterprise or domain account (cannot use smart card authentication)

APP ATTACH

You can not use Entra DS with MSIX App Attach or App Attach v2

ENTRA HYBRID DEVICES

No support for ENTRA hybrid joined devices (must move local devices to Entra DS domain)

NO BACK-OUT OPTIONS

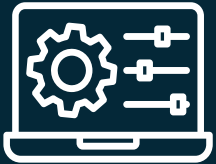
Must start from scratch if you need to move off or go to another domain

PUBLIC ACCESS

Not available over public internet (must use a VPN)

Choices YOU have to make

For your AVD best practices or client environments



Other choices you must make

What will be your MSP's standards?

Some of these can be a standard, while others will be on a case-by-case basis

BACKUP RETENTION

Choose how long to retain your backups (daily/weekly/monthly/yearly)

BACKUP POLICIES

How often will you backup your resources? (once per day or every four hours)

FILE STORAGE

Will you use a file server or Azure File shares?

FSLOGIX PROFILES

How big will the FSLogix profile sizes need to be? (what are the user browsing habits)

RDP PROFILES

Choose the RDP settings needed for this client (redirections, drives, camera, sound etc.)

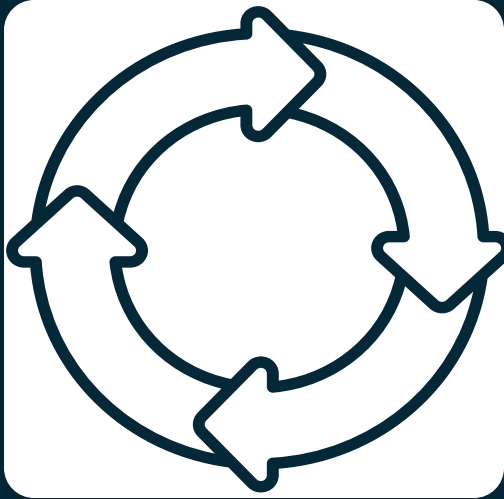
AUTO-SCALE SETTINGS

What will your Auto-Scale global profiles be set to and will you need to configure individually for certain clients?

Packaging Azure

MSP resale models

MSPs choose a wide variety of resale models when starting their Azure practice, but usually settle on these methods.



How MSPs Start

Focused on managed services and not Azure



How MSPs Evolve

Use your margin optimization strategies



How MSPs Win

Deliver a bundled solution at one price



How MSPs start

*Focus on your managed services and pass-through Azure costs with minimal margin;
how we sold physical infrastructure*

The starting-MSP resale model



Why it is helpful

1. Sell like you've always sold (just add line-item w/margin)
2. Easier & quicker to get started (no new changes in process)
3. Differentiation from competitors.
4. Easy to understand billing for you and your client.

Keep in mind

1. Be accurate with your infrastructure proposals
2. Be ready for client questions regarding Azure spend
3. Be sure to add SOW or agreement on top of existing MSP
4. Optimizing Azure costs doesn't benefit you much

Packaging

BUILDING YOUR PROPOSAL

Add Azure cost + Azure Markup

Example:

- Azure infrastructure costs = \$2000/mo
- Your markup = \$300/mo (15%)

Total price for client = \$2300/mo

Your Margin = \$300/mo



Packaging

UNDERSTANDING YOUR MARGIN

CSP + Markup

Example:

- Azure costs = \$2,000/mo
- CSP margin = \$180/mo (9%)
- Added markup = \$300/mo (15%)

Your Margin = \$480/mo





How MSPs evolve

Maximize margins by selling at MSRP plus some markup, then using RI's, AHB, Auto-Scale, etc. to your advantage

The Evolved – MSP Resale Model



Why it is helpful

1. Maximize return for your experience
2. Ability to sell at a fixed price.
3. Same approach as “start” model, but more margin
4. Differentiation from competition – MSP IP

Keep in mind

1. Don’t expose margin optimization to customers
2. Don’t sell too far over Azure “MSRP” / Clients can go look
3. No MSP set and forget mentality
4. Provide ongoing value through continuous upgrades

Packaging

BUILDING YOUR PROPOSAL

Add Azure cost + Azure Markup

Example:

- Azure infrastructure costs = \$2000/mo
- Your markup = \$300/mo (15%)

Total price for client = \$2300/mo



Packaging

UNDERSTANDING YOUR MARGIN

CSP + Markup + Optimization

Example:

- Azure costs = \$2,000/mo
- CSP margin = \$180/mo (9%)
- Added markup = \$300/mo (15%)
- Optimization margin = \$700/mo (35%)

Your Margin = \$1180/mo





How MSPs WIN

Build a complete fixed per user per month SOLUTION with EVERYTHING included

Why Build an Azure SOLUTION?



For you – the MSP

1. Focus on customers who value your expertise
2. Standardize and automate delivery
3. Simplest buying experience
4. Highest MSP margin

Keep in mind

1. Similar to previous model but MSP is included
2. Best when centering on Microsoft full stack where possible
3. You may need to still add a line-item on top of the bundling
4. Only works with you stand firm on bundling

Packaging

BUILDING YOUR PROPOSAL

Add Azure cost + Azure Markup

Example:

- Azure infrastructure costs = \$2000/mo
- Your markup = \$300/mo (15%)

Total price for client = \$2300/mo



Packaging

UNDERSTANDING YOUR MARGIN

CSP + Markup + Optimization

Example:

- Azure costs = \$2,000/mo
- CSP margin = \$180/mo (9%)
- Added markup = \$300/mo (15%)
- Optimization margin = \$700/mo (35%)
- M365 tooling + labor savings = \$150/mo (tools/soft costs)

Your Margin = \$1330/mo



Offer Development

Putting it all together

Starting

- + Azure Cost
- + CSP Margin
- + Markup

Example:

- Azure costs = \$2,000/mo
- CSP margin = \$180/mo (9%)
- Markup = \$300/mo (15%)

Azure Retail Price = \$2,300/mo
Your Margin = \$480/mo

Evolution

- + Azure Cost
- + Optimization Margin
- + CSP Margin
- + Markup

Example:

- Azure costs = \$2,000/mo
- Optimization = \$700/mo (35%)
- CSP margin = \$180/mo (9%)
- Markup = \$300/mo (15%)

Azure Retail Price = \$2,300/mo
Your Margin = \$1180/mo

Solution

- + Azure Cost
- + Optimization Margin
- + CSP Margin
- + Markup
- + Managed Services Margin (20 users)

Example:

- Azure costs = \$2,000/mo
- Optimization = \$700/mo (35%)
- CSP margin = \$180/mo (9%)
- Markup = \$300/mo (15%)
- M365 tooling & labor savings = \$150/mo

SOLUTION Price = \$240 per user
Your Margin = \$1330/mo

This is used as an example. Please ignore the made-up pricing we are using for each.

The 2nd and 3rd solutions are up to YOU – there may be more risk vs reward in each

Our CE tool can be used in either scenarios - with RI, AHB, & Auto-scale or NOT



Overview of Modern Work



Future of AVD + Modern Work with Nerdio



AZURE INFRASTRUCTURE



Azure Virtual
Desktop



Compute



Storage &
Files



Networking &
Security



Backup &
Recovery



Applications



Azure
AI

MODERN WORK



Entra ID & AD



Intune &
Endpoints



Windows
365



Defender for
Business



Policies &
Baselines



Microsoft
365 Apps



License
Management



CLOUD COST
ESTIMATION



AUTOMATED
MANAGEMENT



MULTI & CROSS
TENANT



COST
OPTIMIZATION



MONITORING &
REPORTING



SECURITY &
COMPLIANCE



REMOTE
SUPPORT



Unify endpoint management

AD User Management



AD User Management

Challenges

Solution

- Need a way to manage users across hybrid environments with on-premises Active Directory (AD) and Azure AD.

- A unified, automated approach to hybrid AD and Azure AD user management.

AD User Management

Outcomes



- Reduce security risks.
- Simplify the management of hybrid user environments.
- Automate processes to speed up user management tasks.

AD User Management

Notes

- There is no additional Nerdio cost to utilize AD User Management, but Service Bus Relay Hybrid Connections do have an additional Azure cost

It depends on which App Services plan your Nerdio Manager installation utilizes.

Each domain controller connected to Nerdio Manager counts as a single connection.

App Service Plan	Hybrid Connection Limit
Basic (Nerdio Default)	5
Standard	25
Premium (v1-v3)	220
Isolated (v1-v2)	220



Unify endpoint management

Exchange Online Management



Exchange online management

Challenges

- Frequent account switching for mailbox management is time-consuming and error-prone.
- Limited centralized control hinders consistent policy application.

Solution

- A unified, cross-tenant view that allows MSPs to configure, monitor, and update mailboxes without needing multiple logins.

Exchange online management

Outcomes



- Centralized mailbox management across clients for increased efficiency
- Consistent policy application across tenants
- Reduce admin time with fewer manual steps



Unify endpoint management

Microsoft Intune



A match made in heaven!

Microsoft Intune

+



- Extend your management beyond AVD.
- Create policies to automate common functions.
- Modify policies and track changes with the changelog.
- Quickly revert to previous policy versions.
- Identify resources that are non-compliant.
- Monitor and manage policy drift.

What is an Intune policy?

Intune policies are a set of rules and configurations that help manage and secure devices, apps, and data in an organization.

Device management:

- Set rules for device settings, security, and compliance

App management:

- Control app installation, permissions, and updates

Data protection:

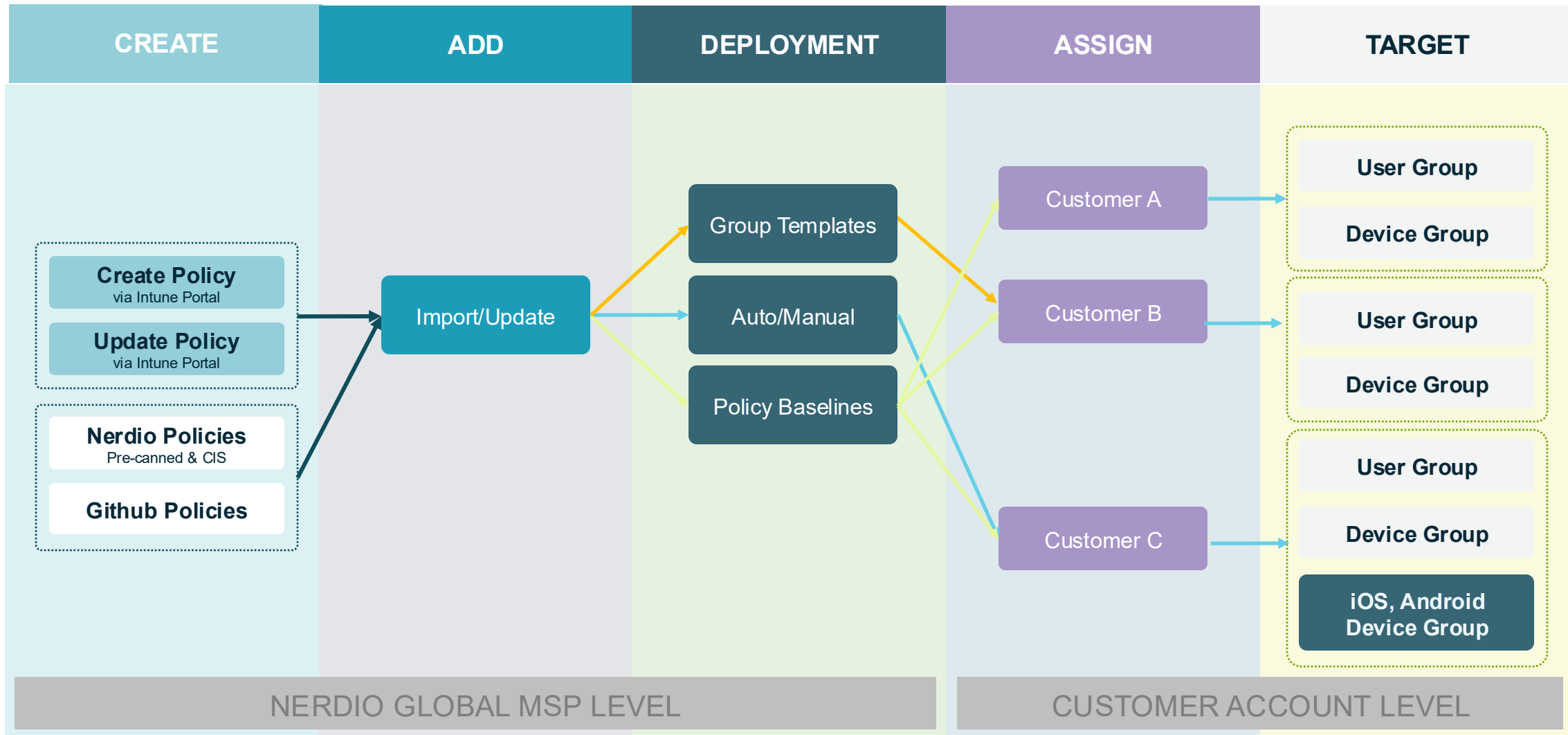
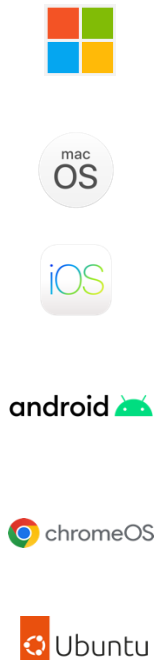
- Company data stays secure and compliant

Automate with Nerdio:

- Nerdio helps apply and manage Intune policies across multiple tenants quickly and efficiently

INTUNE POLICY CREATION/UPDATE FLOW

DEVICE ENROLLMENT



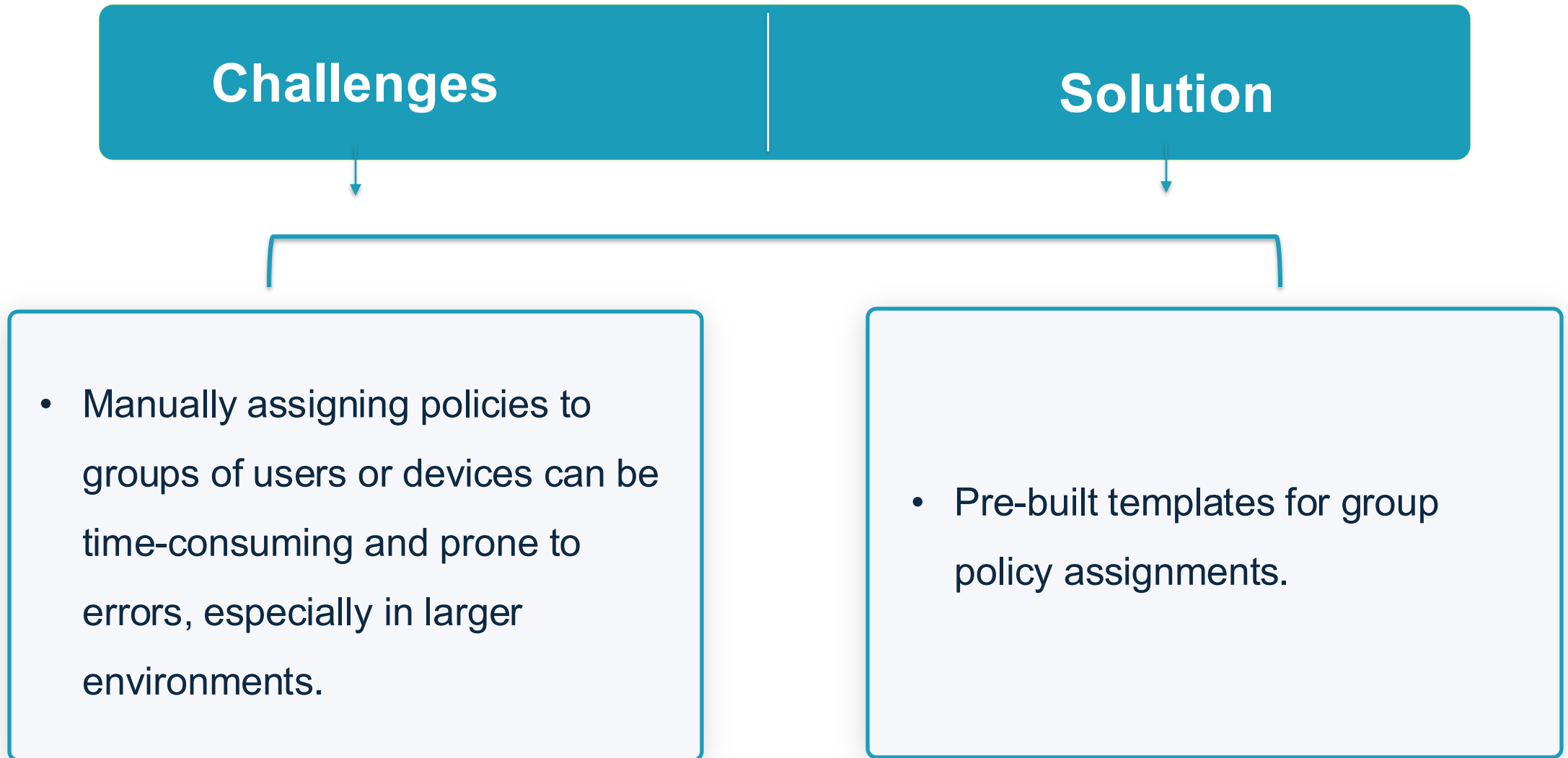


Templates for policy assignment to groups



Group Templates

Group Templates



Group Templates

Outcomes



- Policy assignments become faster and more efficient.
- Policies are applied consistently and reliably.
- MSPs reduce their administrative workload.

Variables in Nerdio

Secure Variables

- Created at the global / MSP level or the customer level.
- Stored in the key vault. Only available for scripted actions (NO Intune policies)
- Cannot be shared between accounts or levels.

Inherited Variables

- Created at the global / MSP level.
- Are inherited by customer accounts.
- Allow you to centrally manage common scripts and Intune policies.
- Can be overridden at the customer account level.

Intune + Nerdio | core features

Changelog

- Track changes between versions with a centralized log.
- Use changelogs when available to keep track of “who did what”.

Versions

- Policy versions can be rolled back in Nerdio Manager.
- This is not available in native Intune.



Unify endpoint management

Recovery Services



Recovery Services

For your policies

Allows you to restore Intune policies, policy baselines, FSLogix, RDP

Profiles and user/device assignments that have changed or were removed

- Daily snapshots of customer and MSP (global) level
- Includes custom policies, assignments, baselines, configs, and tags (MSP)
- Includes user/group assignments (customer)



Unify endpoint management

Policy Baselines



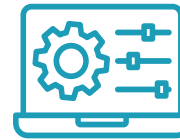
Policy Baselines

Group your policies together



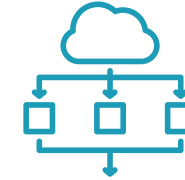
What is a Policy Baseline?

- A group of policies you can use to make initial deployment consistent across all your customer accounts.



Building your Baseline

- Use Nerdio's pre-defined policies or your own custom policies.



Order your policies

- If multiple baselines are assigned, prioritize the order they apply.

Policy Baselines

Enforced Policy Baselines

- Assigned to customer accounts.
- Synced and enforced if the sync type is set to **auto**.
- Enforced policies with a **manual** sync type can be published on an as-needed basis.

Report-only Policy Baselines

- Used to track configuration drift.
- Simplifies identifying customer endpoints that differ from the baseline status.
- Operate on an always-on, ongoing basis.



CIS-Compliant Templates



Why partner with CIS?

- CIS is highly respected globally when it comes to defining security.
- Funded by the US Dept of Homeland Security and CISA to protect Federal, State, Tribal Territory interests.
- CIS Sets the Rules (Benchmarks).
- Compliance Frameworks align to Benchmarks.
- Help our customers reduce attack surface and achieve compliance in an easy manner.

CIS Baselines

Challenges



- Staying compliant is time-consuming.
- It can be difficult to apply security settings uniformly across clients.
- Limited resources make CIS policy management challenging.

Solution



- Use pre-configured templates that align with CIS standards and automatic updates that keep policies CIS-compliant.

CIS Baselines

Outcomes

- Pre-configured for easy CIS-compliant deployment.
- Ensure consistency and reduce manual effort with centralized control.
- Keep policies CIS-compliant with automatic updates.

Mappings ^

IG1 ▾

IG2 ▾

IG3 ▾

<input type="checkbox"/> Australian Signals Directorate's 'Essential Eight' See details	<input type="checkbox"/> Azure Security Benchmark v3 See details	<input type="checkbox"/> CISA Cross-Sector Cybersecurity Performance Goals See details
<input type="checkbox"/> CISA Cybersecurity Performance Goals See details	<input type="checkbox"/> CMMC v2.0 See details	<input type="checkbox"/> Criminal Justice Information Services (CJIS) Security Policy See details
<input type="checkbox"/> CSA Cloud Controls Matrix v4 See details	<input type="checkbox"/> Cyber Risk Institute (CRI) Profile v1.2 See details	<input type="checkbox"/> Federal Financial Institutions Examination Council (FFIEC-CAT) See details
<input type="checkbox"/> GSMA FS.31 Baseline Security Controls v2.0 See details	<input type="checkbox"/> Healthcare and Public Health Sector-Specific Cybersecurity Performance Goals See details	<input type="checkbox"/> HIPAA See details
<input type="checkbox"/> ISACA COBIT 19 See details	<input type="checkbox"/> ISO/IEC 27001:2022 & 27002:2022 Information Security Controls See details	<input type="checkbox"/> MITRE Enterprise ATT&CK v8.2 See details
<input type="checkbox"/> New Zealand Information Security Manual v3.5 See details	<input type="checkbox"/> NIST CSF 1.0 See details	<input type="checkbox"/> NIST CSF 2.0 See details
<input type="checkbox"/> NIST SP 800-171 See details	<input type="checkbox"/> NIST SP 800-53 Revision 5 Low Baseline See details	<input type="checkbox"/> NIST SP 800-53 Revision 5 Moderate Baseline See details
<input type="checkbox"/> North American Electric Reliability Corporation-Critical Infrastructure Protection Standards (NERC-CIP Standards) See details	<input type="checkbox"/> NYDFS Part 500 See details	<input type="checkbox"/> PCI v3.2.1 See details
<input type="checkbox"/> PCI v4.0 See details	<input type="checkbox"/> SOC 2 See details	<input type="checkbox"/> TSA Security Directive Pipeline-2021-02 See details
<input type="checkbox"/> UK NCSC Cyber Assessment Framework See details	<input type="checkbox"/> UK NCSC Cyber Essentials v2.2 See details	

<https://www.cisecurity.org/controls/cis-controls-navigator>

Nerdio CIS Policy Packs

All this goodness is not only for AVD and Hardened Images. CIS Policy Baselines in Nerdio also allow you to harden any Windows 10/11 Endpoint using L1 policies deployed by Intune and PowerShell.

This is FREE and at no cost, official policies from CIS.

- Tremendous time saved from not needing to implement manually.
- Support for Level 2 Windows, Edge, iOS, Android, Office coming soon.
- Faster User Acceptance Testing/Security Testing.
- Vanilla Windows is 24% Compliant, CIS Policy Baselines gets you to 97%.
- Nerdio CIS Policy Baselines gets you to CMMC, HIPAA, PCI-DSS, FedRAMP + much faster.

CIS Benchmarks profiles

LEVEL 1

- Base recommendation, non-performance impacting
- General corporate/enterprise environment usage
- Ensures functionality remains unaffected

LEVEL 2

- Extends Level 1 settings
- For high-security or sensitive data environments
- More strict security controls
- May impact useability

LEVEL 3

- Used primarily by government agencies, DOD agencies, highly regulated industries



CIS Microsoft Windows 11 Enterprise Benchmark

v3.0.0 - 02-22-2024

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Security Configuration Assessment Report for WindowsBuild

Target IP Address: 10.1.1.15

CIS Microsoft Windows 11 Enterprise Benchmark v3.0.0

Level 1 (L1) - Corporate/Enterprise Environment (general use)
Thursday, April 18 2024 13:38:37
Assessment Duration: 1 minute, 45 seconds

Summary

	Description	Tests					Scoring			
		Pass	Fail	Error	Miss	Exc.	Score	Max	Percent	
1	Account Policies	3	7	0	0	1	0	3.0	10.0	30%
1.1	Password Policy	3	4	0	0	0	0	3.0	7.0	43%
1.2	Account Lockout Policy	0	3	0	0	1	0	0.0	3.0	0%
2	Local Policies	61	37	0	0	1	0	61.0	98.0	62%
2.1	Audit Policy	0	0	0	0	0	0	0.0	0.0	0%
2.2	User Rights Assignment	27	10	0	0	0	0	27.0	37.0	73%
2.3	Security Options	34	27	0	0	1	0	34.0	61.0	56%
2.3.1	Accounts	3	2	0	0	0	0	3.0	5.0	60%
2.3.2	Audit	1	1	0	0	0	0	1.0	2.0	50%
2.3.3	DCOM	0	0	0	0	0	0	0.0	0.0	0%
2.3.4	Devices	0	0	0	0	0	0	0.0	0.0	0%
2.3.5	Domain controller	0	0	0	0	0	0	0.0	0.0	0%
2.3.6	Domain member	6	0	0	0	0	6.0	6.0	100%	
2.3.7	Interactive logon	2	5	0	0	0	0	2.0	7.0	29%
2.3.8	Microsoft network client	2	1	0	0	0	0	2.0	3.0	67%
2.3.9	Microsoft network server	2	3	0	0	0	0	2.0	5.0	40%
2.3.10	Network access	9	3	0	0	0	0	9.0	12.0	75%
2.3.11	Network security	2	9	0	0	1	0	2.0	11.0	18%
2.3.12	Recovery console	0	0	0	0	0	0	0.0	0.0	0%
2.3.13	Shutdown	0	0	0	0	0	0	0.0	0.0	0%
2.3.14	System cryptography	0	0	0	0	0	0	0.0	0.0	0%
2.3.15	System objects	2	0	0	0	0	0	2.0	2.0	100%
2.3.16	System settings	0	0	0	0	0	0	0.0	0.0	0%
2.3.17	User Account Control	5	3	0	0	0	0	5.0	8.0	62%
3	Event Log	0	0	0	0	0	0	0.0	0.0	0%
4	Restricted Groups	0	0	0	0	0	0	0.0	0.0	0%
5	System Services	10	10	0	0	0	0	10.0	20.0	50%
6	Registry	0	0	0	0	0	0	0.0	0.0	0%
7	File System	0	0	0	0	0	0	0.0	0.0	0%
8	Wired Network (IEEE 802.3) Policies	0	0	0	0	0	0	0.0	0.0	0%
9	Windows Defender Firewall with Advanced Security (formerly Windows Firewall with Advanced Security)	0	23	0	0	0	0	0.0	23.0	0%
9.1	Domain Profile	0	7	0	0	0	0	0.0	7.0	0%
9.2	Private Profile	0	7	0	0	0	0	0.0	7.0	0%
9.3	Public Profile	0	9	0	0	0	0	0.0	9.0	0%
10	Network List Manager Policies	0	0	0	0	0	0	0.0	0.0	0%
11	Wireless Network (IEEE 802.11) Policies	0	0	0	0	0	0	0.0	0.0	0%
12	Public Key Policies	0	0	0	0	0	0	0.0	0.0	0%
13	Software Restriction Policies	0	0	0	0	0	0	0.0	0.0	0%
14	Network Access Protection NAP Client Configuration	0	0	0	0	0	0	0.0	0.0	0%
15	Application Control Policies	0	0	0	0	0	0	0.0	0.0	0%
16	IP Security Policies	0	0	0	0	0	0	0.0	0.0	0%

Profiles

This benchmark contains 5 profiles. The **Level 1 (L1) - Corporate/Enterprise Environment (general use)** profile was used for this assessment.

Title	Description
Level 1 (L1) - Corporate/Enterprise Environment (general use)	<p>Items in this profile intend to:</p> <ul style="list-style-type: none">be the starting baseline for most organizations;be practical and prudent;provide a clear security benefit; andnot inhibit the utility of the technology beyond acceptable means. <p>Show Profile XML</p>
Level 1 (L1) + BitLocker (BL)	<p>This profile extends the "Level 1 (L1)" profile and includes BitLocker-related recommendations.</p> <p>Show Profile XML</p>
Level 2 (L2) - High Security/Sensitive Data Environment (limited functionality)	<p>This profile extends the "Level 1 (L1)" profile. Items in this profile exhibit one or more of the following characteristics:</p> <ul style="list-style-type: none">are intended for environments or use cases where security is more critical than manageability and usability;may negatively inhibit the utility or performance of the technology; andlimit the ability of remote management/access. <p>Note: Implementation of Level 2 requires that both Level 1 and Level 2 settings are applied.</p> <p>Show Profile XML</p>
Level 2 (L2) + BitLocker (BL)	<p>This profile extends the "Level 2 (L2)" profile and includes BitLocker-related recommendations.</p> <p>Show Profile XML</p>
BitLocker (BL) - optional add-on for when BitLocker is deployed	<p>This profile contains BitLocker-related recommendations, if your organization chooses to use it. It is intended be an optional "add-on" to the Level 1 (L1) or Level 2 (L2) profiles.</p> <p>Show Profile XML</p>

Lab 4

Policy & CIS Baselines

Walkthrough -

- Creating Policy Baselines
- Assign Policies to a Baseline
- Go over CIS Baselines





Unify endpoint management

Device enrollment strategies



Different ways your devices can be joined to Entra ID

Device Identity



Hybrid

Corporate Devices

- ✓ Joined to local AD DS domain – two directories to manage
- ✓ Sign-in with Entra ID account – SSO to cloud and on-premises
- ✓ Can use Group Policy Objects and Conditional Access
- ✓ Syncs from AD DS to Entra ID – using Entra Connect



Registered

BYOD

- ✓ Not controlled by org – belong to users
- ✓ Sign-in with local device account
- ✓ Can use CA and Intune
- ✓ Control access to company data and apps only



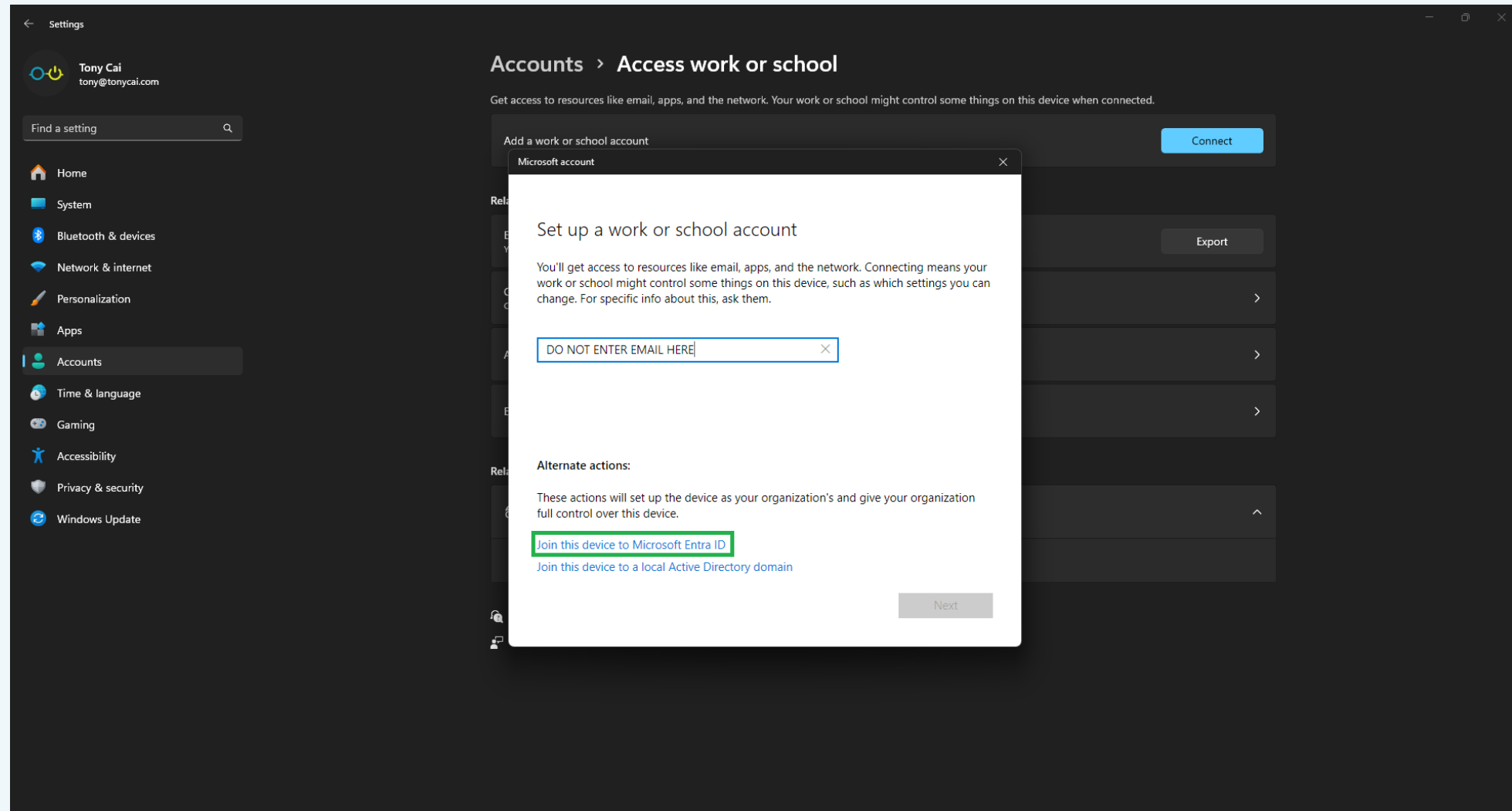
Joined

Corporate Devices

- ✓ Joined to Entra ID
- ✓ Sign-in with Entra ID account
- ✓ Enforce configurations and control device
- ✓ Can use Conditional Access and Intune

How to: Enroll a Windows Device to Entra ID

(via End User Enrollment - MANUALLY)



How to: Enroll a Windows Device to Entra ID

(via USB or Network)

Windows Configuration Designer

File About

Start page

Windows ICD makes it easy to build and flash a Windows image, create provisioning packages, or set up devices to use within your organization. To get started, choose Create or open a Recent project.

Create

Provision desktop devices

Configure common settings for Windows desktop devices

Provision HoloLens devices

Configure common settings for HoloLens devices

Provision kiosk devices

Configure common settings for a device that will run a single app in kiosk mode

Provision Windows mobile devices

Configure common settings for Windows mobile devices

Provision Surface Hub devices

Configure common settings for Surface Hub devices

Advanced provisioning

View and configure all possible settings on provisioned devices

Recent projects

Open

New project

Enter project details


Name: Mass Deploy Intune

Project folder: C:\Users\tony\OneDrive\Documents\Windows Imaging and Configuration Designer (WICD)\Mas Browse...

Description: Deploy Intune at Scale

Finish

Version: 2024.206.0.0+804f88201f4c29e98e2cd035f72041d04f4b7f1a



Windows Configuration Designer

Microsoft Corporation

Open

4.2

Average

77

Ratings

How to: Enroll a Windows Device to Entra ID

(via USB or Network)

Windows Configuration Designer

FileAbout

Start pageNerdio Mass Enrollment

Steps

Set up device

Set up network

Account Management

Add applications

Add certificates

Finish

Summary

Set up device

Share devices

Remove pre-installed software

Enter device name

Yes

Yes

Nerdio-SurfacePro-%SERIAL%

Network settings

Network SSID

Network type

Password

Corporate-Wifi

WPA2-Personal

Account Management

Bulk Token Expiry Date

Local admin user name

Local admin user password

"2024-08-18T21:22:06.830Z"

localadmin

Add applications

Add certificates

Protect your package

Protect the contents of your package by specifying a password. The password length must be 8-16 characters.

Yes

Password:

You are ready to create the package!

Create

Nerdio Mass Enrollment.ppkg created and copied to

C:\Users\tony\OneDrive\Documents\Windows Imaging and Configuration Designer (WICD)\Nerdio Mass Enrollment

Switch to advanced editor

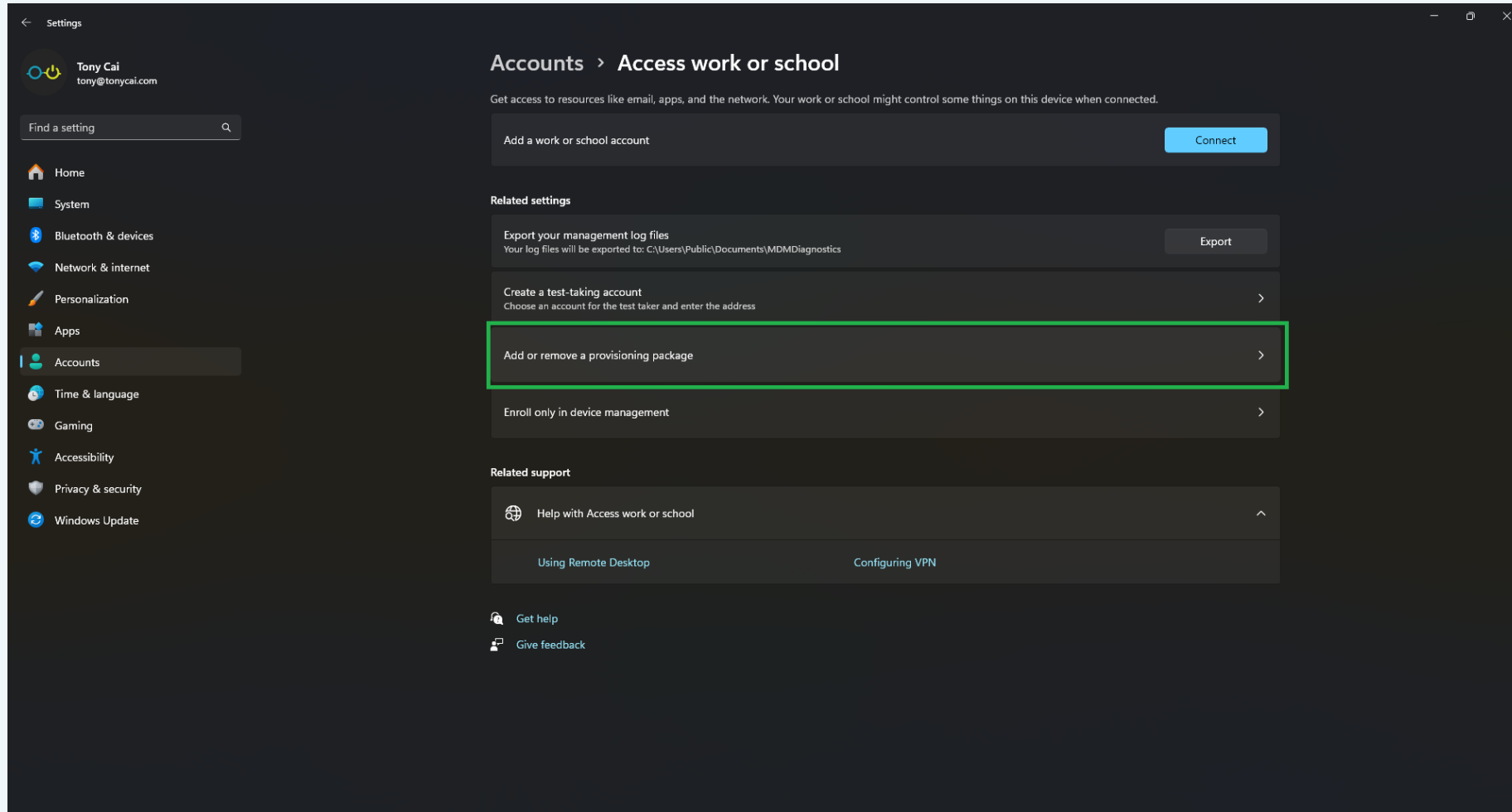
Back

Version: 2024.206.0.0+804f88201fdc29e98e2cd035f72041d04f4b7f1a

Project: Provision desktop devicesEdition: All Windows desktop editions

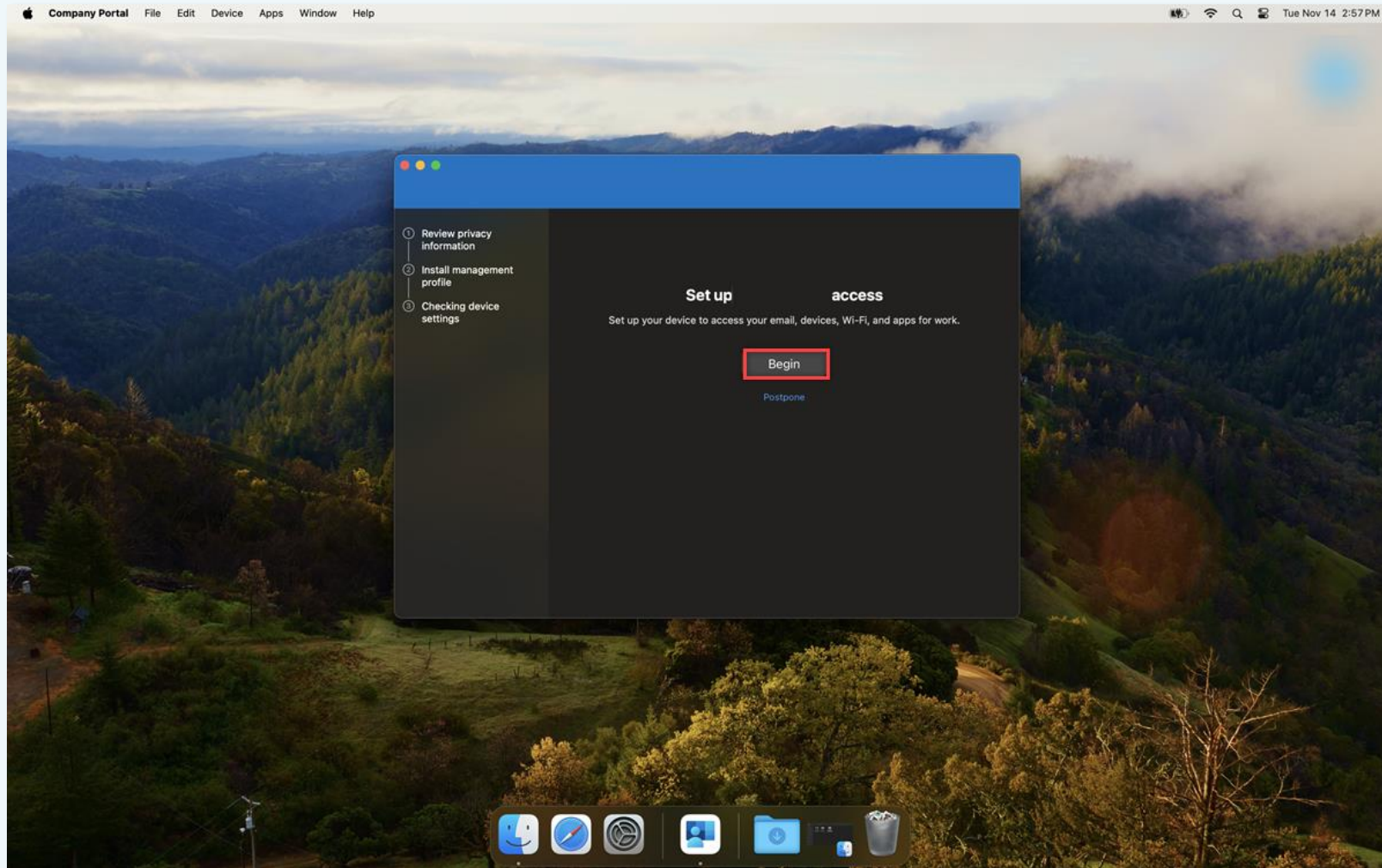
How to: Enroll a Windows Device to Entra ID

(via USB or Network)



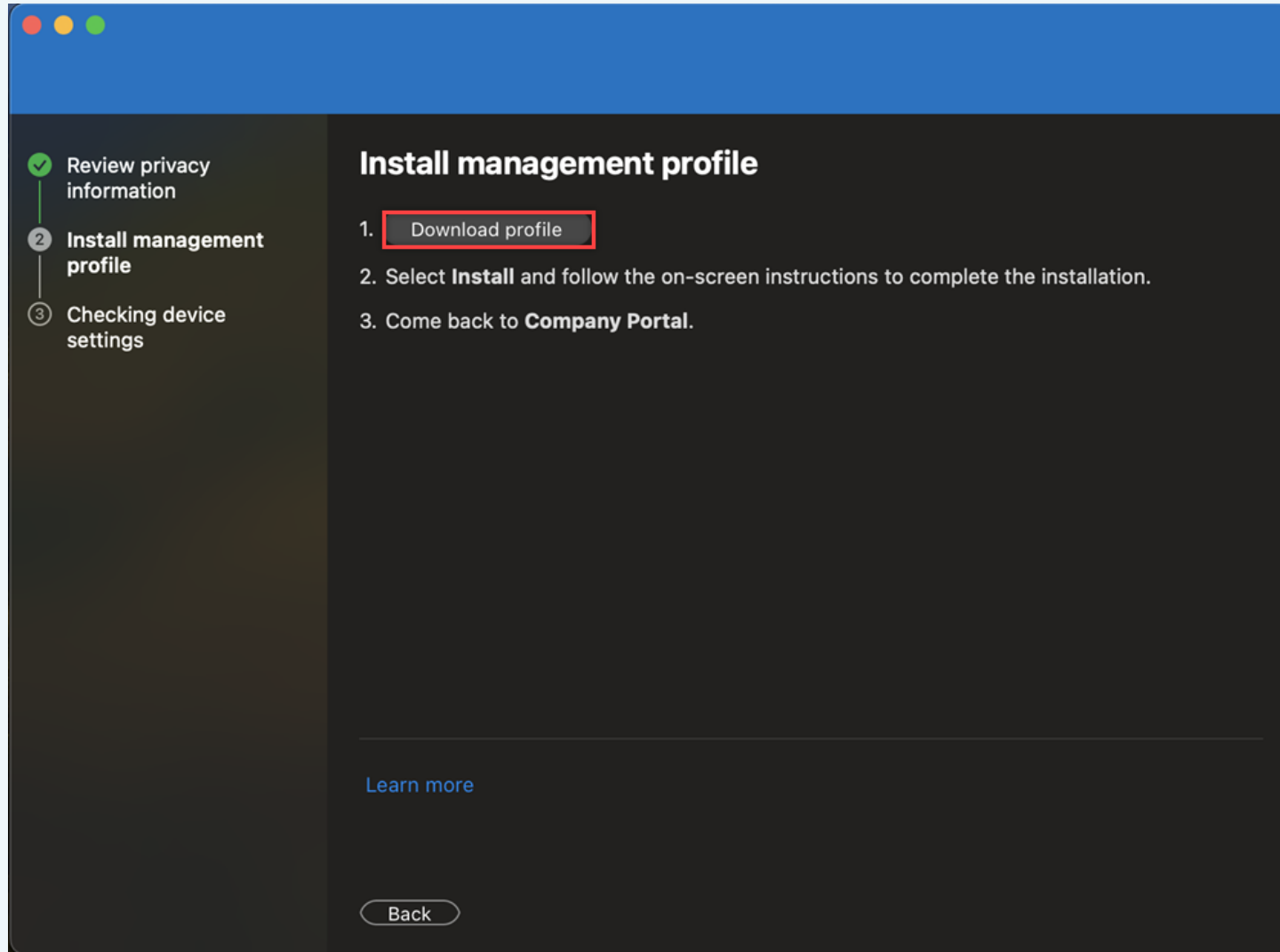
How to: Enroll a Mac Device to Entra ID

(via Company Portal app)



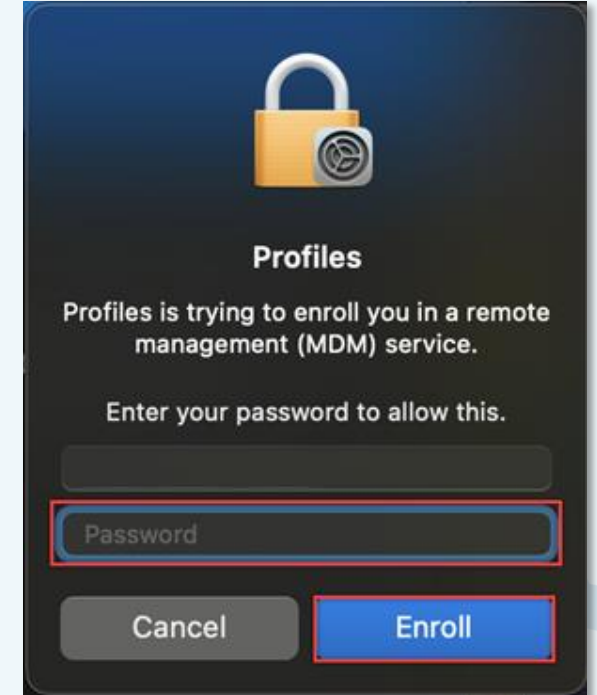
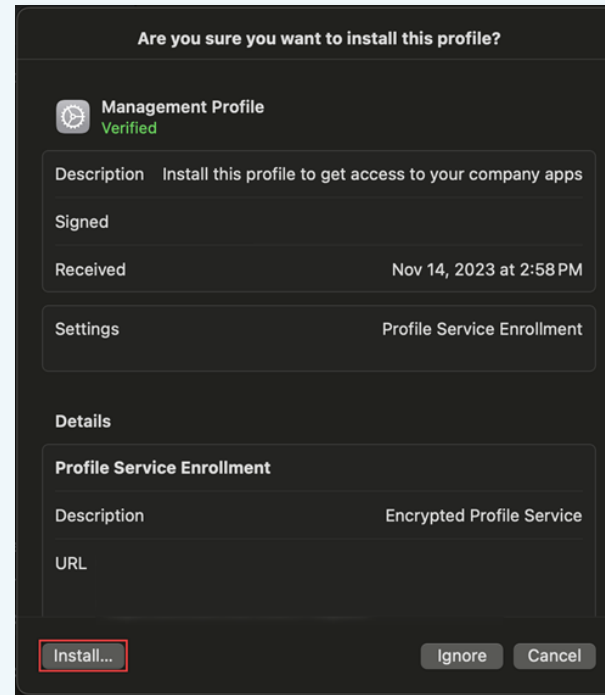
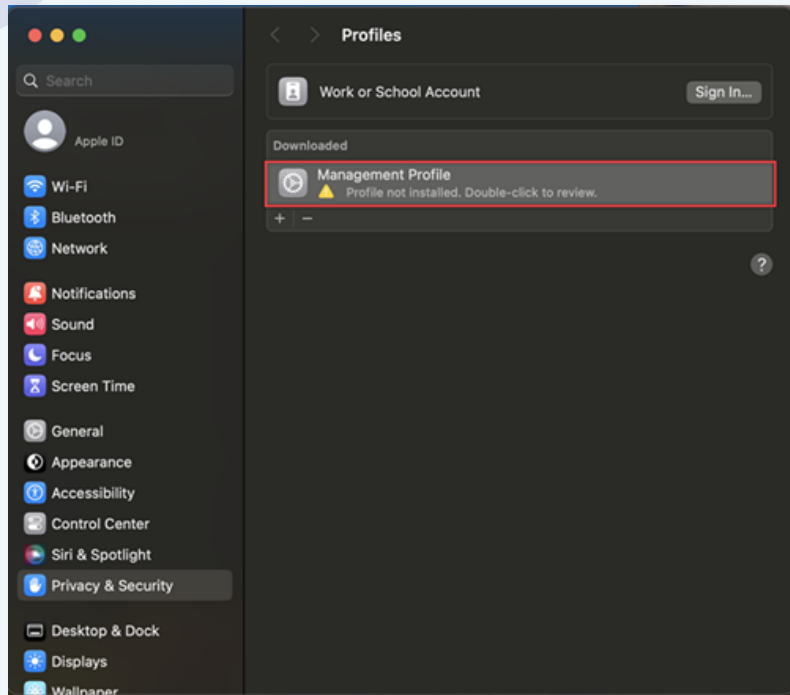
How to: Enroll a Mac Device to Entra ID

(via Company Portal app)



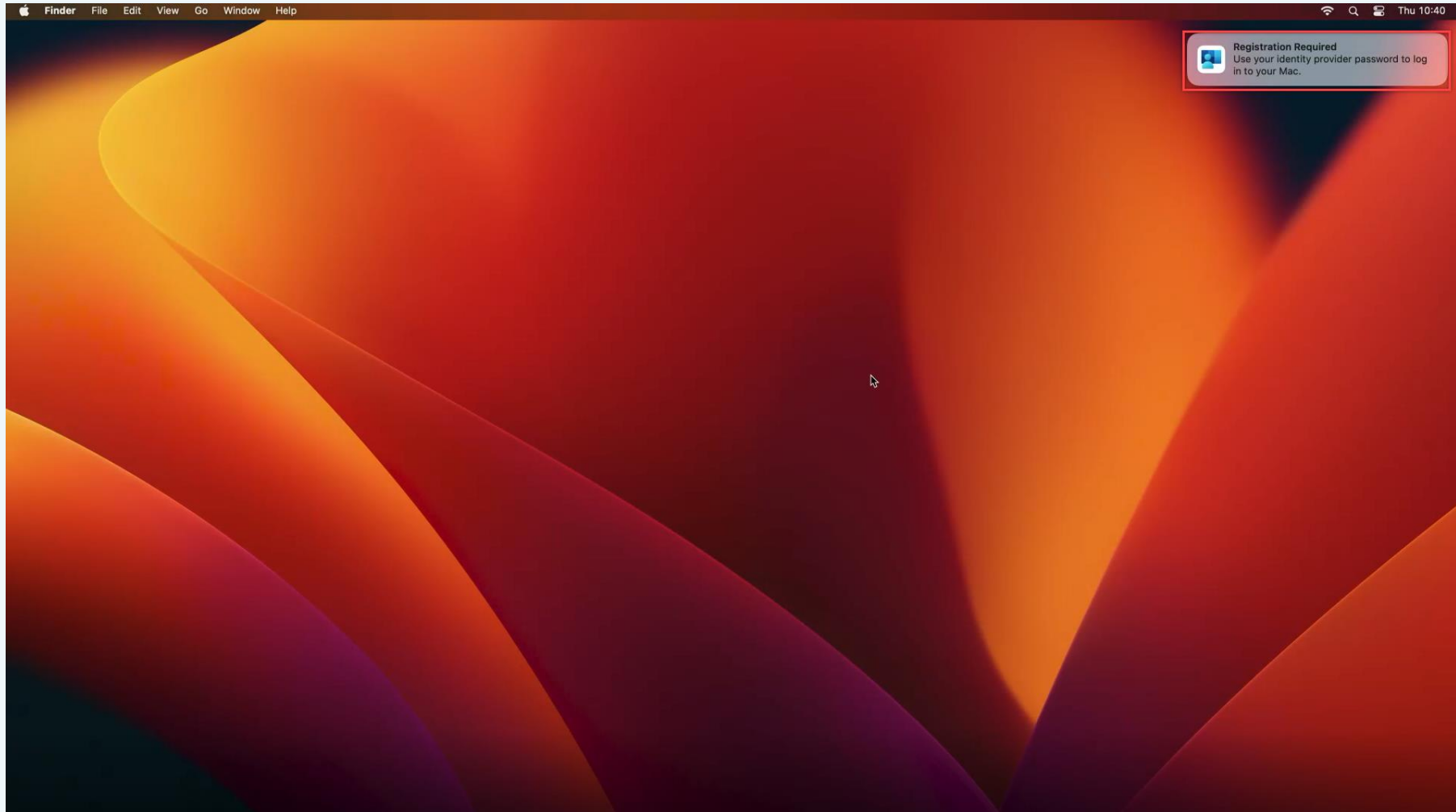
How to: Enroll a Mac Device to Entra ID

(via Company Portal app)



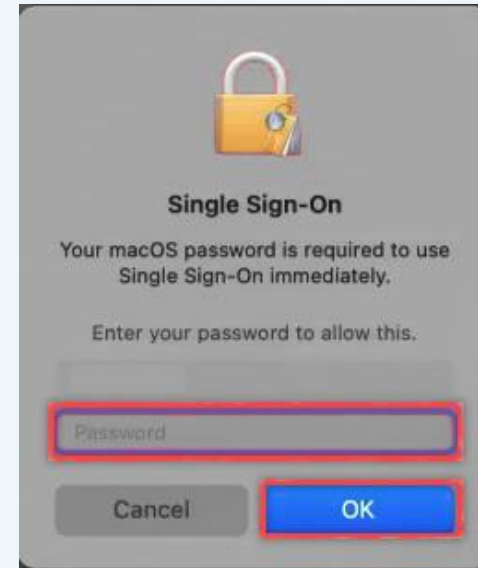
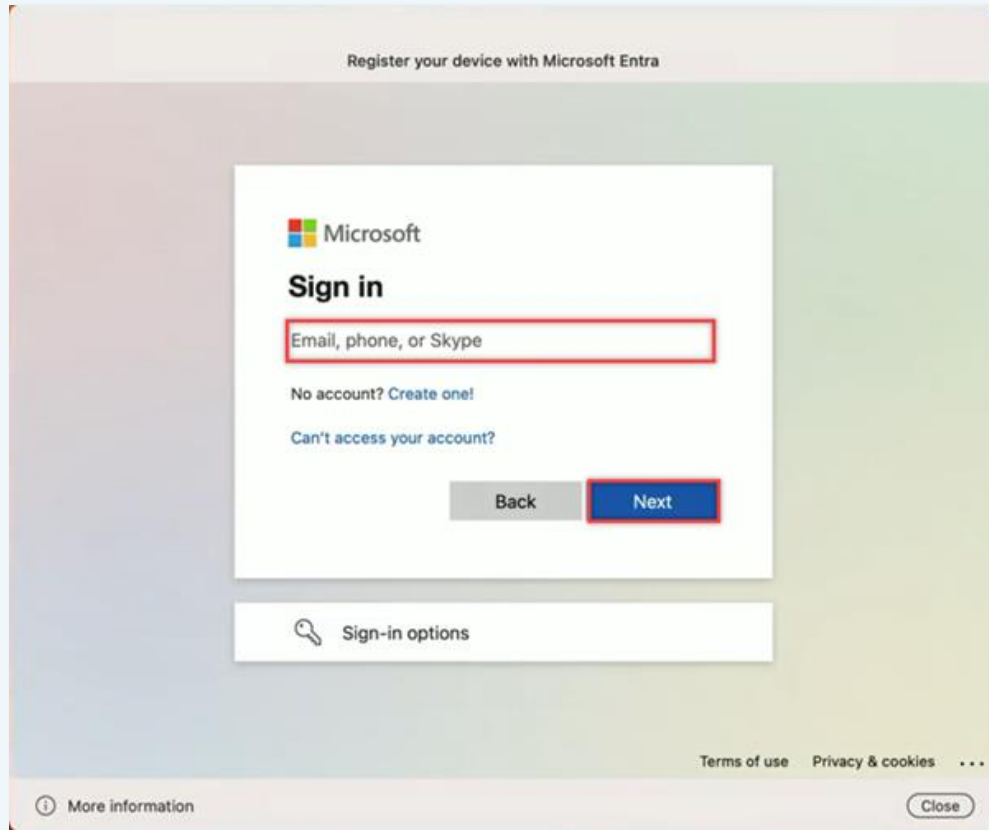
How to: Enroll a Mac Device to Entra ID

(via Company Portal app)



How to: Enroll a Mac Device to Entra ID

(via Company Portal app)



How to:

Enroll a Windows Device to Intune

Auto enrollment

- Any time you are joining a device to Entra ID, you can have it auto enroll into Intune.

Autopilot

- When you set this up and configure it, you can have it enroll into Intune.

User enrollment

- This is done manually through the OS on local machine.
- By clicking **“Join this device to Entra ID”** and then choosing **“Allow my organization to manage my device”**.

Group Policy

- Create a Group Policy that enrolls AD connected devices to Intune.

How to:

Use Windows Autopilot to provision devices



What is it used for?

- ✓ Reset, repurpose, and recover devices.
- ✓ Setup "out of box" Windows devices to desired configuration.
- ✓ Intune license is required and to be assigned to user.
- ✓ Autopilot is the starting pitcher and Intune is the closer.



How to set it up?

- ✓ Create Autopilot profile inside Intune portal to control what happens when the device is being setup.
- ✓ Import into NMM and assign, edit, or clone.
- ✓ Create Enrollment Status Pages inside Intune portal to control what user sees while Autopilot is running.
- ✓ Import into NMM and assign, edit, or clone.

How to: Mobile Device Management

Need Intune license

Used for managing mobile device apps, security, compliance, and configurations.

Difference between MDM and MAM

- BYOD = MAM (protecting apps and corporate data only)
- Corp device = MDM (protecting the device and all that is included)

Compliance policies

**Bring company
and BYOD
devices up to
compliance
before allowing
corporate data
access**

Settings will depend on MDM or MAM approach
Some examples:

- OS Version Compliance
- Jailbreak/Root Detection
- Strong Passcode (minimum length + complexity)
- Auto-lock after inactivity
- Wipe on failed attempts

Mobile Application Management



Secure access

Ensure secure access to corporate applications and data on personal devices without full device enrollment.



Data protection

Implement policies to prevent data leakage, control copy/paste functions, and manage data sharing between applications.



Compliance

Enforce compliance requirements to keep devices and data secure while providing a seamless user experience.

Creating App Protection & Configuration policies

App Protection policy (iOS/Android)

- Restrict copy/paste actions in the Microsoft Edge app.
- Enforce data protection by allowing only managed app data transfers.

- **App Configuration policy (iOS only)**

- Managing data transfer between iOS apps in Intune.*
 - **Only applies to iOS devices*
- Reference Microsoft Intune iOS Data Transfer Guide.*
 - **See the QR code*

Check the doc out below for more info!





Unify endpoint management

Settings Baselines



Settings Baselines

(Intune, Entra, Defender, OneDrive, SharePoint, Exchange Online & Teams Online)

Challenges

Solution

- Management of identity and access across multiple clients is complex.
- A way to ensure consistent security standards across all environments.

- Standardized configurations across all client environments.

Settings Baselines

Outcomes



- Enforce consistent management across environments and simplify operations.
- Ensure configurations are evenly applied.
- Minimize misconfigurations.



Configuration Drift Management



Configuration drift management

Challenges

- Inconsistent configurations create security gaps and non-compliance with standards.
- Tracking and correcting discrepancies manually is time-consuming and inefficient.

Solution

- The ability to monitor and correct discrepancies from defined configurations to maintain consistency across environments.

Configuration drift management

Outcomes



- Consistent configurations improve security and help meet compliance standards.
- Automation saves time and effort, fostering client confidence through reliable management.



Unify endpoint management

Tenant Monitoring



Tenant monitoring

Challenges

- Managing compliance across multiple tenants is challenging due to limited visibility and the need for manual audits, which increase the risk of errors and inconsistencies.

Solution

- A centralized tenant monitoring and reporting feature that allows MSPs to track, compare, and assess policy settings across customer tenants.

Tenant monitoring

Outcomes



- MSPs gain a clear, centralized view of policy compliance across all tenants.
- You can now Identify and highlight policy deviations, enabling timely fixes and reducing risks.



Unify endpoint management

Group policy analytics



Group Policy analytics

Challenges

- Keeping up to date with current on-premises GPOs
- Understanding what cloud-based MDM providers support
- Manually configuring new GPOs into your cloud (no visibility).

Solution

- Use Group Policy analytics to import or analyze existing on-premises GPOs

Group Policy analytics

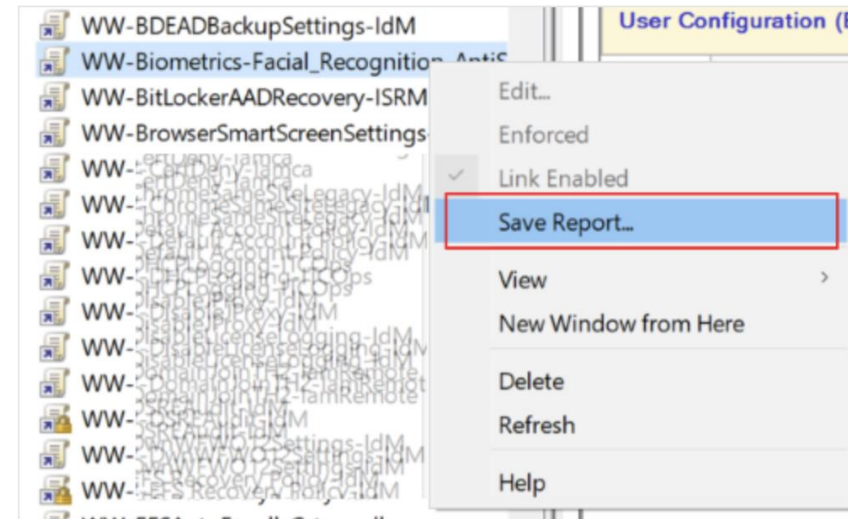
Outcomes

- Imports and analyzes on-premises GPOs
- Shows settings that Intune supports
- Shows deprecated settings

Export a GPO as an XML file

The following steps can be different on your server, depending on the GPMC version you're using. When you export the GPO, make sure you export as an XML file.

1. On your on-premises computer, open the **Group Policy Management** console (GPMC.msc).
2. In the management console, expand your **domain name**.
3. Expand **Group Policy Objects** to see all the available GPOs.
4. Right-click the GPO you want to migrate and choose **Save report**:



5. Select an easily accessible folder for your export. In **Save as type**, select **XML File**. In another step, you add this file to group policy analytics in Intune.

Make sure that the file is less than 4 MB and has a proper Unicode encoding. If the exported file is greater than 4 MB, then reduce the number of settings in the group policy object.

Group Policy analytics

Outcomes

- Imports and analyzes on-premises GPOs
- Shows settings that Intune supports
- Shows deprecated settings

1. Sign in to the Intune admin center as Intune admin or with a role that has “Security baselines” and “Device Configuration” permissions.
2. Select **Import**, select your saved XML > **Next** (can select multiple)
3. You can use **Scope tags**, by select an existing or using default
4. Select **Next > Create**

After analysis runs, the GPO you imported lists some good info.

MDM support: shows the percentage of group policy settings in the GPO that have the same setting in Intune.

Yes – means there’s a matching setting available in Intune.
No - means there isn’t a matching setting.

Group Policy migration readiness report

Notes

- Summary of GPO and policy statuses
- Shows the # of settings in your GPO that can be used in device configuration profile

1. In the Intune admin center, select **Reports > Device management > Group policy analytics**

2. In the **Summary** tab, a summary of the GPO and its policies are shown. Use this information to determine the status of the policies.

Ready for migration: policy has a matching setting

Not supported: policy doesn't have a matching setting

Deprecated: policy can apply to older versions or not used

3. Select **Reports** tab > **Group policy migration readiness**

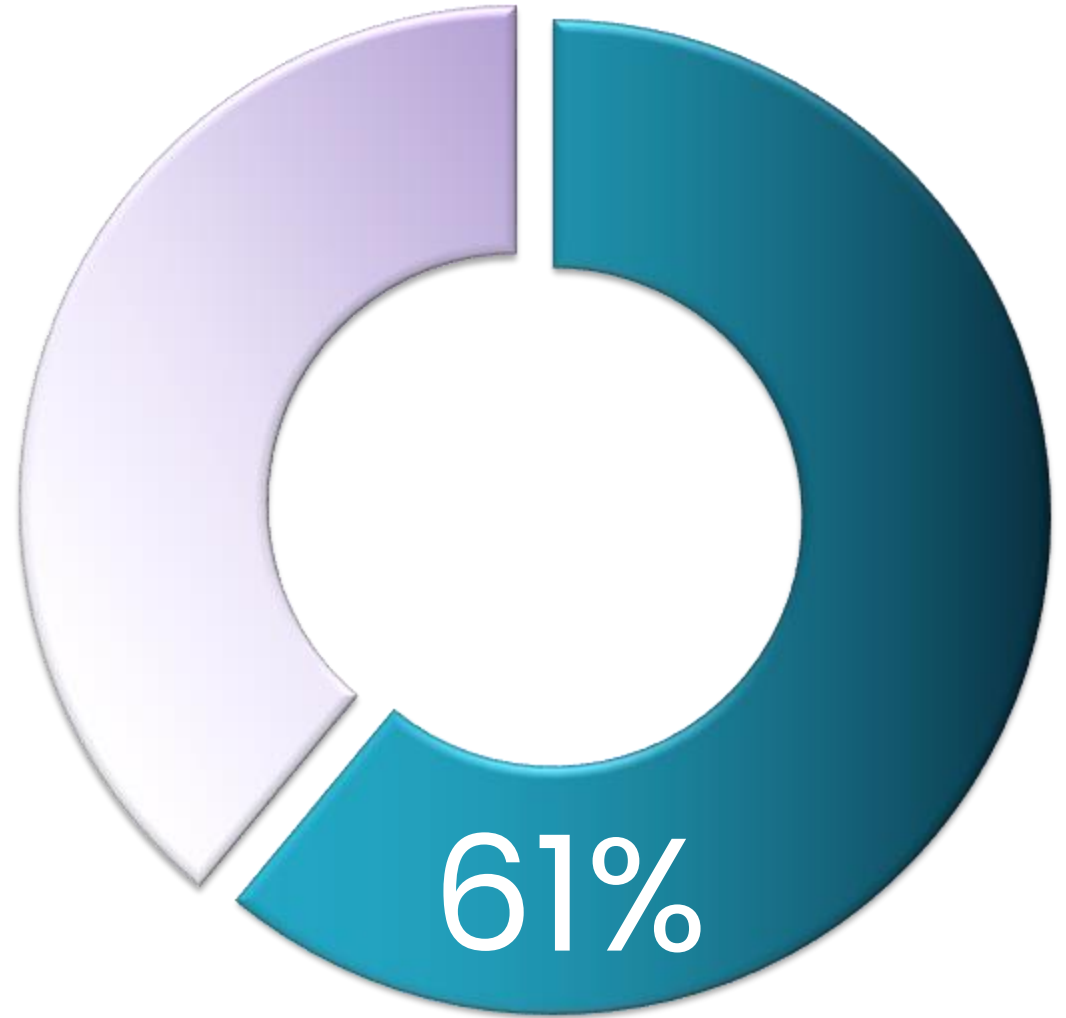
You can use report to see the number of settings in your GPO that can be configured in a device configuration profile.

It also shows if the settings can be in a custom profile, aren't support or are deprecated.

Security for Modern Work

Why security matters for MSPs

61% of SMBs have been hit
by a successful cyberattack
in the last year.



(BlackFog Cybersecurity Report, 2023)

The silent costs: Impacts beyond the bottom line



Reputation
damage



Damage to customer
relationships



Compliance & legal
penalties

Security pitfalls in the Modern Work landscape



Inconsistent security policies

Data exposure risks

Delayed threat detection

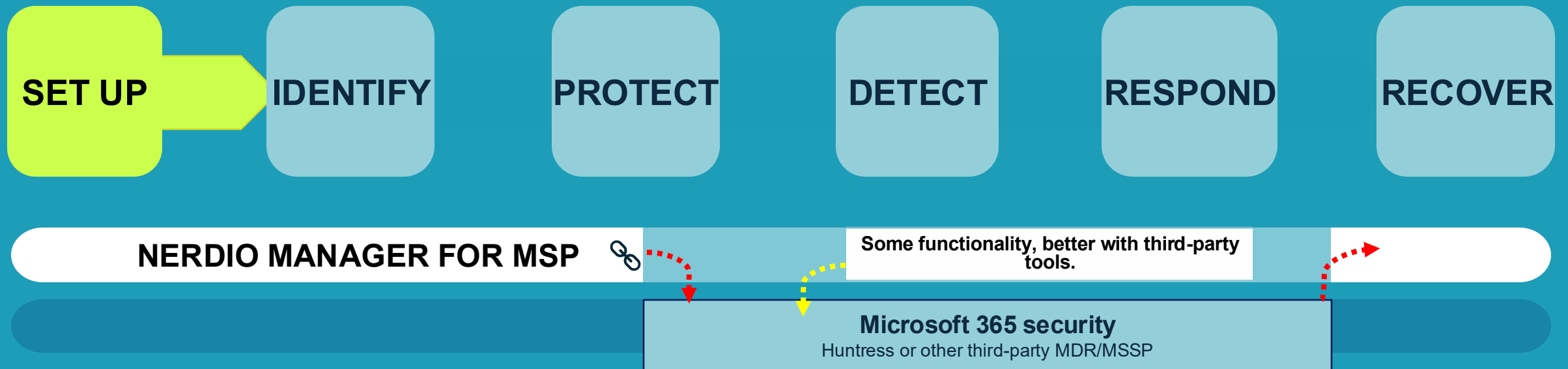
User management challenges

Nerdio Modern Work: Closing the security gaps

- Secure access controls
- Automated policy enforcement
- Enhanced data protection
- Proactive threat monitoring
- Effortless user management



What is the NIST Cybersecurity Framework?



Nerdio Manager for MSP meets the NIST Cybersecurity Framework

Identify				
<ul style="list-style-type: none">• Audit Logs• Risky & Stale User Reports• Defender Vulnerability Reporting• Device Configuration Compliance• Global Views & Dashboards• AVD Utilization and Performance• Tenant Configuration Compliance• Secure Score Management				

Nerdio Manager for MSP meets the NIST Cybersecurity Framework

Identify	Protect			
<ul style="list-style-type: none">• Audit Logs• Risky & Stale User Reports• Defender Vulnerability Reporting• Device Configuration Compliance• Global Views & Dashboards• AVD Utilization and Performance• Tenant Configuration Compliance• Secure Score Management	<ul style="list-style-type: none">• Granular RBAC Model• CIS Hardened AVD Images• CIS Intune Policies• Settings Baselines• Conditional Access• Policy Management• Azure Backup Management• Golden Image Management• Global App Catalog• Global Policy Management• Global Windows Update Rings			

Nerdio Manager for MSP meets the NIST Cybersecurity Framework

Identify	Protect	Detect		
<ul style="list-style-type: none">• Audit Logs• Risky & Stale User Reports• Defender Vulnerability Reporting• Device Configuration Compliance• Global Views & Dashboards• AVD Utilization and Performance• Tenant Configuration Compliance• Secure Score Management	<ul style="list-style-type: none">• Granular RBAC Model• CIS Hardened AVD Images• CIS Intune Policies• Settings Baselines• Conditional Access• Policy Management• Azure Backup Management• Golden Image Management• Global App Catalog• Global Policy Management• Global Windows Update Rings	<ul style="list-style-type: none">• Defender for Endpoint functionality• Risky & Stale User Reporting		

Nerdio Manager for MSP meets the NIST Cybersecurity Framework

Identify	Protect	Detect	Respond	
<ul style="list-style-type: none"> • Audit Logs • Risky & Stale User Reports • Defender Vulnerability Reporting • Device Configuration Compliance • Global Views & Dashboards • AVD Utilization and Performance • Tenant Configuration Compliance • Secure Score Management 	<ul style="list-style-type: none"> • Granular RBAC Model • CIS Hardened AVD Images • CIS Intune Policies • Settings Baselines • Conditional Access • Policy Management • Azure Backup Management • Golden Image Management • Global App Catalog • Global Policy Management • Global Windows Update Rings 	<ul style="list-style-type: none"> • Defender for Endpoint functionality • Risky & Stale User Reporting 	<ul style="list-style-type: none"> • Console Connect 	

Nerdio Manager for MSP meets the NIST Cybersecurity Framework

Identify	Protect	Detect	Respond	Recover
<ul style="list-style-type: none"> • Audit Logs • Risky & Stale User Reports • Defender Vulnerability Reporting • Device Configuration Compliance • Global Views & Dashboards • AVD Utilization and Performance • Tenant Configuration Compliance • Secure Score Management 	<ul style="list-style-type: none"> • Granular RBAC Model • CIS Hardened AVD Images • CIS Intune Policies • Settings Baselines • Conditional Access • Policy Management • Azure Backup Management • Golden Image Management • Global App Catalog • Global Policy Management • Global Windows Update Rings 	<ul style="list-style-type: none"> • Defender for Endpoint functionality • Risky & Stale User Reporting 	<ul style="list-style-type: none"> • Console Connect 	<ul style="list-style-type: none"> • Azure Backup Management & Validation • Golden Image Management & Validation • CIS Hardened AVD Images • Recovery Services for Policies & Baselines • AVD Auto-Heal • AI Backup Validation • AI Image Validation

Risky user management

Risky user reporting

Challenges

Solution

- Need a way to monitor and manage inactive or compromised user accounts.
- Limit the security risks that these users cause.

- Detailed reporting on user accounts that are flagged as risky or stale.

Risky user reporting

Outcomes



- Reduce security risks.
- Ensure compliance with security protocols.
- Provide safer and more efficient client accounts.

Defender vulnerability dashboard

Defender Vulnerability Management

Challenges

Solution

- MSPs need visibility into vulnerabilities across client environments to proactively manage security risks.

- Use a unified dashboard highlighting vulnerabilities.

Defender vulnerability management

Outcomes



- Gain a clear view of vulnerabilities across client environments.
- Enable faster resolution of security risks.
- Improve the security posture of client environments.

Secure score management

Secure score management

Challenges



- Managing Secure Scores for multiple clients is challenging due to limited visibility and significant manual effort, making it time-consuming to address security gaps.

Solution



- A centralized view to track and manage Secure Scores for all clients from a single interface.

Secure Score management

Outcomes



- Streamline security operations across multiple tenants
- Improve client security postures
- Reduce vulnerability risks

Unify application management



Unified Application Management

Unified Application Management

Unify your management of applications

What is UAM?

Unified App Management

- Unified approach to application management
- Streamline deployment, updates, removal of apps
- Has support for a variety of scenarios
- Uses existing technologies

Unified Application Management

Unify your management of applications

Benefits of UAM

Security

- Quickly address application updates and vulnerabilities

Time

- Less manual management (physical and virtual devices)
- Policy based deployments

Tool Sprawl

- Cut down on the variety of application deployment tools
 - Chocolatey
 - Scoop
 - Ninite
 - PDQ Deploy

Unified Application Management

Unify your management of applications

Key Concepts

- Applications
- Targets
- Repositories
- Deployment Technologies

Unified Application Management

Unify your management of applications

Applications

What do you need to deliver?

Variety of installation types

- MSI
- EXE
- ZIP (single file)
- MSIX / App attach (CIM, VHD)

Unified Application Management

Unify your management of applications

Targets

Where you want to install your applications

- Pooled AVD host Pools
- Personal AVD Desktops
- User/Group
- Specific Pools
- Servers
- Intune connected/enrolled
- Users or User Groups
- Device Groups

Unified Application Management

Unify your management of applications

Repositories

Storage location for software packages

- Version control

Software publishers maintain the software

- In many cases for free
- Software is commonly digitally signed

Current availability –

- Microsoft Store
- WinGet community
- Private / custom repo
- Google Play Store
- iOS Store

Unified Application Management

Unify your management of applications

Deployment technologies

WinGet

- Azure connected (virtual) – native Azure tech called extensions
- Intune connected (physical) – Intune to push WinGet commands

Shell apps

- Azure connected (virtual) – native Azure tech called extensions
- Intune connected (physical) – Intune to push customized script packages
 - can call WinGet commands if needed

Unified Application Management

Unify your management of applications

Application deployment

One-time deployment:

- App testing
- One off install for a user

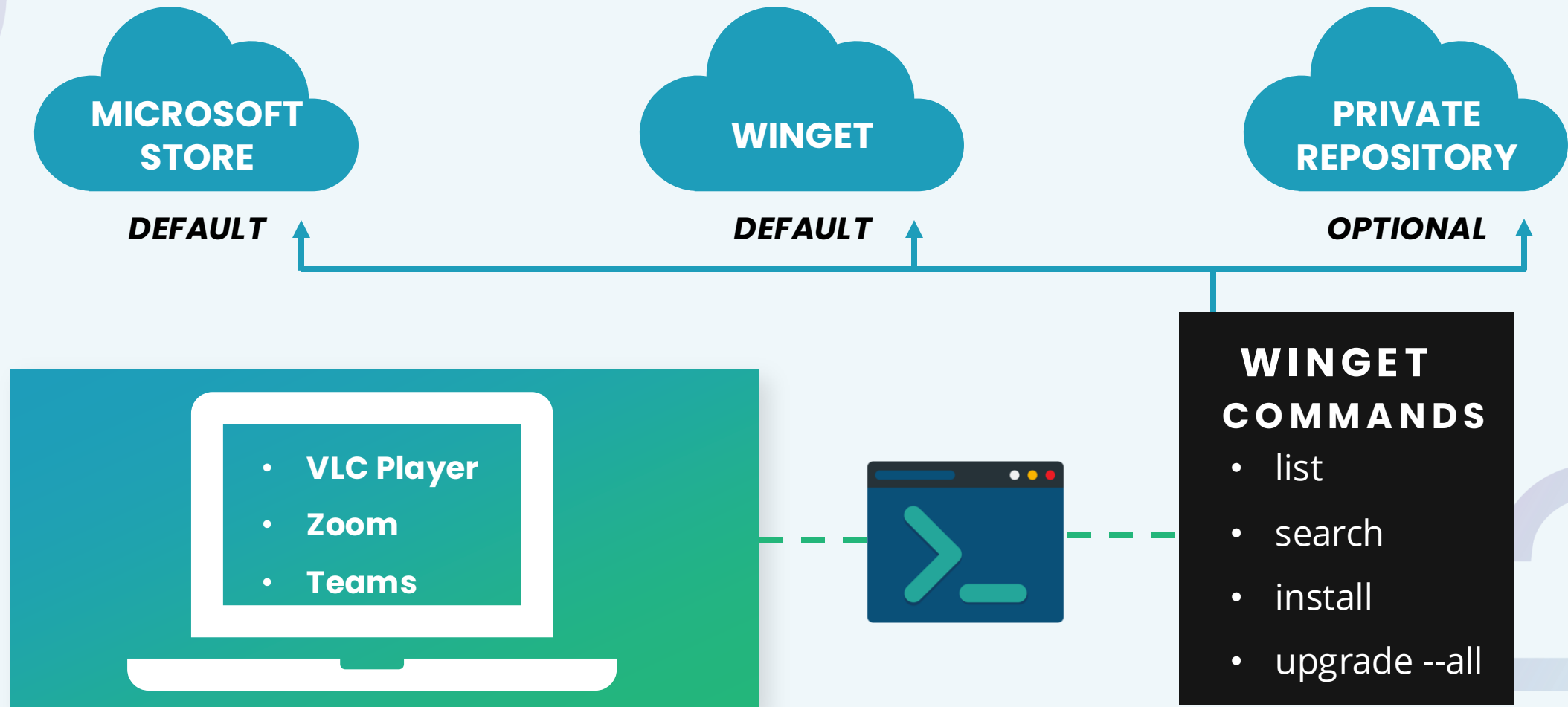
Use policies to automate:

- App installation on session hosts.
- App maintenance and updates.
- App versioning and control.

What is Winget?

- Microsoft Created Windows Package Manager
- Command line Utility introduced in Windows 10 1709
- Agentless – Already built into Windows 10/11
- Uses repositories: MSStore, Winget repo, custom repository
- Easy way to manage, upgrade, install and uninstall apps

Overview: Winget



Launch Winget via PowerShell

(non-admin)

Winget --info

- Shows the version of Winget and the default locations of install folders, etc.

```
Windows PowerShell
PS C:\Users\tony> winget --info
Windows Package Manager v1.6.2771
Copyright (c) Microsoft Corporation. All rights reserved.

Windows: Windows.Desktop v10.0.22621.2361
System Architecture: X64
Package: Microsoft.DesktopAppInstaller v1.21.2771.0

Winget Directories
-----
Logs                                     %LOCALAPPDATA%\Packages\Microsoft.DesktopAppInstaller_8wekyb3d8bbwe\LocalState\Diag...
User Settings                           %LOCALAPPDATA%\Packages\Microsoft.DesktopAppInstaller_8wekyb3d8bbwe\LocalState\sett...
Portable Links Directory (User)          %LOCALAPPDATA%\Microsoft\WinGet\Links
Portable Links Directory (Machine)       C:\Program Files\WinGet\Links
Portable Package Root (User)             %LOCALAPPDATA%\Microsoft\WinGet\Packages
Portable Package Root                   C:\Program Files\WinGet\Packages
Portable Package Root (x86)              C:\Program Files (x86)\WinGet\Packages
Installer Downloads                      %USERPROFILE%\Downloads

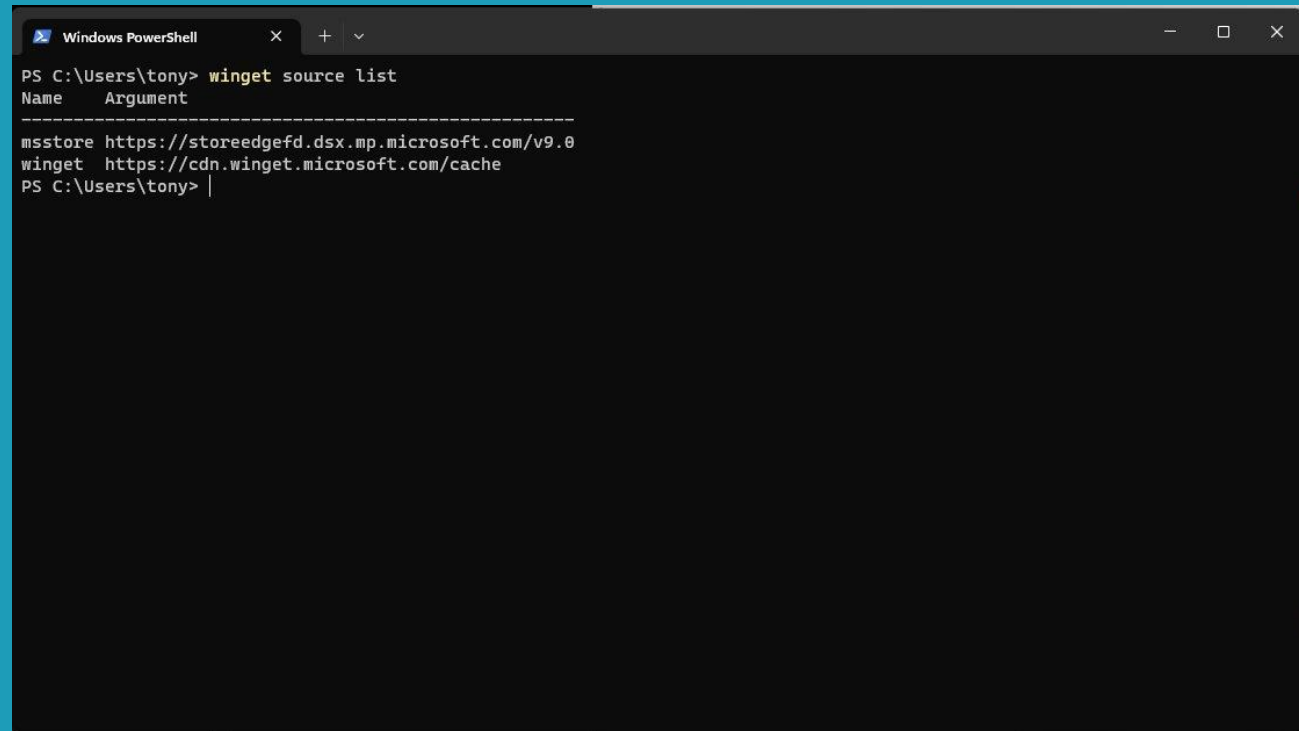
Links
-----
Privacy Statement   https://aka.ms/winget-privacy
License Agreement   https://aka.ms/winget-license
Third Party Notices https://aka.ms/winget-3rdPartyNotice
Homepage            https://aka.ms/winget
Windows Store Terms https://www.microsoft.com/en-us/storedocs/terms-of-sale

Admin Setting      State
-----
LocalManifestFiles Disabled
```

View Winget Sources

Winget source list

- Use this command to list and manage sources for Windows Package Manager
- You can add, remove, update, reset or export repositories.

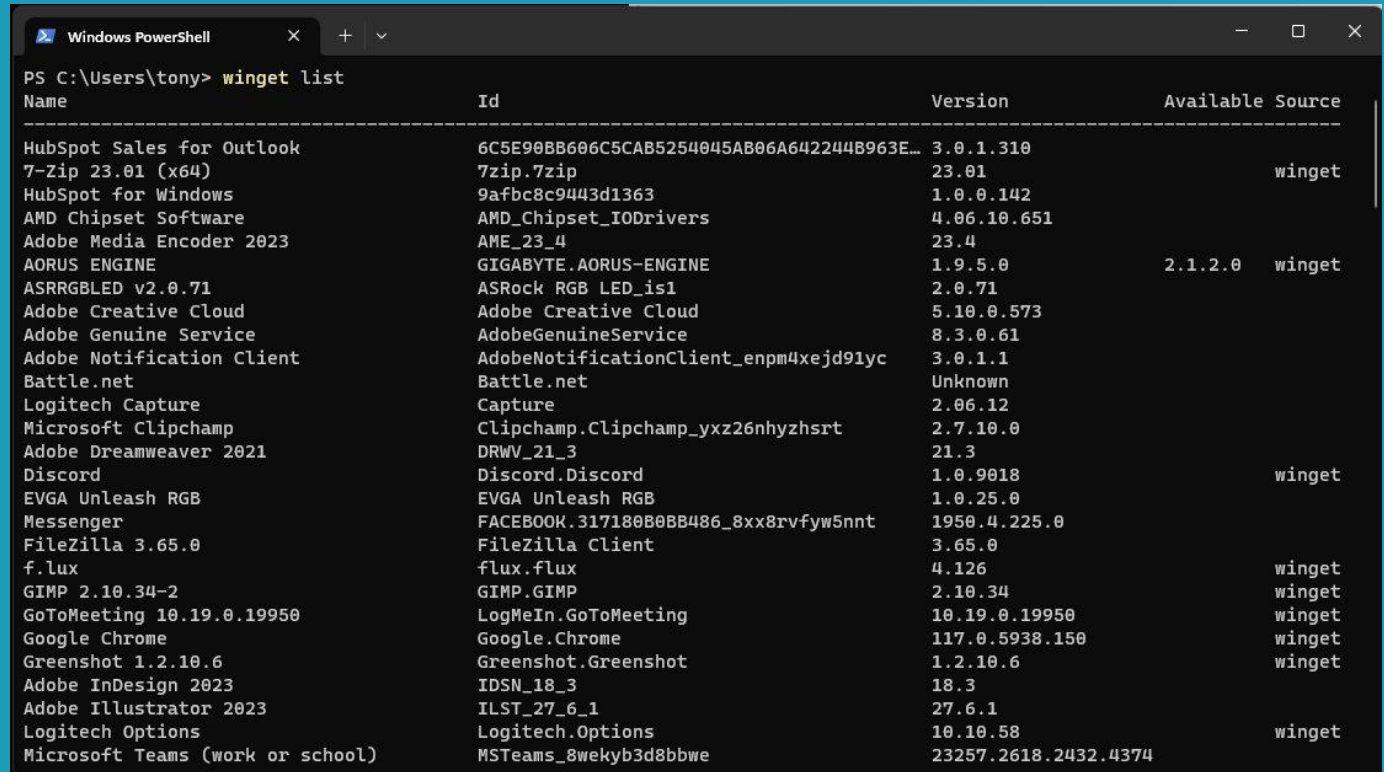


```
Windows PowerShell
PS C:\Users\tony> winget source list
Name      Argument
-----
msstore   https://storeedgefd.dsx.mp.microsoft.com/v9.0
winget    https://cdn.winget.microsoft.com/cache
PS C:\Users\tony> |
```

List Winget Apps on PC

Winget list

- List all of the apps on your computer, its versions and whether or not it is available.
- All apps can be managed regardless of whether they were first installed with Winget.



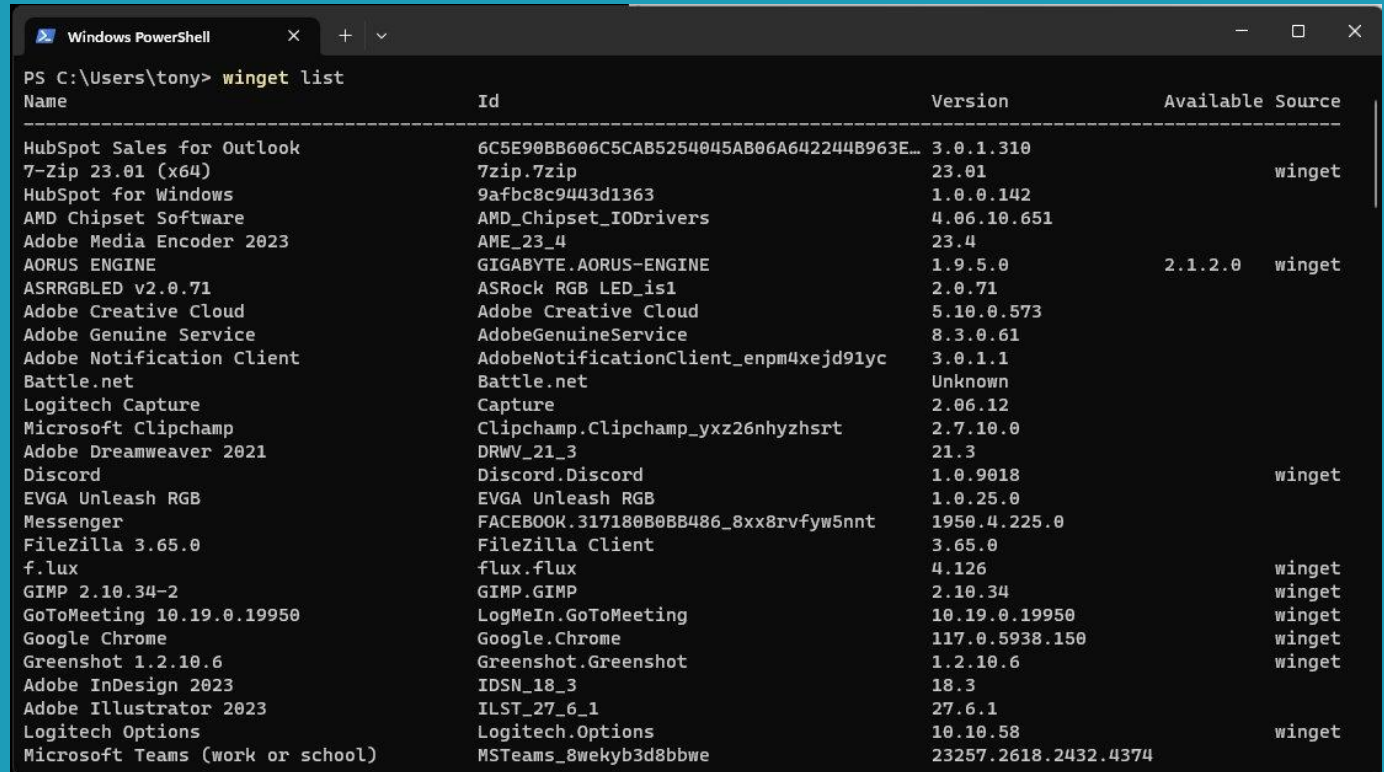
```
PS C:\Users\tony> winget list
```

Name	Id	Version	Available Source
HubSpot Sales for Outlook	6C5E90BB606C5CAB5254045AB06A642244B963E...	3.0.1.310	
7-Zip 23.01 (x64)	7zip.7zip	23.01	winget
HubSpot for Windows	9afbc8c9443d1363	1.0.0.142	
AMD Chipset Software	AMD_Chipset_IODrivers	4.06.10.651	
Adobe Media Encoder 2023	AME_23_4	23.4	
AORUS ENGINE	GIGABYTE.AORUS-ENGINE	1.9.5.0	2.1.2.0 winget
ASRRGBLED v2.0.71	ASRock RGB LED_is1	2.0.71	
Adobe Creative Cloud	Adobe Creative Cloud	5.10.0.573	
Adobe Genuine Service	AdobeGenuineService	8.3.0.61	
Adobe Notification Client	AdobeNotificationClient_enpm4xejd91yc	3.0.1.1	
Battle.net	Battle.net	Unknown	
Logitech Capture	Capture	2.06.12	
Microsoft Clipchamp	Clipchamp.Clipchamp_yxz26nhyzhsrt	2.7.10.0	
Adobe Dreamweaver 2021	DRWV_21_3	21.3	
Discord	Discord.Discord	1.0.9018	winget
EVGA Unleash RGB	EVGA Unleash RGB	1.0.25.0	
Messenger	FACEBOOK.317180B0BB486_8xx8rvfyw5nnt	1950.4.225.0	
FileZilla 3.65.0	FileZilla Client	3.65.0	
f.lux	flux.flux	4.126	winget
GIMP 2.10.34-2	GIMP.GIMP	2.10.34	winget
GoToMeeting 10.19.0.19950	LogMeIn.GoToMeeting	10.19.0.19950	winget
Google Chrome	Google.Chrome	117.0.5938.150	winget
Greenshot 1.2.10.6	Greenshot.Greenshot	1.2.10.6	winget
Adobe InDesign 2023	IDSN_18_3	18.3	
Adobe Illustrator 2023	ILST_27_6_1	27.6.1	
Logitech Options	Logitech.Options	10.10.58	winget
Microsoft Teams (work or school)	MSTeams_8wekyb3d8bbwe	23257.2618.2432.4374	

List Apps with available upgrades

Winget upgrade

- Returns a list of any installed apps with a newer version available for upgrade.



```
PS C:\Users\tony> winget list
```

Name	Id	Version	Available Source
HubSpot Sales for Outlook	6C5E90BB606C5CAB5254045AB06A642244B963E...	3.0.1.310	
7-Zip 23.01 (x64)	7zip.7zip	23.01	winget
HubSpot for Windows	9afbc8c9443d1363	1.0.0.142	
AMD Chipset Software	AMD_Chipset_IODrivers	4.06.10.651	
Adobe Media Encoder 2023	AME_23_4	23.4	
AORUS ENGINE	GIGABYTE.AORUS-ENGINE	1.9.5.0	2.1.2.0 winget
ASRRGBLED v2.0.71	ASRock RGB_LED_is1	2.0.71	
Adobe Creative Cloud	Adobe Creative Cloud	5.10.0.573	
Adobe Genuine Service	AdobeGenuineService	8.3.0.61	
Adobe Notification Client	AdobeNotificationClient_enpm4xejd91yc	3.0.1.1	
Battle.net	Battle.net	Unknown	
Logitech Capture	Capture	2.06.12	
Microsoft Clipchamp	Clipchamp.Clipchamp_yxz26nhyzhsrt	2.7.10.0	
Adobe Dreamweaver 2021	DRWV_21_3	21.3	
Discord	Discord.Discord	1.0.9018	winget
EVGA Unleash RGB	EVGA Unleash RGB	1.0.25.0	
Messenger	FACEBOOK.317180B0BB486_8xx8rvfyw5nnt	1950.4.225.0	
FileZilla 3.65.0	FileZilla Client	3.65.0	
f.lux	flux.flux	4.126	winget
GIMP 2.10.34-2	GIMP.GIMP	2.10.34	winget
GoToMeeting 10.19.0.19950	LogMeIn.GoToMeeting	10.19.0.19950	winget
Google Chrome	Google.Chrome	117.0.5938.150	winget
Greenshot 1.2.10.6	Greenshot.Greenshot	1.2.10.6	winget
Adobe InDesign 2023	IDSN_18_3	18.3	
Adobe Illustrator 2023	ILST_27_6_1	27.6.1	
Logitech Options	Logitech.Options	10.10.58	winget
Microsoft Teams (work or school)	MSTeams_8wekyb3d8bbwe	23257.2618.2432.4374	

Upgrade all Applications

Winget upgrade --all. **don't do this today

- Upgrades all applications on your upgrade list to the latest version shown in manifest.

```
Windows PowerShell
PS C:\Users\tony> winget upgrade --all
```

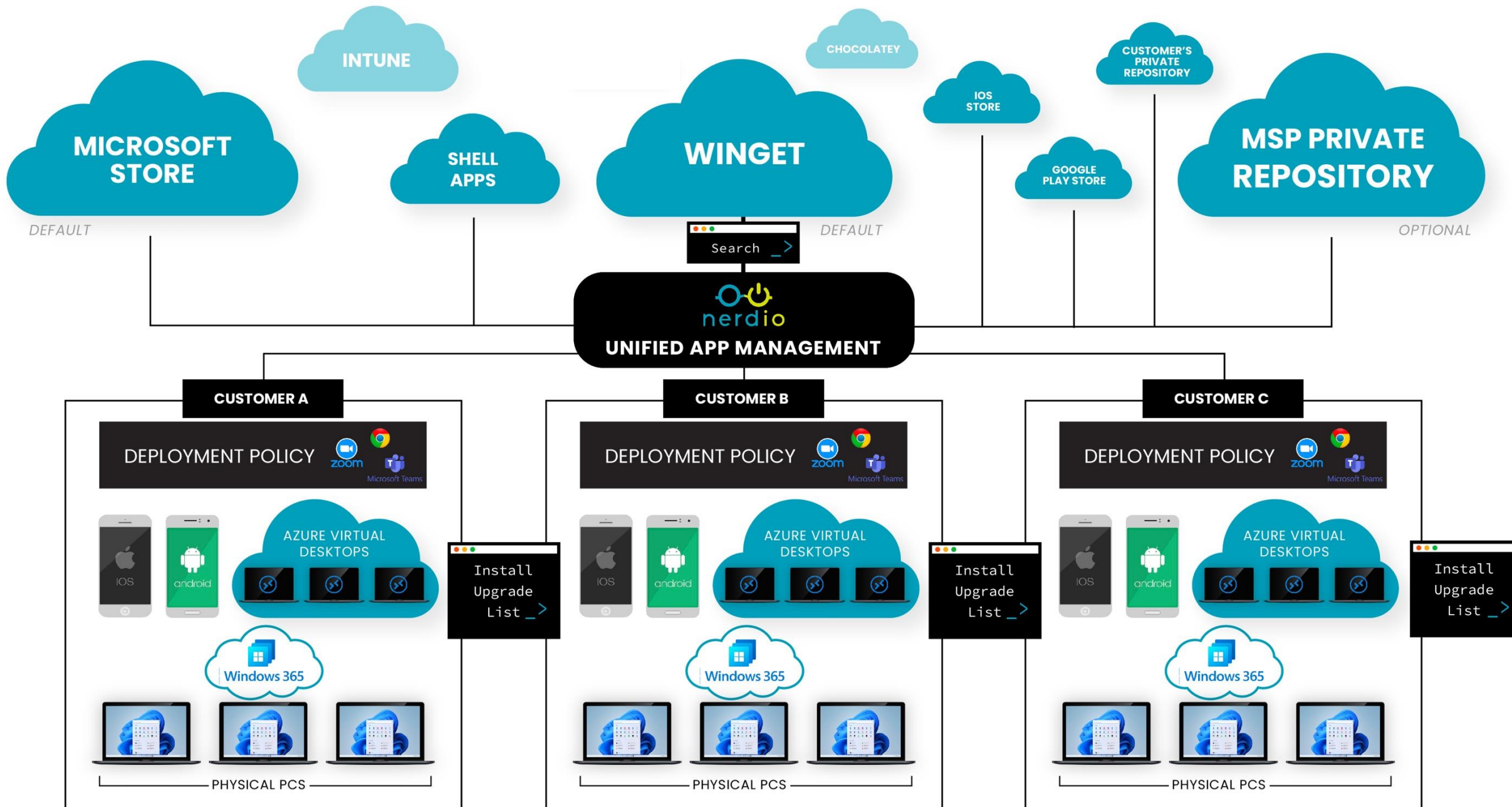
Name	Id	Version	Available	Source
AORUS ENGINE	GIGABYTE.AORUS-ENGINE	1.9.5.0	2.1.2.0	winget
Windows Terminal	Microsoft.WindowsTerminal	1.17.11461.0	1.18.2681.0	winget
OBS Studio	OBSProject.OBSStudio	26.1.1	29.1.3	winget
Microsoft .NET Runtime - 6.0.16 (x64)	Microsoft.DotNet.Runtime.6	6.0.16	6.0.22	winget
EA app	ElectronicArts.EADesktop	13.18.0.5531	13.27.0.5540	winget

```
6 upgrades available.

The following packages have an upgrade available, but require explicit targeting for upgrade:
Name Id Version Available Source
-----
Teams Machine-Wide Installer Microsoft.Teams 1.3.0.28779 1.6.00.27573 winget

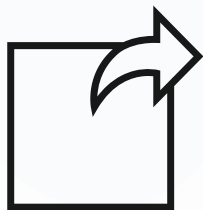
Installing dependencies:
This package requires the following dependencies:
- Packages
  Microsoft.UI.Xaml.2.8 [>= 8.2306.22001.0]
  Microsoft.VCRedist.2015+.x64
(1/5) Found AORUS ENGINE [GIGABYTE.AORUS-ENGINE] Version 2.1.2.0
This application is licensed to you by its owner.
Microsoft is not responsible for, nor does it grant any licenses to, third-party packages.
Downloading https://download.gigabyte.com/FileList/Utility/vga_utility_aorus_setup_v2.1.2.exe
An unexpected error occurred while executing the command:
Download request status is not success.
0x80190194 : Not found (404).

(2/5) Found Windows Terminal [Microsoft.WindowsTerminal] Version 1.18.2681.0
This application is licensed to you by its owner.
```

What are Shell apps?

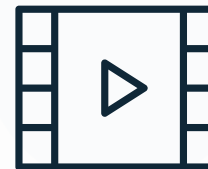
- Enables the creation of complex scripted deployments through policies
- Can deploy multiple components via PowerShell
- Can use the detection script feature to send success and failure status
- In most cases, used in large deployments, or where WinGet is not practical
- Native PowerShell scripts – WinGet CAN be called as part of the installation



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New to Azure?



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