



#POWERCON2024 What's new in Windows Server 2025

Nicola Ferrini Microsoft MVP



Agenda

- Installation
- Hotpatching
- Storage
- Hyper-V
- Networking
- Containers
- File Services
- Modern Server Experience

Installation

Hardware requirements

Requirements	Description
Processor	1.4 GHz 64-bit processor Compatible with x64 instruction set Supports NX and DEP, CMPXCHG16b, LAHF/SAHF, and PrefetchW
Memory/RAM	512 MB (2 GB for Server with Desktop Experience installation option) ECC (Error Correcting Code) type or similar technology, for physical host deployments
Disk Space	Minimum 32 GB (Windows Server 2025 using the Server Core installation option)
Network Requirements	An Ethernet adapter capable of at least 1 gigabit per second throughput Compliant with the PCI Express architecture specification
Additional	UEFI 2.3.1c-based system and firmware that supports secure boot Trusted Platform Module Graphics device and monitor capable of Super VGA (1024 x 768) or higher-resolution

Installation options and versions

- Server Core: This is the recommended installation option. It's a smaller installation that includes the core components of Windows Server and supports all server roles but does not include a local graphical user interface (GUI). It is used for deployments that are remotely managed with Windows Admin Center, PowerShell or other server management tools.
- Server with Desktop Experience: This is the complete installation and includes a full GUI. This option has a larger footprint than server core and is most preferred by organizations.
- Same versions as Windows Server 2022: Windows Server Standard, Windows Server Datacenter, Windows Server Datacenter: Azure Edition



Installation

New installation wizard

Mindows Server Setup				
Select langua	ge settings			
Language to install				
Time and c				
	🌌 Windows Server Setup			
	Select setu Install the latest version of	IP OPTION Windows Server, or repair your PC. If you're installin I be deleted.	g Windows Server, please note your	
	I wou	no delete.		
Hicrosoft		🖉 Windows Server Setup		
		Product key		
		The product knowledge of the state	- Louth- RVR - one is a second constant of	
		Enter Product		
	Previo	þashes will b	💰 Windows Server Setup	
			Select Image	
			Please select the image you want to install.	
		I want to use	Operating System:	
		I don't have a	Windows Server 2025 Standard Windows Server 2025 Standard (Desktop Experience) Windows Server 2025 Datacenter	
		Privacy staten	Windows Server 2025 Datacenter (Desktop Experience)	
		Microsoft		
			This option installs the full Windows graphical environment, consuming extra drive to use the Windows desktop or have an app that requires it.	space. It can be useful if you want
			This option installs the full Windows graphical environment, consuming extra drive to use the Windows desktop or have an app that requires it.	space. It can be useful if you want

Subscription based purchasing model

Simplify purchasing Windows Server:

- Simple experience to license Windows Server
- Billed through Azure Commerce (like Azure Stack HCI or SQL Server 2022)

	← Settings	- o ×
🖆 Windows Server Setup	Administrator Local Account	System > Activation
Product key The product key should be with the box the DVD came in or on your email receipt.	Find a setting Q	Windows Server 2025 Datacenter
It looks similar to this: XXXXX-XXXXX-XXXXX-XXXXXX-XXXXXX	System	
Enter Product key Dashes will be added automatically	8 Bluetooth & devices	E Activation state Active 🛇 🗸
	Network & internet	
	🥖 Personalization	Change product key Change
	Apps	
I want to use Windows Server pay-as-you-go	Accounts	Product ID 00491-60000-00422-AA256
I don't have a product key	🕥 Time & language	
Privacy statement	🕇 Accessibility	Product key XXXXX-XXXXX-XXXXX-XXXXX-7MMT6
	Privacy & security	
	Ø Windows Update	Give feedback

DEMO Installation

🎽 Windows Server Setup

Select Image

Please select the image you want to install.

Operating System:

Windows Server 2025 Standard Windows Server 2025 Standard (Desktop Experience) Windows Server 2025 Datacenter Windows Server 2025 Datacenter (Desktop Experience)

This option installs the full Windows graphical environment, consuming extra drive space. It can be useful to use the Windows desktop or have an app that requires it.

Microsoft Support Legal

Back

Hotpatching



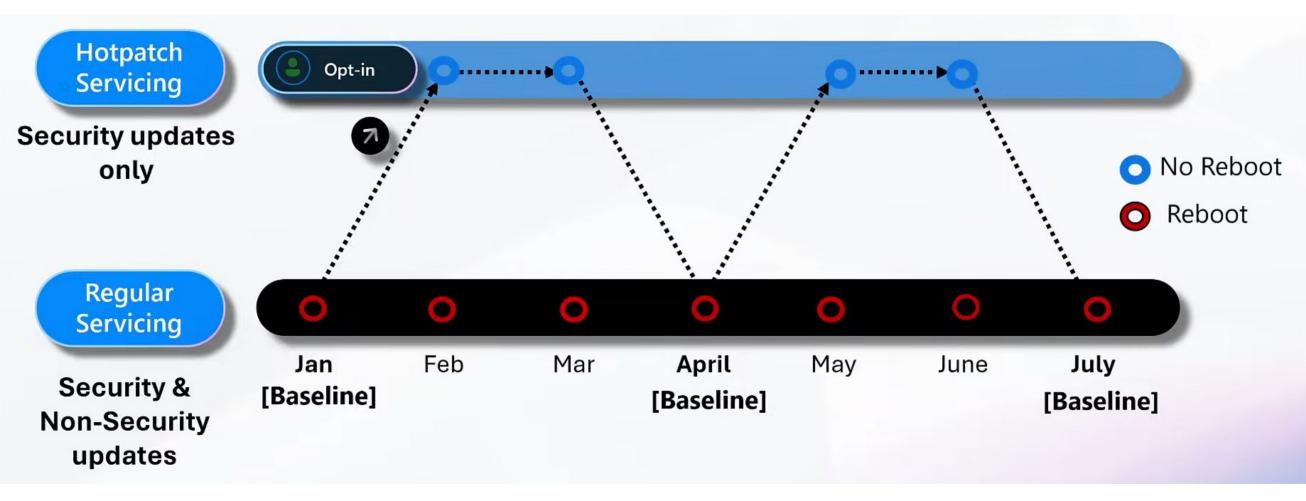
Install security patches without a reboot

Accomplished by modifying inmemory code without restarting the process



Hotpatch per Windows Server 2022 Azure Edition con Desktop Experience - ICT Power

Quarterly Release Cycle



Active Directory improvements

Security enhancements

LDAP support for TLS 1.3

LDAP uses the latest SCHANNEL implementation and supports TLS 1.3 for LDAP over TLS connections

LDAP encryption by default

All LDAP client communication utilizes LDAP sealing by default

Kerberos AES SHA256 and SHA384

The Kerberos protocol implementation is updated to support stronger encryption and signing mechanisms

Kerberos PKINIT support for cryptographic agility

Implementation is updated to supporting more algorithms

Improved security for confidential attributes

LDAP add, search, and modify operations involving confidential attributes when the connection is encrypted Legacy SAM RPC password change behavior

Kerberos is the preferred way to change domain user passwords

32k database page size optional feature

AD uses an Extensible Storage Engine (ESE) database since its introduction in Windows 2000 that uses an 8k database page size. The 8k architectural design decision resulted in limitations throughout AD

Moving to a 32k database page format offers a huge improvement in areas affected by legacy restrictions, including multi-valued attributes are now able to hold up to ~3,200 values

New DCs can be installed with a 32k page database and runs in an "8k page mode" for compatibility with previous versions. An upgraded DC continues to use its current database format and 8k pages.

Moving to 32k database pages is done on a forest-wide basis and requires that all DCs in the forest have a 32k page capable database.



Forest and Domain Functional Levels

The new functional level is used for general supportability and is required for the new 32K database page size feature.

Microsoft has no plans to retrofit functional levels for Windows Server 2019 and Windows Server 2022.

📥 Active Directory Domain Service	es Configuration Wizard	- 🗆 ×	📥 Active Directory Domain Service	s Configuration Wizard		– 🗆 ×
Domain Controlle	r Options	TARGET SERVER WINSERVER2025	Domain Controlle	r Options		TARGET SERVER WINSERVER2025
Deployment Configuration Domain Controller Options	Select functional level of the new forest and root domain Forest functional level: Windows Server 2025		Deployment Configuration Domain Controller Options	Select functional level of the new forest a	and root domain Windows Server 2016	
DNS Options Additional Options	Domain functional level: Windows Server 2025 Vindows Server 2025 V		DNS Options Additional Options	Domain functional level:	Windows Server 2025 ~	
Paths Review Options	Specify domain controller capabilities ✓ Domain Name System (DNS) server 		Paths Review Options	Specify domain controller capabilities ✓ Domain Name System (DNS) server	Windows Server 2016 Windows Server 2025	
Prerequisites Check Installation	 ✓ Global Catalog (GC) Read only domain controller (RODC) 		Prerequisites Check Installation	Global Catalog (GC) Read only domain controller (RODC)		
Results	Type the Directory Services Restore Mode (DSRM) password		Results	Type the Directory Services Restore Mod		
	Password:			Password:	*	
	Confirm password:			Confirm password:	e	
	More about domain controller options			More about domain controller options		
	< <u>P</u> revious <u>N</u> ext > <u>Install</u>	Cancel		< Pre	evious Next > Insta	II Cancel

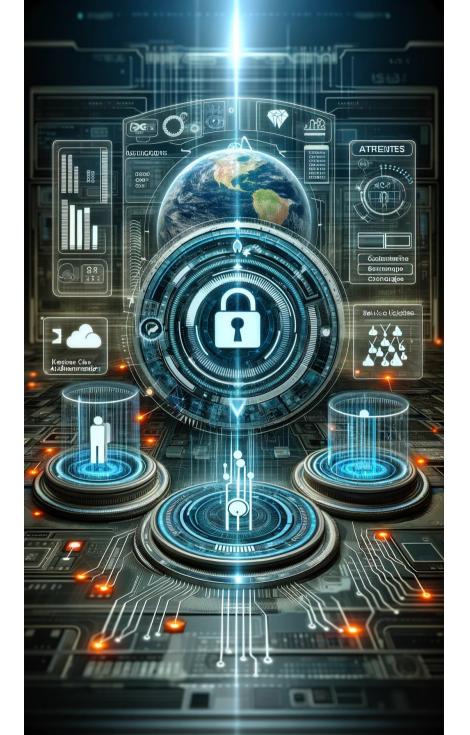
Livelli funzionali di Active Directory: a cosa servono ed implicazioni sulla sicurezza - ICT Power

Secure Kerberos authentication

Kerberos for more scenarios:

- Local KDC Kerberos Key Distribution Service now begin built-into Windows, not just Domain Controllers. A local KDC for Kerberos adds Kerberos support to local accounts.
- **IAKerb** a public extension to the industry standard Kerberos protocol that allows a client without line-of-sight to a Domain Controller to authenticate through a server that does have line-of-sight.

The evolution of Windows authentication | Windows IT Pro Blog

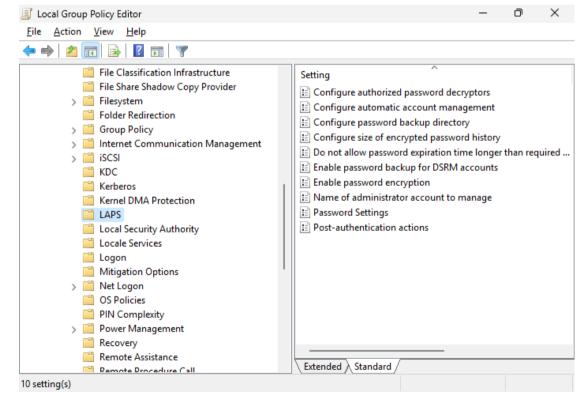


Windows Local Administrator Password Solution (LAPS)

Several features are introduced to Microsoft LAPS that bring the following improvements:

- New automatic account management feature
- New image rollback detection feature
- New passphrase feature
- Improved readability password dictionary

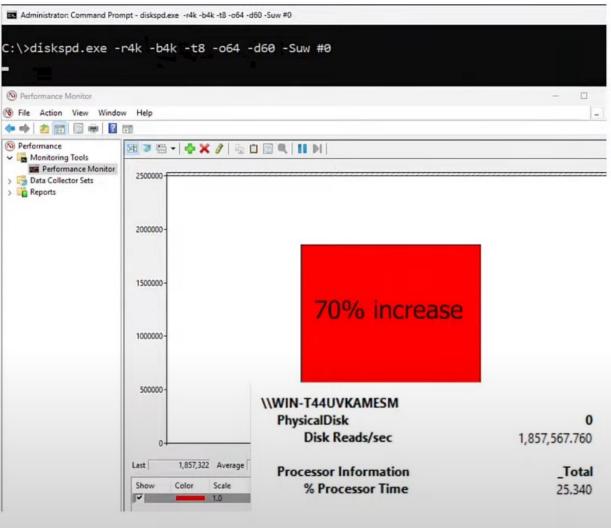
Note: Windows LAPS doesn't allow for customization of the built-in word lists nor the use of customer-configured word lists.





NVMe improvements

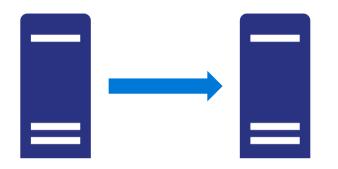
Administrator: Command Pre	mpt - diskspd.exe -r4k -b4k -t8 -o64 -d60 -Suw	/#0	
C:\>diskspd.exe ·	r4k -b4k -t8 -o64 -d60	-Suw #0	
() Performance Monitor () File Action View Winds () () () () () () () () () () () () () (×
Performance	 ፼፼ ⊅ @ • ♣ X / % □ @ !	R 11 H	
Monitoring Tools Performance Monitor Gata Collector Sets Reports	2500000		
	2000000-		
	1500000 -		
	1000000 -		
	500000-		
		DH0KKK710RF icalDisk	0
		Disk Reads/sec	1,148,091.887
	Show Color Sci Proce	essor Information	_Total
	1.0	% Processor Time	24.948



Windows Server 2022

Windows Server 2025 1.86M IOPs

Software-defined Storage enhancements from Azure Stack HCI







Storage Replica

Performance enhancements with <u>enhanced logs</u>

ReFS

ReFS optmized Deduplication and Compression

Storage Spaces

Thinly provisioned storage spaces

SR compression available in all Windows Server editions

Works great with VMs

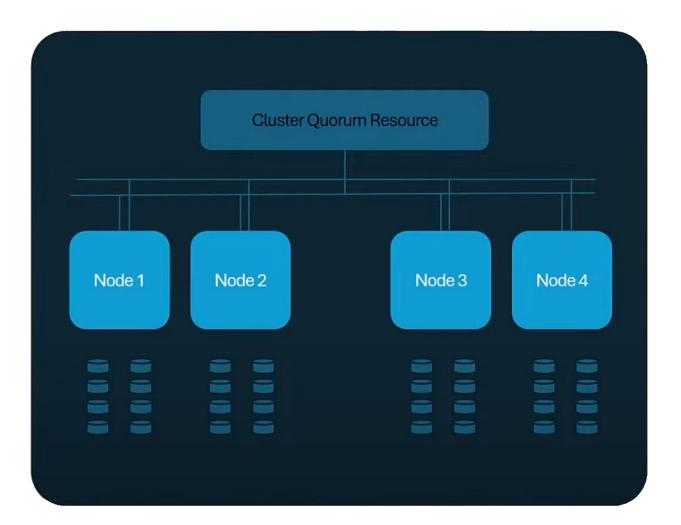
Stretch Cluster support

~60% of saved space for File Server ~90% of saved space for VHD/ISO/backups

Failover Clustering

Failover Clustering

- Cluster-aware Updating
 - Raliability and performance improvements
 - Upgrade form WS 2022 to WS 2025 with no downtime
- Workgroup cluster
 - Certificate-based VM Live Migration
- GPU-P VM Live Migration on a Failover Cluster
- Storage Spaces Direct (S2D) stretch clusters between two sites
 - Improved Storage Replica perfomance







Robust hardware-based virtualization and isolation

Hyper-V is the foundation of:

- Azure
- Azure Stack family
- Windows Server / Windows Client
- Containers with Hyper-V isolation
- Platform Security

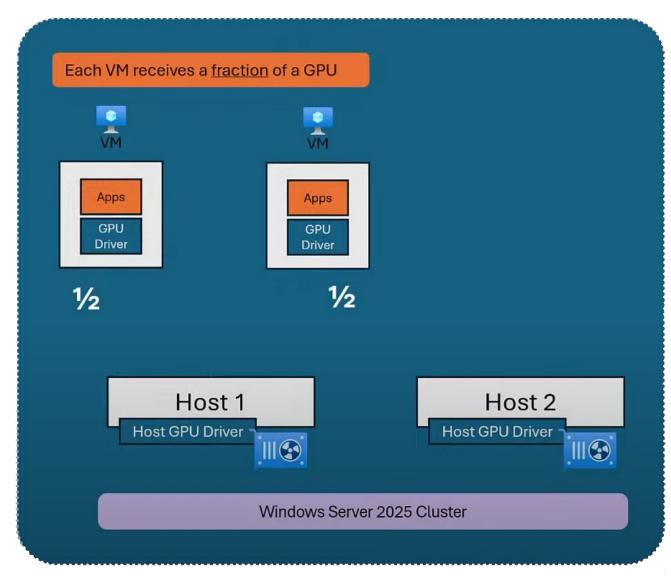


GPU Partitioning (GPU-P)

Share a GPU across multiple VMs

- Create GPU patritions
- Assign each partition to a VM that supports a set of users (multi-session)
- Management over PS and WAC

Support for Live Migration and Failover Clustering

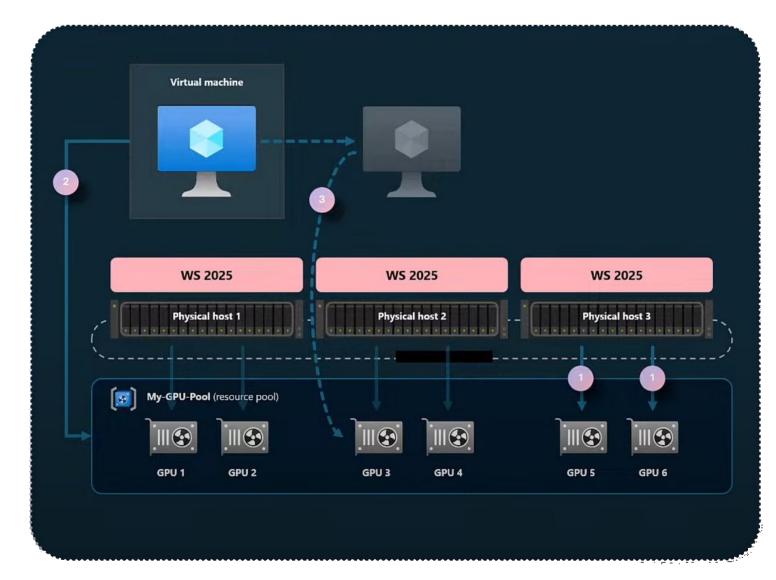


Partition and share GPUs with virtual machines on Hyper-V | Microsoft Learn

GPU Pools

GPU acceleration is provided via Discrete Device Assignment (DDA), which allows you to dedicate one or more physical GPUs to a VM.

- 1. On every node, crate PCI Express resource pool with same name and add GPUs to the pool
- 2. Assing VM to GPU Pool instead of individual GPU
- 3. During failover or move, cluster will start VM on another host if there are GPUs available in the pool



Use GPUs with clustered VMs on Hyper-V | Microsoft Learn

Dynamic Processor Compatibility

Improved in Windows Server 2025

Live migrating between servers with different processor capabilities

- Improved performance
- Increased granularity on processor compatibility
- Enhanced dynamic capabilities on SLAT capable processors

No need to order last-gen hardware for compatibility



< ----- Same Windows Server 2025 cluster ----->

Processor compatibility mode in Hyper-V | Microsoft Learn

Increased Scalability

Maximums for virtual machines

- 240 TB RAM for generation 2 VM
- 1 TB RAM for generation 1 VM
- 2048 vCPU for generation 2 VM
- 64 vCPU for generation 1 VM

Maximums for Hyper-V hosts

- 4 PB for hosts that support 5-level paging
- 256 TB for hosts that support 4-level paging
- 2048 logical processors per host





Networking



Network ATC

Adaptive Traffic Control is a feature designed to simplify and streamline the deployment and management of host networking

Reduce deployment time, complexity and errors



SDN Multisite

Native L2 & L3 connectivity for workloads in multiple locations

This update simplifies unified network policy management, making it easier to handle complex network setups in a hybrid environment



Network HUD

Head-Up Display enhances the visibility and management of network operations

It provides real-time analysis of network issues and offers prescriptive alerts or automatic remediation when possible.

Increase stability and optimize network performance for workloads

Windows Server hybrid and cloud: Software Defined Networking

Containers

Container flexibility

Windows Server 2025 enhances container support with better application **compatibility** and **performance**.

This includes more **flexibility** with **GPU configurations** and support for AI workloads, making it ideal for handling large-scale data processing tasks.

Portability is a feature of Windows Server Annual Channel for container hosts that allows users to move container images, and their associated data, between different hosts or environments without requiring any modifications.





SMB over QUIC

SMB (Server Message Block) over QUIC (Quick UDP Internet Connections) is a significant feature introduced in Windows Server 2025. This technology combines the traditional SMB protocol with the QUIC protocol to enhance security and performance for remote file sharing (over the Internet!).

- Encryption: Uses TLS 1.3 for secure connections
- **Low Latency**: Reduces latency for faster file transfers
- **Resilience**: Maintains connections effectively over network changes
- **Reduced Attack Surface**: Operates over UDP, reducing vulnerability to attacks
- Remote Work: Ideal for secure, remote file access
- Mobile and edge devices: Suitable for unpredictable network conditions
- **Configuration**: Managed through Group Policy and PowerShell
- Event logging: Detailed logging for monitoring and troubleshooting
- **Performance improvements**: Optimized for high-latency networks
- Enhanced security: Prevents identity theft and man-in-the-middle attacks
- Available in all editions: Standard, Datacenter, Azure Edition

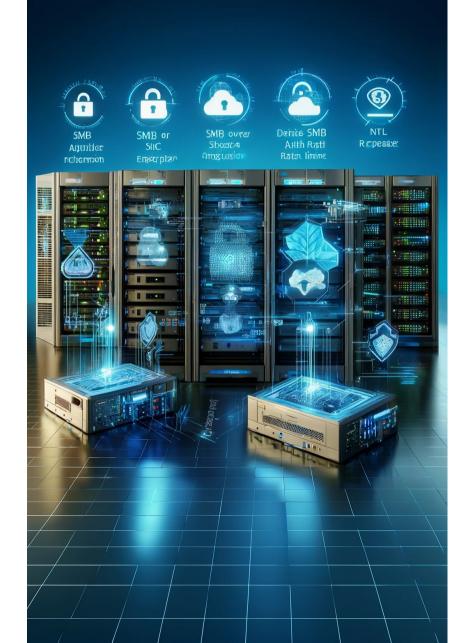
SMB over QUIC in Windows | Microsoft Learn



SMB Security improvements

Secure by default

- SMB signing
 - Signing required by default
 - Stop relay, attacker-in-the-middle, phishing
- Auth rate Limiter
 - Throttles bad NTLM password by default
 - Brute force attack prevention
- SMB firewall rule hardening
 - No longer opens NetBIOS ports
- SMB NTLM disable option
 - Granular control of remote NTLM
- SMB Dialect Control
 - Allow/refuse a range of SMB 2 & 3



Modernizing Windows Server Experience

Winget

Winget enables users to:

- Discover, install and upgrade applications
- Remove unwanted applications
- Configure installed applications
- It acts as the client interface to the Windows Package Manager service

Key features:

- Package management: Winget simplifies software management
- Command-Line interface: Use command prompt or PowerShell
- Open source: Winget is free and open-source

NicolaFerrini.it - Windows Package Manager: Installazioni semplificate delle applicazioni In Windows 10 e in Windows 11



🔿 🗶 Administrator: Windows Powe X + 🗸

Windows PowerShell

Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! htt

PS C:\Users\Administrator> winget search "Microsoft"

DEMO WINGET

OS upgrade using Windows Update

Upgrade from Windows Server 2022 to 2025 with Windows Update

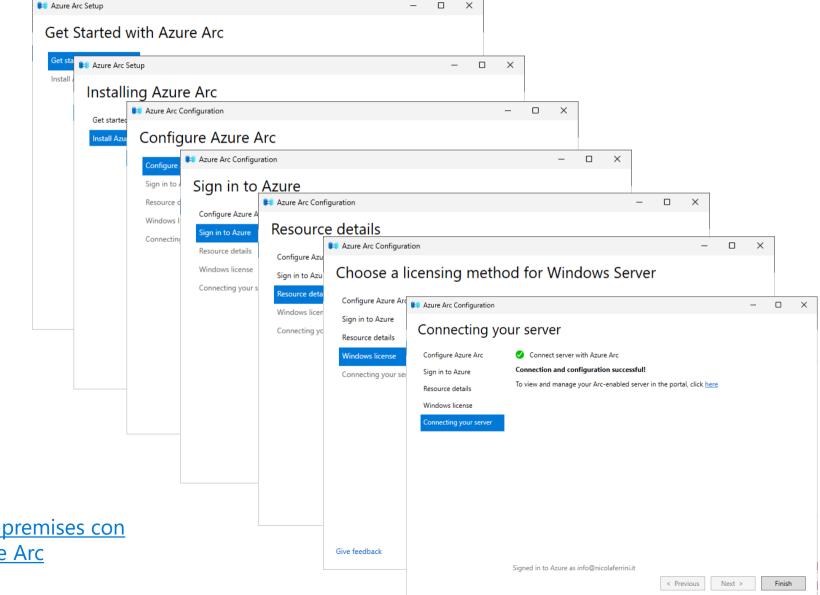
- Same experience like Windows 11
- Makes upgrading to Windows Server 2025 very simple!

10.216.116.76 - Remote Desktop Connection		- 🗆 X	10.216.116.76 - Remote Desktop Connection		
Settings		- a x	← Settings		- 0)
A Home	Windows Update		د Mome	Windows Update	
Find a setting	Some settings are managed by your organization (View policies)		Find a setting ρ	*Some settings are managed by your organization (View policies)	
Update & Security	Updates available Last checked: Today. 4:43 PM	Looking for info on the latest updates? Learn more	Update & Security	Restart required This update is ready to install! We need your help deciding when to restart so we can finish up.	Looking for info on the latest updates? Learn more
C Windows Update	Security Intelligence Update for Microsoft Defender Antivirus - KB2267602 (V Status: Installing - 0%	lersion 1.391.4159.0) Related links	C Windows Update	UUPBVT7 Optional update - build 10.3.15003.0.3 Status: Pending restart	Related links
色 Delivery Optimization	UUPBVT7 Optional update - build 10.3.15003.0.3	heck Storage	191 Delivery Optimization	Restart now Schedule the restart	Check Storage
Windows Security	The next version of Windows is here with new features and security improver and install", and the update will begin after other updates in your queue hav may need to restart.		Windows Security	"We'll automatically download and install updates, except on metered connections (where charges may apply). In that case, we'll automatically download only those updates required to keep Windows	OS build info
P Troubleshoot	Download and install		🖉 Troubleshoot	running smoothly.	
과 Recovery O Activation II For developers	*We'll automatically download and install updates, except on metered conne apply). In that case, we'll automatically download only those updates require running smoothly. Pause updates for 7 days Visit Advanced options to change the pause period			Pause updates for 7 days Visit Advanced options to change the pause period Change active hours Currently B300 AM to 5:00 PM. View update history See updates installed on your device	
	 Change active hours Currently BOO AM to 5:00 PM View update history See updates installed on your device Advanced options Additional update controls and settings 	About Windows Windows Server* 2022 Microsoft Windows Server Version 21PC (05 Build 20348, 1787) @ Microsoft Corporation. All rights reserved. The Windows Server 2022 Diffacence and other restricts are protected by trademark and other countries/regions. This product is located under the <u>Harosoft Software licence</u> <u>Terms to:</u> user name crg name.		update With new fea little longer t	stall the newest Windows feature atures and apps, this one could take a than other updates. Not now? Select hit and we'll do it overnight.

Get Hybrid with Azure Arc

Windows Server 2025 brings closer integration with Azure services, particularly through Azure Arc. This makes it easier to manage hybrid and multicloud environments, extending Azure's capabilities to onpremises data centers

<u>Proteggere e gestire le macchine on-premises con</u> <u>Microsoft Defender for Cloud e Azure Arc</u>



DEMO Azure Arc & Windows Admin Center

Microsoft Azure		ture.tokencaching=true&feature.internalgraphapiversion=tru
 Hollie Y WINSERVER2025 * ··· Machine - Azure Arc Search Search Overview Activity log Activity log Access control (IAM) Tags X Diagnose and solve problems Settings Connect Windows Admin Center (preview) Security Security Security Extensions III Properties Locks Operations Operations Capabilities Recommendations Tutorials Extensions III Properties Locks Operations 	Microsoft Azure	∽ Search resources, services, and docs (G+/)
 Coverview Activity log Activity log Activity log Access control (IAM) Tags Tags Diagnose and solve problems Diagnose and solve problems Settings Connect Windows Admin Center (preview) Security Security Extensions III Properties Locks Operations Correct Enable periodic assessment 	+	
 Subscription (move) : Microsoft Partner Network Settings Settings Connect Windows Admin Center (preview) Security Security Security Extensions III Properties Locks Operations Operations Subscription (move) : Microsoft Partner Network Subscription ID : Agent version : 1.42.02699.1697 Tags (edit) : Add tags Capabilities Recommendations Tutorials III Properties Locks Operations Operations Subscription (move) : Microsoft Partner Network Subscription ID : Agent version : 1.42.02699.1697 Tags (edit) : Add tags Capabilities Recommendations Tutorials III Properties Locks Dependions Enable periodic assessment 	Overview Activity log Access control (IAM)	Resource group (: <u>POWERCON2024</u> Status : Connected
 Windows Admin Center (preview) Security Security Extensions III Properties Locks Locks Operations Operations 	 Diagnose and solve problems Settings 	Subscription (move) : Microsoft Partner Network Subscription ID :
 Properties Locks Locks Operations Enable periodic assessment 	 Windows Admin Center (preview) Security 	
Operations Device a set of the set	Properties Locks	Customize updates for your Arc-
	Operations	1 Enable periodic assessment

Windows Server Insiders

Try Windows Server 2025

Planning on releasing a new preview build every two weeks!

Post your feedback!

Windows Server Insiders Windows Server Insiders Community discussions for Windows Insiders for Business Program. 821 Discussions Home > Windows Server > Windows Server Insiders Windows Server Insiders 821 Discussions ... Sellow △ Subscribe Pinned Posts ^ Subject Post time Announcing Windows Server Preview Build 26236 \$ 8 12 Jun 2024 Stacev Clements (@StacevCL_RM Windows Server Datacenter: Azure Edition preview build 26212 now available in Azure Q \$2 05 Jun 2024 Stacey Clements (@StaceyCL_RM) ☆ Q Windows Server 2025 Public Preview Stoory Classical Control of Contro 22 May 2024 Stacey Clements (@StaceyCL RM





Grazie

Nicola Ferrini Microsoft MVP NicolaferriniNicolaFerrini.itnicolaferrini