Microsoft

Discover what's new in Windows Server 2025

Optimize for the future while delivering the security, performance, and agility your organization needs today with Windows Server 2025.

The latest Windows Server helps you adapt to business imperatives on-premises and in the cloud with seamless hybrid, multicloud and edge capabilities. Stay ahead of increasingly sophisticated cybersecurity threats with advanced, multilayered security features that help you manage and protect your environment more efficiently. Windows Server 2025 also offers the high-performing, reliable infrastructure foundation you need, with improvements in scalability, ease of use, and features that enable AI, ML and other innovations.

GET STARTED

Take your next steps to upgrade to Windows Server 2025

- Evaluate for free
- Install or upgrade

Advanced, multilayered security

Cyber attacks are growing more sophisticated and cyber criminals continue to take advantage of both technical and human weaknesses in an organization's IT security. Windows Server 2025 offers multilayered, built-in protections from core-to-cloud that are a culmination of years of Microsoft security expertise. Just a few highlights of Windows Server 2025 security and resiliency improvements include:

- Identity management is essential to any security strategy, and **Active Directory** in Windows Server 2025 now supports LDAP encryption by default, Kerberos protocol implementation updated to support stronger encryption, and increased scale: 32K database page size.
- **Enhanced SMB (Server Message Block) capabilities** to improve secure file sharing, including SMB over QUIC now in all editions, SMB Authentication rate limiter to help prevent brute force attacks, and SMB firewall rule hardening.
- Avoid vulnerabilities from weak passwords on service accounts with **Delegated Managed Service Account (DMSA)**, which offers better protection through machine-bound identity and integration with Credential Guard.
- **Virtualization-based security (VBS)**. Help protect from administrator-level cryptographic key theft with VBS key protection; Isolate sensitive workloads with VBS enclaves.
- **Secured core server technology:** Windows Server 2025 continues to raise the bar on hardware security with secured-core server capabilities that help defend against firmware-level attacks.

Discover Windows Server 2025

Why Windows Server on Azure?

With Windows Server and Azure together, your organization can take advantage of all the Microsoft Cloud has to offer while using familiar tools and consistent security, identity, and management features.

Get more with Windows Server on Azure:

A global infrastructure
Helping you meet your specific data residency and compliance requirements; there are 60+ Azure regions – more than any other cloud provider.

Save with Azure Hybrid Benefit
A licensing offer that helps you save when you migrate to Azure. Windows Server customers with Software Assurance can save more than 40% on compute alone, and up to 80% when combined with Azure Reserved VM Instance (details).

Trusted launch VMs and Confidential VMs
Windows Server guests can run on confidential VMs in Azure.

Industry-leading cloud security
Microsoft Defender for Cloud streamlines process of meeting regulatory compliance requirements and monitoring the security of your servers. Available on Azure and with Azure Arc.

Azure VMware Solution
Using VMware for virtualization of Windows Servers? Use Azure VMware Solution to help move or extend VMware environments to Azure while maintaining operational consistency.

Save money when you need Extended Security Updates
Get free Extended Security Updates for 3 years after end of support in Azure, which includes destinations such as Azure Stack HCI and Azure VMware Solution to migrate on your own terms.

Cloud agility anywhere

With Windows Server 2025, it's now easier to bridge on-premises and cloud-based servers and get the power of Azure delivered to your hybrid, multicloud and edge environment with Azure Arc.

By connecting Windows servers to Azure Arc, you can manage complex IT environments and adapt more quickly to rapidly shifting business needs. Advantages include:

- **Faster security updates, with fewer restarts.** Hotpatching is now available for on-premises Windows Server 2025, when connected to Azure Arc*.
- **Enhanced management capabilities** through Azure Arc, including control plane functionality at no extra cost, which includes inventory organization and Azure Resource Graph.
- **Access additional Azure services** through Azure Arc, including Azure Update Manager and Microsoft Defender for Cloud*.
- A new, **flexible pay-as-you-go option** for customers who do not have unlimited virtualization but need to scale up with additional virtual machines.
- **Reduce networking deployment time and configuration drift** with Network ATC in Windows Server 2025.

High-performance, future-ready infrastructure

Help your organization take leaps ahead in performance, scalability, and innovation. Windows Server 2025 combines increased efficiency with a refreshed interface and new capabilities that enable AI and ML.

- **Increased scalability.** Larger virtual machines now support 240 TB of RAM and support for 2048 virtual processors.
- **AI-Ready GPU partitioning** across VMs with live migration and failover clustering; built to support AI workloads and inferencing at the edge.
- **More efficient storage.** ReFS (Resilient File System) optimized deduplication and compression (for active workloads like VMs), Storage Replica performance enhancements.
- **Easier upgrades, better reliability and application compatibility.** Operating system upgrades now available through Windows Update; dynamic processor compatibility for live migration between servers with different processor capabilities.
- **Modern and convenient.** A refreshed interface with a more consistent Windows experience, including WiFi and Winget command line interface package manager.

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Windows Server 2025 Comparison Guide

Windows Server 2025 delivers advanced multi-layer security and resiliency, hybrid capabilities with Azure, and a high-performance, future ready infrastructure with a flexible platform for new CPU/GPU intensive workloads like machine learning and artificial intelligence. Use this guide to understand the exciting new features in Windows Server 2025.

How to use this guide

This comparison guide is intended for business decision makers, technical decision makers, solution architects, and IT professionals to help communicate the differences between the Windows Server version they are running today and the latest version available from Microsoft. The guide compares selected features of Microsoft Windows Server 2019, Windows Server 2022, and Windows Server 2025.

Comparison matrix

The guide walks through three key capability areas to show the evolution of relevant features across Windows Server versions. A partial score indicates that the feature has some functionality in the specified version or that it may be available in a single edition only, such as Azure Edition. The legend for this notation is given in the following table.

Feature	Not supported	Partly supported	Mostly supported	Available
Feature Name Feature description				

Advanced, multi-layer security

Public and private sectors continue to suffer major data breaches, at an average cost of $4.35 million in 2022. (https://www.ponemon.org/). As cybersecurity threats escalate and the cost of incidents grow, security continues to be a top priority for customers. Windows Server 2025 includes enhanced security features with Secured-core server and secure connectivity.

Feature & Description	Windows Server 2019	Windows Server 2022	Windows Server 2025
Secured-Core Server and Hotpatching			
Overview Secured-core server brings together powerful threat protections for multi-layer security across hardware, firmware, and the operating system. Hotpatching allows you to secure the platform running your apps without downtime.			
Hotpatch - Windows Server Datacenter: Azure Edition Windows Server Hotpatch allows you to install updates to your Windows Server Datacenter: Azure Edition virtual machines on Azure/Azure Stack HCI without requiring a reboot.	○	●	●
Arc-enabled Hotpatch – Windows Server Standard/Datacenter This Arc-enabled feature allows you to install updates to your Windows Server virtual machines outside of Azure without requiring a reboot.	○	○	●
Credential Guard Part of secured-core server, this feature can be enabled as an option to provide preventative defense for sensitive assets.	◔	●	●
Credential Guard by default Now enabled by default on devices that meet the requirements.	○	○	●
Active Directory			
Overview Active Directory (AD) provides a framework for managing and securing a network's distributed resources. AD organizes and centrally manages network objects in a hierarchical structure, including users, computers, servers, and printers. AD integrates security through logon authentication and access control to objects in the directory. AD is a critical component for management and authentication in organizations.			
32k database page size option A 32k database page format offers a huge improvement in areas affected by legacy restrictions including multi-valued attributes which are now increased 2.5x.	○	○	●
AD object repair AD now allows enterprise administrators to repair objects with missing core attributes SamAccountType and ObjectCategory.	○	○	●

Feature & Description	Windows Server 2019	Windows Server 2022	Windows Server 2025
Channel binding audit support Administrators can identify devices in the environment that do not support or fail channel binding validations	○	○	●
DC-location algorithm improvements Provides new functionality for mapping short NetBIOS-style domain names to DNS-style domain names	○	○	●
Improved algorithms for Name/Sid Lookups Local Security Authority (LSA) Name and Sid lookup use Kerberos authentication and DC Locator algorithm.	○	○	●
Improved security for confidential attributes DCs and AD LDS instances only allow LDAP to add, search, and modify operations involving confidential attributes when the connection is encrypted.	○	○	●
Kerberos AES SHA256 and SHA384 The Kerberos protocol implementation is updated to support stronger encryption and signing mechanisms with support for RFC 8009.	○	○	●
Kerberos PKINIT support for cryptographic agility Updated to support more algorithms and removing hardcoded algorithms.	○	○	●
LDAP encryption by default All LDAP client communication after a Simple Authentication and Security Layer (SASL) bind utilizes LDAP sealing by default.	○	○	●
LDAP support for TLS 1.3 LDAP uses the latest SCHANNEL implementation and supports TLS 1.3 for LDAP over TLS connections.	○	●	●
NUMA support AD DS now takes advantage of Non-uniform Memory Access (NUMA) capable hardware by utilizing CPUs in all processor groups.	○	○	●
Replication priority order AD now allows administrators to increase the system calculated replication priority with a particular replication partner for a particular naming context.	○	○	●

Feature & Description	Windows Server 2019	Windows Server 2022	Windows Server 2025
Windows Local Admin Password Solution			
Windows Local Administrator Password Solution (LAPS) Windows LAPS helps organizations manage local administrator passwords on their domain-joined computers. It automatically generates unique passwords for each computer's local administrator account, stores them securely in AD, and updates them regularly.			
Automatic account management feature The latest update allows IT admins to create a managed local account with ease. With this feature, you can customize the account name, enable, or disable the account, and even randomize the account name for enhanced security.			
Image rollback detection feature Windows LAPS now detects when an image rollback occurs. If a rollback does happen, the password stored in AD may no longer match the password stored locally on the device. Rollbacks can result in a "torn state" where the IT admin is unable to sign into the device using the persisted Windows LAPS password.			
Passphrase feature IT admins can now utilize a new feature in Windows LAPS that enables the generation of less complex passphrases.			
Improved readability password dictionary Windows LAPS introduces a new PasswordComplexity setting. This feature allows you to customize LAPS to use all four-character categories (upper case letters, lower case letters, numbers, and special characters) like the existing complexity setting of 4. However, with the new setting of 5, the more complex characters are excluded to enhance password readability and minimize confusion.			
Secured Connectivity			
Overview Secured connectivity adds an additional layer of security during transport for advanced protection and includes improvements to hypertext transfer protocol secure (HTTPS), transport layer security (TLS), and Secure Message Block (SMB).			

Feature & Description	Windows Server 2019	Windows Server 2022	Windows Server 2025
Transport Layer Security 1.3 Transport Layer Security (TLS) 1.3 is the latest version of the internet's most widely deployed security protocol, which encrypts data to provide a secure communication channel between two endpoints.			
SMB over QUIC allows on-premises, mobile and telecommuter the benefits of the QUIC, which provides low-latency, encrypted connections over the internet.			
SMB over QUIC auditing SMB over QUIC client connection auditing captures events that are written to the event log.			
SMB Signing and Encryption Auditing Administrators can enable auditing of the SMB server and client for support of SMB signing and encryption.			
SMB NTLM Disable SMB NTLM Disable feature is designed to enhance security by blocking NTLM (NT LAN Manager) authentication for SMB (Server Message Block) connections & includes both Group Policy & PowerShell.			
SMB Firewall Rule Hardening SMB Firewall Rule Hardening is a security feature designed to enhance the protection of SMB traffic. Key aspects include hardened security defaults, minimal port exposure mitigation of unauthorized access by restricting access to SMB ports and integration with other security features like SMB signing and NTLM deprecation to provide a comprehensive security posture.			
Local Kerberos. Local Kerberos introduces a local Key Distribution Center (KDC) to enhance authentication security, especially for environments where traditional domain-based Kerberos is not feasible. Key aspects include Local KDC which allows for Kerberos authentication using local accounts, eliminating the need for NTLM in many scenarios. IAKerb which facilitates Kerberos authentication without requiring DNS or DCLocator services. Enhanced security by leveraging Kerberos, it reduces the reliance on NTLM.			

Feature & Description	Windows Server 2019	Windows Server 2022	Windows Server 2025
SMB Authentication Rate Limiter The SMB (Server Message Block) authentication rate limiter is a feature designed to address brute force authentication attacks. To combat this, the SMB server service uses the authentication rate limiter to implement a delay between each failed NTLM or PKU2U-based authentication attempt.	○	○	●
SMB Dialect Control SMB (Server Message Block) dialect control is a feature that allows administrators to manage the SMB2 and SMB3 dialects in Windows Server. Administrators can specify the SMB protocols used, blocking older, less secure, versions from connecting to the server. This can be configured using Group Policy or PowerShell.	○	○	●
SMB Alternative Ports You can use the SMB client to connect to alternative TCP, QUIC, and RDMA ports than their IANA/IETF defaults of 445, 5445, and 443. This can be configured via Group Policy or PowerShell.	○	○	●
Post-Quantum Resilient Kerberos is an advanced security feature designed to protect Kerberos authentication against potential threats posed by quantum computing. This feature incorporates cryptographic algorithms that are resistant to quantum attacks, ensuring that Kerberos authentication remains secure even as quantum computing advances. The post-quantum resilient Kerberos integrates smoothly with existing Kerberos infrastructure, providing enhanced security without requiring significant changes to current systems.	○	○	●
Remote Mailslots Deprecated and disabled by default Remote Mailslots are deprecated and disabled by default for SMB and for DC locator protocol usage with Active Directory.	○	○	●
Routing and Remote Access Services (RRAS) Hardening. By default, new Routing and Remote Access Services (RRAS) setups do not accept VPN connections based on PPTP and L2TP protocols. You can still enable these protocols if necessary.	○	○	●

Hyper-V, AI, Performance

Feature & Description	Windows Server 2019	Windows Server 2022	Windows Server 2025
Overview Hyper-V is Microsoft's hypervisor used to power Azure, Azure Stack, Windows, and Windows Server. It is used for virtualization, security, containers, and AI enablement.			
Hyper-V GPU Partitioning (GPU-P) GPU partitioning allows you to share a physical GPU device with multiple virtual machines (VMs). Instead of allocating the entire GPU to a single VM, GPU partitioning assigns dedicated fractions of the GPU to each VM.	○	○	●
Hyper-V GPU-P High Availability GPU-P with HA ensures that in the case of unplanned downtime, a VM with GPU-P is automatically enabled on another cluster node.	○	○	●
Hyper-V GPU-P Live Migration GPU-P Live Migration provides a solution to move a VM (for planned downtime or load balancing) with GPU-P to another node whether it is standalone or clustered.	○	○	●
Hyper-V Discrete Device Assignment (DDA). Hyper-V DDA is a feature that allows you to pass an entire PCIe device directly into a virtual machine (VM). By doing so, you can achieve high-performance access to devices like NVMe storage or graphics cards from within the VM while leveraging the device's native drivers.	●	●	●
Hyper-V DDA Pools A way to manage and allocate GPU resources in a Hyper-V HA cluster.	○	○	●
Hyper-V Dynamic Processor Compatibility A feature that allows you to move a running virtual machine (VM) or save its state between virtualization hosts that use different generations of processors while delivering the maximum performance.	○	○	●
Hyper-V Workgroup Clusters Hyper-V Workgroup clusters are a special type of Windows Server failover cluster where the Hyper-V cluster nodes are not members of an Active Directory domain.	○	○	●

Feature & Description	Windows Server 2019	Windows Server 2022	Windows Server 2025
Hyper-V Workgroup Cluster Live Migration The ability to live migrate VMs in a Workgroup Cluster.	○	○	●
Network ATC Network ATC simplifies the deployment and management of network configurations for clusters. It provides an intent-based approach to host network deployment, allowing you to automate the intended configuration with continuous drift remediation.	○	○	●
Hyper-V Scalability Industry leading scalability. Up to 4 Petabytes of memory and 2048 logical processors per host. Up to 256 TB of memory and 2048 virtual processors per VM.	◔	◑	●

Storage

Feature & Description	Windows Server 2019	Windows Server 2022	Windows Server 2025
SAN Support Block based external storage access via Fibre Channel or iSCSI.	●	●	●
NAS Support File based external storage access via SMB 3.0.	●	●	●
Storage Replica Compression Storage Replica Compression reduces the amount of data transferred over the network during replication.	○	◑	●
Storage Replica Enhanced Log Enhanced Logs help the Storage Replica log implementation to eliminate the performance costs associated with file system abstractions, leading to improved block replication performance.	○	○	●
ReFS Native Storage Deduplication & Compression ReFS Native storage deduplication and compression are techniques used to optimize storage efficiency for both static and active workloads such as file servers or virtual desktops.	○	○	●

Feature & Description	Windows Server 2019	Windows Server 2022	Windows Server 2025
Thinly Provisioned Storage Spaces Direct Thinly Provisioned Storage Spaces Direct are a way to allocate storage resources more efficiently and avoid costly overallocation by allocating from the pool only when needed in a cluster.	○	○	●
Convert fixed to thin provisioned volumes Converting from fixed to thin provisioned volumes returns any unused storage back to the pool for other volumes to leverage.	○	○	●
Adjustable Storage Repair Adjustable Storage Repair is a feature that allows administrators to fine-tune the speed and resource allocation for storage repair and resynchronization processes. Key aspects include Customizable Repair Speed, administrators can adjust the speed of storage repair to balance between maintaining virtual machine (VM) performance and ensuring data integrity. Windows Admin Center Integration to easily manage the desired repair speed. Resource Allocation by adjusting the repair speed, you can allocate more resources to either the repair process (for faster data recovery) or to active workloads (to maintain performance).	○	●	●
Storage Spaces Direct Campus Clusters Campus clusters are an advanced feature designed to enhance the resilience and availability of services across geographically dispersed locations. Key aspects include Geographical Distribution: Campus clusters allow you to set up clusters that span multiple physical locations, providing high availability and disaster recovery capabilities. This feature includes support for 2 or 3-way mirrors, which means data is replicated across three different nodes, ensuring data integrity and availability even if multiple nodes fail.	◔	◔	◔

Azure Arc and Hybrid

Extend your datacenter to Azure for greater IT efficiency and take advantage of cloud innovation with your on-premises investments — while you enjoy improved tools to help manage servers wherever they are.

Feature & Description	Windows Server 2019	Windows Server 2022	Windows Server 2025
Azure Arc Connecting to Azure Arc enables customers to manage, secure, and govern Windows Server on-premises, at the edge, or in multi-cloud environments from a single control plane in Azure. Brings in Azure management capabilities (some at additional cost) for those servers.			
Simplified Azure Arc Setup Azure Arc setup feature-on-demand is installed, which offers a user-friendly wizard interface and a system tray icon in the taskbar to facilitate the process of adding servers to Azure Arc.			
Native Windows Server SDN Network Controller Microsoft SDN has a new native Network Controller plane that is deployed as clustered services on the hosts and no longer requires VMs. Network Controller is now always up to date when Windows Server is patched.			
Software Defined Networking Multisite Software-Defined Multisite is a feature that enhances network management and connectivity across multiple locations. Key aspects include: Native L2 and L3 Connectivity to provides native Layer 2 (L2) and Layer 3 (L3) connectivity for workloads across different sites. Unified Network Policy Management: This feature allows for unified management of network policies, making it easier to maintain consistent security and performance standards across all sites. Hybrid and Multicloud Support: It integrates well with hybrid and multicloud environments, allowing for flexible and scalable network configurations.			
SMB Compression SMB compression allows an administrator, user, or application to request on-the-fly compression of files as they transfer over the network. Compressed files will consume less network bandwidth and take less time to transfer.			

Feature & Description	Windows Server 2019	Windows Server 2022	Windows Server 2025
Storage Migration Service (SMS) Helps inventory and migrate data, security, and configurations from legacy systems to Windows Server or a cloud virtual machine. Starting with Windows Server 2022, customers can integrate SMS with Azure File Sync and migrate to low-latency private cloud servers or the bottomless cloud storage in Azure while reducing on-premises storage footprint. SMS migrates file servers from Windows Server, Windows clusters, Samba, and starting in Windows Server 2022—NetApp FAS arrays.	◔	●	●

Windows Server Desktop Experience and Upgrades

Feature & Description	Windows Server 2019	Windows Server 2022	Windows Server 2025
Broadest Application Compatibility Validation Expanded Microsoft application testing to verify with top industry applications.	◔	◔	●
Windows Server Upgrade Support Windows Server Upgrade supports N-2 upgrades where “N” is a major version. (For example, upgrading from Windows Server 2019 to Windows Server 2025).	●	●	●
Windows Server Upgrade Support Windows Server Upgrade supports N-4 upgrades where “N” is a major version. (For example, upgrading from Windows Server 2012R2 to Windows Server 2025).	○	○	●
Windows Shell Desktop shell experience conforms to the style and appearance of Windows 11.	○	○	●
In-Place Upgrade via Windows Update Perform upgrades via Windows Update to newer versions.	●	●	●
Windows Terminal A powerful and efficient multi-shell application for command-line users.	○	○	●

Feature & Description	Windows Server 2019	Windows Server 2022	Windows Server 2025
Dtrace A command-line utility that enables users to monitor and troubleshoot their system's performance in real-time without any need to modify the code itself.	○	○	●
WinGet A command line Windows Package Manager tool that provides comprehensive package manager solutions for installing applications on Windows devices	○	○	●
Wi-Fi It is easier to enable wireless capabilities for edge deployments as the Wireless LAN Service feature is now installed by default	◐	◐	●
Flighting. Allows users to receive Windows Server flights similar to Windows client.	○	○	●
File Compression A new compression feature that supports ZIP, 7z, and TAR compression formats with specific compression methods for each.	○	○	●
Feedback Hub Submitting feedback or reporting problems encountered while using Windows Server 2025 can now be done using the Windows Feedback Hub.	○	○	●
Windows Admin Center v2 Windows Admin Center is a browser-based management tool designed to manage Windows Servers, clusters, and hyper-converged infrastructure. It supports both client and server deployments with & without high availability.	●	●	●

Containers

Feature & Description	Windows Server 2019	Windows Server 2022	Windows Server 2025
Container Image Portability Container base image portability ABI. Run Windows Server 2022 containers on Windows Server 2025 without upgrading the base image.			
Windows Server Annual Channel (preview) Get the latest OS innovations with annual updates to Windows Server. Combined with Container Image Portability, your container images remain the same, but the container host benefits from the latest advancements. Use Windows Annual Channel for Containers on Azure Kubernetes Service (AKS) - Azure Kubernetes Service | Microsoft Learn			
Reduced Image Size Container images are smaller and will remain smaller with optimized monthly updates. Exact size will be available when generally available.			
Improved App Compat for Nano Server Nano Server, the smallest and most secure container image, can now support some applications that previously required Server Core.			
Networking Control Path Performance Performance improvements made to the networking control path to reduce latency, increase throughput, and improve reliability			

Get started with Windows Server 2025

Windows Server product page

Evaluate Windows Server