

# Windows Server 2022 Version Comparison

Smarter  
technology  
for all

Lenovo

## Why Upgrade?

Eventually, you'll need to upgrade your OS. Outdated security and a shrinking support window are just a few reasons. The question is, what do you upgrade to? Should you slowly work your way up the Windows OS chain or jump straight to Windows Server 2022?

### Good news.

We know you don't have the time to deeply research the past versions of Windows Server. That's why we've done it for you. We organized our research into an easy-to-read, at-a-glance chart, below.

## Why Lenovo?

We have your back. Lenovo puts customers first, and that means we offer reliable servers and support for our products. This is important to us, so we strive to be the best. We're rated #1 in server reliability for seven years and counting, and provide an experience that our customers love. 283 world records later<sup>1</sup>, we're dedicated to offering open solutions for any organization at any scale. Windows Server 2022 helps us achieve this goal on our journey to offer smarter technology for all.



Solutions, products and offers subject to availability. Lenovo reserves the right to alter offerings and specifications, at any time, without notice. Lenovo makes every effort to ensure accuracy of all information but is not liable or responsible for any editorial, photographic or typographic error. Images are for illustrative purposes only. For full Lenovo solution, product, service and warranty, visit: [www.lenovo.com](http://www.lenovo.com). Lenovo and the Lenovo logo are trademarks or registered trademarks of Lenovo. Other company offerings, products and services names may be the trademarks or service marks of others.

(1) <https://lenovopress.com/?p=1145-lenovo-thinksystem-continues-to-lead-the-industry-in-performance>

© Lenovo 2021. All rights reserved.

**Windows Server 2022 comes equipped with a variety of new features. Here are some examples of the Azure hybrid capabilities, application platforms, and performance improvements in Windows Server 2022.**

## Azure hybrid capabilities

**You can increase your efficiency and agility with built-in hybrid capabilities in Windows Server 2022 that allow you to extend your data centers to Azure more easily than ever before.**

### Azure Arc enabled Windows Servers

Azure Arc enabled servers with Windows Server 2022 brings on-premises and multi-cloud Windows Servers to Azure with Azure Arc. This management experience is designed to be consistent with how you manage native Azure virtual machines. When a hybrid machine is connected to Azure, it becomes a connected machine and is treated as a resource in Azure. More information can be found at the [Azure Arc enables servers documentation](#).

### Windows Admin Center

Improvements to Windows Admin Center to manage Windows Server 2022 include capabilities to both report on the current state of the Secured-core features mentioned above, and where applicable, allow customers to enable the features. More information on these and many more improvements to Windows Admin Center can be found at the [Windows Admin Center documentation](#).



## Application platform

There are several platform improvements for Windows Containers, including application compatibility and the Windows Container experience with Kubernetes. A major improvement includes reducing the Windows Container image size by up to 40%, which leads to a 30% faster startup time and better performance.

You can now also run applications that depend on Azure Active Directory with group Managed Services Accounts (gMSA) without domain joining the container host, and Windows Containers now support Microsoft Distributed Transaction Control (MSDTC) and Microsoft Message Queuing (MSMQ).



## Performance Improvements

There are several other enhancements that simplify the Windows Container experience with Kubernetes. These enhancements include support for host-process containers for node configuration, IPv6, and consistent network policy implementation with Calico.

With support for Intel Ice Lake processors, Windows Server 2022 supports business-critical and large-scale applications, such as SQL Server, that require up to 48 TB of memory and 2,048 logical cores running on 64 physical sockets. Confidential computing with Intel Secured Guard Extension (SGX) on Intel Ice Lake improves application security by isolating applications from each other with protected memory.



## Nested virtualization for AMD processors

Nested virtualization is a feature that allows you to run Hyper-V inside of a Hyper-V virtual machine (VM). Windows Server 2022 brings support for nested virtualization using AMD processors, giving more choices of hardware for your environments. More information can be found at the [nested virtualization documentation](#).



# Windows Server 2022 Version Comparison

## FEATURES AVAILABLE GENERALLY

	Windows Server 2022 Standard	Windows Server 2022 Datacenter	Windows Server 2019 Standard	Windows Server 2019 Datacenter	Windows Server 2016 Standard	Windows Server 2016 Datacenter
Best Practices Analyzer	YES	YES	YES	YES	YES	YES
Direct Access	YES	YES	YES	YES	YES	YES
Dynamic Memory (in virtualization)	YES	YES	YES	YES	YES	YES
Hot Add/Replace RAM	YES	YES	YES	YES	YES	YES
Microsoft Management Console	YES	YES	YES	YES	YES	YES
Minimal Server Interface	YES	YES	YES	YES	YES	YES
Network Load Balancing	YES	YES	YES	YES	YES	YES
Windows PowerShell	YES	YES	YES	YES	YES	YES
Server Core Installation Option	YES	YES	YES	YES	YES	YES
Server Manager	YES	YES	YES	YES	YES	YES
SMB Direct and SMB over RDMA	YES	YES	YES	YES	YES	YES
Software-defined Networking	NO	YES	NO	YES	NO	YES
Storage Replica	YES (1 partnership and 1 resource group with a single 2TB volume)	YES (Unlimited)	YES (1 partnership and 1 resource group with a single 2TB volume)	YES (Unlimited)	NO	YES
Storage Spaces	YES	YES	YES	YES	YES	YES
Storage Spaces Direct	NO	YES	NO	YES	NO	YES
Volume Activation Services	YES	YES	YES	YES	YES	YES
VSS (Volume Shadow Copy Service) integration	YES	YES	YES	YES	YES	YES
Windows Server Update Services	YES	YES	YES	YES	YES	YES
Windows System Resource Manager	YES	YES	YES	YES	YES	YES
Server license logging	YES	YES	YES	YES	YES	YES
Inherited activation	As guest if hosted on Datacenter	Can be a host or a guest	As guest if hosted on Datacenter	Can be a host or a guest on	As guest if hosted Datacenter	Can be host or guest
Work Folders	YES	YES	YES	YES	YES	YES
Hardware route of trust for measurement technology	YES	YES	NO	NO	NO	NO
Trusted platform module 2.0	YES	YES	NO	NO	NO	NO
Dynamic Root of Trust for Measurement (DRTM) technology	YES	YES	NO	NO	NO	NO
Direct Memory Access (DMA) protection	YES	YES	NO	NO	NO	NO
Virtualization-based security	YES	YES	NO	NO	NO	NO
Hypervisor-based code integrity (HVCI)	YES	YES	NO	NO	NO	NO
HTTPS and TLS 1.3 enabled by default	YES	YES	NO	NO	NO	NO

# WINDOWS SERVER ROLES AVAILABLE

	Role Services	Windows Server 2022 Standard	Windows Server 2022 Datacenter	Windows Server 2019 Standard	Windows Server 2019 Datacenter	Windows Server 2016 Standard	Windows Server 2016 Datacenter
Active Directory Certificate Services		YES	YES	YES	YES	YES	YES
Active Directory Domain Services		YES	YES	YES	YES	YES	YES
Active Directory Federation Services		YES	YES	YES	YES	YES	YES
AD Lightweight Directory Services		YES	YES	YES	YES	YES	YES
AD Rights Management Services		YES	YES	YES	YES	YES	YES
Device Health Attestation		YES	YES	YES	YES	YES	YES
DHCP Server		YES	YES	YES	YES	YES	YES
DNS Server		YES	YES	YES	YES	YES	YES
Fax Server		YES	YES	YES	YES	YES	YES
File & Storage Services	File Server	YES	YES	YES	YES	YES	YES
File & Storage Services	BranchCache for Network Files	YES	YES	YES	YES	YES	YES
File & Storage Services	Data Deduplication	YES	YES	YES	YES	YES	YES
File & Storage Services	DFS Namespaces	YES	YES	YES	YES	YES	YES
File & Storage Services	DFS Replication	YES	YES	YES	YES	YES	YES
File & Storage Services	File Server Resource Manager	YES	YES	YES	YES	YES	YES
File & Storage Services	File Server VSS Agent Service	YES	YES	YES	YES	YES	YES
File & Storage Services	iSCSI Target Server	YES	YES	YES	YES	YES	YES
File & Storage Services	iSCSI Target Storage Provider	YES	YES	YES	YES	YES	YES
File & Storage Services	Server for NFS	YES	YES	YES	YES	YES	YES
File & Storage Services	Work Folders	YES	YES	YES	YES	YES	YES
File & Storage Services	Storage Services	YES	YES	YES	YES	YES	YES
Host Guardian Service		YES	YES	YES	YES	YES	YES
Hyper-V		YES	YES including Shielded Virtual Machines	YES	YES including Shielded Virtual Machines	YES	YES including Shielded Virtual Machines
Network Controller		NO	YES	NO	YES	NO	YES
Network Policy and Access Services		YES when installed as Sever with Desktop Experience	YES when installed as Sever with Desktop Experience	YES when installed as Sever with Desktop Experience	YES when installed as Sever with Desktop Experience	YES when installed as Sever with Desktop Experience	YES when installed as Sever with Desktop Experience
Print and Document Services		YES	YES	YES	YES	YES	YES
Remote Access		YES	YES	YES	YES	YES	YES
Remote Desktop Services		YES	YES	YES	YES	YES	YES
Volume Activation Services		YES	YES	YES	YES	YES	YES
Web Services (IIS)		YES	YES	YES	YES	YES	YES
Windows Deployment Services		YES	YES	YES*	YES*	YES when installed as Sever with Desktop Experience	YES when installed as Sever with Desktop Experience
Windows Server Essentials Experience		NO	NO	NO	NO	YES	YES
Windows Server Update Services		YES	YES	YES	YES	YES	YES

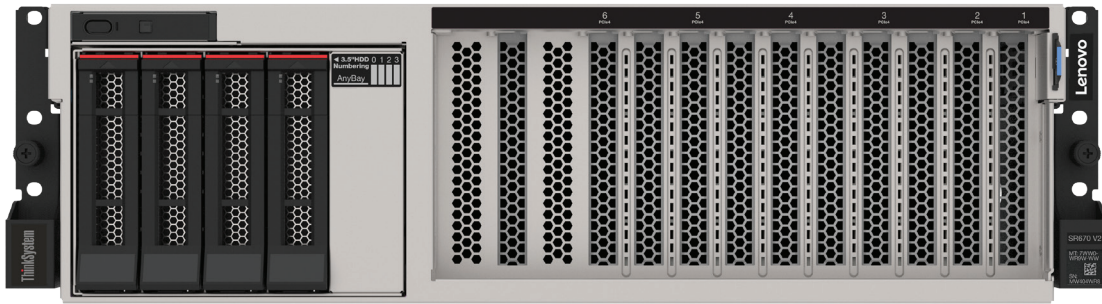
\*WDS Transport Server is new to Server Core installations in Windows Server 2019 (also in the Semi-Annual Channel starting with Windows Server, version 1803)

# WINDOWS SERVER FEATURES AVAILABLE

	Windows Server 2022 Standard	Windows Server 2022 Datacenter	Windows Server 2019 Standard	Windows Server 2019 Datacenter	Windows Server 2016 Standard	Windows Server 2016 Datacenter
.NET Framework 3.5	YES	YES	YES	YES	YES	YES
.NET Framework 4.8	YES	YES	4.7	4.7	4.6	4.6
Background Intelligent Transfer Service (BITS)	YES	YES	YES	YES	YES	YES
BitLocker Drive Encryption	YES	YES	YES	YES	YES	YES
BitLocker Network Unlock	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience
BranchCache	YES	YES	YES	YES	YES	YES
Client for NFS	YES	YES	YES	YES	YES	YES
Containers	YES	YES	YES Unlimited Windows Containers; up to 2 Hyper-V Containers	YES Unlimited Windows & Hyper-V Containers	YES Unlimited Windows Containers; up to 2 Hyper-V Containers	YES All container types unlimited
Data Center Bridging	YES	YES	YES	YES	YES	YES
Direct Play	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience
Enhanced Storage	YES	YES	YES	YES	YES	YES
Failover Clustering	YES	YES	YES	YES	YES	YES
Group Policy Management	YES	YES	YES	YES	YES	YES
Host Guardian Hyper-V Support	NO	YES	NO	YES	NO	YES
I/O Quality of Service	YES	YES	YES	YES	YES	YES
IIS Hostable Web Core	YES	YES	YES	YES	YES	YES
Internet Printing Client	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience
IP Address Management (IPAM) Server	YES	YES	YES	YES	YES	YES
LPR Port Monitor	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience
Management OData IIS Extension	YES	YES	YES	YES	YES	YES
Media Foundation	YES	YES	YES	YES	YES	YES
Message Queueing	YES	YES	YES	YES	YES	YES
Microsoft Defender Antivirus	INSTALLED	INSTALLED	INSTALLED	INSTALLED	INSTALLED	INSTALLED
Multipath I/O	YES	YES	YES	YES	YES	YES
MultiPoint Connector	YES	YES	YES	YES	YES	YES
Network Load Balancing	YES	YES	YES	YES	YES	YES
Network Virtualization	YES	YES	YES	YES	YES	YES
Peer Name Resolution Protocol	YES	YES	YES	YES	YES	YES
Quality Windows Audio Video Experience	YES	YES	YES	YES	YES	YES
RAS Connection Manager Administration Kit (CMAK)	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience
Remote Assistance	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience
Remote Differential Compression	YES	YES	YES	YES	YES	YES
Remote Server Administration Tools (RSAT)	YES	YES	YES	YES	YES	YES

	Windows Server 2022 Standard	Windows Server 2022 Datacenter	Windows Server 2019 Standard	Windows Server 2019 Datacenter	Windows Server 2016 Standard	Windows Server 2016 Datacenter
RPC over HTTP Proxy	YES	YES	YES	YES	YES	YES
Setup and Boot Event Collection	YES	YES	YES	YES	YES	YES
Simple TCP/IP Services	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience
SMB 1.0/CIFS File	INSTALLED	INSTALLED	INSTALLED	INSTALLED	INSTALLED	INSTALLED
Sharing Support SMB Bandwidth Limit	YES	YES	YES	YES	YES	YES
SMTP Server	YES	YES	YES	YES	YES	YES
SNMP Service	YES	YES	YES	YES	YES	YES
Software Load Balancer	YES	YES	YES	YES	NO	YES
Software Migration Service	YES	YES	YES	YES	YES	YES
Software Migration Service Proxy	YES	YES	YES	YES	YES	YES
Storage Replica	YES	YES	YES 1 partnership and 1 resource group with a single 2T volume	YES (UNLIMITED)	NO	YES
System Insights	YES	YES	YES	YES	NO	NO
Telnet Client	YES	YES	YES	YES	YES	YES
TFTP Client	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience
VM Shielding Tools for Fabric Management	YES	YES	YES	YES	YES	YES
WebDAV Redirector	YES	YES	YES	YES	YES	YES
Windows Biometric Framework	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience
Windows Identity Foundation 3.5	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience
Windows Internal Database	YES	YES	YES	YES	YES	YES
Windows PowerShell 5.1	INSTALLED	INSTALLED	YES	YES	YES	YES
Windows PowerShell 2.0 Engine	YES	YES	YES	YES	YES	YES
Windows Process Activation Service	YES	YES	YES	YES	YES	YES
Windows Search Service	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience
Windows Server Backup	YES	YES	YES	YES	YES	YES
Windows Server Migration Tools	YES	YES	YES	YES	YES	YES
Windows Standards-Based Storage Management	YES	YES	YES	YES	YES	YES
Windows Subsystem for Linux	YES	YES	YES	YES	NO	NO
Windows TIFF IFilter	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience	YES when installed as Server with Desktop Experience
WinRM IIS Extension	YES	YES	YES	YES	YES	YES
WINS Server	YES	YES	YES	YES	YES	YES
Wireless LAN Service	YES	YES	YES	YES	YES	YES
WoW64 support	INSTALLED	INSTALLED	INSTALLED	INSTALLED	INSTALLED	INSTALLED

	Windows Server 2022 Standard	Windows Server 2022 Datacenter	Windows Server 2019 Standard	Windows Server 2019 Datacenter	Windows Server 2016 Standard	Windows Server 2016 Datacenter
DNS-over-HTTPS	YES	YES	NO	NO	NO	NO
Microsoft Edge included	YES	YES	NO	NO	NO	NO
Includes UDP Segmentation Offload (USO)	YES	YES	NO	NO	NO	NO
UDP Receive Side Coalescing (UDP RSC)	YES	YES	NO	NO	NO	NO
Latest UDP performance improvements	YES	YES	NO	NO	NO	NO
TCP HyStart++	YES	YES	NO	NO	NO	NO
RACK to reduce Retransmit TimeOuts (RTO)	YES	YES	NO	NO	NO	NO
Receive Segment Coalescing (RSC)	YES	YES	NO	NO	NO	NO
Adjustable storage repair speed	YES	YES	NO	NO	NO	NO
Storage bus cache	YES	YES	NO	NO	NO	NO
SMB compression automation	YES	YES	NO	NO	NO	NO



## STORAGE MIGRATION SERVICE

	Windows Server 2022 Standard	Windows Server 2022 Datacenter	Windows Server 2019 Standard	Windows Server 2019 Datacenter	Windows Server 2016 Standard	Windows Server 2016 Datacenter
Migrate local users/groups	YES	YES	NO	NO	NO	NO
Migrate to/from failover clusters	YES	YES	NO	NO	NO	NO
Migrate from Linux/Samba servers	YES	YES	NO	NO	NO	NO
Azure File Sync	YES	YES	NO	NO	NO	NO
Migrate to new networks/Azure	YES	YES	NO	NO	NO	NO
Migrate NetApp CIFS servers	YES	YES	NO	NO	NO	NO



# Windows Server 2022 Version Comparison

## LOCKS AND LIMITS

	Windows Server 2022 Standard	Windows Server 2022 Datacenter	Windows Server 2019 Standard	Windows Server 2019 Datacenter	Windows Server 2016 Standard	Windows Server 2016 Datacenter
Maximum number of users	BASED ON CALS	BASED ON CALS	BASED ON CALS	BASED ON CALS	BASED ON CALS	BASED ON CALS
Maximum SMB connections	16,777,216	16,777,216	16,777,216	16,777,216	16, 777, 216	16, 777, 216
Maximum RRAS connections	UNLIMITED	UNLIMITED	UNLIMITED	UNLIMITED	UNLIMITED	UNLIMITED
Maximum IAS connections	2,147,483,647	2,147,483,647	2,147,483,647	2,147,483,647	2,147,483,647	2,147,483,647
Maximum RDS connections	65,535	65,535	65,535	65,535	65535	65535
Maximum number of 64-bit sockets	64	64	64	64	64	64
Maximum number of cores	UNLIMITED	UNLIMITED	UNLIMITED	UNLIMITED	UNLIMITED	UNLIMITED
Maximum RAM	48 TB	48 TB	24 TB	24 TB	24 TB	24TB
Can be used as virtualization guest	YES 2 virtual machines, plus one Hyper-V host per license	YES Unlimited virtual machines, plus one Hyper-V host per license	YES 2 virtual machines, plus one Hyper-V host per license	YES Unlimited virtual machines, plus one Hyper-V host per license	YES 2 virtual machines plus one Hyper-V host per license	YES Unlimited virtual machines, plus one Hyper-V host per license
Windows Server Containers	UNLIMITED	UNLIMITED	2	UNLIMITED	2	UNLIMITED
Virtual OSE/Hyper-V isolated Containers	2	UNLIMITED	2	UNLIMITED	2	UNLIMITED
Server can join a domain	YES	YES	YES	YES	YES	YES
Edge network protection/firewall	NO	NO	NO	NO	NO	NO
DirectAccess	YES	YES	YES	YES	YES	YES
DLNA codecs and web media streaming	YES if installed as Server with Desktop Experience	YES if installed as Server with Desktop Experience	YES if installed as Server with Desktop Experience	YES if installed as Server with Desktop Experience	YES if installed as Server with Desktop Experience	YES if installed as Server with Desktop Experience

Learn more at  
[LenovoSalesPortal.com](http://LenovoSalesPortal.com)



Smarter  
technology  
for all

Lenovo

Modernize with Windows Server 2022: The cloud-ready operating system that boosts on-premises investments with hybrid capabilities.



Solutions, products and offers subject to availability. Lenovo reserves the right to alter offerings and specifications, at any time, without notice. Lenovo makes every effort to ensure accuracy of all information but is not liable or responsible for any editorial, photographic or typographic error. Images are for illustrative purposes only. For full Lenovo solution, product, service and warranty, visit: [www.lenovo.com](http://www.lenovo.com). Lenovo and the Lenovo logo are trademarks or registered trademarks of Lenovo. Other company offerings, products and services names may be the trademarks or service marks of others.

© Lenovo 2021. All rights reserved.