Microsoft

Secure. Evolve. Innovate.
with Windows Server 2016

The cloud offers IT organizations opportunities to flourish under a new model that delivers faster time to value and innovation. Many organizations, however, face strict compliance or business requirements. For organizations that need it all—security, efficiency, and innovation—Windows Server 2016 delivers it. Windows Server 2016 is the cloud-ready operating system that supports your current workloads while introducing new technologies that make it easy to transition to cloud computing when you are ready.

Security at the OS level

Windows Server 2016 includes built-in breach resistance to help thwart attacks on your systems and meet compliance goals. Even if someone finds a way into your environment, the layers of security built into Windows Server 2016 limit the damage they can cause and help detect suspicious activity.

- **Protect your virtual machines.** Use the unique Shielded Virtual Machines feature to encrypt your VMs with BitLocker and help ensure they can run only on hosts approved by the Host Guardian Service.

- **Help secure admin credentials.** Protect admin credentials from Pass-the-Hash attacks using Credential Guard and Remote Credential Guard, and control administrator privileges with Just-In-Time Administration and Just Enough Administration, which together help minimize the time and capability granted for specific privileges.

- **Protect the operating system.** Resist breaches with built-in Control Flow Guard, which helps prevent memory corruption attacks, and Windows Defender, optimized for server roles. Help ensure only trusted software can be run on the server with Device Guard.

- **Improve ability to detect attacks.** Use advanced auditing capabilities to help detect malicious behavior.

- **Isolate applications.** Help protect container-based applications with Windows Server containers with Hyper-V isolation, which do not share the host kernel with other containers. Use the distributed firewall, a software-defined networking capability, to control internal and external network traffic to VMs.

Bring Windows Server licenses to Azure

When you are ready to transition workloads to the public cloud, you can leverage your existing investment in Windows Server. The Azure Hybrid Benefit lets you bring your on-premises Windows Server licenses with Software Assurance to Azure. Rather than paying the full price for a new Windows Server virtual machine, you pay only the base compute rate. Boost savings further with Azure Reserved Virtual Machine Instances, which enable you to reserve virtual machines for one-year or three-year terms.

"Within a few years, I suspect that all hosters—and their clients—will require the use of Shielded Virtual Machines to protect workloads from hosters and fabric admins."

– Philip Moss
Chief Product Officer
Acuutech

"We're moving towards a world where we don't need to know where our data is—on-premises or in the cloud. The combination of Storage Spaces Direct, Hyper-V, scale-out flash storage, and SMB3 allows us to focus on functionality rather than location. With Windows Server 2016, migration is no longer a project, just a task."

– Ulf Preisler
IT Director
Danske Fragtmænd

Evolve your infrastructure

Datacenter operations are struggling to reduce costs while handling more data traffic. New applications stretch the operational fabric and create infrastructure backlogs that can slow business. As organizations push the boundaries of highly virtualized environments, they can use Windows Server 2016 capabilities to meet operational and security challenges, freeing up IT resources to plan a strategy that uses the cloud for future applications and solutions.

Resilient compute

Run your datacenter with a highly automated, resilient server operating system.

- **Trust your workloads to an enterprise-class hypervisor.** You can be confident your workloads will perform on Hyper-V, which Microsoft uses to run hyper-scale datacenters around the globe. When needed, you also can easily migrate a Hyper-V workload from on-premises to a Windows Server VM in Azure.

- **Upgrade efficiently.** Upgrade infrastructure clusters to Windows Server 2016 with zero downtime for your Hyper-V or Scale-out file server workloads, and without requiring new hardware, using Mixed OS Mode cluster upgrades.

- **Stay open.** Deploy applications on multiple operating systems with best-in-class support for Linux on Hyper-V.

- **Automate server management.** Use PowerShell and Desired State Configuration to automate routine operations.

- **Control Windows servers remotely.** Use PowerShell or GUI solutions such as Server Manager or Microsoft Management Console (MMC) tools.

Affordable high-performance storage

Storage systems are critical to the performance of most business applications. But traditional, expensive, manually configured storage systems can prevent organizations from realizing the efficiency benefits of a software-defined datacenter. In contrast, the Azure-inspired, software-defined storage capabilities in Windows Server 2016 use policies and automation to reduce costs and add scale.

- **Reduce cost.** Build highly available, scalable software-defined storage solutions at a fraction of the price of SAN or NAS. With Storage Spaces Direct, you can use industry-standard servers with local storage, including high speed solid-state drives.

- **Create affordable business continuity.** Prepare for the worst using Storage Replica synchronous storage replication for disaster recovery among datacenters.

- **Prioritize storage resources.** Ensure critical applications receive priority access to storage resources using storage Quality of Service (QoS) policies.

Remote Desktop Services with Windows Server 2016

Desktop virtualization is one way IT leaders can more securely deliver applications to the wide array of devices that mobile workers use on the job. Because apps don't execute on the client devices, IT also helps secure corporate data, extends the life of older equipment, and gets more out of newer, lower-cost hardware. The remote desktop experience just got better with Windows Server 2016:

Better graphics experience

Graphics cards (GPUs) can be assigned to a virtual machine, unleashing the full power of available server-class graphics cards to virtual desktops and apps, thus using the native driver of the GPU.

Enhanced connection broker

Connection broker can now handle up to 10,000 concurrent connections.

More efficient cloud deployment

Reduce the number of VMs required for deployment in Azure IaaS, which combines services into a single VM.

Support for cloud-managed domain services

Deploy as easily on-premises as in the cloud, helping mobile workers be productive anywhere, anytime.av

Azure-inspired networking

Traditional network infrastructures are rigid and complex. Organizations can respond faster to market changes by moving the network control layer from hardware to software to create a software-defined network. This enables them to centrally configure and manage physical and virtual network devices such as routers, switches, and gateways, resulting in automatic load balancing and the ability to shift workloads without setting switches. IT can continue to use existing physical switches, routers, and other hardware devices with the virtual controllers, while achieving deeper integration between the virtual network and the physical network.

- **Manage by policy.** Deploy and manage workloads across their entire lifecycle with hundreds of networking policies (isolation, QoS, security, load balancing, switching, routing, gateway, DNS, etc.) in a matter of seconds using a scalable Network Controller.

- **Enhance network security.** Dynamically segment your network based on workload needs using a distributed firewall and network security groups to apply rich policies within and across segments. Layer enforcement by routing traffic to virtualized firewall appliances for even greater levels of security.

- **Gain workload mobility.** Take control of your hybrid workloads, including running them in containers, and move them across servers, racks, and clouds using standards-based VXLAN and NVGRE overlay networks and multi-tenanted hybrid gateways.

Application innovation

Increasingly, organizations use apps to help differentiate themselves from the competition. Apps help win, engage, and support customers. Developers building and updating the apps tend to have little patience for the realities of IT infrastructure. They don't want to wait long for IT services, and they want apps in production to work the same way the apps work on developers' machines.

Windows Server 2016 supports application innovation using container technology and microservices. Containers can help speed application deployment and streamline the way IT operations and development teams collaborate to deliver applications. In addition, developers can use microservices architectures to separate app functionality into smaller, independently deployable services, which make it easier to upgrade part of the app without affecting the rest.

Windows Server 2016 helps organizations update and innovate with their apps in three ways:

- **Secure fabric for existing applications.** Give your hard-working client-server applications some assistance. You can run existing apps on Windows Server 2016 without modifying them, which enables them to take advantage of enhanced security and efficiency features in the fabric.

Management options

Microsoft System Center 2016

Whether you have a few servers or thousands, System Center provides efficient deployment and management functionality for your virtualized, software-defined datacenter to bring you increased agility and performance.

PowerShell and Desired State Configuration

Define, deploy, and manage your software environment through PowerShell scripting and Desired State Configuration, using a single console.

Azure security and management

To manage and help protect workloads in multiple cloud types, Azure offers security and operations management services to give you visibility and control across Azure, on-premises, and other third party clouds.

"Most of our application portfolio consists of older legacy applications that are cumbersome to update. By moving these applications into Windows Server containers and embracing a microservices architecture, we can break these big applications apart and update the pieces independently. This will reduce customer downtime and increase business agility."

– Stephen Tarmey
   Chief Architect
   Tyco International

- **Deliver container benefits to existing apps.** Containers isolate the app at the operating-system level and help you move existing applications into a modern DevOps environment with little or no code changes, while gaining benefits such as continuous integration and better security. Containers can help you introduce new architectures, including microservices, which improve application agility and scale. Also, when developers package apps into containers for delivery to IT, they help standardize on a platform that streamlines deployment on-premises, to any cloud, or to a hybrid architecture across clouds.

- **Build cloud-native and hybrid apps.** Create new microservices applications using fewer and compressed resources, and more agile "just enough" technologies. Use containers to build, test, and deploy the apps to any cloud, including Microsoft Azure cloud infrastructure.

Installation options

Customers who choose the Datacenter or Standard editions are able to customize their installation of Windows Server 2016 by choosing from two options:

Windows Server 2016 editions

Windows Server 2016 Datacenter for highly virtualized datacenter and cloud environments.

- Features exclusive to the Datacenter Edition include Shielded Virtual Machines, software-defined networking, Storage Spaces Direct, and Storage Replica.

Windows Server 2016 Standard for physical or minimally virtualized environments.

Windows Server 2016 Essentials for small businesses with up to 25 users and 50 devices.

Option	Scenario	Details
Server Core	Small-footprint, headless operating system removes the desktop UI from the server and runs only required components.	• Includes limited local graphical tools such as Task Manager and PowerShell for local or remote management. • Does not include Server Manager or MMC tools.
Server with Desktop Experience (previously known as Server with a GUI)	Provides user experience for those who need to run an app that requires a local user interface or for a Remote Desktop Services Host.	• Experience a full Windows client shell and experience, consistent with Windows 10. • Use with PowerShell or GUI solutions such as Server Manager or Microsoft Management Console (MMC) tools.

Take the next step. Learn more at
www.microsoft.com/windowsserver

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