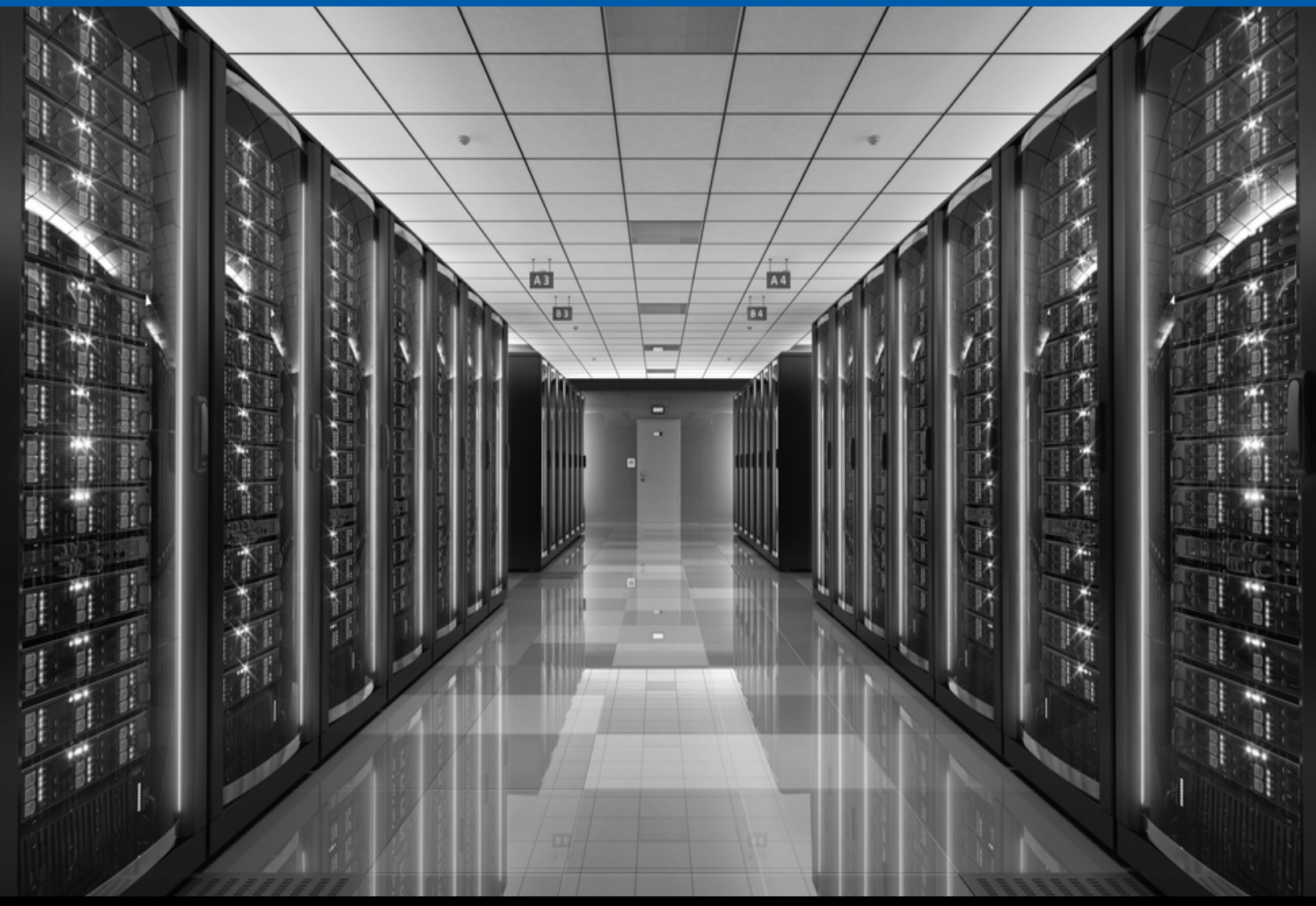
Windows Server IoT 2019 FAQ



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General Questions

What is Windows Server IoT 2019?

Windows Server IoT 2019 delivers enterprise manageability and security to IoT solutions. Windows Server IoT 2019 is a binary equivalent to Windows Server 2019, so you can use the same familiar development and management tools that you use on your general-purpose servers. However, when it comes to licensing and distribution, the general-purpose version and IoT versions differ. **Windows Server IoT 2019 is only licensed through the OEM channel under special dedicated use rights.**

Windows Server IoT 2019 allows you to build fixed purpose, industry specific solutions for security, retail, manufacturing, healthcare, and more, with specific allowances and restrictions in the license agreement. Dedicated solutions may include things such as:

- Video surveillance and security monitoring systems
- Factory automation, equipment monitoring, or manufacturing defect detection
- Medical and healthcare-related applications
- Intelligent buildings optimizing energy use or monitoring safety
- Telecommunications (PB switchboard systems, call centers, IVR)
- Other industry-specific services

In these cases, the dedicated-purpose devices have fixed functionality and are built to perform a pre-defined set of tasks. When this is the case, Windows Server IoT 2019 is licensed through the OEM channel with special dedicated use licensing terms. Prior versions of this operating system were referred to as Windows Server for Embedded Systems or Windows Storage Server.

Windows Server IoT 2019 is a Long-Term Servicing Channel offering (formerly called the "Long-Term Servicing Branch"), meaning this channel is appropriate for systems that require a longer servicing option and functional stability over many years. Deployments of Windows Server IoT 2019 and earlier versions of Windows Server will not be affected by the new Semi-Annual Channel (SAC) releases. The Long-Term Servicing Channel (LTSC) will continue to receive security and non-security updates, but it will not receive other new features and functionality. Users are entitled to 5 years of mainstream support and 5 years of extended support.

Did the name change from Embedded Server?

Yes. Windows Server IoT 2019 incorporates new "IoT" branding as a change from earlier "Embedded" Server editions and aligns with Windows Enterprise IoT and Core IoT branding strategies. IoT Server editions are designed to support Microsoft's "Intelligent Edge" vision, with key new features, including built-in support for Azure and hybrid capabilities.

How can I learn more about Windows Server IoT 2019?

You can learn more about more about Windows Server IoT 2019 by visiting the following Web pages.

Device Partner Center (Note: if you do not have access, please contact your OEM or Distributor)
Introduction to Windows Server IoT 2019
What's new in Windows Server 2019?
Windows Server servicing channels: LTSC and SAC
Licensing and Programs Resource Center
Compare features in Windows Server versions
Regional Distribution Partners

Features & Functionality

Is Windows Server IoT 2019 functionally the same as the general-purpose Windows Server 2019?

Yes. Windows Server IoT 2019 uses the same binaries as Windows Server 2019. What this means is that you get all the latest capabilities including Hybrid capabilities with Azure, Advanced multilayer security and faster innovation for applications. That said, Windows Server IoT 2019 is only licensed under special dedicated use rights through distributors and OEMs for fixed purpose devices (as has always been the case).

What is new in Windows Server IoT 2019?

Windows Server IoT 2019 uses the same binaries as Windows Server 2019. Windows Server 2019 is built on the strong foundation of Windows Server 2016 and brings numerous innovations on four key themes: Hybrid Cloud, Security, Application Platform, and Hyper-Converged Infrastructure (HCI). You can see more details on what is new in this version by visiting this site: What's new in Windows Server 2019?

Which SKU should I use in my solution?

Microsoft offers six Windows Server IoT "offers" or SKUs. The table below provides some general information regarding which version may be right for the solution you are building.

What type of application are you planning to provide on your server appliance?	Offer
A dedicated server with the need for Active Directory integration (file, print, networking services) or require a connected keyboard, monitor or mouse to perform its dedicated purpose.	WS IoT 2019 Standard
Turnkey solution that may require Storage Spaces Direct or be for highly virtualized datacenters or cloud environments which consolidate several complex functions into a single server appliance.	WS IoT 2019 Datacenter
A server appliance used edge security such as Anti-virus server, or an E-mail filtering or Network traffic monitoring server.	WS IoT 2019 Essentials
A dedicated file Server, Network Attached Storage, Storage Area Network Gateway, or other storage solution.	WS IoT 2019 Storage Standard
A storage solution for 50 users or less that does NOT require network infrastructure services (file, print, etc.) and does not require a connected keyboard, monitor or mouse.	WS IoT 2019 Storage Workgroup
Specialized telecommunications applications such as PBX, IP PBX, Automated Attendant, Interactive Voice Response (IVR), or teleconferencing.	WS IoT 2019 Telecommunications

The following table compares the licensing provisions associated with each offer:

Licensing Provisions	WS IoT 2019 Standard	WS IoT 2019 Essentials	WS IoT 2019 Datacenter	WS IoT 2019 Storage Standard	WS IoT 2019 Storage Workgroup	WS IoT 2019 Telecommunications
Preinstalled OS	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory
Embedded Application	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory
Line of Business Applications	No	No	No	No	No	No
Network Infrastructure Services	Yes	Restricted	Yes	Yes	No	Restricted
Remote Usage	Yes	Remote Management	Yes	Remote Management	Remote Management	Remote Management
Keyboard, Video & Mouse	Yes	No	Yes	No	No	No
File Service over Network	Yes	No	Yes	Yes	Yes	No
Authentication Services	Yes	No	Yes	No	No	No
Client Access License (CAL) Required	Yes	No	Yes	No	No	No
Messaging or Enterprise Mail	Yes	POP3	Yes	No	No	No
Firewall, Anti-Spam, VPN	Yes	Yes	Yes	Yes	Yes	No
Core Based Licensing	Yes	Yes	Yes	Yes	No	Yes

For more advice on choosing the right Windows Server IoT offer for your solution, please reach out to our Regional Distribution Partners.

How do I know which SKU has been loaded on my device?

The splash screen will always say Windows Server IoT 2019. Your OEM can inform you which SKU you have purchased. Licensing rights & requirements vary by offer and are defined in the License Terms.

Does Windows Server IoT have a single Embedded Product Key Entry Activation (ePKEA) product key like Windows 10 IoT Enterprise?

No. It does have Product Key Entry Activation (PKEA) but all Windows Server editions since 2008 use OEM Activation 2.x as follows:
2.0 = 2008
2.1 = 2008 R2
2.2 = 2012
2.3 = 2012 R2
2.4 = 2016
2.5 = IoT 2019
The technology is the same between all editions – the only thing that changes is the version number of the generated Windows marker file that is installed in the OEM server's firmware. This requires the use of the correct version of the OATool.exe utility that is released in conjunction with each OS, and if backwards compatibility is desired with multiple editions of Windows Server and media, the same signing key certificate should be used on all media. OEM Activation is inherently backwards compatible – so an OA 2.5 marker file can work with any prior version of Windows Server. OEM Activation is not forward compatible – so a 2.4 marker cannot activate Windows Server IoT 2019, which requires a 2.5 marker.

Do embedded Server products include the media?

No. OEM device manufacturers can optionally create their own custom recovery image (on a recovery partition or via separate recovery media) for the specific solutions they develop and ship.

Server Core is included in Windows Server IoT 2019. Is it OK to use Server Core for storage solutions?

Yes. With the Server Core option, the standard user interface (the Desktop Experience) is not installed; you manage the server using the command line, Windows PowerShell, or by remote methods.

Is Azure File Sync supported on Windows Server IoT 2019 for Storage?

Microsoft does not provide a feature by feature breakdown since the feature list is far too long. There are number of licensing restrictions that OEMs need to meet in how they configure, distribute, market, and support solutions with the Storage SKU as outlined in the licensing agreements. Features and capabilities need to be focused on storage, either on premise or in the cloud through Azure extensibility features in 2019.

How do I pre-install Azure IoT Edge on Windows Server IoT 2019?

Azure IoT Edge is an Internet of Things (IoT) service that builds on top of IoT Hub. This service is meant for customers who want to analyze data on devices at the edge allowing them to react more quickly to events. Learn more about Azure IoT Edge here: Azure IoT Edge documentation

How do I certify my solution on the Azure IoT Catalog?

You can join the Certified for IoT Ecosystem by visiting: Catalog Azure

Licensing & Use Rights

Where can I find applicable licensing and pricing documents for Windows Server IoT?

Please refer to the information on the Licensing and Programs Resource Center. Microsoft has listened to OEMs' requests and continues to simplify licensing terms and make them easier to understand. Distributors and OEM customers can also seek clarification from their Microsoft account managers. It is also important that OEMs and end customers engage their own legal support to help understand licensing rights and limitations.

Does Windows Server IoT 2019 require Client Access Licenses (CAL's)?

Yes, in general, Windows Server IoT 2019 does require CALs, however, the requirements may be different depending on the user's individual use scenario(s), systems configuration and the specific IoT Server edition installed.

**Note: As of July 2018, Microsoft is running a limited time program for servers that do not require CALs. To learn more, contact your distributor or Microsoft account manager.*

Where can I find the Windows Server IoT 2019 License Terms?

You can view licensing information on the Licensing and Programs Resource Center

What happened to Long-Term Service Branch?

The Long-Term Service Branch (LTSB) has been renamed to Long-Term Servicing Channel (LTSC).

What is LTSC and why is this the right way to buy Windows Server embedded/IoT?

The Long-Term Servicing Channel (LTSC) is designed for Windows 10 devices and use cases where the key requirement is that functionality and features don't change over time. Examples include medical systems (such as those used for MRI and CAT scans), industrial process controllers, and air traffic control devices. These devices share characteristics of embedded systems: they are typically designed for a specific purpose and are developed, tested, and certified before use. We designed the LTSC with these types of use cases in mind, offering the promise that we will support each LTSC release for 10 years--and that features, and functionality will not change over the course of that 10-year lifecycle. For more information, see: Windows Server servicing channels: LTSC and SAC.

When counting the cores in a physical server, do I need to also count the hyper-threads as cores?

No, you only license the physical cores with Server.

What is meant by “Fixed Function” or “Dedicated Use”?

Windows Server Embedded / IoT allows you to build fixed purpose solutions with specific allowances and restrictions in the license agreement.

Fixed function appliances using Windows Server IoT 2019 will be dedicated to specific information or transaction processing, aggregating data from downstream “things”, analyzing data on-premise at scale, maintaining databases that are too big to transfer to the cloud, acting as a gateway to enterprise IT infrastructures, or leveraging the Azure cloud in hybrid scenarios with cloud-native apps managed by Azure IoT Edge. Examples of dedicated solutions may include things such as:

- Video surveillance and security monitoring systems
- Factory automation, equipment monitoring, or manufacturing defect detection
- Intelligent building scenarios like optimizing energy use or monitoring enterprise fire and life safety
- Medical and healthcare-related applications such as such as picture archiving and communication systems (PACS)
- Audio and video communication solutions such as live media and entertainment workflows and streaming
- High scale network attached storage (NAS) functionality for on premise or cloud storage and analytics
- Telecommunications (PB switchboard systems, call centers, IVR)
- Other industry-specific services

In these cases, the dedicated-purpose devices have fixed functionality and are built to perform a pre-defined set of tasks. When this is the case, you can license the Windows Server under the Windows Server OEM Embedded/IoT Licensing program. The special licensing model is referred to as Windows Embedded Server (for versions 2016 and prior) or Windows Server IoT 2019 (for the current release).

Because Windows embedded/IoT Server is a special licensing model for specialized applications, the following requirements must be met:

- The application is an embedded system used as a special-purpose solution by an industry and cannot be used in conjunction with general-purpose PCs. Nor can it be used with other commercial applications such as accounting, messaging or enterprise email, enterprise resource planning software, Web-based time management applications that address appointments, meetings, or other calendaring items, Microsoft Exchange or Microsoft SharePoint Portal Server, team collaboration software, word processing, or CRM.
- The embedded application must be preinstalled with the operating system on the server and shipped with the hardware. Embedded application means an industry or task-specific software program and/or function that provides the primary functionality of the end customer system and it is designed to meet the functionality requirements of the specific industry into which the system is marketed and distributed.

In the end, devices must not be designed for use as a substitute for a general-purpose computing device. **The embedded software application must provide the primary function of the solution.**

What line of business applications can be used on Windows Server IoT devices?

As a general rule, solutions that include Windows Server embedded/IoT are designed for a specific use. Under licensing guidelines, you cannot use the operating system to support additional software programs or functions other than utilities or similar software that is used solely for administration, performance enhancement, preventative maintenance, or to provide complimentary data storage functionality for the Server. By way of example, the following applications may be allowed (see your license agreement for details): Anti-Virus software, backup utilities, remote management utilities, and other utilities that support the appliance.

Does the Windows Server IoT 2019 license allow for applications to be updated?

OEM developed applications can be updated per the definition of "Update Image" and other applicable Update terms of the License Agreement. The OEM is responsible for managing the updates as determined by any support agreements between the OEM and their end customers. The primary dedicated purpose of the appliance for which the Windows operating system OS was licensed must remain the same.

Are we able to provide a software only solution as a virtual machine using the OEM Embedded Windows Server products?

No. The OEM channel requires that the server software be installed on the hardware. However, if an OEM sells the initial hardware server solution and the customer now wants to add additional virtual machines, the OEM can sell a software only "add-on" solution.

Can I add Software Assurance to the OEM Embedded version of Server?

No. Software Assurance (SA) is not available for Windows Server Embedded/IoT products.

Can I purchase additional licenses and stack them in order to add additional Virtual Machine rights?

Yes, **however**, here are key requirements to keep in mind concerning Core licensing and qualified VMs:

- ALL physical cores of a server must be licensed.
- The minimum number of licenses required per server is 16 even if there are fewer cores.
- The minimum number of licenses required per processor is 8 cores, even if there are fewer cores.
- Rights for VMs* (2 VMs for Standard, Essentials, Telco; unlimited for Datacenter) are granted **only when all physical cores have been licensed**.
- **ALL physical cores must be re-licensed to qualify for additional VMs.**

If I have 2 physical servers setup in an active-passive cluster, do I need a license for each server?

Yes, both physical servers must have a Windows Server license, even in a passive failover configuration.

What is the Support Lifecycle for Windows Server IoT 2019?

Windows Server IoT 2019 is an LTSC release which includes 5 years of mainstream support, plus 5 years of extended support. End of support for Windows Server IoT 2019 will be January 09, 2029.

Version Feature Comparsions

Comparison: Windows Storage Server 2016 and Windows Server IoT 2019 Storage Editions.

	Windows Storage Server 2016		Windows Server IoT 2019	
	Workgroup	Standard	Storage Workgroup	Storage Standard
Core based Licensing	No	No	No	Yes
Client Access License (CAL) Required?	No	No	No	No
Maximum #CPU	1	2	1	n/a *
Virtual Machine Rights	No	2	No	2 **
# Users	50	Unlimited	50	Unlimited
NVMe-enabled Hardware	No	Yes	No	Yes
# Disks	6	Unlimited	6	Unlimited
External Serial Attached SCSI (SAS) Interconnect	No	Yes	No	Yes
Maximum Memory	32 GB	24 TB	24 TB	24 TB
Hardware RAID	Yes	Yes	Yes	Yes
Concurrent SMB Connections	250	Unlimited	Unlimited	Unlimited
File Sharing (SMB&NFS)	Yes	Yes	Yes	Yes
Online Backup	Yes	Yes	Yes	Yes
DFS Replication	Yes	Yes	Yes	Yes
Storage Replica	No	No	No	Yes
File Classification Infrastructure	Yes	Yes	Yes	Yes
File Server Resource Manager	Yes	Yes	Yes	Yes
Domain Join	Yes	Yes	Yes	Yes
Shared Block Storage (iSCSI Target + Boot)	Yes	Yes	Yes	Yes
OEM Customizable Out of Box Experience	Yes	Yes	Yes	Yes
Storage Spaces	Yes	Yes	Yes	Yes
Storage Spaces Direct/Volume Replication	No	No	No	No
Deduplication	No	Yes	No	Yes
BranchCache - Hosted Cache	No	Yes	No	Yes
Clustering (Including AD/DNS)	No	Yes	No	Yes
Simplified Cluster Setup	No	Yes	No	Yes
Networking infra (DHCP, DNS & WINS)	No	Yes	No	Yes
AD Roles including Domain Controller (RODC)	No	No	No	No
Active Directory (Certificate Services, Domain Services, Federation Services, Lightweight Directory Services, Rights Management)	No	No	No	No
Application Server, Network Policy, Remote Desktop Broker, WDS and Fax Server	No	No	No	No

** CPU no longer applies to Storage Standard*

***The number of Virtual Machines (VM's) allowed is based on the number of cores licensed on a physical server. There are minimum licensing requirements per server: 8 cores per processor and 16 cores per server. All cores on a physical server must be licensed in order to be compliant. VM's are based on the total licensed cores on the physical server. The minimum 16 cores qualify for 2 VMs. Please refer to the applicable Windows Server IoT Product Terms document located on the Device Partner Center for details regarding core licensing and VM rights.*

Comparison: Windows Server IoT 2019 vs. Windows 10 IoT Enterprise

Both Windows Server IoT 2019 and Windows 10 IoT Enterprise have similar minimum hardware requirements. Both have similar security, management, and product lifecycles. Both are licensed for dedicated use devices. However, the Sever is designed for substantially heavier workloads and redundancy capabilities.

	Windows Server IoT 2019	Windows 10 IoT Enterprise
Device connection	Unlimited	20
CPU sockets	64 with unlimited cores	2
RAM	24 TB	6TB
Host databases	✓	
Survive extensive hardware failures in disks, servers and clusters	✓	

Comparison: Windows Server IoT 2019 Offers

The following table compares the Licensing provisions associated with each offer.

Licensing Provisions	WS IoT 2019 Standard	WS IoT 2019 Essentials	WS IoT 2019 Datacenter	WS IoT 2019 Storage Standard	WS IoT 2019 Storage Workgroup	WS IoT 2019 Telecommunications
Preinstalled OS	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory
Embedded Application	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory
Line of Business Applications	No	No	No	No	No	No
Network Infrastructure Services	Yes	Restricted	Yes	Yes	No	Restricted
Remote Usage	Yes	Remote Management	Yes	Remote Management	Remote Management	Remote Management
Keyboard, Video & Mouse	Yes	No	Yes	No	No	No
File Service over Network	Yes	No	Yes	Yes	Yes	No
Authentication Services	Yes	No	Yes	No	No	No
Client Access License (CAL) Required	Yes	No	Yes	No	No	No
Messaging or Enterprise Mail	Yes	POP3	Yes	No	No	No
Firewall, Anti-Spam, VPN	Yes	Yes	Yes	Yes	Yes	No
Core Based Licensing	Yes	Yes	Yes	Yes	No	Yes

Comparison: Feature innovations for Windows IoT Scenarios across Windows Server Versions

Feature	Windows Server 2008 R2	Windows Server 2012 R2	Windows Server 2016	Windows Server 2019
Windows Defender Advanced Threat Protection (ATP)*				●
Credential Guard			●	●
Bit Locker			●	●
Windows Machine Learning (requires Desktop Experience)				●
Storage Spaces		●	●	●
Storage-class memory				●
Linux containers				●
Windows Server containers			●	●
Server Core base container image				●
Nano server base container image			●	●
Kubernetes platform support				●
Docker container support			●	●
Windows Subsystem on Linux				●

Additional Resources

Device Partner Center (Note: if you do not have access, please contact your OEM or Distributor)
Introduction to Windows Server IoT 2019
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18_02/2020