

Windows Server IoT 2022 and Microsoft SQL Server IoT Licensing Guide



Build competitive solutions for demanding edge-computing workloads

For more than two decades, Windows Embedded has been a go-to choice for mission-critical dedicated devices. Windows Server IoT 2022 continues that tradition.

Windows Server IoT 2022 offers a binary equivalent to Windows Server 2022. This means you get the latest features, including:

- hybrid capabilities with Azure
- enterprise manageability
- faster innovation for apps (including support for modern container technologies managed by Azure IoT Edge)
- advanced multilayer security

Windows Server IoT 2022 is designed to support large scale compute, connections, or storage workloads where processing on the edge is required for latency, bandwidth, cost, data residency or privacy requirements. And because it is the same as Windows Server 2022, you can use the familiar development and management tools that you use with your general-purpose Windows Servers.

Windows Server IoT 2022 does however, follow different licensing and distribution policies than Windows Server 2022. It's **only licensed through the OEM channel under special dedicated use rights as determined by special licensing agreements**. This different licensing program helps OEMs more effectively compete in price-sensitive markets.

Fixed-function appliances using Windows Server IoT 2022 will be dedicated to specific information or transaction processing, aggregating data from downstream 'things' and analyzing it on-premises at scale; maintaining databases that are too big to transfer to the cloud; serving as a gateway to enterprise IT infrastructures; or leveraging Azure in hybrid scenarios with cloud-native apps managed by Azure IoT Edge.

With Windows Server IoT, you can build dedicated, sever-class appliances that can:

- Analyze multiple video streams in surveillance and security monitoring systems
- Monitor the health of industrial automation equipment or perform defect detection on high-speed manufacturing lines
- Enable intelligent building scenarios like optimizing energy use or monitoring enterprise fire and life safety
- Support medical imaging technology such as picture archiving and communication systems (PACS) to provide economical storage and access to patient images
- Support audio and video communication solutions such as live media, entertainment workflows and streaming
- Provide heavy-duty network attached storage (NAS) functionality for storage and analytics
- Enable telecommunications scenarios such as Power Break (PB) switchboard systems, call centers, or Interactive Voice Response (IVR) automated telephony systems

Whatever the solution, Windows Server IoT provides a trusted and functionally stable platform that can protect, process and aggregate large volumes of data either on-premises or in Azure.

Due to the specific, dedicated nature of appliances using Windows Server IoT 2022, Microsoft has a software licensing model tailor-made for Windows Server IoT 2022. This guide is designed to help you understand the licensing model and the general nature and variety of scenarios that it supports.

Windows Embedded/IoT licensing program

Dedicated-purpose devices have fixed functionality and are built to perform a pre-defined set of tasks. When this is the case, the OEM channel licenses Windows Server IoT 2022 with special dedicated use licensing terms. (Prior versions were referred to as Windows Server for Embedded Systems or Windows Storage Server.)

Microsoft's exclusive licensing scheme for dedicated use server applications enables you to provide price competitive products and solutions. Furthermore, the redistribution rights lets you customize and brand your own server appliances meeting your marketing and branding needs.

The special licensing model is referred to as Windows Server IoT because of the following two distinguishing features:

- 1 The application is an embedded system used as a special-purpose solution.
- 2 The Windows Server IoT Licenses are available through a worldwide network of [Regional Distribution Partners](#).

Qualifying to license Windows Server IoT 2022

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 as a substitute for a general-purpose computing device. It also can't 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 Server 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. An embedded application means an industry or task-specific software program and/or function that provides the primary functionality of the end customer system. 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.

Windows Server IoT SKUs

Multiple offerings for a variety of use cases

Microsoft offers six Windows Server IoT editions. The table below can help you identify which one may be right for the specific solution you want to deliver to your customers.

What type of application are you planning to provide on your server appliance?	Editions
A dedicated server with Active Directory integration (file, print, networking services) or those requiring a connected keyboard, monitor or mouse to perform its dedicated purpose.	Windows Server IoT 2022 Standard
A turnkey solution for highly virtualized datacenters or cloud environments that can consolidate several complex functions into a single server appliance. The solution may require Storage Spaces Direct.	Windows Server IoT 2022 Datacenter
A dedicated file server appropriate for Network Attached Storage, Storage Area Network Gateway or another storage solution.	Windows Server IoT 2022 Storage Standard
A small storage solution (for 50 users or less) that does NOT require network infrastructure services (file, print, etc.) or a connected keyboard, monitor or mouse.	Windows Server IoT 2022 Storage Workgroup
A specialized telecommunications application such as PBX, IP PBX, Automated Attendant, Interactive Voice Response (IVR) or teleconferencing.	Windows Server IoT 2022 Telecommunications

Core licensing and virtual machine rights

With the exception of Windows Server IoT 2022 Storage Workgroup, the Windows Server IoT SKUs are all licensed based on physical cores.

Minimum license requirements:

- ALL physical cores of a server must be licensed
- 8 core licenses per processor (even if there are fewer cores)
- 16 core licenses required per server (even if there are fewer cores)

After all cores have been licensed:

A customer obtains rights to run virtual machines (VMs) as follows:

Windows Server IoT 2022 Edition	Core-based licensing	VM Rights	Client Access License (CAL) Required
Datcenter	Yes	Unlimited	Yes
Standard	Yes	2	Yes
Standard; CAL-less	Yes	2	No
Storage Standard	Yes	2	No
Storage Workgroup	No	See Note 1	No
Telecommunications	Yes	2	No

To qualify for *additional* VMs for Standard, Storage Standard, or Telecommunications, all cores must be licensed again. Once all cores are re-licensed, rights for 2 additional VMS (for a total of 4 VMs) will be granted.

Note 1: For Storage Workgroup, VM rights are alternative to a physical install and are not incremental. You may install and use one copy of the server software on one licensed server (physical **or** virtual).

Comparison of Storage Offerings

Please note, this snapshot provides only a summary. Complete licensing information documents can be found on the [Licensing and Programs Center on Device Partner Center](#).

	Windows Storage Server 2016		Windows Server IoT 2019		Windows Server IoT 2022	
	Workgroup	Standard	Storage Workgroup	Storage Standard	Storage Workgroup	Storage Standard
Core based licensing	No	No	No	Yes	No	Yes
Client Access License (CAL) required?	No	No	No	No	No	No
Maximum #CPU	1	2	1	n/a*	1	n/a*
Virtual Machine Rights	No	2	No	2**	No	2**
# Users	50	Unlimited	50	Unlimited	50	Unlimited
NVMe-enabled hardware	No	Yes	No	Yes	No	Yes
# Disks	6	Unlimited	6	Unlimited	6	Unlimited
External Serial Attached SCSI (SAS) interconnect	No	Yes	No	Yes	No	Yes
Maximum Memory	32 GB	24 TB	24 TB	24 TB	48 TB	48 TB
Hardware RAID	Yes	Yes	Yes	Yes	Yes	Yes
Concurrent SMB Connections	250	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
File Sharing (SMB&NFS)	Yes	Yes	Yes	Yes	Yes	Yes
Online Backup	Yes	Yes	Yes	Yes	Yes	Yes
DFS Replication	Yes	Yes	Yes	Yes	Yes	Yes
Storage Replica	No	No	No	Yes	No	Yes
File Classification Infrastructure	Yes	Yes	Yes	Yes	Yes	Yes
File Server Resource Manager	Yes	Yes	Yes	Yes	Yes	Yes
Domain Join	Yes	Yes	Yes	Yes	Yes	Yes
Shared Block Storage (iSCSI Target + Boot)	Yes	Yes	Yes	Yes	Yes	Yes
OEM Customizable Out of Box Experience	Yes	Yes	Yes	Yes	Yes	Yes
Storage Spaces	Yes	Yes	Yes	Yes	Yes	Yes
Storage Spaces Direct/Volume Replication	No	No	No	No	No	No
Deduplication	No	Yes	No	Yes	No	Yes
BranchCache - Hosted Cache	No	Yes	No	Yes	No	Yes
Clustering (Including AD/DNS)	No	Yes	No	Yes	No	Yes
Simplified Cluster Setup	No	Yes	No	Yes	No	Yes
Networking Infra (DHCP, DNS & WINS)	No	Yes	No	Yes	No	Yes
AD Roles including Domain Controller (RODC)	No	No	No	No	No	No
Active Directory (Certificate Services, Domain Services, Federation Services, Rights Management)	No	No	No	No	No	No
Application Server, Network Policy, Remote Desktop Broker, WDS and Fax Server	No	No	No	No	No	No

* CPU no longer applies to Storage Standard

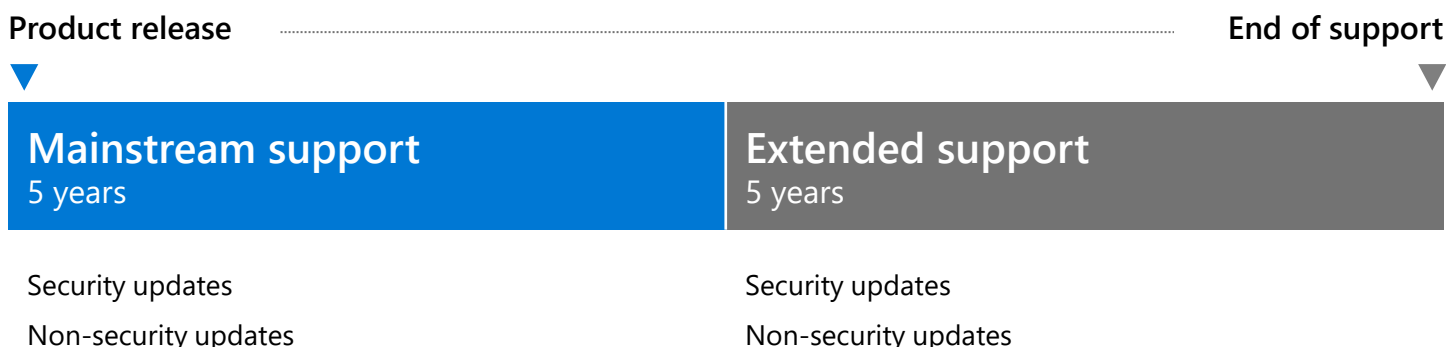
**The number of Virtual Machines (VM's) allowed is based on the number of cores licensed on a physical server. There are minimum licensing requirements per server: 8 cores per processor and 16 cores per server. All cores on a physical server must be licensed in order to be compliant. VM's are based on the total licensed cores on the physical server. The minimum 16 cores qualifies 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.

Long-term support and functional stability

Windows Server IoT 2022 is a Long-Term Servicing Channel (LTSC) offering, meaning this channel is appropriate for systems that require a longer servicing option and functional stability over many years. Deployments of Windows Server IoT 2022 and earlier versions of Windows Server will not be affected by the new features and functionality in the Semi-Annual Channel (SAC) releases. The 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. For more information, see: [Windows Server servicing channels: LTSC and SAC](#).

For clarity, the Semi-annual Channel is not available via the OEM embedded licensing program. That said, most of the features introduced in the Semi-Annual Channel will be rolled up into the next LTSC releases. The editions, functionality, and supporting content might vary from release to release depending on customer feedback.

End of support for Windows Server IoT 2022 will be August 2031.



Windows Server IoT – for the most demanding edge computing workloads

Windows Server IoT 2022 provides full capabilities of Windows Server 2022 for fixed-function server class devices supporting demanding workloads at the edge.

Securely store and analyze large amounts of data

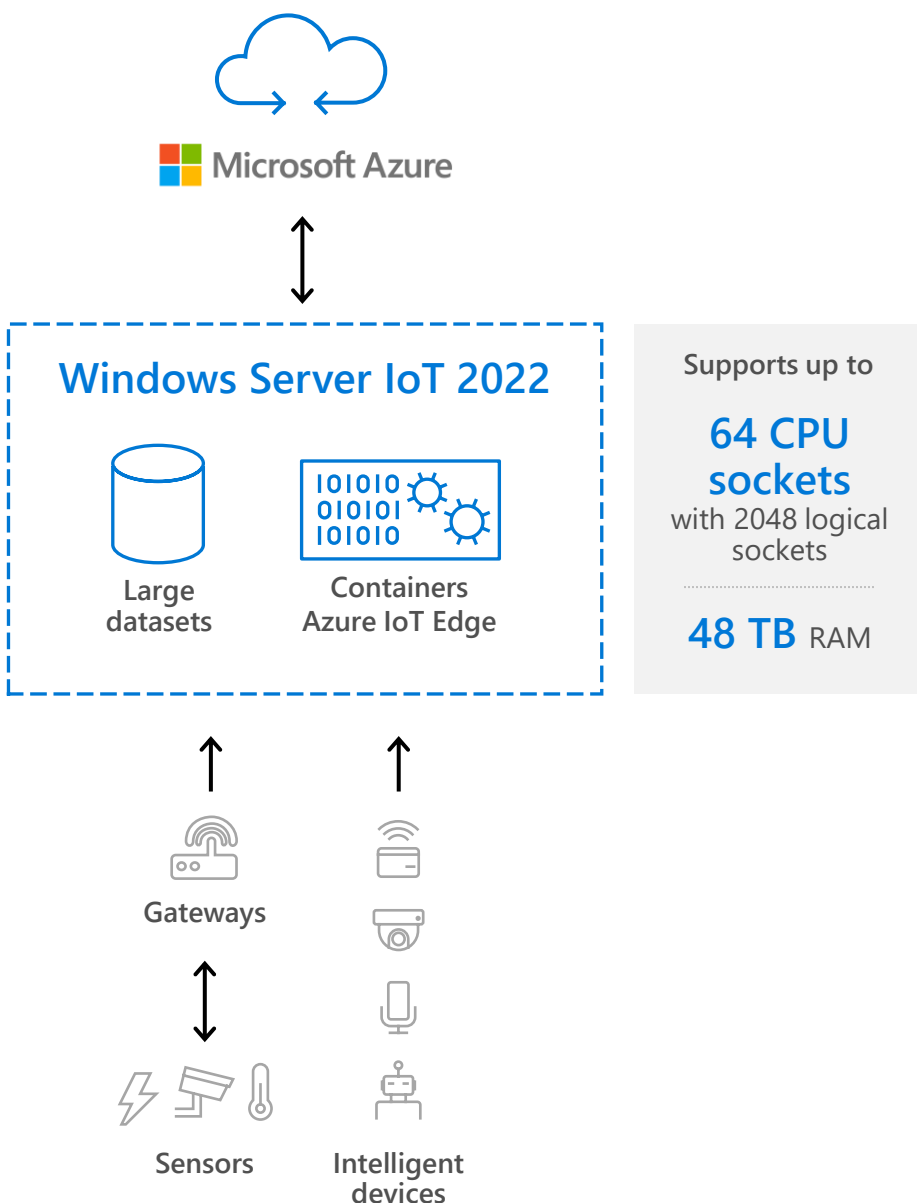
Address latency and connectivity requirements

Maintain data on-premises to meet privacy or regulatory requirements

Connect to a large number of devices

Offer advanced resiliency features

Leverage Azure, hosting containers managed by Azure IoT Edge



Microsoft SQL Server IoT

Full power of SQL Server for dedicated use scenarios

Microsoft SQL Server has been available for embedded use for many years. Licensed through the OEM channel specifically for dedicated-use, server class edge devices running purpose-built software applications, Microsoft SQL Server IoT 2019 is the binary equivalent to SQL Server 2019. Combined with Windows Server IoT 2022 and a specific purpose application, Microsoft SQL Server IoT 2019 provides a comprehensive database platform for mission-critical data analytics and offers industry-leading performance, availability, and security. New functionality includes intelligent query processing, accelerated database recovery, and In-Memory Database optimization, all of which improve performance and scale over prior versions.

For clarity, Microsoft SQL Server IoT 2019 has the same features and functionality as Microsoft SQL Server 2019, but different licensing and distribution. **Microsoft SQL Server IoT 2019 is only licensed through the OEM channel under special dedicated use rights. It must be installed on the device with an integrated (embedded) software application (or suite of applications) dedicated and designed for a specific use. Licensing terms do not permit use as a general-purpose enterprise database.**

Many customers license embedded SQL Servers together with Windows Server embedded/IoT. Together, these two products provide a powerful platform that enables competitive solutions.

Which SKU should I use in my solution?

Microsoft offers two SQL Server IoT editions – Standard and Enterprise. The table below provides some general information regarding which version may be right for the solution you are building.

What type of database solution does your application require?

Edition

Full-featured database for mid-tiered applications on servers not exceeding 24 cores.

SQL IoT 2019
Standard

Intelligent applications requiring mission critical in-memory performance, security, and high availability.

SQL IoT 2019
Enterprise

Licensing Microsoft SQL Server IoT

Like Windows Server IoT 2022, SQL Server embedded/IoT is only licensed through the OEM channel under special dedicated use rights as determined by special licensing agreements. Microsoft offers two SQL Server IoT editions – Standard and Enterprise. The table below highlights some of the product specifications and licensing provisions.

Licensing provisions	Standard	Enterprise
Max # of Cores	24	OS Max
Max memory utilized	128	OS Max
Maximum storage size	524 PB	524 PB
Licensing options (Please see Note 1)	Two license options: (a) Physical Cores on a Server. (b) Individual Virtual OSE.	
Core-based licensing	YES	YES
Server + CAL licensing	YES	n/a
Embedded application	Mandatory	Mandatory

Note 1: For complete licensing details, OEMs should refer the SQL Server IoT Product Terms. End customers should refer to the Microsoft Software License Terms for SQL Server IoT.

Microsoft 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. Please refer to the information on the [Licensing and Programs Resource Center \(https://devicepartner.microsoft.com/en-us/licensing-and-programs\)](https://devicepartner.microsoft.com/en-us/licensing-and-programs).

Microsoft SQL Server IoT – Support

Long term support and stability for dedicated purpose applications

Microsoft SQL Server IoT is a Long-Term Servicing Channel (LTSC) offering The LTSC channel is appropriate for systems that require a longer servicing option and functional stability over many years. Deployments will not be affected by new features and functionality but will continue to receive security and non-security updates. Users are entitled to five years of mainstream support and five years of extended support through the End of Support in August 2031.

Starting with SQL Server 2017, Microsoft adopted a simplified, predictable servicing lifecycle:

- Service Packs (SPs) are no longer available
- Cumulative updates (CUs) are delivered bi-monthly and accommodate localized content
- General Distribution Releases (GDRs) delivered as needed during the product lifecycle for security-related fixes
- CU and GDRs are voluntary updates (unless you have automatic updates turned on)

Scenarios for dedicated edge servers



Security and safety

Identify people, activities and potential threats, using Artificial Intelligence (AI)-enabled cameras, to increase facility security with edge-based Video Management Systems for storage and deeper analysis

Manage and route calls in 911 call centers



Manufacturing

Monitor equipment sensors to calculate performance metrics, solve production problems, and predict required maintenance, improving field-service efficiency

Use video analytics and AI to perform real-time defect detections on the production line



Smart buildings

Protect with intelligent enterprise fire and life safety monitoring solutions

Connect building devices and systems to bring more efficient operations and control to building owners, operators and occupants

Optimize energy, air quality, security, lighting and HVAC with machine learning



Healthcare

Support medical imaging technology such as picture archiving and communication systems (PACS) for patient images

Use automated medication dispensing systems and protect patient data on-premises

Maintain vital equipment by detecting and fixing problems before they occur



Smart cities

Monitor complex and rapidly changing environmental conditions like air and water

Track status and optimize routes based on conditions with sensors on public transit vehicles connecting to server power

Deliver filtered data, once bandwidth is secure, for cloud-based analysis to improve jet engine fuel usage and maintenance



Retail

Monitor shelf inventory and quality (object detection)

Consolidate data from kiosks and digital signage devices, and transmit the data to a datacenter for data visualization, customer loyalty applications, and customer buying habits research

Use a dedicated backend server database for content management services in digital signage or broadcast television systems

Evaluate and license through authorized distributors

Windows Server IoT 2022 and SQL Server IoT are generally **licensed through Microsoft authorized distributors**. These distributors provide valuable information and resources that help support OEMs in bringing Windows Server IoT solutions to market quickly.

They can help in several ways including:

- Helping choose the right product and navigating the licensing process
- Providing evaluation software and OEM Preinstall kits (OPKs)
- Facilitating the build process with technical support and by offering value-added services
- Discussing pricing and licensing options
- Supporting OEMs to bring their dedicated server or server appliance solutions to market

Agreement type	What it is	What it does	Signing parties
Distributor Agreement	Defines and governs the relationship between a Distributor and Microsoft	<ul style="list-style-type: none">• Provides a Distributor the rights required to procure and sell Microsoft products• Establishes the business rhythm, timing of interactions and guidance for the interaction between Microsoft and the Distributor	Microsoft entities Distributor entities
Customer License Agreement (CLA)	<p>Breadth agreement for Microsoft's indirect OEMs.</p> <p>Defines and governs the relationship between an Indirect OEM and Microsoft</p>	<ul style="list-style-type: none">• Provides an indirect OEM the rights required to license and install Microsoft products within solutions• Establishes the general product-agnostic licensing and utilization rights for the indirect OEM	Microsoft entities Indirect OEM entities
CLA additional terms	Extends the CLA with product-specific usage rights and restrictions	<ul style="list-style-type: none">• Guides an indirect OEM on how they may utilize a given product solution• Establishes restrictions on use cases where applicable• Defines product End of License (EOL) dates	Microsoft entities Indirect OEM entities

Licensing FAQs – Windows Server IoT

Is Windows Server IoT 2022 a new product from Microsoft?

The difference between Windows Server IoT 2022 products and Windows Server 2022 general purpose products lies in the licensing restriction and limitations with the Server IoT licensing program.

Prior Versions of Windows Server IoT include:

Windows Server 2019 for Embedded Systems

Windows Storage Server 2016

Windows Server 2016 for Embedded Systems

Windows Server 2012 R2 for Embedded Systems

Windows Server 2012 for Embedded Systems

Windows Server 2008 R2 for Embedded Systems

Windows Server 2008 for Embedded Systems

Is Windows Server IoT 2022 functionally the same as the general-purpose Windows Server 2022?

Windows Server IoT 2022 uses the same binaries as Windows Server 2022. 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 2022 is only licensed under special dedicated use rights through distributors and OEMs for fixed purpose devices (as has always been the case).

What are the licensing terms of Windows Server IoT?

The application is for a specific purpose only and cannot be used in conjunction with general-purpose PCs. Nor can it be used with other commercial applications such as accounting, email, word processing and CRM. The embedded application must be preinstalled with the operating system on the server and shipped with the hardware. For clarity, 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. Please refer to the information on the [Licensing and Programs Resource Center](#).

Does Windows Server IoT 2022 require Client Access Licenses (CALs)?

Yes, Windows Server IoT 2022 generally requires 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. To learn more, contact your Microsoft approved distributor.

How do I obtain a Windows Embedded Server license?

Windows Server IoT 2022 is available only through a Microsoft Authorized Regional Distribution Partner. To find a current distributor, please see: [Windows Embedded/IoT Distributor Information](#).

Licensing FAQs – Windows Server IoT

Does the Windows Server IoT 2022 license enable 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 was licensed, must remain the same.

Does Microsoft license Windows Server IoT 2022 directly to OEMs?

In certain high-volume cases, OEMs can license directly from Microsoft. Contact your Microsoft Account Manager to see if you qualify.

Can we provide a software only solution as a virtual machine using OEM Embedded Windows Server products?

No. The OEM channel requires that the server software be sold with new hardware. However, if an OEM sells the initial hardware server solution and the customer wants to add additional virtual machines (VMs), the OEM can sell additional licenses to cover the additional VMs.

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.

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

No. SA is not available through the OEM channel for Windows Server Embedded/IoT products.

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, meaning they're 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 commitment that we will support each LTSC release for 10 years and that features and functionality won't change over the course of that lifecycle. For more information, see: [Windows Server servicing channels: LTSC and SAC](#).

Licensing FAQs – Windows Server IoT

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

Yes, *however*, there 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, Telco) are granted *only when all physical cores have been licensed*.
- *ALL physical cores must be re-licensed to qualify for additional VMs.*

What is the Support Lifecycle for Windows Server IoT 2022?

Windows Server IoT 2022 is a LTSC release, which includes 5 years of mainstream support plus 5 years of extended support. End of support for Windows Server IoT 2022 will be August 2031.

Licensing FAQs – Microsoft SQL Server IoT

Is Microsoft SQL Server IoT 2019 a new product from Microsoft?

SQL Server IoT 2019 builds on a long history of SQL Server products which have been licensed through the Embedded Server/IoT licensing program.

Prior versions of Microsoft SQL Server IoT include:

SQL Server 2017 IoT
SQL Server 2016 for Embedded Systems
SQL Server 2014 for Embedded Systems
SQL Server 2012 for Embedded Systems
SQL Server 2008 R2 for Embedded Systems
SQL server 2008 for Embedded Systems
SQL Server 2005 for Embedded Systems

Is SQL Server IoT 2019 functionally the same as SQL Server 2019?

Microsoft SQL Server IoT 2019 editions (Standard or Enterprise) use the same binaries as the corresponding Microsoft SQL Server 2019 editions but are only licensed under special dedicated use rights through distributors and OEMs for specific, dedicated-use devices.

Is there a CAL-Less offer for SQL Server IoT as with Windows Server IoT?

The SQL Server IoT Core based licenses do not require CALs. CALs are required when licensing the Standard edition under the Server + CAL licensing model per SQL Server Product Terms (OEMs) or Microsoft Software License Terms (end users) and are incremental to any CALs paid for Windows Server IoT.

What are the licensing terms of SQL Server IoT?

Microsoft SQL Server IoT 2019 is only licensed through the OEM channel under special dedicated use rights. It must be installed on the device with an integrated (embedded) software application (or suite of applications) that cover a specific, dedicated use. License Terms do not permit use as a general-purpose enterprise database.

The embedded software application must provide the primary function of the solution. Please refer to the information on the [Licensing and Programs Resource Center](#).

How do I obtain an embedded Server license?

Embedded/IoT Servers are available only through Microsoft Authorized Regional Distribution Partners. To find a current distributor, please see: [Windows Embedded/IoT Distributor Information](#).

How much does SQL Server IoT 2019 cost?

SQL Server IoT is available in both Standard and Enterprise editions. Client Access License (CALs) are required depending on the use case systems configuration and the specific IoT Server edition installed. Please ask your OEM or Microsoft approved Distributor for pricing.

More information

Learn more about Windows Server IoT 2022

docs.microsoft.com/en-us/windows/iot-core/windows-server

Learn more about Windows Server 2022

www.microsoft.com/en-us/cloud-platform/windows-server

What's new in SQL Server 2019

<http://aka.ms/ss19>

SQL Server technical documentation

https://aka.ms/SQL_Server_2019_Features

Device Partner Center

devicepartner.microsoft.com/en-us

Contact a Microsoft Authorized Distributor

ASBIS[®]

For details and ordering contact ASBIS Experts
software@asbis.com