Microsoft Windows 11 IoT Enterprise Licensing Guide for IoT & Dedicated-Purpose Devices

Licensing Guide

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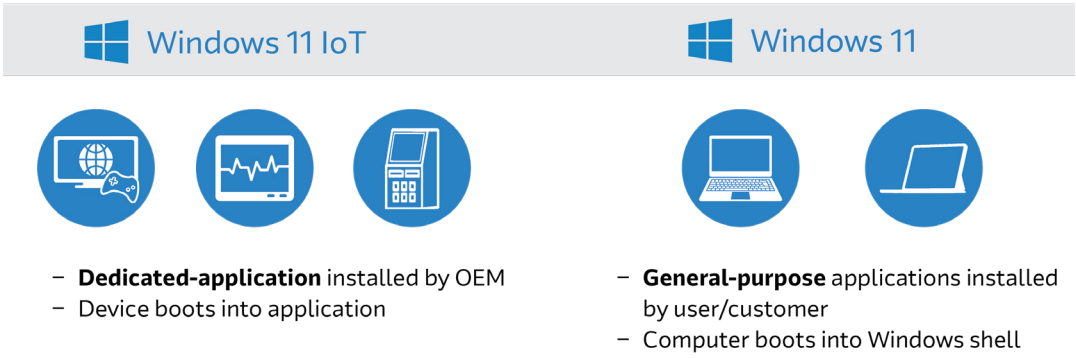
Dedicated-purpose (or fixed-function) devices are built to perform a pre-defined set of tasks. They are preloaded and delivered with the operating system and the application. Such devices are used in retail, factory automation, healthcare, signage, security/surveillance, and transportation applications. They typically have special requirements like longer lifecycles, controlled Windows updates, global deployment capabilities, etc. To support these requirements, Microsoft created the "IoT" family of products and offers several products to support OEM requirements.

Figure 1:

Dedicated-Purpose vs. General Purpose Devices



The Windows 11 "IoT" editions are available in several versions to fit specific types of embedded and IoT devices. The Enterprise editions are based on Windows 11 Enterprise but provide many additional features focused on OEMs building IoT devices. The differences between the versions are centered on usage and licensing terms. The table below compares the licensing channels and can guide OEMs on the correct channel to use when building dedicated appliances vs. general-purpose devices.

The products in the IoT channel have 10 years of lifecycle and the GAC editions received 3 years of support.

Table 1:

Comparison of the licensing channels available for Windows 11 IoT Enterprise

	OEM Embedded/ IoT License	OEM System Builder License	CSP & Volume Licenses
Dedicated purpose	✓	×	×
Usage	Okay to resell as part of a system	Okay to resell as part of a system	Cannot resell. For internal purpose only
Minimum order quantity (MoQ)	None	None	Minimum 5
License tied to end system	✓	✓	Tied to end-company
License tied to end-users	×	×	✓
End-user known at time of purchase	×	×	Required
Embedded application pre-installed on device (option)	✓	Optional	✓
Lifecycle	10 Years	2 Years	2 Years
Full client OS	✓	✓	Upgrade Only
Recovery media	Allowed	×	×
Cost	$	$$	$$$

Qualifications for Using the Windows 11 IoT Enterprise LTSC License Option

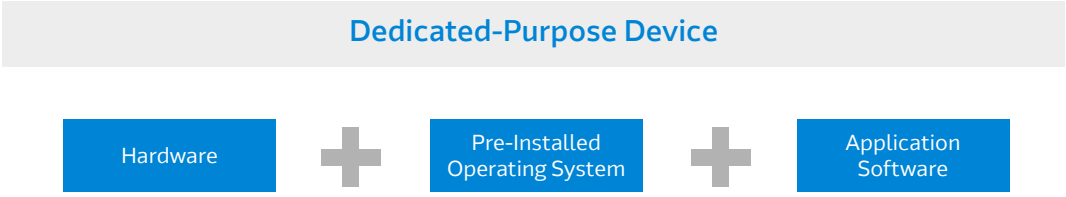
Devices must not be designed for use as a substitute for a general-purpose computing device. **The embedded software application must provide the primary function of the solution.**

Today, there is not an LTSC version of Windows 11 IoT Enterprise. Microsoft is not expected to release an LTSC version of Windows 11 IoT Enterprise until either end of 2023 or the end of 2024. The only option today for Windows 11 within the IoT Channel is the GAC or General Availability Channel which has an annual release schedule and each build that is released then receives 3 years of support. The LTSC edition when it is released will have 10 years of support.

Windows 11 IoT Enterprise LTSC is an OEM Embedded offering, meaning this channel is appropriate for OEMs building dedicated systems that require a longer lifecycle and functional stability over many years. To qualify for the OEM IoT Embedded licensing model, these requirements must be met:

- The application is for a specific purpose only and cannot be used with general-purpose PCs.
- The applications cannot be used with other commercial applications such as accounting, email, word processing, and CRM.
- The embedded application must be pre-installed with the operating system on the device and shipped with the hardware.

Figure 2:
Dedicated-Purpose Device



Windows 11 IoT Enterprise LTSC

Based on the full version of Windows 11 Enterprise, the IoT LTSC edition when launched in a few years, changes the license terms to focus on OEMs that build dedicated appliances, and the Long Term Service Channel provides for 10 years of support while locking into a single build version of Windows 11. OEMs no longer need to worry about new features or new builds of Windows 11 being pushed to the device which could in some cases cause a problem with their appliance. This gives OEMs full control over Windows updates and simplifies the support for systems.

Windows 11 IoT Editions

The Windows 11 IoT editions provide different options for OEMs to align with their solutions:

- **Windows 11 IoT Enterprise General Availability Channel (GAC)** is based on full Windows 11 Enterprise supports Win32 and Win10 Universal Applications. The GAC edition allows devices to stay current on the latest build but offers less control of Windows updates and has a much shorter support timeframe with only 36 months of support per build version.

– **Windows 11 IoT Enterprise Long-Term Servicing Channel (LTSC)** will be the most popular edition as it will be based on the full Windows 11 Enterprise. It locks devices into a single build of Windows 11 and allows full control of Windows updates. Also, 10 years of support and a great pricing model are compelling advantages for most OEMs. We do not expect a Win 11 IoT Ent LTSC edition until end of 2023 or end of 2024.

Win 11 IoT Enterprise vs. Win 11 Professional

Many OEMs building systems for customers make the mistake of using the preloaded direct OEM license for Windows 11 Professional or purchase the OEM System Builder version of Windows 11 Professional. For OEMs building a dedicated appliance, Microsoft created the OEM IoT Embedded channel-specific for dedicated appliances. Windows 11 IoT Enterprise comes with many features and advantages over the traditional Windows 11 Professional.

Table 2:
Comparison of Win 11 IoT Enterprise vs. Win 11 Professional

	Windows 11 Professional (GAC)	Windows 11 IoT Enterprise (GAC)
Channel	Direct OEM + OEM system builder	OEM IoT embedded
Target device	General use computer	Dedicated IoT appliance
Licensed by	Physical computer	Processor w/4 price tiers
Pricing	Single high-end	High-End, value, entry and base
Life cycle	Short	Long
Support cycle	36 months	36 years
Windows update	Required (optional 365-day delay)	Optional w/full control
Update type	Features & quality	Features & quality
Re-imaging rights	Not included	Included
External recovery	Not allowed	Allowed
Global shipments	Limited	Unlimited
Customization	Limited	Unlimited
Product key	Unique	Single

Licensing Windows 11 IoT Enterprise

The Windows 11 IoT Enterprise product uses a "Value-based" licensing model which allows for a lower licensing cost based on the processor performance of the appliance.

- **HIGH END:** For devices that use the higher-performing Intel® Xeon, Core™ i9, Core™ i7 or AMD Ryzen™ 7 processors the "High-End" license option must be used.
- **VALUE:** For devices using the Intel® Core™ i3, Core™ i5, and AMD Ryzen™ 3 or 5 series processors, the "Value" license option is the best.
- **ENTRY:** Devices with entry-level processors such as certain Intel Atom®, and select Celeron® and AMD G-series, the "Entry" license lowers the pricing to support a lower cost device.
- **BASE:** For Devices that use the ARM NXP processor the "Base" license option must be used.

This licensing process is a 100% honor system as Windows 11 supports all x86 and some ARM processors. The actual installation of the Windows 11 IoT Enterprise product is a single installation with a single key. OEMs can simply purchase the appropriate COA sticker license and apply it to the device. The "High-End" license option covers "all" processors while the "Value" or middle option covers all processors at the same level or lower. It is common for some OEMs to simply use the High-End or Value to cover all options rather than attempting to manage 4 license options.

Value-Based Licensing Example: An OEM has 5 product offerings on their line card of products. Two offerings use the Intel® Core™ i5 and three offerings use the Intel® Celeron® N series processors. They can purchase the "Value" license for the Core™ i5 products and the "Entry" for the Celeron N series which would save them the most money. However, if they wanted to simplify and only purchase a single part number, they could use the "Value" license option on all 5 of their product offerings as it covers the i5 processor devices and anything lower performing.

Microsoft publishes an official Windows 11 IoT Enterprise Value-Based pricing processor list and makes it available via the Microsoft DPC or Device Partner Center. A copy can be requested from the Arrow Microsoft sales team. There are separate part numbers and pricing for each of the 4 processor tiers. Contact Arrow for the most current pricing.

OEM Certificate of Authentication (COA) License Overview

Watch our video instructions on how to hide your Microsoft Windows 10 product key

Many OEMs incorrectly believe that the product key or the product activation key constitutes an actual license. However, in the OEM channels, the license is a physical sticker called a COA sticker. When an order for the Windows 11 IoT Enterprise product is placed, an envelope with the physical COA sticker(s) is sent. OEMs can purchase the licenses in singles (-1P), ten packs (-10P), and even one hundred packs (-100P) by changing the ending on the part number to represent the pack size. Larger pack sizes include a pricing discount.

For the Windows 11 IoT Enterprise family of products, there are two types of COA sticker licenses to choose from depending on the product key process. The most common and simplified option that most OEM customers use is the "ePKEA" (embedded Product Key Entry Activation) option. This option has a one-time-key request process where a single ePKEA key is requested from Microsoft. OEMs can simply "embed" the single ePKEA key into the primary image. The single key is used repeatedly to activate and enable products. Arrow strongly suggests hiding this key to protect it from misuse.

The COA sticker for the ePKEA product is much smaller and has no individual product key printed on it.

The second less popular option is called the "PKEA" (Product Key Entry Activation). For this option, a unique individual product key is printed on every single COA. This requires a technician to enter a unique key on every device and the COA sticker has the unique key printed on it. This can add time to the integration process. Some OEMs prefer to have the key on the COA.

See the figures below to compare examples of the ePKEA vs. the PKEA COA license options. The actual printed COAs have code names. For the PKEA COA's you have the "Ruby". For the thumbnail ePKEA COA's you have the "Jade" thumbnail COA.

Figure 3:

PKEA COA Options vs ePKEA COA Option

PKEA - Ruby COA license sticker

ePKEA - Jade COA license sticker

Licensing Channel Comparison of OEM IoT Embedded vs. CSP Volume

Finding the right licensing options for the Windows 11 Enterprise can be confusing given the number of available options. This section covers the differences in purchasing Windows 11 Enterprise via the OEM IoT Embedded channel vs. the CSP Volume channel.

OEM IoT Embedded Channel

OEMs building a dedicated appliance should use the OEM IoT Embedded channel and purchase the full OEM license of Windows 11 "IoT" Enterprise. The OEM channel provides a full OEM license and does not require end-user customer information when ordering. The OEM license is a COA sticker, and the sticker license is applied to the physical device. The license then lives and dies with the device and may not be transferred to a new device. If the COA sticker is lost or damaged, purchasing a full new COA license is required. Failed components can be replaced with comparable components, and re-installation and reactivation on the device with the COA is allowed as often as needed. The product key and the activation are not licenses but instead, enable the product. The COA sticker is the license and can be re-installed and re-activated on the device with the COA as often as needed. However, if the device fails and a complete replacement system is purchased, the replacement system will need a new COA sticker license.

With the OEM IoT Embedded channel, the ePKEA single product key option allows OEMs to request a single product key good for up to 50K activations. The key is to the OEM CLA agreement, not the end-customer. This allows OEMs to use the same single key for all systems they sell and ship.

CSP Volume Channel

The CSP Volume channel is intended for end-user companies that range in small to enterprise-level, to purchase Microsoft licenses for their internal use. It is used for general-purpose computing such as computers used for daily work activities including email, internet, spreadsheets, presentations, and CRM activities. CSP Volume channel versions should not be used for dedicated-appliance solutions. It does not have a physical COA sticker, instead the end-user receives an email with volume agreement details that are used to access the CSP cloud portal website and that is where Microsoft tracks the ownership and licenses.

Higher pricing, more complex product key management, and limited global shipment are some of the top concerns of using CSP Volume. OEMs should avoid using the CSP Volume Licensing and build using the OEM version.

First and most important item to understand about CSP Volume licensing for Windows 11 — Microsoft only offers "Upgrade" licenses. This means the device must have a full OEM Windows 10 Pro, 11 Pro or older Windows 7 Pro or 8 Pro to qualify for the Windows 11 Enterprise upgrade license. For new devices, companies must first purchase a full OEM Windows 11 Pro license just to get started. From there, CSP Volume Windows 11 Enterprise upgrade must be purchased.

CSP Volume licenses are tied to end-user companies and end-user company info must be provided at the time of purchase. This is very difficult for some OEMs as they might not know who will be using their devices when they are building and loading the Windows operating system. Most important, OEMs cannot purchase the CSP License in their company's name and then resell it. This is a common mistake that can lead to some serious legal penalties in case of audits. When purchasing CSP Volume licensing, companies must sign an CSP Volume agreement in a company name and the licenses purchased within the open agreement belong to the company within the agreement. Lastly, the CSP Volume licensing price is high compared to the Value-based pricing options for the full OEM license. Companies could pay as much as double the price for an upgrade license compared to a full OEM license.

Product keys are tied to the end-user company requiring OEMs to change the key for every customer and making sure that one customer's key is not used with other customers' systems. Logging into the Microsoft CSP Cloud Portal Service Center is required to obtain product keys and approvals for individual customers. This complicates the complex process of managing and maintaining product keys.

Lastly, CSP Volume licenses must be purchase from an authorized distributor within the same region as the end-user customer. This dramatically limits global distribution capabilities as companies must source the CSP Volume licenses from many regions of the globe and deal with many distributors.

In summary, higher pricing, more complex product key management, and limited global shipment are some of the top concerns of using CSP Volume. OEMs should avoid using the CSP Volume licensing and build using the OEM version.

Windows 11 Enterprise LTSC vs Windows 11 "IoT" Enterprise LTSC

TThe product is available in either the CSP Volume or the OEM IoT Embedded Channel. The product itself is identical however the licensing terms and method of purchase and distribution are very different. The CSP Volume channel edition named Windows 11 Enterprise is specifically for general-purpose systems. The support cycle for the CSP Volume channel is only 3 years and is not ideal for static systems with long life cycles. The license is also strictly an upgrade requiring the hardware device to already have a full OEM license. The Windows 11 IoT Enterprise edition is intended for a dedicated appliance and is a full OEM license. Both products are licensed differently and have very different pricing structures. See the comparison chart:

Table 3:
Comparison of Windows 11 Enterprise LTSC vs Windows 11 "IoT" Enterprise LTSC

	Windows 11 Enterprise LTSC	Windows 11 "IoT" Enterprise LTSC
Channel	CSP Volume, open value, select, EA	OEM IoT embedded
Licensed against	End user company	Hardware
Licensed by	Physical computer	Physical computer
Intended use	General purpose	Dedicated appliance
Client license	Upgrade only — requires base OEM license	Full OEM license
Pricing	$230 - $295 depending on end-users	Under $155 depending on processor
Life cycle	Short	Long
Support cycle	3 years	3 years
Windows update	Quality updates only	Quality updates only
Global shipments	Limited	Unlimited
Media & key locations	CSP Cloud Portal	DPC & ON COA
Media required	Volume	OEM
Product key	Tied to end-user	Tied to hardware or OEM

Downgrade Rights vs. Migration Rights

For OEM IoT Embedded licensing, it is common for OEMs to migrate their devices from older Windows O/S versions to Windows 11 IoT Enterprise. A frequently asked question is — "Can I purchase a COA sticker license for Windows 11 IoT Enterprise, apply it to a device and yet load my older Windows O/S image?". The answer is yes, however, OEMs must understand the difference between downgrading and migrating to stay compliant with the Microsoft license terms.

The most common request is from customers moving from the Windows 7 family of products due to the End of Support as of January 2020. OEMs that need to migrate their solution to Windows 10 can use "Migration Rights" to migrate all the systems to Windows 10 within a 12 month window. Medical OEMs that need certifications and testing can get up to 24 months. This process allows OEMs to purchase the Windows 10 IoT Enterprise license option using the value-based processor licensing method and load an older Windows image.

Resources

- Click here for Microsoft getting started resources, part numbers, customer licensing agreement (CLA) and more
- Microsoft Parts List: Including end of life (EOL) & end of support (EOS) dates and COA types.

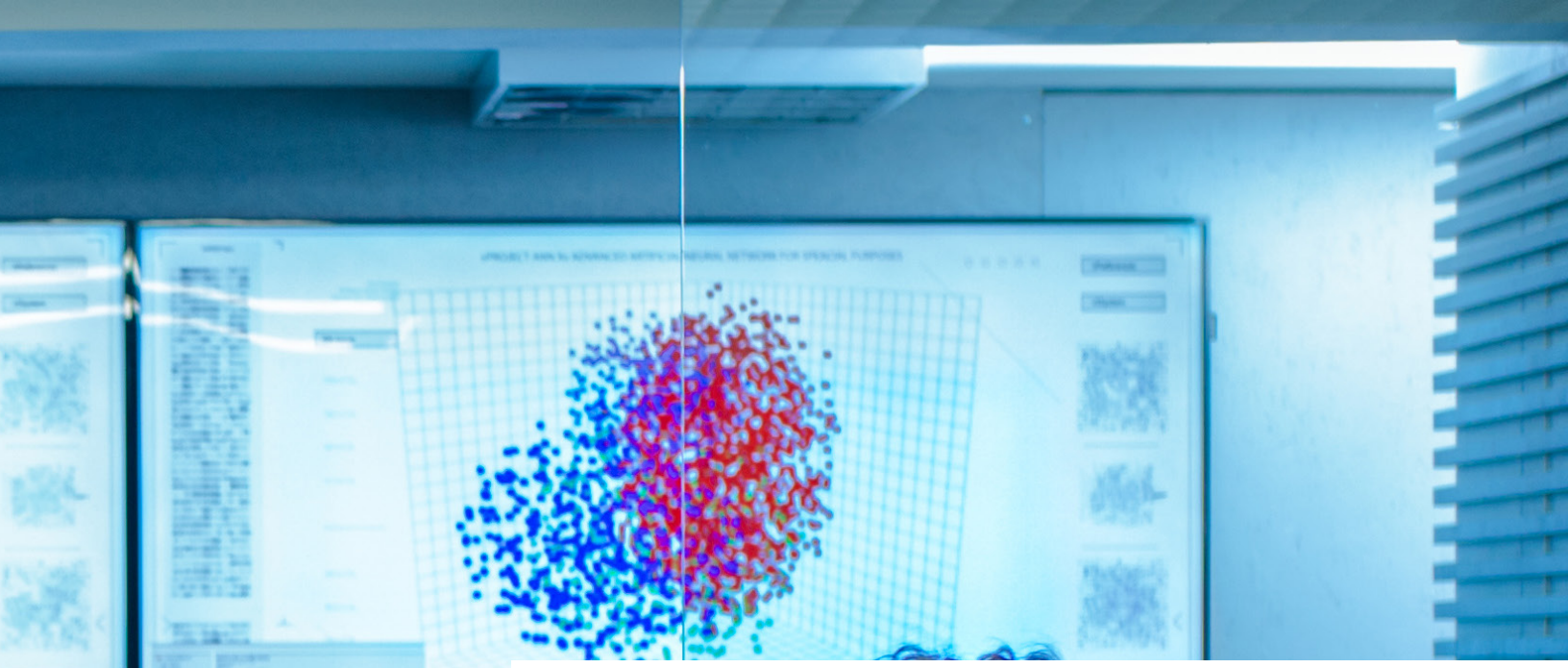
They must apply the Windows 11 IoT Enterprise COA sticker license to the device and yet the system will boot and run the older O/S. Given the device has a full OEM Windows 11 IoT Enterprise license applied to it, it has full rights to the Windows 11 product at any time the customer is ready to re-image the device with Windows 11. The catch, however, is that as per the license terms, the OEM is required to re-image the system with Windows 11 within the 12 to 24-month window depending on device type.

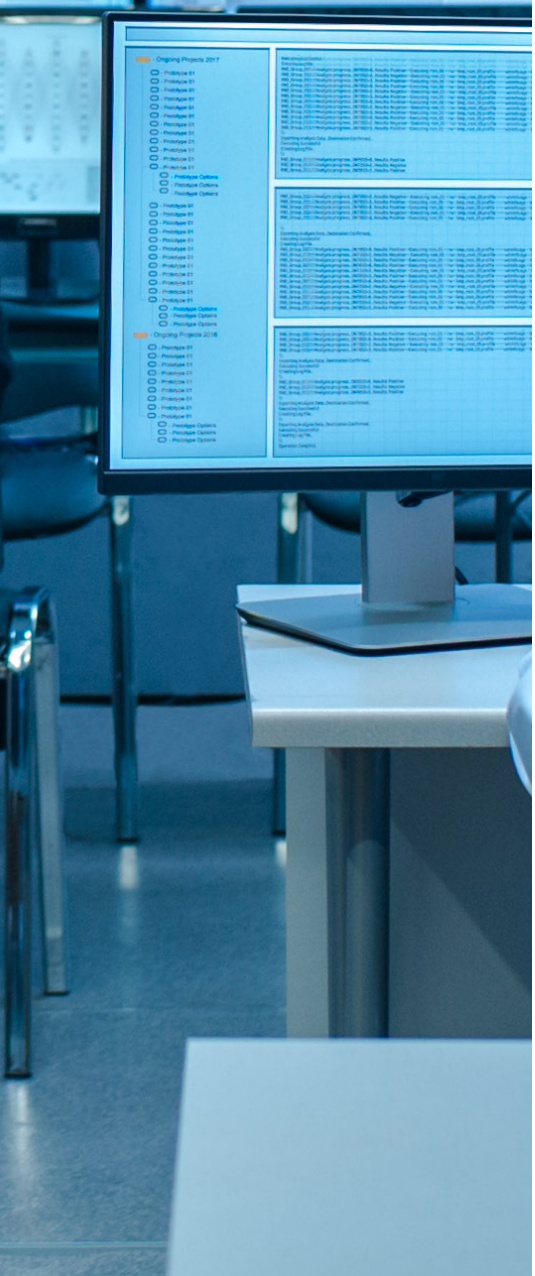
The primary reason that Microsoft has this limitation is since the OEM IoT Embedded products have 10 years of life, they expect OEMs use the product that they have purchased. If OEMs plan on running the older product on the system for years, they need to purchase the older product. That leads the discussion to the "Downgrade Rights" option which only comes into play when an OEM embedded product goes End of Life.

To use "Downgrade Rights", the OEM product must be End of Life. If the product is not End of Life and still available, OEMs must purchase the license for the product unless they are in the process of migrating the solution. These should be covered by using migration rights.

To implement downgrade rights, OEMs must first receive the downgrade request from the end-user customer as downgrade rights are the right of the end-user and not the OEM. To add to the extra challenge, the end-user must provide the downgraded image to the OEM. From there, OEMs must purchase the most current and most High-End version of the product family per the new Microsoft license terms and verify that the product they are purchasing has downgrade rights back to the older product.

Once the end-user customer has made the downgrade request and provided the downgraded image, OEM can then move forward with downgrade rights. They will purchase the current product COA sticker and apply it to each device while loading the older End of Life downgraded image. At any time during the product life, the OEM and the end-user customer have the right to upgrade back to the licensed product on the COA sticker license. Plus, there is the added benefit of leaving the older product installed for as long as needed as there is no time limit restriction. It is important to know that if the product has gone End of Life, it also is no longer supported as the End of Support date will have passed.





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Five Years Out