




# Licensing Windows Server 2019 on-premises

## Windows Server 2019 editions

There are three editions of Windows Server 2019:

### Licensing Model

Windows Server 2019 Datacenter	Windows Server 2019 Standard	Windows Server 2019 Essentials
<i>Core-based and CAL</i> 	<i>Core-based and CAL</i> 	<i>Per Server</i> 
Options for medium and large organizations		Options for small organizations

## Windows Server 2019 Essentials

- Licensed with a single Server license
- Host virtualization rights and rights to run in a single physical or virtual OSE
- Restricted to 25 user accounts and 50 devices
- Supported as a Long-Term Servicing Channel release

## Windows Server services

### Remote Desktop Services

- Remote Desktop Services (RDS) makes it possible to run an application or an entire desktop in one location but controlled in another. In addition to the traditional session virtualization scenario (formerly known as "Terminal Services"), RDS provides an extensible platform for a Virtual Desktop Infrastructure (VDI)
- RDS must be activated on the Windows Server, and users need licenses for all software they are using, plus an RDS CAL as well as a Windows Server CAL
- An RDS External Connector license is available as an option for external users

### Active Directory Rights Management Services

- Windows Rights Management Services is a security technology that works with RMS-enlightened applications (such as Microsoft Office 2019) to help safeguard digital information from unauthorized use
- Within the organization, users must have ADRMS CALs, and an ADRMS External Connector license is available as an option for external users

## Core-based and CAL licensing

A Core license must be assigned to each physical core in the server, with a minimum of 8 Core licenses per processor, and a minimum of 16 Core licenses per server. For example, a single processor server with 4 cores requires 16 Core licenses, and a 4-processor server with 8 cores on each processor requires 32 Core licenses.



Core licenses are purchased in 2-packs or 16-packs from resellers.

**Windows Server 2019 Client Access Licenses are required for either users or devices.**

*A Device CAL is assigned to the device and allows multiple users to use that device*



*A User CAL is assigned to the user and allows that user to use multiple devices*



## Licensing external users

External users can be licensed with either individual User or Device CALs or with a Windows Server 2019 External Connector license:

- A physical server must be licensed appropriately with Windows Server 2019 Standard or Datacenter licenses and then a single External Connector license is assigned to the server. There is just one edition of the External Connector license used regardless of whether the underlying server is licensed with Windows Server Standard or Datacenter edition
- The External Connector license allows unlimited external users to connect to and use the services of the physical server and any virtual machines running on the server
- If an organization has more than approximately 70 external users, it is likely to be most cost effective to use an External Connector license to license those users

## Downgrading versions and editions

- Windows Server 2019 **Datacenter** may be downgraded to any version of Windows Server Datacenter, Enterprise, Standard or Essentials
- Windows Server 2019 **Standard** may be downgraded to any version of Windows Server Enterprise, Standard or Essentials
- Windows Server 2019 **Essentials** may be downgraded to any previous version of Windows Server Essentials

## Licensing virtual machines/containers

### Windows Server 2019 Datacenter

- The server must be fully licensed with Core licenses (as described in the Core-based and CAL licensing section)
- An unlimited number of virtual machines may be run on the server

### Windows Server 2019 Standard

- The server must be fully licensed with Core licenses (as described in the Core-based and CAL licensing section)
- 2 virtual machines may be run on the server
- The server must be licensed again to run a further 2 virtual machines. For example, a single processor server with 8 cores requires 16 Core licenses to run 2 VMs. A further 16 Core licenses must be assigned to the server to run another 2 VMs

### Windows Server Containers

- Any number of Windows Server Containers without Hyper-V isolation may be run on licensed servers
- The rules for licensing Windows Server Containers with Hyper-V isolation are exactly the same as for virtual machines detailed above

## Servicing Channels

Two Servicing Channels are available for Windows Server 2019:

- **Semi-Annual Channel:** new feature releases twice a year, with each release supported for 18 months
- **Long-Term Servicing Channel:** new major version released every 2-3 years, with 5 years of mainstream support and 5 years of extended support

Both Servicing Channels receive regular security updates.

## License Mobility

- License Mobility is not available for Windows Server 2019
- Licenses may be reassigned to servers no more frequently than once every 90 days

## Step-Up licenses

- Customers who have existing Windows Server 2019 Standard Core licenses with Software Assurance may purchase Step-Up licenses to move to Windows Server 2019 Datacenter Core licenses
- The Step-Up license is priced at the difference in price of the two licenses and SA

## Volume activation

Product activation is the process of validating software with the manufacturer.



Activation confirms the genuine status of a product and that the product key has not been compromised. It establishes a relationship between the software's product key and a particular installation of that software on a device.

A **Multiple Activation Key (MAK)** is a volume license key that is used for one-time activation with activation services that are hosted by Microsoft. There are two ways to use MAK to activate computers:

- **MAK independent activation**  
Each computer must independently connect and be activated by Microsoft over the Internet or by telephone.
- **MAK proxy activation**  
A computer that is acting as a MAK proxy gathers activation information from multiple computers on the network, and then sends a centralized activation request to Microsoft on their behalf. MAK proxy activation is configured by using the Volume Activation Management Tool (VAMT).  
MAK activation is useful when not all of an organization's computers are conveniently located on the organization's networks.

**Key Management Service (KMS)** activation is done against a service hosted within an organization, and not with Microsoft, thus enabling organizations to activate systems within their network, eliminating the need for individual computers to connect to Microsoft for product activation. KMS is the default key for volume activation clients.

**Active Directory-based Activation** is a role service that allows organizations to use Active Directory Domain Services (AD DS) to store activation objects, which can further simplify the task of maintaining volume activation services for a network. With Active Directory-based Activation, no additional host server is needed, and activation requests are processed during computer startup.

