

Volume Licensing reference guide

# Windows Server 2016



### Introduction

This guide can help Microsoft Volume Licensing customers understand how Windows Server 2016 is licensed through Microsoft Volume Licensing programs. This guide is for informational purposes and does not supersede or replace any documentation covering Windows Server 2016 licensing.

Specific license terms for Windows Server 2016 are defined in the Microsoft Volume Licensing Product Terms, the Microsoft Volume Licensing agreement under which it was acquired, and/or its original equipment manufacturer (OEM) or Retail Software License Terms. This licensing guide is not a legal use rights document. Program specifications and business rules are subject to change.

For complete details and information on licensing, refer to the [Product Terms](#) for Volume Licensing use rights, or the [End User License Agreement](#) for OEM and retail. Additional information about Windows Server 2016, including the latest version of this guide, is available on the [Microsoft Volume Licensing website](#).

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## Product overview

Windows Server 2016 is the cloud-ready operating system that supports current workloads while introducing new technologies that make it easy to transition to cloud computing when a customer is ready. It delivers powerful new layers of security along with Microsoft Azure-inspired innovation for the applications and infrastructure that power business.

- ▶ **Strengthen security—starting at the operating system** Customers can help prevent malicious attacks and detect suspicious activity where it matters: their operating system and workloads. Rely on security features built into Windows Server 2016 to control privileged access, protect virtual machines, and harden the platform against emerging threats. [Learn more about security features.](#)
- ▶ **Be more efficient with a software-defined datacenter** Customers can bring flexibility and control to their datacenter while lowering costs with software-defined compute, storage, and networking. The datacenter can run with an automated and resilient operating system, and customers can access many of the same cloud-efficient features found in Microsoft Azure datacenters. [Learn more about software-defined datacenter features.](#)
- ▶ **Innovate faster with cloud-ready application workloads** Customers can securely deploy and run their existing applications on Windows Server 2016 to transform them into new cloud-native models. Help developers to innovate and create on-premises and cloud applications using the latest technology—containers, microservices, and Nano Server. [Learn more about enterprise application features.](#)

## Edition overview and comparison

The Windows Server 2016 product is streamlined and simple, making it easy for customers to choose the edition that is right for their needs. Choose from three primary editions of Windows Server, based on organization size as well as virtualization and datacenter requirements:

- ▶ **Datacenter edition** is ideal for highly virtualized and software-defined datacenter environments.
- ▶ **Standard edition** is ideal for customers with low density or non-virtualized environments.
- ▶ **Essentials edition** is a cloud-connected first server, ideal for small businesses with up to 25 users and 50 devices. Essentials is a good option for customers currently using the Foundation edition, which is not available with Windows Server 2016.

Service/role	Datacenter	Standard	Essentials
Active Directory Certificate Services	●	●	■ <sup>1</sup>
Active Directory Domain Services	●	●	■ <sup>2</sup>
Active Directory Federation Services	●	●	●
Active Directory Lightweight Directory Services	●	●	●
Active Directory Rights Management Service <sup>6</sup>	●	●	●
Device Health Attestation	●	●	
DHCP Server	●	●	●
Domain Name System (DNS) Server	●	●	■
Fax Server	●	●	●
File Services	●	●	■ <sup>3</sup>
Host Guardian Service	●	●	
Hyper-V	●	●	●
Network Controller	●		

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Network Policy & Access Services	●	●	■
Print & Doc Services	●	●	●
Remote Access	●	●	■ <sup>4</sup>
Remote Desktop Services <sup>7</sup>	●	●	■ <sup>5</sup>
UDDI Services	●	●	●
Volume Activation Services	●	●	
Web Server (IIS)	●	●	■
Windows Deployment Services	●	●	●
Windows Server Essentials Experience	●	●	■
Windows Server Update Services (WSUS)	●	●	●

● Full

■ Automatically Installed/Configured

<sup>1</sup> Limited to creating Certificate Authorities—there are no other Active Directory Certificate Services features (Network Device Enrollment Services, Online Responder Service). See Active Directory Certificate Services role documentation on TechNet for more information.

<sup>2</sup> If Active Directory DS role is installed, must be root of forest and domain and have all FSMO roles.

<sup>3</sup> The data de-duplication feature is not available.

<sup>4</sup> Limited to 50 RRAS connections, 10 IAS connections; Direct Access and VPN are supported.

<sup>5</sup> Only the RD Gateway role service is installed and configured, other RDS role services including RD Session Host are not supported.

<sup>6</sup> Requires additive access license for Windows Server Active Directory Rights Management Services.

<sup>7</sup> Requires additive access license for Windows Server Remote Desktop Services, with the exception of using the Remote Web Access feature of the Essentials edition.

## Feature overview and comparison

As with prior versions, Windows Server 2016 Standard and Datacenter editions include the core functionality of Windows Server and offer different virtualization rights. New features were added to both editions of Windows Server 2016, including Host Guardian Service and Nano Server. Windows Server 2016 Datacenter edition includes additional features such as Shielded Virtual Machines, software-defined networking, Storage Spaces Direct, and Storage Replica. For more information on features, visit the [Windows Server 2016 product page](#).

Feature	Datacenter	Standard	Essentials
Core functionality of Windows Server	X	X	X
Operating system environment (OSEs/Hyper-V containers)	Unlimited	Two <sup>1</sup>	One <sup>2</sup>
Windows Server containers	Unlimited	Unlimited	
Host Guardian Service	X	X	
Nano Server <sup>3</sup>	X	X	
Shielded Virtual Machines	X		
Networking stack	X		
Storage features including Storage Spaces Direct and Storage Replica	X		

<sup>1</sup> Windows Server Standard edition permits use of one running instance of the server software in the physical OSE on the licensed server (in addition to two virtual OSEs), if the physical OSE is used solely to host and manage the virtual OSEs.

<sup>2</sup> Windows Server Essentials edition allows one OSE to run the Windows Server Essentials software only.

<sup>3</sup> Software Assurance is required to deploy and operate Nano Server.

### Server licensing overview

With the launch of Windows Server 2016 Datacenter edition and Windows Server 2016 Standard edition, Windows Server licensing transitioned from being processor-based to being core-based. For both Standard and Datacenter editions, the number of core licenses required equals the number of physical cores on the licensed server, subject to a minimum of 8 core licenses per physical processor and a minimum of 16 core licenses per server. Core licenses are sold in 2-packs and 16-packs. For complete details and information on licensing, refer to the [Product Terms](#).

Attribute	Datacenter	Standard	Essentials
Licensing model	Per Core/CAL <sup>1</sup>	Per Core/CAL <sup>1</sup>	Specialty servers <sup>2</sup>
License type	Core license	Core license	Server license
OSEs/Hyper-V containers	Unlimited	Two <sup>3</sup>	One <sup>4</sup>
Windows Server containers	Unlimited	Unlimited	

<sup>1</sup> All physical cores on the server must be licensed, subject to a minimum of 8 core licenses per physical processor and a minimum of 16 core licenses per server.

<sup>2</sup> Windows Server Essentials edition server is for either one or two processor servers.

<sup>3</sup> Windows Server Standard edition permits use of one running instance of the server software in the physical OSE on the licensed server (in addition to two virtual OSEs), if the physical OSE is used solely to host and manage the virtual OSEs.

<sup>4</sup> Windows Server Essentials edition permits use of one running instance of the server software in the physical OSE on the licensed server (in addition to one virtual OSE), if the physical OSE is used solely to host and manage the virtual OSE.

#### Virtualization rights

- ▶ **Datacenter edition** – When all physical cores on the server are licensed, Windows Server Datacenter edition provides rights to use unlimited operating system environments (OSEs) or Hyper-V containers and unlimited Windows Server containers on the licensed server.
- ▶ **Standard edition** – When all physical cores on the server are licensed, Windows Server Standard edition provides rights to use two Operating System Environments (OSEs) or Hyper-V containers and unlimited Windows Server containers on the licensed server.
  - For example, a 2-processor server with 8 cores per processor requires 16 core licenses (in other words, one 16-pack of core licenses or eight 2-packs of core licenses) and gives rights to two OSEs or two Hyper-V containers. In the case of this example, for each additional two OSEs or two Hyper-V containers the customer wishes to use, an additional 16 core licenses must be assigned to the server.
  - Standard edition permits use of one running instance of the server software in the physical OSE on the licensed server (in addition to two virtual OSEs), if the physical OSE is used solely to host and manage the virtual OSEs
- ▶ **Essentials edition** – Each server license provides rights to use one running instance of the server software in either a physical OSE or virtual OSE on the licensed server.

#### Nano Server licensing

Nano Server is an elective deployment option that provides a more active servicing model, which is similar to the experience with Windows 10. These periodic releases are known as Current Branch for Business (CBB). This approach supports customers who are moving at a “cloud cadence” of rapid development lifecycles and wish to innovate more quickly. With the Current Branch for Business (CBB) servicing model, Nano Server continues to receive new features and functionality.

For this reason, Software Assurance is required to deploy and operate Nano Server. Customers with active Software Assurance on Windows Server Standard or Datacenter licenses may install and use the Nano Server deployment option. Active Software Assurance is also required on Windows Server Base CALs. If the customer is licensed to access to advanced

server functionality, such as Remote Desktop Services, active Software Assurance is also required on those applicable Windows Server Additive CALs.

Learn more about [Nano Server](#).

## Determining the required number of core licenses

Server software licensing for Windows Server 2016 Standard and Datacenter editions requires core licenses. For each server, the number of core licenses required equals the number of physical cores on the licensed server, subject to a minimum of 8 core licenses per physical processor and a minimum of 16 core licenses per server. Core licenses are sold in 2-packs and 16-packs. For complete details on server licensing, refer to the [Product Terms](#).

### Minimum requirements for Standard and Datacenter editions

The table below provides examples for various server configurations, and the minimum number of core licenses required.

- ▶ **Standard:** When all cores on the server are licensed (subject to a minimum of 8 core licenses per physical processor and a minimum of 16 core licenses per server), Standard has rights to use two OSEs or two Hyper-V containers and unlimited Windows Server containers.
- ▶ **Datacenter:** When all cores on the server are licensed (subject to a minimum of 8 core licenses per physical processor and a minimum of 16 core licenses per server), Datacenter edition has rights to use unlimited OSEs, Hyper-V containers, and Windows Server containers.

Server licensing Windows Server Standard & Datacenter	1-processor server		2-processor server		4-processor server	
	Required # cores licenses <sup>1</sup>	Required # 2-pack SKUs <sup>2</sup>	Required # cores licenses <sup>1</sup>	Required # 2-pack SKUs <sup>2</sup>	Required # cores licenses <sup>1</sup>	Required # 2-pack SKUs <sup>2</sup>
2 cores per processor	<b>16</b>	8	<b>16</b>	8	<b>32</b>	16
4 cores per processor	<b>16</b>	8	<b>16</b>	8	<b>32</b>	16
6 cores per processor	<b>16</b>	8	<b>16</b>	8	<b>32</b>	16
8 cores per processor	<b>16</b>	8	<b>16</b>	8	<b>32</b>	16
10 cores per processor	<b>16</b>	8	<b>20</b>	10	<b>40</b>	20

<sup>1</sup> Core licenses are sold in 2-packs as well as optional 16-packs (for convenience).

<sup>2</sup> Eight 2-packs and one 16-pack are priced the same and provide equivalent use rights. However, point counts may vary, so MPSA and Open Volume customers should assess which pack sizes work best for them.

### Licensing requirements of additional OSEs for Standard edition

Standard edition has rights to use two operating system environments (OSEs) or two Hyper-V containers and unlimited Windows Server containers when all cores on the server are licensed (subject to a minimum of 8 core licenses per physical processor and a minimum of 16 core licenses per server). Once a server is licensed, customers may wish to license the server for additional OSEs or Hyper-V containers. This practice is often referred to as “stacking”, and is allowed with Standard edition.

The table below provides examples of “stacking” scenarios for various server configurations, the minimum number of licenses required, and the resulting number of OSEs or Hyper-V containers provided. As a rule, for each additional set of two OSEs or two Hyper-V containers the customer wishes to use, the server must be relicensed for the same number of core licenses. Note that Datacenter edition has rights to unlimited virtualization so “stacking” therefore is not required.

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“Stacking” Standard OSEs or Hyper-V containers	1-proc server with 16 cores		2-proc server with 16 cores		4-proc server with 32 cores	
	Required # cores licenses <sup>1</sup>	Required # 2-pack SKUs <sup>2</sup>	Required # cores licenses <sup>1</sup>	Required # 2-pack SKUs <sup>2</sup>	Required # cores licenses <sup>1</sup>	Required # 2-pack SKUs <sup>2</sup>
2 per server	<b>16</b>	8	<b>16</b>	8	<b>32</b>	16
4 per server	<b>32</b>	16	<b>32</b>	16	<b>64</b>	32
6 per server	<b>48</b>	24	<b>48</b>	24	<b>96</b>	48
8 per server	<b>64</b>	32	<b>64</b>	32	<b>128</b>	64
10 per server	<b>80</b>	40	<b>80</b>	40	<b>160</b>	80

<sup>1</sup> Core licenses are sold in 2-packs as well as optional 16-packs (for convenience).

<sup>2</sup> Eight 2-packs and one 16-pack are priced the same and provide equivalent use rights. However, point counts may vary, so MPSA and Open Volume customers should assess which pack sizes work best for them.

## Server access licensing overview

Server software access for Windows Server 2016 Standard and Datacenter editions requires access licenses. There are two classes of access licenses: Client Access Licenses (CALs) and External Connectors. There are two categories of access licenses: Base and Additive. There are two types of CALs: User and Device. There is one type of External Connector. For complete details on server access licensing, refer to the [Product Terms](#).

### Structure and application of access licenses

Product	Class	Category	Type
Windows Server	Client Access License	Base	Per user or device
Windows Server Remote Desktop Services	Client Access License	Additive	Per user or device
Windows Server Active Directory Rights Management Services	Client Access License	Additive	Per user or device
Microsoft Identity Manager User	Client Access License	Additive	Per user
Windows Server	External Connector	Base	Per server <sup>1</sup>
Windows Server Remote Desktop Services	External Connector	Additive	Per server <sup>1</sup>
Windows Server Active Directory Rights Management Services	External Connector	Additive	Per server <sup>1</sup>
Microsoft Identity Manager User	External Connector	Additive	Per server <sup>1</sup>

<sup>1</sup> Each physical server accessed requires an External Connector.

Server software access for Windows Server 2016 Standard and Datacenter editions requires either Client Access Licenses (CALs) or External Connectors. CALs are required for users that are either the customer's or its affiliates' employees, or its or its affiliates' onsite contractors or onsite agents. CALs or, alternatively, External Connectors are required for users that are *not* either the customer's or its affiliates' employees, or its or its affiliates' onsite contractors or onsite agents.

- ▶ **CALs:** Each user or device that accesses licensed servers requires a Windows Server CAL (Base CAL). Each user or device that accesses advanced functionality on the licensed server requires the associated CAL (Additive CAL). Additive CALs must be licensed in addition to the corresponding Base CALs for access to advanced functionality.
- ▶ **External Connectors:** External access to licensed servers requires CALs (Base CALs) for each accessing user or device or, alternatively, a Windows Server External Connector (Base EC) for each server that is accessed. External access to advanced functionality on licensed servers requires the associated CAL (Additive CAL) for each accessing user or device or, alternatively, the associated External Connector (Additive EC) for each server accessed. Additive External Connector Licenses must be assigned in addition to the corresponding Base access license(s) for access to advanced functionality on the licensed server.



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- ▶ **Base and Additive licenses:** Each Base access license provides access to server functionality and instances of the server software on the licensed servers. Each Additive access license provides access to advanced server functionality of the server software on the licensed servers. Additive CALs (or ECs) must be licensed in addition to the corresponding Base CALs (or ECs).
- ▶ **Access provided:** Windows Server 2016 CALs and External Connectors permit access to the corresponding version of the Windows Server 2016 server software and prior versions of Windows Server 2016 server software. To learn more about CALs, see the [Base and Additive Client Access Licenses](#) licensing brief.

Each user CAL permits one user, using any device, to access instances of the server software on their licensed servers. Each device CAL permits one device, used by any user, to access instances of the server software on their licensed servers. External Connectors permit access to instances of the server software on the licensed servers. Customers may use a combination of User and Device CALs, and External Connector licenses as required. To learn more about indirect-access licensing, see the [Multiplexing — Client Access License \(CAL\) Requirements](#) licensing brief.

### Requirements for internal users – Client Access License (CAL)

For users that are either the customer's or its affiliates' employees, or its or its affiliates' onsite contractors or onsite agents:

Access License	Category	Datacenter	Standard	Essentials
Windows Server	Base	CAL <sup>1</sup>	CAL <sup>1</sup>	n/a
Windows Server Remote Desktop Services	Additive	CAL <sup>2,3</sup>	CAL <sup>2,3</sup>	n/a <sup>4</sup>
Windows Server Active Directory Rights Management Services	Additive	CAL <sup>2</sup>	CAL <sup>2</sup>	CAL <sup>5</sup>
Microsoft Identity Manager	Additive	CAL <sup>2,6</sup>	CAL <sup>2,6</sup>	n/a

<sup>1</sup> Required for every user or device accessing the licensed server.

<sup>2</sup> Required for every user or device accessing the licensed server, if the advanced functionality is accessed.

<sup>3</sup> Also required for use of Windows Server to host a graphical user interface.

<sup>4</sup> Not required for Remote Web Access feature of the Essentials edition. Only the RD Gateway role service is installed and configured, other RDS role services including RD Session Host are not supported.

<sup>5</sup> Required for each User Account through which a user directly or indirectly accesses the advanced functionality.

<sup>6</sup> Also required for any person for whom the software issues or manages identity information.

### Requirements for external users – Client Access License (CAL) and/or External Connector (EC)

For users that are *not* either customer's or its affiliates' employees, or its or its affiliates' onsite contractors or onsite agents:

Access License	Category	Datacenter	Standard	Essentials
Windows Server	Base	CAL <sup>1</sup> / EC <sup>7</sup>	CAL <sup>1</sup> / EC <sup>7</sup>	n/a
Windows Server Remote Desktop Services	Additive	CAL <sup>2,3</sup> / EC <sup>8,3</sup>	CAL <sup>2,3</sup> / EC <sup>8,3</sup>	n/a <sup>4</sup>
Windows Server Active Directory Rights Management Services	Additive	CAL <sup>2</sup> / EC <sup>8</sup>	CAL <sup>2</sup> / EC <sup>8</sup>	CAL <sup>5</sup>
Microsoft Identity Manager	Additive	CAL <sup>2,6</sup> / EC <sup>8,9</sup>	CAL <sup>2,6</sup> / EC <sup>8,9</sup>	n/a

<sup>1</sup> Required for every user or device accessing the licensed server.

<sup>2</sup> Required for every user or device accessing the licensed server, if the advanced functionality is accessed.

<sup>3</sup> Also required for use of Windows Server to host a graphical user interface.

<sup>4</sup> Not required for Remote Web Access feature of the Essentials edition. Only the RD Gateway role service is installed and configured, other RDS role services including RD Session Host are not supported.

<sup>5</sup> Required for each user account through which a user directly or indirectly accesses the advanced functionality.

<sup>6</sup> Also required for any person for whom the software issues or manages identity information.

<sup>7</sup> Required for each physical server (any number of OSEs) that is accessed.

<sup>8</sup> Required for each physical server (any number of OSEs) that is accessed, if the advanced functionality is accessed.

<sup>9</sup> Also required for any external user for whom the software issues or manages identity information (in absence of CALs).

### Use of Client Access Licenses (CALs) or External Connectors (ECs)

CALs and ECs permit access to instances of the server software on licensed servers. CALs and ECs permit access to the same version, or earlier versions, of the server software. All server software access requires CALs, ECs, or CAL Equivalent licenses.

	Windows Server 2016	Windows Server 2012 R2	Windows Server 2012	Windows Server 2008 R2	Windows Server 2008
2016 CAL/EC	Yes	Yes	Yes	Yes	Yes
2012 CAL/EC	No	Yes	Yes	Yes	Yes
2008 CAL/EC	No	No	No	Yes	Yes

CALs and ECs are not required:

- For access by another licensed server (for example, one licensed server accessing another licensed server).
- To access server software running a web workload (such as content served within an Internet web solution on a publicly available website) or high performance computing (HPC) workload (such as server software used to run a cluster node, in conjunction with other software on a cluster node, for the purposes of supporting the clustered HPC applications).
- For access in a physical OSE used solely for hosting and managing virtual OSEs (for example, if 2016 is used in a physical OSE as the hypervisor, but all virtual OSEs are 2012, only 2012 CALs or ECs are required).

## Software Assurance benefits

Microsoft Volume Licensing customers with active Software Assurance get more out of their Microsoft software and services investments with access to a unique set of technologies, services, and license rights to help use Microsoft products efficiently. Here is a list of just a few of the benefits that customers can receive with Software Assurance for Windows Server:

- ▶ **New version rights:** Upgrade each product license covered by active Software Assurance to the most recent version when available.
- ▶ **Planning services:** Get in-depth planning assistance from qualified Microsoft partners or Microsoft Services to help evaluate and create a structured plan to deploy Microsoft solutions. Private Cloud, Management & Virtualization Deployment Planning Services (PVDPS) provides the fundamental analysis, business case, process, and technical procedures that customers need to optimize their datacenter.
- ▶ **Step-up licenses:** Customers with active Software Assurance can migrate from a lower- to higher-level edition of certain products (for example, from Windows Server 2016 Standard to Windows Server 2016 Datacenter). Note that the Step-up license option is not available through the Open License.
- ▶ **24x7 problem resolution support:** includes around-the-clock phone support for business-critical issues, or business hours' phone support for non-critical. In addition, unlimited email support is available for non-critical problems.
- ▶ **Back-up for disaster recovery:** Provides additional instances for servers used as offline ("cold") backups, to help customers recover in case of a catastrophic event. See below for additional details.
- ▶ **Azure hybrid use benefit (HUB):** Customer may upload and use their own Windows Server images on Microsoft Azure through Azure Virtual Machines ("Base Instances"), and pay only for the cost of service utilization of the Base Instances.
- ▶ **Nano Server:** Customers with active Software Assurance on Windows Server Standard or Datacenter licenses may install and use the Nano Server deployment option. Active Software Assurance is also required on Base Access Licenses and Additive Access Licenses.

### Disaster recovery rights

For each instance of eligible server software that a customer runs in a physical or virtual OSE on a licensed server, they may temporarily run a backup instance in a physical or virtual OSE on either (a) servers dedicated to disaster recovery and to the

customer's use, or (b) for instances of eligible software other than Windows Server, on Microsoft Azure Services, provided that the backup instance is managed by Azure Site Recovery to Azure. The license terms for the software and the following limitations apply to the customer's use of the backup instance.

The backup instance can run only during the following exception periods:

- For brief periods of disaster recovery testing within one week every 90 days.
- During a disaster, while the production server being recovered is down.
- Around the time of a disaster, for a brief period, to assist in the transfer between the primary production server and the disaster recovery server.

To use the software under disaster recovery rights, the customer must comply with the following terms:

- The OSE on the disaster recovery server must not be running at any other times except as above.
- The OSE on the disaster recovery server may not be in the same cluster as the production server.
- Other than backup instances running on Microsoft Azure Services, a Windows Server license is not required for the disaster recovery server if the Hyper-V role within Windows Server is used to replicate virtual OSEs from the production server at a primary site to a disaster recovery server.
- The disaster recovery server may be used only to run hardware virtualization software (such as Hyper-V), provide hardware virtualization services, run software agents to manage the hardware virtualization software, serve as a destination for replication, receive replicated virtual OSEs, test failover, and/or await failover of the virtual OSEs.
- Run disaster recovery workloads as described above.
- The disaster recovery server may not be used as a production server.
- Use of the software backup instance should comply with the license terms for the software.
- Once the disaster recovery process is complete and the production server is recovered, the backup instance must not be running at any other times except those times allowed here.
- Maintain Software Assurance coverage for all CALs, External Connector licenses and Server Management Licenses under which their access the backup instance and manage the OSEs in which that software runs.
- The customer's right to run the backup instances ends when their Software Assurance coverage ends.

Specific Software Assurance benefit eligibility can vary by Volume Licensing program (such as an Enterprise Agreement or Open Value Agreement) and product, as well as the number of qualifying licenses that are enrolled in Software Assurance. Visit [Getting Software Assurance](#) for more information.

## Software Assurance migrations and license grants

### Version upgrade rights – Windows Server Essentials edition

Volume Licensing customers with active Software Assurance on Windows Server Essentials licenses as of October 1, 2016, are eligible to upgrade to Windows Server 2016 Essentials. The information below provides a summary. For complete details on these benefits, and for applicable Volume License program rules, refer to the current [Product Terms](#).

Eligible license with Software Assurance	Software Assurance version upgrade to
(1) Windows Server Essentials	(1) Windows Server 2016 Essentials

### Core license grant – Windows Server Standard and Datacenter editions

Volume Licensing customers with active Software Assurance on Windows Server Standard or Datacenter processor licenses as of October 1, 2016, are eligible for license grants. The information below provides a summary. For complete details on these benefits, and for applicable Volume License program rules, refer to the current [Product Terms](#).

Eligible license with Software Assurance	Full core license grant	Additional core license grant
(1) Windows Server 2012 R2 Standard processor license	(16) Windows Server 2016 Standard core licenses	Documentation required. Includes “stacked licenses”.
(1) Windows Server 2012 R2 Datacenter processor license	(16) Windows Server 2016 Datacenter core licenses	Documentation required. Does not include “stacked licenses”.

### Original equipment manufacturer (OEM) licenses – enrollment into Software Assurance

Software Assurance is available for the latest version (determined by the most recent version available on the Volume Licensing Service Center) of the software: Windows Server 2016. Customers must acquire Software Assurance within 90 days of purchase (see the [Microsoft Volume Licensing Product Terms](#) for details). If a customer acquires Software Assurance for an OEM license, their use of the software becomes subject to the Microsoft Product Terms for that product and the terms and conditions or their organization’s volume licensing agreement.

## Software Assurance core license grants

Volume Licensing customers with active Software Assurance on Windows Server Standard or Datacenter processor licenses as of October 1, 2016, are eligible for license grants. The information below provides a summary. For complete details on these benefits, and for applicable Volume License program rules, refer to the current [Product Terms](#).

Microsoft is providing license grants to Software Assurance customers so that they may easily transition from Windows Server 2012 R2 (processor-based) to Windows Server 2016 (core-based). Grants of core licenses provide customers sufficient licenses to continue running the same number of workloads (OSEs) on their existing server configurations.

Windows Server 2012 R2 was the last version of Windows Server licensed under the Processor/CAL license model. Windows Server 2016 is licensed under the new Per Core/CAL model. Customers with Software Assurance on processor licenses at the launch of Windows Server 2016 (October 1, 2016) are eligible for certain use rights and grants.

Eligible licenses include Windows Server processor licenses with active Software Assurance obtained by the customer as of General Availability (October 1, 2016) and any Windows Server processor licenses with active Software Assurance subsequently obtained under the same agreement through a programmatic True-up.

Customers with eligible licenses may upgrade to and use the same edition of Windows Server 2016 in place of earlier versions of Windows Server during the then-current term of Software Assurance coverage. Such use is subject to the Windows Server 2012 R2 processor-based use rights in the September 2016 Product Terms.

Upon expiration of the then-current term of Software Assurance coverage on their eligible licenses, customers who have acquired perpetual licenses will receive Full Core License grants and are also eligible to receive Additional Core License grants. Core grants apply to subscription customers who elect the buyout option.

- **Full Core Licenses:** Each eligible license will be granted 16 core licenses for Windows Server 2016
- **Additional Core Licenses:** For servers with more than 8 cores per processor and more than 16 cores per server

To be eligible for Additional Core License grants, customers must establish and maintain a record of the physical hardware and the configuration of the licensed server to which their eligible licenses are assigned. A record must be established as of September 30, 2019, or the expiration of the Software Assurance term for the Eligible Licenses—whichever is earlier.

To establish the record, customers may use the [Software Inventory Logging \(SIL\)](#) technology or any equivalent software. SIL is included with Windows Server 2016 software and requires installation for servers running Windows Server 2012 R2, 20012, and 2008 R2. For Windows Server 2008 and prior, Microsoft recommends the [Microsoft Assessment and Planning \(MAP\) Toolkit](#).

Customers are not required to share, submit, or provide server documentation with Microsoft upon expiration or renewal to receive an Additional Core License grant. However, the customer must maintain documentation as proof of Additional Core License grant eligibility should a licensing or compliance scenario require validation.

## Microsoft Volume Licensing reference guide for Windows Server 2016

Additional Core License grants are applicable to “stacked licenses” for Standard edition. Additional Core License grants are not applicable to “stacked licenses” for Datacenter edition. A “stacked license” means an eligible license that is assigned to a licensed server in excess of the minimum number required to run the server software on that server.

- For example, a 2-processor server requires a minimum of one 2-processor license for Windows Server 2012 R2 Standard or one 2-processor license for Windows Server 2012 R2 Datacenter. In this example, any licenses assigned to this server in excess of the required minimum are considered to be “stacked licenses”.

Full and Additional Core Licenses are effective upon the renewal of Software Assurance for Windows Server or, for customers who do not renew Software Assurance coverage, upon the upgrade to Windows Server 2016. Full and Additional Core Licenses replace customers’ eligible licenses. With core licenses, use of Windows Server 2016 and prior versions is subject to core-based licensing and use rights.

Upon a lapse of customer’s Software Assurance coverage, Additional Core Licenses may not be assigned to a different server and used apart from the Full Core Licenses granted in association with the same eligible license.

### Core license grants – examples for Datacenter edition

The tables below provide examples of various server configurations, the minimum number of 2012 R2 processor licenses required to correctly license each server, and the resulting number of Windows Server 2016 core licenses granted. The grants provide sufficient core licenses to continue running the same number of workloads (OSEs) on the existing server.

One 2012 R2 Datacenter processor license covers two processors and provides rights to unlimited OSEs on a fully licensed server. It is unnecessary to “stack licenses” in excess of the required minimums. Any “stacked license” for Datacenter assigned the server will receive the Full Core License grant. Additional Core License grants are not applicable to “stacked licenses” for Datacenter.

Windows Server Datacenter	1-processor server										
Scenario – example server	A	B	C	D	E	F	G	H	I	J	K
Physical cores per processor	1	2	4	6	8	10	12	14	16	18	20
Total physical cores	1	2	4	6	8	10	12	14	16	18	20
Assigned – 2012 R2 processor licenses	1	1	1	1	1	1	1	1	1	1	1
Full Core License grant	16	16	16	16	16	16	16	16	16	16	16
Additional Core License grant	0	0	0	0	0	0	0	0	0	2	4
<b>Granted – 2016 core licenses</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>18</b>	<b>20</b>
Stacked – 2012 R2 processor license	1	1	1	1	1	1	1	1	1	1	1
<b>Granted – 2016 core licenses</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>

Windows Server Datacenter	2-processor server										
Scenario – example server	A	B	C	D	E	F	G	H	I	J	K
Physical cores per processor	1	2	4	6	8	10	12	14	16	18	20
Total physical cores	2	4	8	12	16	20	24	28	32	36	40
Assigned – 2012 R2 processor licenses	1	1	1	1	1	1	1	1	1	1	1
Full Core License grant	16	16	16	16	16	16	16	16	16	16	16
Additional Core License grant	0	0	0	0	0	4	8	12	16	20	24
<b>Granted – 2016 core licenses</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>20</b>	<b>24</b>	<b>28</b>	<b>32</b>	<b>36</b>	<b>40</b>
Stacked – 2012 R2 processor license	1	1	1	1	1	1	1	1	1	1	1
<b>Granted – 2016 core licenses</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>

## Microsoft Volume Licensing reference guide for Windows Server 2016

<b>Windows Server Datacenter</b>	<b>4-processor server</b>										
Scenario – example server	A	B	C	D	E	F	G	H	I	J	K
Physical cores per processor	1	2	4	6	8	10	12	14	16	18	20
Total physical cores	4	8	16	24	32	40	48	56	64	72	80
Assigned – 2012 R2 processor licenses	2	2	2	2	2	2	2	2	2	2	2
Full Core License grant	32	32	32	32	32	32	32	32	32	32	32
Additional Core License grant	0	0	0	0	0	8	16	24	32	40	48
<b>Granted – 2016 core licenses</b>	<b>32</b>	<b>32</b>	<b>32</b>	<b>32</b>	<b>32</b>	<b>40</b>	<b>48</b>	<b>56</b>	<b>64</b>	<b>72</b>	<b>80</b>
Stacked – 2012 R2 processor license	1	1	1	1	1	1	1	1	1	1	1
<b>Granted – 2016 core licenses</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>

### Core License grants – examples for Standard edition

The tables below provide examples of various server configurations, the minimum number of 2012 R2 processor licenses required to correctly license each server, and the resulting number of Windows Server 2016 core licenses granted. The grants provide sufficient core licenses to continue running the same number of workloads (OSEs) on the existing server.

One 2012 R2 Standard processor license covers two processors and provides rights to two OSEs on a fully licensed server. For rights to additional OSEs, customer may have “stacked licenses” in excess of the required minimums. In such cases, each “stacked license” for Standard assigned the server will receive the Full Core License grant and is eligible for the Additional Core License grant.

<b>Windows Server Standard</b>	<b>1-processor server</b>										
Scenario – example server	A	B	C	D	E	F	G	H	I	J	K
Physical cores per processor	1	2	4	6	8	10	12	14	16	18	20
Total physical cores	1	2	4	6	8	10	12	14	16	18	20
Assigned – 2012 R2 processor licenses	1	1	1	1	1	1	1	1	1	1	1
Full Core License grant	16	16	16	16	16	16	16	16	16	16	16
Additional Core License grant	0	0	0	0	0	0	0	0	0	2	4
<b>Granted – 2016 core licenses</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>18</b>	<b>20</b>
Stacked – 2012 R2 processor license	1	1	1	1	1	1	1	1	1	1	1
<b>Granted – 2016 core licenses</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>18</b>	<b>20</b>

<b>Windows Server Standard</b>	<b>2-processor server</b>										
Scenario – example server	A	B	C	D	E	F	G	H	I	J	K
Physical cores per processor	1	2	4	6	8	10	12	14	16	18	20
Total physical cores	2	4	8	12	16	20	24	28	32	36	40
Assigned – 2012 R2 processor licenses	1	1	1	1	1	1	1	1	1	1	1
Full Core License grant	16	16	16	16	16	16	16	16	16	16	16
Additional Core License grant	0	0	0	0	0	4	8	12	16	20	24
<b>Granted – 2016 core licenses</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>20</b>	<b>24</b>	<b>28</b>	<b>32</b>	<b>36</b>	<b>40</b>
Stacked – 2012 R2 processor license	1	1	1	1	1	1	1	1	1	1	1
<b>Granted – 2016 core licenses</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>20</b>	<b>24</b>	<b>28</b>	<b>32</b>	<b>36</b>	<b>40</b>

## Microsoft Volume Licensing reference guide for Windows Server 2016

Windows Server Standard	4-processor server											
	A	B	C	D	E	F	G	H	I	J	K	
Scenario – example server												
Physical cores per processor	1	2	4	6	8	10	12	14	16	18	20	
Total physical cores	4	8	16	24	32	40	48	56	64	72	80	
Assigned – 2012 R2 processor licenses	2	2	2	2	2	2	2	2	2	2	2	
Full Core License grant	32	32	32	32	32	32	32	32	32	32	32	
Additional Core License grant	32	32	32	32	32	48	64	80	96	112	128	
<b>Granted – 2016 core licenses</b>	<b>64</b>	<b>64</b>	<b>64</b>	<b>64</b>	<b>64</b>	<b>80</b>	<b>96</b>	<b>112</b>	<b>128</b>	<b>144</b>	<b>160</b>	
Stacked – 2012 R2 processor license	1	1	1	1	1	1	1	1	1	1	1	
<b>Granted – 2016 core licenses</b>	<b>32</b>	<b>32</b>	<b>32</b>	<b>32</b>	<b>32</b>	<b>40</b>	<b>48</b>	<b>56</b>	<b>64</b>	<b>72</b>	<b>80</b>	

### Additional Core License grants – Microsoft Inventory Solutions

To be eligible for Additional Core License grants, customers must establish and maintain a record of the physical hardware and the configuration of the licensed server to which their eligible licenses are assigned. To establish the record, customers may use the Microsoft [Software Inventory Logging \(SIL\)](#) technology or any equivalent software.

Microsoft offers two solutions to assist in the planning of a migration of a customer's servers from Windows Server 2012 R2 processor-based licensing to Windows Server 2016 core-based licensing. The Software Inventory Logging (SIL) tool and the [Microsoft Assessment and Planning \(MAP\) Toolkit](#) both provide inventory, analysis, and reporting tools.

- **SIL:** Recommended for servers running Windows Server 2008 R2 through 2016. Requires software installation for servers running Windows Server 2012 R2, 20012, and 2008 R2. Included with Windows Server 2016 software.
- **MAP:** Recommended for servers running Windows Server 2008 and prior. Requires the [hotfix installation](#) for servers running Windows Server 2008 and prior.

The table below outlines the feature differences between the Microsoft SIL and MAP tools. For migration planning, Microsoft recommends that customers choose the tool based on the server software in use. Once Windows Server 2016 is deployed, Microsoft recommends the SIL tool to streamline the tracking and reporting of software in deployments.

Feature	SIL tool	MAP
Reports usage automatically to Microsoft	No	No
Creates a scalable, enterprise-wide solution	Yes	No
Provides continuous usage reporting	Yes	No
Receives long-term Microsoft technical support	Yes	No
Has an architecture that "self discovers" new instances	Yes	No
Requires server software installation (2012 R2, 2012, 2008 R2)	Yes	No
For ongoing organizational use	Yes	No
Included as a current component of Windows Server 2016 software	Yes	No
Uses HTTPS for primary communication of inventory data	Yes	No
Leverages SQL and is completely managed through PowerShell	Yes	No
Is an on-premises solution	Yes	Yes
Is a low-cost solution	Yes	Yes
Provides internal usage reporting	Yes	Yes

## Microsoft Volume Licensing reference guide for Windows Server 2016

Can be used for software asset management	Yes	Yes
Provides data pertinent to Microsoft license models	Yes	Yes
Provides data pertinent to Microsoft core grants	Yes	Yes
Supports Windows Server	Yes	Yes
Supports System Center	Yes	Yes
Supports VMware, Linux, KVM/Xen	Yes	Yes

### Additional Core License grants – Microsoft Software Inventory Logging Aggregator (SILA)

The Software Inventory Logging Aggregator (SILA) enables customers of Microsoft server applications to capture the unique software instances in their Windows Server deployments easily and continuously, at scale. SILA also provides basic reporting capability for easy consumption and use. No data is sent to Microsoft with the use of the SILA software.

The SILA is designed for use by IT pros and data center administrators who need a low-cost way to collect valuable software inventory data, automatically, over time. For CIOs and finance controllers, SILA streamlines the tracking and reporting of Microsoft enterprise software in their organizations' IT deployments.

Below is a list of the information that the SILA provides. If a customer elects to use any equivalent software, equivalent information must be established and maintained. Visit [Software Inventory Logging Aggregator](#) for the free download and related documentation.

Information provided	Example
File time and date stamp	2/10/2016, 1:56:43 PM
Host name	64-bit Microsoft Windows Server 2012 R2 Standard
Host type	Windows
Hypervisor type	Hyper-V
Processor manufacturer	Genuine Intel
Processor model	Intel(R) Xeon(R) CPU E5440 @ 2.83GHz
VM name	bfh42012DC01.contoso.company.com Microsoft Windows Server 2012 Datacenter
Simultaneously running Windows Server VMs by host	3
Physical processor count	1
Physical core count	4
Virtual processor count	1
Poll date time	2/10/2016, 1:56:43 PM
VM last seen date time	2/10/16, 1:20:27 PM
Software name (applies to System Center)	Configuration manager Client Microsoft Endpoint Protection Management Components Microsoft Forefront Endpoint Protection 2010 Server Management



## Software Assurance migration rights by purchase program

Each Microsoft purchase program has different rules for Software Assurance migration entitlements during and at the end of an enrollment. The table below provides a summary. Customer rights are conditional on their, and their affiliates, continued compliance with the terms of their agreement, including payment for the Products. For complete details on these benefits, and for applicable Volume License program rules, refer to the [Product Terms](#).

Program	Eligible licenses with Software Assurance on October 1, 2016
<ul style="list-style-type: none"> <li>• Enterprise Agreement</li> <li>• Microsoft Products and Services Agreement (MPSA)</li> <li>• Select</li> <li>• Select Plus</li> <li>• Open Value (OV)</li> <li>• Open License (OL)</li> </ul>	<p><b>Customer rights during their then-current Software Assurance enrollment term:</b></p> <ul style="list-style-type: none"> <li>• Essentials (OV, OL): Customer may upgrade to and use the current Windows Server 2016 Essentials edition, subject to Windows Server 2016 Essentials use rights.</li> <li>• Standard or Datacenter: Customer may upgrade to and use the current and corresponding Windows Server 2016 edition in place of earlier versions, subject to Windows Server 2012 R2 processor-based use rights in the September 2016 Product Terms. Windows Server 2016 use rights apply to net new licenses acquired outside of programmatic True-up rights.</li> </ul> <p><b>Customer rights upon expiration of their then-current Software Assurance enrollment term:</b></p> <ul style="list-style-type: none"> <li>• Essentials (OV, OL): Customer will receive perpetual rights for the current Windows Server 2016 Essentials edition.</li> <li>• Standard or Datacenter: Customer will receive perpetual core license grants for the current and corresponding Windows Server 2016 edition. Customer may renew Software Assurance on the number core licenses granted.</li> </ul>
<ul style="list-style-type: none"> <li>• Enterprise Agreement Subscription</li> <li>• Enrollment for Education Solutions (EES)</li> <li>• Open Value Subscription (OVS)</li> </ul>	<p><b>Customer rights during their then-current Software Assurance enrollment term:</b></p> <ul style="list-style-type: none"> <li>• Essentials (EES, OVS): Customer may upgrade to and use the current Windows Server 2016 Essentials edition, subject to Windows Server 2016 Essentials use rights.</li> <li>• Standard or Datacenter: Customer may upgrade to and use the current and corresponding Windows Server 2016 edition in place of earlier version, subject to Windows Server 2012 R2 processor-based use rights in the September 2016 Product Terms. Windows Server 2016 use rights apply to net new licenses acquired outside of programmatic True-up rights.</li> </ul> <p><b>Customer options upon expiration of their then-current Software Assurance enrollment term:</b></p> <ul style="list-style-type: none"> <li>• Renew enrollment: Price is based on the new annual subscription price of the associated product. Windows Server 2016 use rights apply to subscription renewals.</li> <li>• Buy-out the new product: Buy-out price is based on customer’s CPS or reseller’s channel price sheet. The customer should refer to the terms of their contract for details.</li> </ul> <p><b>Customer process for buy-outs of Standard or Datacenter subscription licenses:</b></p> <ul style="list-style-type: none"> <li>• Enterprise Agreement subscription customers must obtain and purchase processor buy-out SKUs from their Customer Price Sheet (CPS). EES and OVS customers do not have a CPS, and must therefore obtain and purchase processor buy-out SKUs from their reseller.</li> <li>• EES customers must have licensed Windows Server under one or more Enrollments (including extensions) for at least 36 full calendar months immediately preceding their enrollment expiration.</li> <li>• Once processor buy-out SKUs are purchased, the customer’s License Summary reflects perpetual licenses. With these, the customer is now eligible for Software Assurance core licenses grants for Windows Server as specified in the <a href="#">Product Terms</a>.</li> <li>• Customer may renew Software Assurance on the number core licenses granted.</li> </ul>

## How Windows Server 2016 licenses are sold

Windows Server 2016 software licenses are sold through channels designed to meet the unique needs of customers. These sales channels include online retailers offering full packaged product (FPP) licenses of Windows Server software, original equipment manufacturers (OEMs) offering pre-installed licenses with their hardware systems, as well as Licensing Solutions Partners (LSPs) and Enterprise Software Advisors (ESAs) offering Windows Server software through Microsoft Volume Licensing programs for end-customer organizations.

### Volume Licensing

For organizations with as few as five users, Microsoft offers licensing programs to help reduce administrative overhead and software management costs, while enabling product licensing on an ongoing basis at a considerable discount. The various licensing options enable customers to choose the program that works best for their management and operational needs.

- Comprehensive programs that offer Software Assurance as a fixed benefit: Open Value (OV), Open Value Subscription (OVS), Enterprise Agreement, Enterprise Agreement subscription, Server and Cloud Enrollment (SCE).
- Transactional programs: Open and the Microsoft Products and Services Agreement (MPSA). Windows Server is not available through the Microsoft Independent Software Vendor (ISV) Royalty Licensing Program.

Microsoft also offers programs that can meet the specific needs of organizations that partner with Microsoft to provide additional software and services, such as the Microsoft Services Provider License Agreement (SPLA).

### Server and Cloud Enrollment (SCE)

The Server and Cloud Enrollment is an enrollment under the Microsoft Enterprise Agreement that enables highly committed customers to standardize broadly on one or more key server and cloud technologies from Microsoft. In exchange for making an installed base-wide commitment to one or more components of the Server and Cloud Enrollment, customers receive the best pricing and terms, plus other benefits, including cloud-optimized licensing options and simplified license management.

### Channel availability

This table below shows the primary channel availability for Windows Server 2016 software licenses. Every edition may not be available in all channels or licensing programs in all regions.

- For details about Microsoft Volume Licensing Programs, download the [Volume Licensing Reference Guide](#).
- For details about the Microsoft Server and Cloud Enrollment, visit the [Volume Licensing Enterprise Agreement](#) website or download the [Server and Cloud Enrollment](#) datasheet.

Windows Server 2016	Volume Licensing programs			Third party		Retail	Other
	EA/EAS/SCE	MPSA	OPEN	SPLA	ISVR	FPP/ESD	OEM
Datacenter edition	•	•	•	•		•	•
Standard edition	•	•	•	•		•	•
Essentials edition			•	•		•	•

- *MPSA = Microsoft Products and Services Agreement*
- *EA/EAS/SCE = Enterprise Agreement, Enterprise Subscription Agreement, and Server and Cloud Enrollment*
- *FPP/ESD = Full Package Product and Electronic Software Download*
- *OEM = original equipment manufacturer*
- *ISVR = Independent Software Vendor (ISV) Royalty Licensing Program*
- *SPLA = Services Provider License Agreement*

# Availability through Volume Licensing programs

Licenses for Windows Server 2016 editions are available in the following Microsoft Volume Licensing programs.

Windows Server 2016	OL	S/S+	MPSA	OV/OVS	EA/EAS	OVS-ES	EES
Datacenter Edition	•	•	•	•	•	•	•
Standard Edition	•	•	•	•	•	•	•
Essentials Edition	•			•		•	•

- *OL = Open License*
- *S/S+ = Select and Select Plus*
- *MPSA = Microsoft Products and Services Agreement*
- *OV/OVS = Open Value and Open Value Subscription*
- *EA/EAS = Enterprise Agreement and Enterprise Subscription Agreement*
- *OVS-ES = Open Value Subscription – Education Solutions*
- *EES = Enrollment for Education Solutions*

## Volume Activation

Volume Activation is a set of technologies and tools designed to automate the product activation process for systems that are deployed under a Microsoft Volume Licensing agreement. Windows Server 2016 includes technologies designed to simplify the task of configuring the distribution and management of an organization's volume software licenses. For more information, visit [Volume Activation Overview](#).

- ▶ **The Volume Activation Services server role:** Volume Activation Services is a server role in Windows Server (2012, 2012 R2, 2016, or later editions) that enables a customer to automate and simplify the issuance and management of Microsoft software volume licenses for a variety of scenarios and environments. With Volume Activation Services, the customer can install and configure the Key Management Service (KMS) and enable Active Directory-based activation.
- ▶ **Key Management Service (KMS):** KMS is a role service that allows organizations to activate systems within their network from a server where a KMS host has been installed. With KMS, IT pros can complete activations on their local network, eliminating the need for individual computers to connect to Microsoft for product activation. KMS does not require a dedicated system, and it can be cohosted on a system that provides other services. By default, volume editions of Windows 8 (or later editions) and Windows Server 2012 (or later editions) connect to a system that hosts the KMS service to request activation. No action is required from the user.
- ▶ **Active Directory-based activation:** Active Directory-based activation is a role service that allows the customer to use Active Directory Domain Services (Active Directory 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.

Any computers running Windows 8 (or later editions) and Windows Server 2012 (or later editions) with a Generic Volume License Key (GVLK) that are connected to the domain will activate automatically and transparently. They will stay activated as long as they remain members of the domain and maintain periodic contact with a domain controller. Activation takes place after the licensing service starts. When this service starts, the computer running Windows 8 (or later editions) and Windows Server 2012 (or later editions) contacts Active Directory DS automatically, receives the activation object, and activates without user intervention.

## Downgrade rights

Windows Server 2016 is streamlined and simple, making it easy for customers to choose the edition that is right for their needs. Choose from three primary editions of Windows Server, based on organization size as well as virtualization and

## Microsoft Volume Licensing reference guide for Windows Server 2016

datacenter requirements. Customers can also choose to deploy earlier versions of the same edition or lower editions in place of what they are licensed for. These are referred to as “downgrade rights” and “down edition rights.” When invoking downgrade rights or down edition rights, the license terms of the version and edition acquired still govern use of the software.

Licensed edition	Deployment options <sup>1</sup>		
	Down editions	Versions <sup>2</sup>	Use rights <sup>3</sup>
<b>Windows Server 2016 Datacenter</b>	Windows Server Datacenter	2012 R2 or earlier	2016
	Windows Server Standard	2012 R2 or earlier	2016
	Windows Server Essentials	2012 R2 or earlier	2016
	Windows Web Server	2008 R2 or earlier	2016
	Windows HPC Server	2008 R2 or earlier	2016
<b>Windows Server 2016 Standard</b>	Windows Server Standard	2008 R2 or earlier	2016
	Windows Server Essentials	2012 R2 or earlier	2016
	Windows Web Server	2008 R2 or earlier	2016
	Windows HPC Server	2008 R2 or earlier	2016
<b>Windows Server 2016 Essentials</b>	Windows Small Business Server Essentials	2008 R2 or earlier	2016

<sup>1</sup> Shows software editions and versions that may be used in place of the appropriately licensed edition in a given OSE.

<sup>2</sup> Customers may downgrade to any other version as long as they have the appropriate media and keys.

<sup>3</sup> All use rights are still governed by the licensed edition.

## Planning for Windows Server 2016

When planning to deploy Windows Server 2016, either through upgrades or new licenses, remember the following:

- ▶ Select the edition of Windows Server 2016 based on virtualization needs and edition features:
  - **Datacenter** edition for highly virtualized and software-defined datacenter environments
  - **Standard** edition for low-density or non-virtualized environments
  - **Essentials** edition for small businesses with up to 25 users and 50 devices running one- or two-processor servers.
- ▶ Renewing Software Assurance is the best way to protect investments and provide access to new versions, Deployment Planning Services, and technical assistance
- ▶ Core CAL and Enterprise CAL Suites will continue to be the most cost-effective way to purchase Windows Server CALs to access workloads running on Windows Server 2016 Standard and Datacenter editions.
- ▶ The Microsoft Core Infrastructure Suite (CIS) will continue to offer the best value for private cloud and datacenter management pricing.
- ▶ Learn how flexible payments can help get the IT the customer needs and stay on budget. For program details, visit [Microsoft Financing](#), contact a Microsoft Solution Partner directly, or call (800) 936-3500 in the United States and Canada.
- ▶ Prices and pricing levels vary. Microsoft does not determine pricing or payment terms for licenses acquired through resellers. Microsoft reaches customers at sales offices, support centers, and technology centers around the world. For specific pricing, [connect with a Microsoft reseller at a sales office](#).

## Frequently asked licensing questions (FAQ)

For complete details and information on licensing, refer to the [Product Terms](#) for Volume Licensing use rights, or the [End User License Agreement](#) for other channels.

### 1. How are Windows Server 2016 Standard and Datacenter editions licensed?

With the launch of Windows Server 2016 Datacenter edition and Windows Server 2016 Standard edition, Windows Server licensing transitioned from being processor-based to being core-based. For both Standard and Datacenter editions, the minimum number of core licenses required equals the number of physical cores on the licensed server, subject to a minimum of 8 core licenses per physical processor and a minimum of 16 core licenses per server. Core licenses are sold in 2-packs as well as optional 16-packs (for convenience). Eight 2-packs and one 16-pack are priced the same and provide equivalent use rights. However, point counts may vary, so MPSA and Open Volume customers should assess which pack sizes work best for them.

### 2. Do the minimum licensing requirements apply to all servers?

Yes. Regardless of the number of physical processors or physical cores on a server, the number of core licenses required equals the number of physical cores on the licensed server, subject to a minimum of 8 core licenses per physical processor and a minimum of 16 core licenses per server.

### 3. Do I have to license all cores on the server, even if they are disabled?

Yes. All physical cores on all physical processors on a server must be sufficiently licensed, even if they have been disabled.

### 4. Can I split my Windows Server 2016 core licenses across multiple servers?

Yes. Core licenses are sold in 2-packs, as well as optional 16-packs (for convenience), and each individual license may be assigned to a separate physical server.

### 5. Can I assign a Windows Server 2016 license to a virtual machine?

No. Licenses are assigned to the physical server. After assigning the required number of core licenses to a physical server, the customer has the rights to use the operating system environments (OSEs) (for example, virtual machines), Hyper-V containers, and Windows Server containers on that licensed server.

### 6. Can I mix Windows Server 2016 Datacenter and Standard licenses on the same server?

No. All physical cores on a given server must be licensed with the same version and edition. The customer can run different editions or older versions of Windows Server software as guests within virtual OSEs, but they are not allowed to assign licenses of different versions or editions to the same physical server to license the physical cores on the server.

### 7. Are CALs required for access to Windows Server 2016 Standard and Datacenter editions?

Yes, server software access for Windows Server 2016 Standard and Datacenter editions requires access licenses. Server software access for Windows Server 2016 Standard and Datacenter editions requires either Client Access Licenses (CALs) or External Connectors (ECs). Each user or device that accesses the licensed servers requires a Windows Server CAL. External access to the licensed server requires a CAL for each user or device or, alternatively, a Windows Server EC. Customers may use a combination of user and device CALs and External Connector licenses as required.

### 8. Which Access Licenses do I use to access Windows Server 2016?

Windows Server 2016 Client Access Licenses (CALs) and 2016 External Connectors permit access to the Windows Server 2016 server software and prior versions of Windows Server software. Each user or device that accesses the licensed servers requires a Windows Server CAL. External access to the licensed server requires CALs for each accessing user or device or, alternatively, a Windows Server External Connector. Customers may use a combination of user and device CALs and External Connector licenses as required.

- ▶ **CALs:** Each user or device that accesses licensed servers requires a Windows Server CAL (Base CAL). Each user or device that accesses advanced functionality on the licensed server requires the associated CAL (Additive CAL). Additive CALs must be licensed in addition to the corresponding Base CALs for access to advanced functionality.

- ▶ **External Connectors:** External access to licensed servers requires CALs (Base CALs) for each accessing user or device or, alternatively, a Windows Server External Connector (Base EC) for each server that is accessed. External access to advanced functionality on licensed servers requires the associated CAL (Additive CAL) for each accessing user or device or, alternatively, the associated External Connector (Additive EC) for each server accessed. Additive External Connectors must be licensed in addition to the corresponding Base External Connectors for access to advanced functionality on the licensed server.

### 9. Are there any exceptions to the CAL and External Connector requirements?

Yes, CALs and External Connectors are not required for access by another licensed server, to access server software running a web workload or HPC Workload, or to access in a physical OSE used solely for hosting and managing virtual OSEs.

### 10. What is the difference between Base and Additive access licenses?

Base access licenses provide access for Windows Server 2016 Standard and Datacenter editions. Windows Server CAL and Windows Server External Connector licenses are Base access licenses. Additive access licenses provide access to advanced server functionality, and are available as CALs and External Connector licenses. CALs and External Connector licenses for Windows Server Remote Desktop Services, Windows Server Active Directory Rights Management Services, and Microsoft Identity Manager are all Additive access licenses. Additive access licenses must be acquired in addition to the corresponding Base access licenses for access to advanced server functionality.

### 11. Do I still need a separate CAL to access advanced server functionality for Windows Server 2016?

Yes. The licensing requirements for access to advanced server functionality have not changed with Windows Server 2016. Advanced server functionality requires Additive access licenses, and are available as CALs and External Connector. Windows Server Remote Desktop Services, Windows Server Active Directory Rights Management Services, and Microsoft Identity Manager all require Additive access licenses. Additive access licenses must be licensed in addition to the corresponding Base access licenses. Base access licenses provide access for Windows Server 2016 Standard and Datacenter editions. Windows Server CAL and Windows Server External Connector licenses are Base access licenses. Additive CALs must be licensed in addition to the corresponding Base CALs for access to advanced functionality on the licensed server.

### 12. What is the difference between Windows Server 2016 Standard and Datacenter editions?

As with prior versions, Windows Server 2016 Standard and Datacenter editions include the core functionality of Windows Server and offer different virtualization rights. New features were added to both editions of Windows Server 2016, including Host Guardian Service and Nano Server. Windows Server 2016 Datacenter edition includes additional features such as Shielded Virtual Machines, software-defined networking, Storage Spaces Direct, and Storage Replica.

### 13. What are some of the features available in Windows Server 2016 Datacenter and Standard editions?

There are a variety of new features in Windows Server 2016 Datacenter and Standard editions. Here are just a few examples:

- ▶ **Nano Server** is a deeply refactored version of Windows Server with a small footprint and remotely managed installation, optimized for the cloud and a DevOps workflow. It is a purpose-built operating system designed to run born-in-the-cloud applications and containers. It is designed for fewer patch and update events, faster restarts, better resource utilization and tighter security. Learn more about [Nano Server](#).
- ▶ **Containers** are the next evolution in virtualization and empower software developers to create the next generation of applications experiences. A container is an isolated, resource controlled, and portable operating environment where an application can run without affecting the rest of the system and without the system affecting the application. Other advantages of containers include speed, simplified DevOps, and increased flexibility in application development.
  - **Windows Server containers** provide application isolation through process and namespace isolation technology. A Windows Server container shares a kernel with the container host and all containers running on the host. Learn more about [Windows Server Containers](#).
  - **Hyper-V containers** expand on the isolation provided by Windows Server Containers by running each container in a highly optimized virtual machine. In this configuration, the kernel of the container host is not shared with the Hyper-V containers.
- ▶ **Shielded Virtual Machines** (Shielded VMs) provide a more secure environment for VMs and extend to virtual machines the same security capabilities (for example, secure boot, TPMs, disk encryption) that physical machines have enjoyed for years. As a result, the data and state of a Shielded VM are protected against inspection, theft and tampering from

malware running on a Hyper-V host as well as the fabric admins administering it. Shielded VMs are available with Datacenter edition. Learn more about [Shielded VMs](#).

- ▶ **Host Guardian Service** (HGS) is a main component for configuring guarded hosts and running Shielded VMs. HGS provides Attestation and Key Protection services that enable Hyper-V to run Shielded VMs. A Hyper-V host is known as a “guarded host” once the Attestation service affirmatively validates its identity & configuration. Once affirmatively attested, the Key Protection service provides the transport key (TK) needed to unlock & run Shielded VMs. Without HGS, a Hyper-V host cannot power a Shielded VM on because it can’t decrypt it. Why? Because Hyper-V doesn’t have the keys—only HGS does. HGS won’t hand out the keys to a Hyper-V host until that host has been measured and is considered “healthy”—a process known as “attestation.” Learn more about [Host Guardian Service](#).

### 14. How do I determine which Windows Server 2016 edition is right for me?

Because Windows Server 2016 Standard and Datacenter editions provide different virtualization rights and offer differentiated features, the decision will be based on virtualization, datacenter, and infrastructure strategies.

- ▶ **Datacenter:** If the customer’s strategy includes highly virtualized and software-defined datacenter environments, Datacenter edition provides optimum flexibility. When all physical cores on the server are licensed, Datacenter edition provides rights to use unlimited Operating System Environments (OSEs) or Hyper-V containers and unlimited Windows Server containers on the licensed server. This edition allows elasticity to add and move virtual OSEs across Datacenter licensed servers without needing to track the virtual OSE count on that server. Datacenter edition includes Nano Server, Host Guardian Service, Shielded Virtual Machines, software-defined networking, Storage Spaces Direct, and Storage Replica.
- ▶ **Standard:** If the customer’s strategy includes low density or non-virtualized environments, Standard edition is the right product for their needs. When all physical cores on the server are licensed, Standard edition provides rights to use two OSEs or Hyper-V containers and unlimited Windows Server containers on the licensed server. Standard edition includes Nano Server and Host Guardian Service.
- ▶ **Essentials:** If the customer’s strategy includes a cloud-connected first server for small businesses with up to 25 users and 50 devices, Essentials edition is the right product for their needs. Each server license provides rights to use one running instance of the server software in either a physical OSE or virtual OSE on the licensed server.

### 15. What are the licensing requirements for use of Nano Server?

Nano Server is an elective deployment option for Windows Server 2016 Standard and Datacenter editions. The customer needs to assign the required number of core licenses to the physical server. For both Standard and Datacenter editions, the minimum number of core licenses required equals the number of physical cores on the licensed server, subject to a minimum of 8 core licenses per physical processor and a minimum of 16 core licenses per server.

To use Nano Server, the customer needs active Software Assurance on their Windows Server Standard or Datacenter server licenses. Additionally, they need active Software Assurance on Windows Server Base CALs or External Connectors. If they are licensed to access advanced server functionality, such as Remote Desktop Services, active Software Assurance is required on those applicable Windows Server Additive CALs or External Connectors.

### 16. What are the virtualization rights for Windows Server 2016 Standard and Datacenter editions?

Standard edition has rights to use two OSEs or two Hyper-V containers and unlimited Windows Server containers when all cores on the server are licensed (subject to a minimum of 8 core licenses per physical processor and a minimum of 16 core licenses per server). Datacenter edition has rights to use unlimited OSEs, Hyper-V containers, and Windows Server containers when all cores on the server are licensed (subject to a minimum of 8 core licenses per physical processor and a minimum of 16 core licenses per server).

### 17. Are Hyper-V containers and Windows Server containers OSEs?

Yes. Both container types meet the definition of OSE: all or part of an operating system instance, or all or part of a virtual (or otherwise emulated) operating system instance which enables separate machine identity (primary computer name or similar unique identifier) or separate administrative rights, and instances of applications, if any, configured to run on the operating system instance or parts identified above. A physical hardware system can have one physical OSE and/or one or more virtual OSEs.

**18. If I have a Windows Server 2016 Standard edition license, how can I increase my virtualization rights?**

With the Windows Server 2016 Standard edition licensing model, the customer can expand the virtualization capacity of their licensed server in two ways (note: for MPSA customers, “stepping up” is done with transition licenses):

1. Purchase Step-Up licenses for Datacenter edition. “Stepping up” from Standard edition licenses to Datacenter edition licenses gives rights to run unlimited Operating System Environments (OSEs) or Hyper-V containers on the licensed server. To use this benefit, the underlying Standard licenses must have Software Assurance.
  - For example, a 2-processor server with 10 cores per processor requires 20 core licenses with Software Assurance for Standard edition and has rights to two OSEs or Hyper-V containers. To “step up” to Datacenter, purchase 20 (in other words, ten 2-packs of core licenses or one 16-pack and two 2-packs of core licenses) Software Assurance Step-Up licenses for Datacenter and assign them to the server.
2. Purchase additional licenses for Standard edition. Assigning additional licenses to the same physical server gives rights to run additional OSEs or Hyper-V containers on the licensed server. The server must have the correct number of licenses assigned to it to ensure coverage of all OSEs or Hyper-V containers running at any given time.
  - For example, a 2-processor server with 8 cores per processor requires 16 core licenses for Standard edition and has rights to two OSEs or two Hyper-V containers. For each additional two OSEs or two Hyper-V containers the customer wishes to use, an additional 16 core licenses (in other words, eight 2-packs of core licenses or one 16-pack of core licenses) must be assigned to the server.

“Stacking” Standard OSEs or Hyper-V containers	2-processor server with 8 cores per processor (16 cores total)	
	Required # core licenses <sup>1</sup>	Required # 2-pack SKUs <sup>2</sup>
2 per server	<b>16</b>	8
4 per server	<b>32</b>	16
6 per server	<b>48</b>	24
8 per server	<b>64</b>	32

<sup>1</sup> Core licenses are sold in 2-packs as well as optional 16-packs (for convenience).

<sup>2</sup> Eight 2-packs and one 16-pack are priced the same and provide equivalent use rights. However, point counts may vary, so MPSA and Open Volume customers should assess which pack sizes work best for them.

**19. How does the price of Windows Server 2016 compare to Windows Server 2012 R2?**

Core licenses for Windows Server 2016 are sold in 2-packs and 16-packs. The price of 16 core licenses (eight 2-packs of core licenses or one 16-pack of core licenses) for Windows Server 2016 (Standard or Datacenter) is approximately the same as the price of one 2-processor license for Windows Server 2012 R2 (Standard or Datacenter).

Prices and pricing levels vary. Microsoft does not determine pricing or payment terms for licenses acquired through resellers. Microsoft reaches customers at sales offices, support centers, and technology centers around the world. For specific pricing, [connect with a Microsoft reseller at a sales office.](#)

Eight 2-packs and one 16-pack are priced the same and provide equivalent use rights. However, point counts may vary, so MPSA and Open Volume customers should assess which pack sizes work best for them.

	License	Price	Quantity	Total
Windows Server Datacenter 2016	2-pack <sup>1</sup>	\$578 <sup>2</sup>	8	\$4,620
Windows Server Datacenter 2012 R2	2-processor	\$4,617 <sup>3</sup>	1	\$4,617
Windows Server Standard 2016	2-pack <sup>1</sup>	\$83 <sup>2</sup>	8	\$664
Windows Server Standard 2012 R2	2-processor	\$662 <sup>3</sup>	1	\$662



## Microsoft Volume Licensing reference guide for Windows Server 2016

<sup>1</sup> Licenses are sold in 2-packs as well as optional 16-packs (for convenience). Eight 2-packs and one 16-pack are priced the same and provide equivalent use rights. However, point counts may vary, so MPSA and Open Volume customers should assess which pack sizes work best for them.

<sup>2</sup> Open NL, ERP, L&SA, one-year annualized price, January 2017. Prices and pricing levels vary.

<sup>3</sup> Open NL, ERP, L&SA, one-year annualized price, September 2016. Prices and pricing levels vary.

### 20. How do I determine whether Standard or Datacenter edition is more economical?

The number of core licenses required depends on the number of physical cores on the server, as well as the number of Operating System Environments (OSEs) or Hyper-V containers that the customer will be running.

- ▶ For a server with 13 or more OSEs or Hyper-V containers, Datacenter edition is recommended:
  - A. **Datacenter core licenses:** For each server, the number of core licenses required equals the number of physical cores on the licensed server, subject to a minimum of 8 core licenses per physical processor and a minimum of 16 core licenses per server. Core licenses are sold in 2-packs as well as optional 16-packs (for convenience). Eight 2-packs and one 16-pack are priced the same and provide equivalent use rights. However, point counts may vary, so MPSA and Open Volume customers should assess which pack sizes work best for them.
  - B. **Datacenter instances:** When all physical cores on the server are licensed, Datacenter edition provides rights to use unlimited Operating System Environments (OSEs) or Hyper-V containers and unlimited Windows Server containers on the licensed server.
- ▶ For a server with fewer than 13 OSEs or Hyper-V containers, Standard edition is recommended:
  - C. **Standard core licenses:** For each server, the number of core licenses required equals the number of physical cores on the licensed server, subject to a minimum of 8 core licenses per physical processor and a minimum of 16 core licenses per server. Core licenses are sold in 2-packs as well as optional 16-packs (for convenience). Eight 2-packs and one 16-pack are priced the same and provide equivalent use rights. However, point counts may vary, so MPSA and Open Volume customers should assess which pack sizes work best for them.
  - D. **Standard instances:** When all physical cores on the server are licensed, Standard edition provides rights to use two Operating System Environments (OSEs) or Hyper-V containers and unlimited Windows Server containers on the licensed server. For each additional two OSEs or two Hyper-V containers the customer wishes to use, an equivalent number of additional core licenses must be assigned to the server as specified in C, above.
- ▶ The following table demonstrates the economic breakeven point between Windows Server 2016 Standard and Windows Server 2016 Datacenter, given the licensing requirements and virtualization rights for each edition.

Version choice (breakeven)	2-processor server with 8 cores per processor (16 cores total)								
OSEs or Hyper-V containers	2	4	6	8	10	12	13	14	16
Cores to license	16	16	16	16	16	16	16	16	16
2-pack core licenses <sup>2</sup>	8	8	8	8	8	8	8	8	8
<b>Datacenter core licenses<sup>1</sup></b>	<b>\$4,620</b>	<b>\$4,620</b>	<b>\$4,620</b>	<b>\$4,620</b>	<b>\$4,620</b>	<b>\$4,620</b>	<b>\$4,620</b>	<b>\$4,620</b>	<b>\$4,620</b>
Cores to license	16	32	48	64	80	96	112	112	128
2-pack core licenses <sup>2</sup>	8	16	24	32	40	48	56	56	64
<b>Standard core licenses<sup>1</sup></b>	<b>\$664</b>	<b>\$1,328</b>	<b>\$1,992</b>	<b>\$2,656</b>	<b>\$3,320</b>	<b>\$3,984</b>	<b>\$4,648</b>	<b>\$4,648</b>	<b>\$5,312</b>

<sup>1</sup> Open NL, ERP, L&SA, one-year annualized price, January 2017. Prices and pricing levels vary.

<sup>2</sup> Licenses are sold in 2-packs as well as optional 16-packs (for convenience). Eight 2-packs and one 16-pack are priced the same and provide equivalent use rights. However, point counts may vary, so MPSA and Open Volume customers should assess which pack sizes work best for them.

### 21. If I want to use the software from an earlier Windows Server version or edition, what are my options?

If the customer has Windows Server 2016 Datacenter edition, they have the right to downgrade software bits to any prior version or lower edition. If the customer has Windows Server 2016 Standard edition, they have the right to downgrade the software to use any prior version of Enterprise, Standard, or Essentials editions.

The ability to downgrade does not change the licensing or support terms under which a customer can use the product; the rights for purchased product (in other words, Windows Server 2016) apply. This means that core-based licensing and use rights apply to the version the customer downgrades to and that the virtualization rights do not change. Below are a few examples.

Licensed edition	Downgraded version or edition	Licensing rights that apply
Datacenter 2016	Datacenter 2012 R2	Datacenter 2016
Standard 2016	Enterprise 2012 R2	Standard 2016
Standard 2016	Standard 2012 R2	Standard 2016

### 22. If I had Datacenter edition with Software Assurance when Windows Server 2016 was released, which edition am I entitled to use?

If a customer had eligible licenses for Datacenter edition as of October 1, 2016, they are entitled to Windows Server 2016 Datacenter edition. During the then-current term of Software Assurance coverage, the customer may upgrade to and use Windows Server 2016 Datacenter in place of earlier versions of Windows Server. Such use is subject to the Windows Server 2012 R2 processor-based use rights in the September 2016 Product Terms. Upon expiration of Software Assurance coverage, each license will receive a Full Core License grant and is eligible to receive additional core license grants for Windows Server 2016 Datacenter.

### 23. If I had Standard edition with Software Assurance when Windows Server 2016 was released, which edition am I entitled to use?

If a customer had eligible licenses for Standard edition as of October 1, 2016, they are entitled to Windows Server 2016 Standard edition. During the then-current term of Software Assurance coverage, the customer may upgrade to and use Windows Server 2016 Standard in place of earlier versions of Windows Server. Such use is subject to the Windows Server 2012 R2 processor-based use rights in the September 2016 Product Terms. Upon expiration of Software Assurance coverage, each license will receive a Full Core License grant and is eligible to receive additional core license grants for Windows Server 2016 Standard.

### 24. What are the most common questions about core license grants?

Volume Licensing customers with active Software Assurance on Windows Server Standard or Datacenter processor licenses as of October 1, 2016, are eligible for license grants. The information below provides a summary. For complete details on these benefits, and for applicable Volume License program rules, refer to the [Product Terms](#).

#### ► Why is Microsoft providing core license grants?

Microsoft is providing license grants to Software Assurance customers so that they may easily transition from Windows Server 2012 R2 (processor-based) to Windows Server 2016 (core-based). Grants of core licenses provide customers sufficient licenses to continue running the same number of workloads (OSEs) on their existing server configurations.

#### ► Are core grants available for System Center and CIS Suite as well?

Yes, Microsoft is providing grants for these products, as specified in the [Product Terms](#).

#### ► Which of my licenses are eligible for core grants?

Core grants are provided for processor licenses with active Software Assurance as of October 1, 2016, and any processor licenses with active Software Assurance subsequently obtained under the same agreement through a programmatic True-up. Core grants are applicable only to customers acquiring perpetual licenses. Core grants apply to subscription customers who elect the buyout option.

#### ► How can I use Windows Server 2016 (core-based licensing) when my eligible licenses are processor-based?

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## Microsoft Volume Licensing reference guide for Windows Server 2016

Customers with eligible licenses may upgrade to and use the same edition of Windows Server 2016 in place of earlier versions of Windows Server during the then-current term of Software Assurance coverage. Such use is subject to the Windows Server 2012 R2 processor-based use rights in the September 2016 Product Terms.

### ▶ **What types of core grants will my eligible licenses receive?**

There are two types of core grants. Full core license grant: Each eligible license will be granted 16 core licenses. Additional core license grant: For servers with more than 8 cores per processor and more than 16 cores per server (eligibility requires documentation).

### ▶ **What do I need to do to receive Additional Core Licenses?**

To be eligible for Additional Core License grants, the customer must establish and maintain a record of the physical hardware and the configuration of the licensed server to which its eligible licenses are assigned.

### ▶ **When do I need to do to document my servers?**

A record must be established as of September 30, 2019, or the expiration of the Software Assurance term for the eligible licenses—whichever is earlier. Customers should start planning for renewal and the transition to core-based licensing as early as possible.

### ▶ **How should the customer establish and maintain an inventory of their servers?**

To establish the record, customers may use the Microsoft Software Inventory Logging (SIL) technology or any equivalent software. SIL is included with Windows Server 2016 software and requires installation for servers running Windows Server 2012 R2, 20012, and 2008 R2. For Windows Server 2008 and prior, Microsoft recommends the [MAP Toolkit](#).

### ▶ **What does the customer need to do with server documentation?**

Customers are not required to share, submit, or provide server documentation with Microsoft upon expiration or renewal to receive an Additional Core License grant. However, the customer must maintain documentation as proof of Additional Core License grant eligibility—should a licensing or compliance scenario require validation.

### ▶ **Why does Microsoft recommend using the Software Inventory Logging (SIL) technology?**

Software Inventory Logging (SIL) enables customers of Microsoft server applications to capture the unique software instances in their Windows Server deployments easily and continuously, at scale. SIL also provides basic reporting capability for easy consumption and use. No data is sent to Microsoft with the use of the SIL software.

### ▶ **When will my grant be provided?**

Upon expiration of the then-current term of Software Assurance coverage on their eligible licenses, customers who have acquired perpetual licenses will receive Full Core License grants and are also eligible to receive Additional Core License grants.

### ▶ **How will my grant be reflected?**

Renewing and non-renewing Software Assurance customers fulfill their grants differently. Renewing customers purchase Windows Server 2016 Software Assurance SKUs, and will see their grant reflected as a purchase in their License Summary. Customers who do not renew Software Assurance will see their grant reflected as a right in the [Product Terms](#).

### ▶ **How will the Windows Server 2016 Software Assurance SKUs I purchase be reflected in my License Summary?**

Renewing customers who purchase Windows Server 2016 Software Assurance SKUs will see their purchases in their License Summary. While the formats differ between VLSC and MLA, the table below provides a fundamental illustration of the data provided. Because the customer is being granted the underlying License, Software Assurance purchases will appear in the system as “Unresolved Quantity”.

In this example, a customer has ten 2-processor servers with 8 cores per processor (16 cores per server, and 160 total cores). Each server was assigned one 2-processor licenses for 2012 R2. Upon expiration of Software Assurance, each 2-processor license received a Full Core License grant (16 core licenses) and the customer renewed Software Assurance on 160 core licenses (eighty 2-packs of core licenses or five 16-packs of core licenses).

System will show	Version	Effective quantity	Unresolved quantity	Active Software Assurance quantity
Windows Server Datacenter	2012 R2	10	0	0
Windows Server Datacenter	2016	0	160	160

### ► How do Additional Core License grants apply to “stacked licenses”?

A “stacked license” means an eligible license that is assigned to a licensed server in excess of the minimum number required to run the server software on that server. Additional Core License grants are applicable to “stacked licenses” for Standard edition only, and are not applicable to Datacenter edition.

### ► Do core Additional Core License grants apply to licenses obtained on or after October 1, 2019?

No. To be eligible for Additional Core License grants, the customer must establish and maintain a record of the physical hardware and the configuration of the licensed server to which its eligible licenses are assigned. A record must be established as of September 30, 2019, or the expiration of the Software Assurance term for the eligible licenses—whichever is earlier.

### ► Do core license grants apply to True-up purchases?

Yes. Core grants are provided for processor licenses with active Software Assurance as of October 1, 2016, and any processor licenses with active Software Assurance subsequently obtained under the same agreement through a programmatic True-up. If the customer obtains additional processor licenses with Software Assurance under these conditions, those perpetual licenses are eligible core license grants.

### ► Do core license grants apply to net new purchases?

No. Core grants are only provided for processor licenses with active Software Assurance as of October 1, 2016, and any processor licenses with active Software Assurance subsequently obtained under the same agreement through a programmatic True-up. If the customer obtains additional processor licenses with Software Assurance outside of these conditions, those perpetual licenses are not eligible core license grants.

### ► When are Full and Additional Core Licenses effective?

Full and Additional Core Licenses are effective upon the renewal of Software Assurance for Windows Server or, for customers who do not renew Software Assurance coverage, upon the upgrade to Windows Server 2016. Full and Additional Core Licenses replace customers’ eligible licenses. Upon a lapse of customer’s Software Assurance coverage, Additional Core Licenses may not be assigned to a different server and used apart from the Full Core Licenses granted in association with the same eligible license.

### ► How do subscription customers get core grants?

Subscription customers may upgrade to and use 2016 under processor use rights during remainder of their subscription. Upon expiration, customers may renew their subscription under core-based licensing or elect the buyout option. Because core grants are involved, the buyout process of subscription licenses is unique.

Core grants are applicable to eligible licenses. Eligible licenses are processor licenses with Software Assurance, which are deemed to include subscription licenses. If the customer elects the buyout option upon expiration, they have perpetual licenses and are therefore eligible for the core grant outlined in the [Product Terms](#).

Enterprise Agreement subscription customers use processor buyout SKUs from their CPS. Non-Enterprise Agreement subscription customers must obtain buyout SKUs from their reseller. Once transacted, the customer’s License Summary shows perpetual processor licenses for 2012 R2. Based on these, the grant for 2016 core licenses is reflected as a right in the [Product Terms](#).

## 25. Can Windows Server 2016 licenses be moved between Hyper-V and Azure?

Yes. Although Windows Server 2016 licenses, just like Windows Server 2012 R2, are not eligible for the License Mobility through Software Assurance benefit, customers can deploy on-premises images in Azure using either the Azure Hybrid Use Benefit or “re-imagining” rights. The latter requires customers to pay for the use of Windows Server based on Azure meters. See question 27 for more information about the Azure Hybrid Use Benefit.

### **26. Can Windows Server licensed under Core Infrastructure Server (CIS) Suite be used in Azure?**

No. Windows Server software licensed under CIS Suite may not be used in Azure. Windows Server does not offer License Mobility as a standalone license or as a component product within the CIS Suite product. The Azure Hybrid Use Benefit (HUB) provides an exception, see question 27.

### **27. Can Windows Server images be used in Azure under the Azure Hybrid Use Benefit (HUB)?**

Yes. Under the Microsoft Azure Hybrid Use Benefit (HUB), customers with Windows Server licenses covered with Software Assurance may upload and use their own Windows Server images on Microsoft Azure through Azure Virtual Machines ("Base Instances"). Customers pay only for the cost of service utilization of the Base Instances.

Each Windows Server processor license with Software Assurance, and each set of 16 Windows Server core licenses with Software Assurance, entitles customers to use Windows Server on Microsoft Azure on up to 16 virtual cores allocated across two or fewer Azure Base Instances. Each additional set of 8 core licenses with Software Assurance entitles use on up to 8 virtual cores and one Base Instance.

Azure HUB provides additive rights to deploy and use the software when exercised in connection with Datacenter licenses. Azure HUB provides alternative rights when exercised in connection with Standard Licenses. When Windows Server Standard licenses are used under Azure HUB, they are deemed "assigned to Azure" and are subject to license reassignment limitations.

### **28. Can System Center license be used for managing Windows Server 2016 instances running on Azure?**

Yes. Under the License Mobility through Software Assurance benefit, customers can assign their standalone System Center 2016 license to manage a Windows Server instance running on Azure.

### **29. Can System Center licensed under Core Infrastructure Server (CIS) Suite be used in Azure?**

No. System Center software licensed under CIS Suite may not be used in Azure. System Center does not offer License Mobility as a component product within the CIS Suite product. Server and Cloud Enrollment customers should refer to question 30.

### **30. Can SCE customers use System Center licensed under Core Infrastructure Server (CIS) Suite in Azure?**

Yes. Server and Cloud Enrollment (SCE) customers are eligible to use System Center software licensed under CIS Suite to manage their qualifying virtual OSEs running within Microsoft Azure. Eligibility requires that the customer meet enrollment coverage requirements, and be licensed for and using CIS Suite to manage OSEs in their own data centers. Each CIS Suite processor license covered by the customer's SCE, and each set of 16 CIS Suite core licenses covered by the customer's SCE, entitles the customer to manage up to 10 qualifying virtual OSEs running within Microsoft Azure. For additional details, refer to the CIS product entry in the Product Terms (*Server and Cloud Enrollment (SCE) - Right to manage OSEs on Microsoft Azure under CIS Suite Licenses*).

### **31. Are CALs or External Connectors required for Windows Server instances running on Azure?**

Base access licenses (CALs and External Connectors) are not required for use of Windows Server on Microsoft Azure. Remote Desktop Services ("RDS") User CAL and User SL have Extended Rights to use its RDS User CALs and User SLs with Windows Server software running in OSEs dedicated to its internal use on either Microsoft Azure Platform Services or the shared servers of a License Mobility through Software Assurance Partner for which it has completed and submitted the License Mobility Validation form. Customers may also cover access by third parties, as permitted under the OST, or as permitted under Software Assurance Self-Hosting rights using Subscription Access Licenses (SALs) acquired under a Services Provider License Agreement.

### **32. Are there any changes to the licensing model for Windows Server 2016 Essentials?**

No. Windows Server 2016 Essentials will continue to cover a single server with up to two physical processors. It does not require Windows Server CALs, but is limited to 25 user accounts.

### **33. What are some of the features that are now available in Windows Server 2016 Essentials?**

Windows Server Essentials is a cloud-connected first server that incorporates best-of-breed capabilities to deliver a server environment well suited for small businesses with up to 25 users and 50 devices. Each server license provides rights to use one running instance of the server software in either a physical OSE or virtual OSE on the licensed server.

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Essentials is a good platform for critical line-of-business applications and on-premises workloads. It provides an integrated management experience when running cloud-based applications and services, such as email, collaboration, online backup, and more. Essentials enables customers to protect their data, provide secure remote access, and integrate cloud services.

Essentials is a good option for customers using Foundation edition, which is no longer available with Windows Server 2016.

### 34. What are the different editions available with Windows Server 2016 Essentials?

There is only one edition: Windows Server 2016 Essentials. It is a flexible offering that provides a platform for running on-premises or cloud-based workloads.

### 35. Are there any changes to Foundation edition as part of Windows Server 2016?

Yes. Foundation edition is no longer available with Windows Server 2016.

### 36. How does the price of Windows Server Essentials 2016 compare to Windows Server Essentials 2012?

Prices and pricing levels vary. Microsoft does not determine pricing or payment terms for licenses acquired through resellers. Microsoft reaches customers at sales offices, support centers, and technology centers around the world. For specific pricing, [connect with a Microsoft reseller at a sales office](#).

	License	Price	Quantity	Total
Windows Server Essentials 2016	Server	\$638 <sup>1</sup>	1	\$638
Windows Server Datacenter 2012 R2	Server	\$638 <sup>2</sup>	1	\$638

<sup>1</sup> Open NL, ERP, L&SA, one-year annualized price, January 2017. Prices and pricing levels vary.

<sup>2</sup> Open NL, ERP, L&SA, one-year annualized price, September 2016. Prices and pricing levels vary.

## Licensing definitions

- ▶ **License** means the right to download, access, install, and use a product.
- ▶ **Physical processor** means a processor in a physical hardware system.
- ▶ **Physical core** means a core in a physical processor.
- ▶ **Server** means a physical hardware system capable of running server software.
- ▶ **Licensed server** means a single server, dedicated to customer's use, to which a license is assigned. For purposes of this definition, a hardware partition or blade is considered to be a separate server.
- ▶ **Operating system environment (OSE)** means all or part of an operating system instance, or all or part of a virtual (or otherwise emulated) operating system instance which enables separate machine identity (primary computer name or similar unique identifier) or separate administrative rights, and instances of applications, if any, configured to run on the operating system instance or parts identified above. A physical hardware system can have one physical OSE and/or one or more virtual OSEs.
- ▶ **Physical OSE** means an OSE that is configured to run directly on a physical hardware system. The operating system instance used to run hardware virtualization software or to provide hardware virtualization services is considered part of the physical OSE.
- ▶ **Virtual OSE** means an OSE that is configured to run on a virtual hardware system.
- ▶ **Hyper-V container** is a feature of Windows Server that utilizes a virtual operating system environment. Each Hyper-V container is considered to be one virtual OSE.
- ▶ **Windows Server container** is a feature of Windows Server software.
- ▶ **Client Access License (CAL)** means client access license, which may be assigned by user or device, as appropriate. A user CAL allows access to corresponding version of the server software or earlier versions of the server software from any device by one user. A device CAL allows access to corresponding versions of the server software or earlier versions

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of the server software from one device by any user. CALs allow access to server software running on a customer's licensed servers only.

- ▶ **External Connector licenses** means a license assigned to a server dedicated to customer's use that permits access to the corresponding version of the server software or earlier versions of the server software by external users.
- ▶ **External users** means users that are not either a customer's or its affiliates' employees, or its affiliates' onsite contractors or onsite agents.
- ▶ **Web workload** (also referred to as "Internet web solutions") are publicly available web pages, websites, web applications, web services, and/or POP3 mail serving. For clarity, access to content, information, and applications served by the software within an Internet web solution is not limited to a customer's or its affiliates' employees. Software in Internet web solutions is used to run:
  - Web server software (for example, Microsoft Internet Information Services), and management or security agents (for example, the System Center Operations Manager agent);
  - Database engine software (for example, Microsoft SQL Server) solely to support Internet web solutions; or
  - The Domain Name System (DNS) service to provide resolution of Internet names to IP addresses as long as that is not the sole function of that instance of the software.
- ▶ **High performance computing (HPC) workload** means a workload where the server software is used to run a cluster node and is used in conjunction with other software as necessary to permit security, storage, performance enhancement and systems management on a cluster node for the purpose of supporting the clustered HPC applications.
- ▶ **Cluster node** means a device that is dedicated to running clustered HPC applications or providing job scheduling services for clustered HPC applications.
- ▶ **Clustered HPC application** means a high-performance computing applications that solves, in parallel, complex computational problems, or a set of closely related computational problems. clustered HPC applications divide a computationally complex problem into a set of jobs and tasks which are coordinated by a job scheduler, such as provided by Microsoft HPC Pack, or similar HPC middleware, which distributes these in parallel across one or more computers operating within an HPC cluster.

## For more information

- ▶ **Windows Server Licensing:** [www.microsoft.com/en-us/licensing/product-licensing/windows-server-2016.aspx](http://www.microsoft.com/en-us/licensing/product-licensing/windows-server-2016.aspx)
- ▶ **Microsoft Volume Licensing:** [www.microsoft.com/licensing](http://www.microsoft.com/licensing)
- ▶ **Microsoft License Advisor:** [mla.microsoft.com/default.aspx](http://mla.microsoft.com/default.aspx)
- ▶ **Volume Licensing Service Center (VLSC):** [www.microsoft.com/licensing/servicecenter/](http://www.microsoft.com/licensing/servicecenter/)
- ▶ **Volume Activation:** [www.microsoft.com/en-us/licensing/existing-customer/product-activation.aspx](http://www.microsoft.com/en-us/licensing/existing-customer/product-activation.aspx)

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