

Hardware for Skype for Business Server 2019

After you have your topology down (and if you don't, you can check out the [Topology Basics for Skype for Business Server 2019](#) topic), it's time to think about servers. Skype for Business Server 2019 servers require 64-bit hardware. Our recommendations for hardware are below. These aren't requirements, but they reflect the requirements necessary for optimal performance. We have capacity planning documentation that will help you determine if you need more than this, depending on your circumstances.

Recommended hardware for Standard Edition servers:

Hardware component	Recommended
CPU	Intel Xeon E5-2673 v3 dual processor, 6-core, 2.4 gigahertz (GHz) or higher. Intel Itanium processors are not supported for Skype for Business Server 2019 roles.
Memory	32 gigabytes (GB).
Disk	EITHER: • 8 or more 10000 RPM hard disk drives with at least 72 GB free disk space (two of the disks using RAID 1 and 6 using RAID 10). OR • Solid state drives (SSDs) able to provide the same free space and similar performance to 8 10000 RPM mechanical disk drives.
Network	1 dual-port network adapter, 1 Gbps or higher (2 network adapters can be used, but they need to be teamed with a single MAC address and a single IP address). Dual or multi-homed configurations are not supported for Front End Servers, Back End Servers, and Standard Edition servers. As long as they are not exposed to the operating system and are being used to monitor and manage server hardware, you can have out-of-band management systems, such as DRAC or ILO. This scenario doesn't constitute a multi-homed server, and it is supported.

Recommended hardware for Front End Servers and Back End Servers:

Hardware component	Recommended
CPU	Intel Xeon E5-2673 v3 dual processor, 6-core, 2.4 gigahertz (GHz) or higher. Intel Itanium processors are not supported for Skype for Business Server 2019 roles.
Memory	64 gigabytes (GB).
Disk	EITHER: • 8 or more 10000 RPM hard disk drives with at least 72 GB free disk space (two of the disks using RAID 1 and 6 using RAID 10). OR • Solid state drives (SSDs) able to provide the same free space and similar performance to 8 10000 RPM mechanical disk drives.
Network	1 dual-port network adapter, 1 Gbps or higher (2 network adapters can be used, but they need to be teamed with a single MAC address and a single IP address). Dual or multi-homed configurations are not supported for Front End Servers, Back End

Hardware component**Recommended**

Servers, and Standard Edition servers.

As long as they are not exposed to the operating system and are being used to monitor and manage server hardware, you can have out-of-band management systems, such as DRAC or ILO. This scenario doesn't constitute a multi-homed server, and it is supported.

Recommended hardware for Edge Servers, standalone Mediation Servers, and Directors:

Hardware component**Recommended**

CPU

Intel Xeon E5-2673 v3 dual processor, 6-core, 2.4 gigahertz (GHz) or higher.
Intel Itanium processors are not supported for Skype for Business Server 2019 roles.

Memory

32 gigabytes.

Disk

EITHER:

- 4 or more 10000 RPM hard disk drives with at least 72 GB free disk space (the disks should be in a 2x RAID 1 configuration).

OR

- Solid state drives (SSDs) able to provide the same free space and similar performance to 4 10000 RPM mechanical disk drives.

Network

1 dual-port network adapter, 1 Gbps or higher (2 network adapters can be used, but they need to be teamed with a single MAC address and a single IP address).

Dual or multi-homed configurations are **not** supported for Video Interop Servers and Directors.

Edge servers will require two network interfaces that are dual-port network adapters, 1 Gbps or higher (or two paired network adapters, for a total of four, each pair being teamed with a single MAC address and a single IP address, for a total of two pairs).

On standalone Mediation Servers, the installation of additional network interface cards (NICs) to allow the configuration of a specific PSTN IP address is supported.

Note

Regardless of the server role, we also recommend the following hardware settings for Skype for Business Server 2019 (this may vary depending on the brand of hardware you've purchased, so please refer to manufacturer documentation for specifics):

- BIOS config - should be set to FLAT from NUMA.
- Enable Hyperthreading.
- The RSS queue setting should be set to 8 queue.
- **Operating systems for Skype for Business Server 2019**
- After you have the hardware in place, you'll need to install the operating system (OS) that will allow you to install and successfully use Skype for Business Server 2019.

Windows Server 2019

Windows Server 2016

- Anything other than the operating systems listed here won't work properly; please don't try it for installs of Skype for Business Server 2019.
- **Note**
- If you are installing Windows Admin Center 2019 on your Windows Server 2019 machine, it will prompt you for a port to listen on. There's a likelihood you might choose port 443, but if that machine has Skype for Business Server 2019 installed on it, or is going to have Skype for Business Server 2019 installed on it, then you must choose a different port number.
- Why is this the case? If Windows Admin Center 2019 is running on port 443, you will not be able to connect to the server using the Skype for Business Control Panel, nor will you be able to connect to any internal web service running on the server (Address Book Web Service, Autodiscover Service, WebTicket Service, etc). In fact, you will not be able to connect to any Internal Web Service URL. Please choose a different port, in the event you need or want to put Windows Admin Center 2019 on a server with Skype for Business Server 2019.

Software that should be installed before a Skype for Business Server 2019 deployment

There are some things you're going to need to install or configure for any server running Skype for Business Server 2019. These are listed below, followed by additional requirements for specific server roles.

All servers:

Software/role	Details
Windows PowerShell 3.0	<p>All Skype for Business Server servers need Windows PowerShell 3.0 installed.</p> <ul style="list-style-type: none"> • This should be installed by default with Windows Server 2016.
Microsoft .NET Framework	<p>WCF services is a Feature that's installed as a Windows feature, under Server Manager, no downloads needed.</p> <ul style="list-style-type: none"> • You need to make sure, when you install this feature, or if it's already installed and you're checking on it, that the HTTP Activation option is also checked and installed, like so: <p>Don't worry if you get an additional pop-up saying some other things need to be installed for HTTP Activation to be installed. That's normal; click OK and go ahead. If you don't get this pop-up, you can assume those things are already installed and go ahead. Microsoft .NET Framework is usually installed when Windows Server 2016 is installed. Skype for Business Server works with the following Microsoft .NET Framework versions:</p> <ul style="list-style-type: none"> • .NET 3.5 • .NET 4.5 • .NET 4.6.x • .NET 4.7
Media Foundation	<p>For Windows Server 2016, the Windows Media Format Runtime installs with Microsoft Media Foundation.</p> <p>All Front End Servers and Standard Edition servers used for conferencing require Windows Media Format Runtime to run the Windows Media Audio (.wma) files that the Call Park, Announcement, and Response Group applications play for announcements and music.</p>

Software/role	Details
Windows Identity Foundation	<p>We need Windows Identity Foundation 3.5 to support server-to-server authentication scenarios for Skype for Business Server 2019.</p> <ul style="list-style-type: none"> For Windows Server 2016, there's no need to download anything. Open Server Manager, and go to the Add Roles and Features Wizard. Windows Identity Foundation 3.5 is listed under the Features section. If it's selected, you're good. Otherwise select it and click Next to reach the Install button.
Remote Server Administration Tools	Role Administration Tools: AD DS and AD LDS tools

Front End Servers and Standard Edition server also need:

Software/role	Details
Internet Information Services (IIS)	<p>IIS is needed on all Front End Servers, as well as all Standard Edition servers, with the following modules selected:</p> <ul style="list-style-type: none"> Common HTTP Features: Default Document, HTTP Errors, Static Content Health and Diagnostics: HTTP Logging, Logging Tools, Tracing Performance: Static Content Compression, Dynamic Content Compression Security: Request Filtering, Client Certificate Mapping Authentication, Windows Authentication Application Development: .NET Extensibility 3.5, .NET Extensibility 4.5, ASP.NET 3.5, ASP.NET 4.5, ISAPI Extensions, ISAPI Filters Management Tools: IIS Management Console, IIS Management Scripts and Tools <p>Note that Anonymous Access is also needed, but you get that when you install IIS, so you don't have a place to select it on the list.</p>
Windows Media Format Runtime	For Windows Server 2016, you'll need to install the Media Foundation feature in Server Manager . You actually can start your Skype for Business Server 2019 installation without this, but you'll be prompted to install it, and then reboot the server, before the Skype for Business Server 2019 install continues. It's better to do it ahead of time.
Silverlight	You can install the latest version of Silverlight here .

To help you out, here's a sample PowerShell script you can run to automate this:
Copy

```
Add-WindowsFeature RSAT-ADDS, Web-Server, Web-Static-Content, Web-Default-Doc, Web-Http-Errors, Web-Asp-Net, Web-Net-Ext, Web-ISAPI-Ext, Web-ISAPI-Filter, Web-Http-Logging, Web-Log-Libraries, Web-Request-Monitor, Web-Http-Tracing, Web-Basic-Auth, Web-Windows-Auth, Web-Client-Auth, Web-Filtering, Web-Stat-Compression, Web-Dyn-Compression, NET-WCF-HTTP-Activation45, Web-Asp-Net45, Web-Mgmt-Tools, Web-Scripting-Tools, Web-Mgmt-Compat, Server-Media-Foundation, Telnet-Client
```

Directors also need:

IIS, with the following modules selected:

- Common HTTP Features
 - Default Document
 - HTTP Errors
 - Static Content
- Health and Diagnostics
 - HTTP Logging
 - Logging Tools
 - Tracing
- Performance
 - Static Content Compression
- Security
 - Request Filtering
 - Client Certificate Mapping Authentication
 - Windows Authentication
- Application Development
 - .NET Extensibility 3.5
 - .NET Extensibility 4.5
 - ASP.NET 3.5
 - ASP.NET 4.5
 - ISAPI Extension
 - ISAPI Filters

(If you're wondering, it's the same module set as the Front End Servers and Standard Edition servers, with the Dynamic Content Compression and Management Tools left out.)

And we have some PowerShell code below for this too:

Copy

```
Add-WindowsFeature RSAT-ADDS, Web-Server, Web-Static-Content, Web-Default-
Doc, Web-Http-Errors, Web-Asp-Net, Web-Net-Ext, Web-ISAPI-Ext, Web-ISAPI-
Filter, Web-Http-Logging, Web-Log-Libraries, Web-Request-Monitor, Web-Http-
Tracing, Web-Basic-Auth, Web-Windows-Auth, Web-Client-Auth, Web-Filtering,
Web-Stat-Compression, NET-WCF-HTTP-Activation45, Web-Asp-Net45, Web-
Scripting-Tools, Web-Mgmt-Compat, Server-Media-Foundation, Telnet-Client
```

Back end databases that will work with Skype for Business Server 2019

When installing Skype for Business Server 2019 Standard Edition, you'll have SQL Server 2016 Express (64-bit edition).

Skype for Business Server 2019 Enterprise Edition will require full SQL Server, as indicated below (only 64-bit edition; please don't use 32-bit editions):

Microsoft SQL Server 2016 (64-bit edition), and you must run with the latest updates, and with AlwaysOn availability groups.

If you don't see the SQL Server edition you want to use listed here, you can't use it.

Note

You also need to install SQL Server Reporting Services for the Monitoring Server role, SQL Clustering, and SQL Always On

SQL Clustering with Skype for Business Server 2019 is supported. If you want to set up SQL Clustering, that's done in SQL Server.

Make sure you have an active/passive configuration for SQL Clustering, which is supported. Don't share the passive node with any other SQL instance.

You can have the following for failover clustering:

Two-node:

- Microsoft SQL Server 2016 Standard (64-bit edition), and we recommend running with the latest service pack.

Sixteen-node:

- Microsoft SQL Server 2016 Enterprise (64-bit edition), and we recommend running with the latest service pack.

We'll have an article, [Configure SQL Server clustering for Skype for Business Server 2019](#), that will have the steps for getting clustering ready.

SQL Always On is supported, and you can read more about it in [Back End Server high availability in Skype for Business Server 2019](#).

Additional server installation recommendations:

Please don't install any Microsoft Internet Security and Acceleration (ISA) Server client software, or any other Winsock Layered Service Providers (LSP) software (any third-party firewalls or anti-virus network inspection software would be included here) on any of your front end servers or standalone mediation servers. Poor media traffic performance has been seen when that software is installed.

Active Directory

Although much of the configuration data for servers and services is stored in the Skype for Business Server 2019 Central Management store, there are some things still stored in Active Directory:

Active Directory objects	Object types
Schema extensions	User object extensions Extensions for Skype for Business Server 2015 and Lync Server 2013, to maintain backward compatibility with the previous supported versions
Data	User SIP URI and other user settings

**Active
Directory
objects**

Object types

Contact objects for applications (like the Response Group application and the Conferencing Attendant application)

Data published for backward compatibility

A service control point (SCP) for the Central Management store

Kerberos Authentication Account (an optional computer object)

OS for Domain Controllers

The following Domain Controller operating systems can be used:

- Windows Server 2019
- Windows Server 2016
- Windows Server 2012 R2
- Windows Server 2012

The domain functional level of any domain you deploy Skype for Business Server 2019 into, and the forest functional level of any forest you deploy Skype for Business Server 2019 into, must be one of the following:

- Windows Server 2019
- Windows Server 2016
- Windows Server 2012 R2
- Windows Server 2012

Can you have read-only domain controllers in these environments? Sure, as long as there are also writable domain controllers available.

It's important to know that Skype for Business Server 2019 doesn't support single-labeled domains. What are they? If you have a root domain labeled contoso.local, that's going to be fine. If you have a root domain that's just named local, that's not going to work, and it's not supported as a result. A little more about this has been written [in this Knowledge Base article](#).

Skype for Business Server 2019 also doesn't support renaming domains. If you really have to rename your domain, you'll need to uninstall Skype for Business Server 2019, do the domain rename, and then reinstall Skype for Business Server 2019.

Finally, you may be dealing with a domain with a locked-down AD DS environment, and that's alright. We have more information on how to deploy Skype for Business Server 2019 into a locked-down AD DS environment in the Deployment documentation.

AD Topologies

Supported topologies in Skype for Business Server 2019 are:

- Single forest with single domain
- Single forest with a single tree and multiple domains
- Single forest with multiple trees and disjoint namespaces
- Multiple forests in a central forest topology
- Multiple forests in a resource forest topology
- Multiple forests in a Skype for Business resource forest topology with Exchange Online
- Multiple forests in a resource forest topology with Skype for Business Online and Azure Active Directory Connect