

# Software and Hardware Requirements for Citrix, VMware and RDS Environments

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# Supported virtualized environments

## Nuance audio extensions

Platform	Clients	Supported
Citrix	Windows	Yes
	Linux	Partially
	Other (for example, zero clients)	No
VMware View	Windows	Yes
	Linux	No
	Other (for example, zero clients)	No
VMware RDSH	Windows	Yes
	Linux	No
	Other (for example, zero clients)	No
Microsoft RDS	Windows	Yes
	Linux	No
	Other (for example, zero clients)	No

For more information on network requirements, see: [Network requirements](#).

## Nuance PowerMic extensions

Platform	Clients	Supported
Citrix	Windows	Yes
	Linux	No
	Other (for example, zero clients)	No
VMware View	Windows	Yes
	Linux	No
	Other (for example, zero clients)	No
VMware RDSH	Windows	Yes
	Linux	No
	Other (for example, zero clients)	No
Microsoft RDS	Windows	Yes
	Linux	No
	Other (for example, zero clients)	No

For more information on network requirements, see: [Network requirements](#).

## Philips SpeechMike control channel

The following table shows if SpeechMike button support is available for [Nuance products](#).

Platform	Clients	Supported	Comment
Citrix	Windows	Yes	
	Linux	Partially	Client hardware: Restricted to USB 2.0 ports; USB redirection isn't available for USB 3.0 ports.
	Other (for example, zero clients)	No	
VMware View	Windows	Yes	
	Linux	No	not tested
	Other (for example, zero clients)	No	not tested
Microsoft RDS	Windows	Yes	
	Linux	No	
	Other (for example, zero clients)	No	

For more information on network requirements, see: [Network requirements](#).

## Citrix native audio redirection

The following table shows which platforms support the usage of [Nuance products](#) with Citrix HDX audio (also known as Citrix native audio).

Platform	Clients	Supported	Comment
Citrix	Windows	Yes	
	Linux	Partially tested	<p>Client hardware: Restricted to USB 2.0 ports; USB redirection isn't available for USB 3.0 ports.</p> <p>PowerMic buttons work if device splitting is supported by the client.</p>
	Other (for example, zero clients)	Partially (tested for HP ThinPro 7 and Wyse ThinOS-based clients)	<p>Client hardware: Restricted to USB 2.0 ports; USB redirection isn't available for USB 3.0 ports.</p> <p>PowerMic buttons work if device splitting is supported by the thin client.</p>

## USB redirection

### Recommendations:

- Use device splitting in combination with native audio, if available.
- Use the Nuance extensions, which are optimized for audio traffic, instead of USB redirection.

Platform	Clients	Supported	Comment
Citrix	Windows	Yes	
	Linux	Partially	Tested with XenDesktop 7.x (client hardware: Restricted to USB 2.0 ports; USB redirection isn't available for USB 3.0 ports).
	Other (for example, zero clients)	Partially (tested for HP ThinPro 7)	Tested with XenDesktop 7.x (client hardware: Restricted to USB 2.0 ports; USB redirection isn't available for USB 3.0 ports).
VMware View	Windows	Yes	Tested with VMware View 7.6 or higher.
	Linux	Partially (tested for HP and Wyse ThinOS)	
	Other (for example, zero clients)	Partially	
Microsoft RDS	Windows	No	Not tested
	Linux	No	
	Other (for example, zero clients)	No	

**Note:** In Citrix environments, the USB redirection or device splitting (Citrix optimized audio) requires Citrix XenApp 7.15 or higher.

## Double hop configuration

Double hop configuration is a combination of USB redirection (or native audio with device splitting) and Nuance audio channel.

A double hop configuration consists of the following:

- End point 1: Client end point (for example, Windows end point or thin client).
- End point 2: Citrix/VMware virtual desktop or Citrix server.

- End point 3: The Citrix XenApp server where the speech recognition/dictation app is hosted.

The audio data is streamed from the client end point to the virtualized app by using USB redirection from end point 1 to end point 2 (first hop) and the Nuance extensions from end point 2 to end point 3 (second hop).



# Software and hardware requirements

## Client end point requirements

### Client end point: Microsoft

- Sound card or USB audio device
- Operating systems:
  - Microsoft Windows 10 (32-bit and 64-bit)
  - Microsoft Windows 11 (64-bit)
  - Microsoft Windows Server 2016
  - Microsoft Windows Server 2019
  - Microsoft Windows Server 2022

### Client end point: Linux

- IGEL
  - For information on the IGEL thin clients supported, see the IGEL Knowledge Base, [Nuance compatibility](#).

For more information on system requirements and supported thin clients, see the readme delivered in the Linux client package.

**Note:** PowerMic 4 is currently not supported.

## Virtualization system requirements

### Citrix environments

- Citrix virtualized environments:
  - Citrix XenApp/XenDesktop 7.15 or higher
  - Citrix Virtual Apps and Desktops 1912 LTSR or higher
- Citrix server operating systems:
  - Microsoft Windows Server 2016
  - Microsoft Windows Server 2019
  - Microsoft Windows Server 2022

Microsoft Windows 10

Microsoft Windows 11

- Guest (client end point) operating systems:  
Microsoft Windows 10 (32-bit and 64-bit)  
Microsoft Windows 11 (64-bit)  
Microsoft Windows Server 2016  
Microsoft Windows Server 2019  
Microsoft Windows Server 2022
- Citrix clients:  
Citrix Workspace app 1912 LTSR or higher

**Note:** Old versions of the Citrix Workspace app have known performance issues and aren't supported. The Nuance audio and PowerMic extensions must be installed after the Citrix Workspace app is installed on the guest operating system. If you upgrade the Citrix Workspace app, the Nuance extensions must be reinstalled.

For more information on end-of-life policy, see: [End-of-life policy: Third-party environments](#).

## RDS environments

- RDS server operating systems:  
Microsoft Windows Server 2016  
Microsoft Windows Server 2019  
Microsoft Windows Server 2022
- Guest (client end point) operating systems:  
Microsoft Windows 10 (32-bit and 64-bit)  
Microsoft Windows 11 (64-bit)
- Remote Desktop protocols:  
RDP 7.x or higher

Nuance RDS Audio Extension and Nuance PowerMic RDS Client Extension: UDP transport must be disabled on Remote Desktop Protocol (RDP) clients. To disable UDP transport, add the following registry keys and value to the Remote Desktop Client, then restart the PC:

Keys:

HKEY\_LOCAL\_MACHINE\Software\Microsoft\Terminal Server Client

HKEY\_LOCAL\_MACHINE\Software\Wow6432Node\Microsoft\Terminal Server Client

DWORD Value:

DisableUDPTransport = 1

## VMware environments

- VMware Horizon View:  
VMware Horizon View Agent 7.13 or higher  
VMware Horizon View Client 5.5 or higher
- VMware server operating systems:  
Microsoft Windows Server 2016  
Microsoft Windows Server 2019  
Microsoft Windows Server 2022
- Guest (client end point) operating systems:  
Microsoft Windows 10 (32-bit and 64-bit)  
Microsoft Windows 11 (64-bit)  
Microsoft Windows Server 2016  
Microsoft Windows Server 2019  
Microsoft Windows Server 2022

For more information on end-of-life policy, see: [End-of-life policy: Third-party environments](#).

## Network requirements

Channel	Minimum bandwidth (client to server)	Network latency	Comment
Nuance audio extension	CELP: 19.2 kbit/s  Speex: 27 kbit/s  PCM 8 kHz: 128 kbit/s  PCM 16 kHz: 256 kbit/s	Must not exceed 50 ms	
Citrix USB redirection for PowerMic	PCM 22 kHz: ~500 kbit/s	Must not exceed 50 ms	
Double Hop for PowerMic	Citrix: ~500 kbit/s (between end point 1 - end point 2)  VMware: ~1,2 Mbit/s  Nuance audio extensions: ~27 kbit/s (Speex, end point 2 - end point 3)	Must not exceed 50 ms	Citrix: USB redirection is used between clients (end point 1) and Citrix virtual desktop (end point 2).  VMware: USB redirection is used between clients (end point 1) and VMware desktop (end point 2).  Nuance custom audio channel is used between end point 2 and XenApp server.

Channel	Minimum bandwidth (client to server)	Network latency	Comment
Citrix native audio channel	Audio quality:  0 - High - ~150 kbit/s  1 - Medium - 64 kbit/s	Must not exceed 50 ms	The following audio quality options can be configured for any Citrix ICA session from the Citrix Studio: "High", "Medium" and "Low". The option configured determines the amount of bandwidth required for the audio data within that session. By default, the audio quality is set to "High". We don't recommend using other options.  <b>Note:</b> For old XenApp versions, make sure to set the audio quality to "High" to benefit from the best audio quality.
VMware Real-Time Audio-Video (RTAV)	Optimized audio channel  > 200 kbit/s	Must not exceed 50 ms	VMware View 7.3 or higher supports 16 kHz and 22 KHz audio in addition to the 8 KHz audio stream.  Internally, Speex is used to stream the audio data from the client end point to the virtual desktop.

## Backward compatibility and upgrading

The Nuance audio and PowerMic extensions are designed to be backward compatible from the speech recognition app to the client end point. This means that you can run newer versions of the speech recognition app and they work with older versions of the corresponding client end point extension with the following restrictions:

- New versions of the speech recognition app are backward compatible with the corresponding end point virtual extensions for up to one year.
- We recommend upgrading the audio extension to the latest version.

**Note:** The Nuance Citrix Client Audio Extension's automatic download feature is disabled by default for Capture Services (Desktop) 19.3.

## End-of-life policy: Third-party environments

Support for third-party environments is only valid as long as they're supported by the corresponding vendor and might be subject to other restrictions. Contact Nuance Technical Support for details. For more information, see the documentation delivered with the third-party product and supporting Nuance documentation.

When standard support by the vendor has stopped, Nuance will continue support if an issue is specific to the Nuance solution, within the limitations of the vendor's standard end-of-life policy and Nuance's policy. This means that issues that are a combination of the vendor's component and the Nuance solution can't be supported.

# Concepts

## **Nuance audio extensions (custom audio channels)**

High quality audio is required for accurate speech recognition. Regardless of the virtualization technology and architecture, you must be able to deliver audio from the client end point to the speech recognition app hosted in the virtual environment.

The Nuance audio extensions install custom audio channels on the client end point to reduce the bandwidth requirements between the client end point and the hosted app. Depending on the sound format, they require between 19.2 and 256 kbit/s for each dictating user (native audio channels can require up to 150 kbit/s in RDS and VMware environments and 1 Mbit/s in Citrix environments).

The Nuance audio extensions are available for the following products:

- Dragon Medical One
- Dragon Medical Direct
- Dragon Case and Care
- Dragon Professional Anywhere
- Dragon Legal Anywhere
- Apps based on Dragon Medical Server (.NET and COM editions)
- Apps based on SpeechMagic SDK
- Apps based on Capture Services (Desktop) SDK

For more information on supported environments, see: [Nuance audio extensions](#).

## **Citrix/VMware/RDS native audio channels**

The vendors' native built-in audio channels are an alternative to the Nuance custom audio channels. These channels are available for most virtual environments and many clients; for more information, see: [Supported environments](#).

Limitation: For speech recognition accuracy, high quality audio must be configured; this will increase the network bandwidth.

## **Citrix/VMware USB redirection**

The USB redirection provides full audio and button control support by redirecting USB devices (for example, PowerMic) from client end points to virtual desktops/servers.



Depending on the USB audio device and format used for recording or playback, the USB redirection can increase the bandwidth up to 1 Mbit/s. For PowerMic devices the bandwidth consumption is approximately 440 kbit/s (for more information, see: [Calculate bandwidth for USB audio devices](#)).

For general information on supported environments, see: [Supported environments](#).

For detailed information, see the VDI vendor's website.

### **Nuance PowerMic extensions (custom PowerMic control channels)**

The Nuance PowerMic extensions provide custom PowerMic control channels to redirect PowerMic button presses to the virtualized instance. These extensions are available for the following environments:

- Citrix XenApp and XenDesktop virtualization software
- Microsoft Remote Desktop RDS virtualization software
- VMware Horizon View virtualization software

### **Philips SpeechMike channel**

Philips provides a custom channel that enables button redirection for SpeechMike and foot control devices on supported platforms. For more information, see: <https://www.dictation.philips.com>