

Deployment and Configuration for Microsoft RDS Environments

Table of contents

Overview	3
Application deployment	3
Audio channels	4
Package contents	5
Requirements	6
Server	6
Client end point	6
Network requirements	6
Audio channel installation	7
PowerMic control channel installation	8
Silent setup	9
Installation	9
Uninstalling	9
Supported microphones	10
Third-party microphones	10
Troubleshooting audio	11
Third-party software updates	11
Common issues	11
Verifying the installation	11
Remote Desktop client does not start	13
Microphone unavailable	13
Record/playback not working	14
Application performance and stability issues	15
Enabling logging	15
Contacting support	16
Troubleshooting PowerMic controls	17
Common issues	17
Verifying the installation	17
Contacting support	18

Overview

The Nuance RDS Client Audio Extension and Nuance PowerMic RDS Client Extension provide custom audio and microphone button channels for the following products:

- Microsoft Remote Desktop Services (RDS)
- Microsoft Windows and Windows Embedded operating systems
- The following speech recognition applications:
 - Dragon Medical One Desktop Application
 - Dragon Medical Direct
 - Dragon Case and Care
 - Applications based on Dragon Medical SpeechKit (.NET and COM editions)
 - Applications based on SpeechMagic SDK

For more information on hardware, software and network requirements, see: [Requirements](#).

Application deployment

Applications or desktops that are hosted in a virtualized environment are displayed as a bit map image via a receiver or remote desktop application.

This has the following implications:

- Your speech recognition application is not installed on the client end point, but on the remote server/virtual desktop.
- Your speech recognition application is not installed where the microphone is plugged in.
- If your speech recognition application sends recognized text to a target application (for example. clinical documentation program or word processor), the speech recognition application must be installed on the same server or virtual desktop image as the target application to be able to access the target application's text controls.

Note: In Windows Server 2019 and higher, applications must be given explicit access to hardware devices via Group Policy. To allow the speech recognition application to access the microphone device that is passed into the VDI session, create a Group Policy Object (GPO) for all users to set the registry key `HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\CapabilityAccessManager\ConsentStore\microphone` to Allow; this can then be applied to all servers.

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 application hosted on the server.

Native audio channels can require between 150 kbps and 1 Mbps bandwidth between the client end point and the hosted application. The Nuance RDS Client Audio Extension reduces the bandwidth requirement to 19.2-27.8 kbps (depending on the sound format).

The corresponding improvements in application responsiveness and performance are critical to the user experience.

Microphone control channels

Microphone buttons, sliders and other controls must be routed separately to the speech recognition application.

To enable this for the Nuance PowerMic in a Microsoft RDS system, the [Nuance PowerMic RDS Client Extension](#) provides a custom channel for Nuance PowerMic button controls.

For Philips and Grundig devices, [third party redistributable packages](#) are available.

Package contents

Nuance RDS Client Audio Extension

A virtual audio channel for Microsoft RDS systems:

- Client component:
Nuance RDS Audio and Button Extensions\Client folder, Nuance RDS Client Audio Extension.exe

Nuance PowerMic RDS Client Extension

A virtual channel for Nuance PowerMic button controls in a Microsoft RDS system.

- Client component:
Nuance RDS Audio and Button Extensions\Client folder, Nuance PowerMic RDS Client Extension.exe

Third-party device drivers

- Redistributable packages for Philips and Grundig devices. For more information, see: [Supported microphones](#).

Requirements

Important: For security reasons, make sure that VDI channel encryption is enabled between client end points and VDI servers or virtual desktops. Disabling encryption in a virtualized environment can lead to confidential data being exposed. Encryption is enabled by default.

Server

- One of the following operating systems running Microsoft Remote Desktop Services (RDS):
 - Microsoft Windows Server 2012 R2
 - Microsoft Windows Server 2016
 - Microsoft Windows Server 2019
 - Microsoft Windows Server 2022

Client end point

- Sound card or USB audio device. For more information, see: [Supported microphones](#).
- One of the following operating systems:
 - Microsoft Windows 10
 - Microsoft Windows 11
- Remote Desktop Protocol 7.x or higher.
- Microsoft Remote Desktop Client

Network requirements

- Minimum Remote Desktop Client to Terminal Server bandwidth for audio data:
 - CELP: 19.2 kbps
 - Speex: 28 kbps
 - PCM 8 kHz: 128 kbps
 - PCM 16 kHz: 256 kbps
- Network latency must not exceed 50 ms.

Audio channel installation

Install the Nuance RDS Client Audio Extension on the client end point.

Proceed as follows:

1. Log on to the client end point as an administrator.
2. Open the Nuance RDS Audio and Button Extensions\Client folder and double-click Nuance RDS Client Audio Extension.exe.
3. Follow the installation wizard.
4. Make sure the device you want to use is selected as the default recording device on the client end point (Control Panel, **Sound** dialog box, **Recording** tab).

Remarks

- The extension does not need to be installed on the server/virtual desktop; the required server binaries are already included in the application folder.
- Make sure you uninstall the Nuance RDS Server & Virtual Desktop Audio Extension setup unless it is used by other products.
- The 32-bit and 64-bit versions of the Nuance RDS Client Audio Extension are installed together.
- Microphone buttons and other controls require a separate channel. For more information, see: [PowerMic control channel installation](#) and [Supported microphones](#).

PowerMic control channel installation

To use a microphone with buttons or other controls, install the corresponding device driver/redistributable package with Microsoft RDS support. See also: [Third party microphones](#).

For Nuance PowerMic, install the Nuance PowerMic RDS Client Extension on the client end point.

Proceed as follows:

1. Log on to the client end point as an administrator.
2. Open the Nuance RDS Audio and Button Extensions\Client folder and double-click Nuance PowerMic RDS Client Extension.exe.
3. Follow the installation wizard.

Remarks

- The extension does not need to be installed on the server; the required server binaries are already included in the application folder.
- The 32-bit and 64-bit versions of the Nuance PowerMic RDS Client Extension are installed together.

Silent setup

Installation

You can install the Nuance RDS Client Audio Extension and Nuance PowerMic RDS Client Extension via the command line. For example:

- Nuance RDS Client Audio Extension
`"<path>\Nuance RDS Client Audio Extension.exe" -i -q -l log.txt`
- Nuance PowerMic RDS Client Extension
`"<path>\Nuance PowerMic RDS Client Extension.exe" -i -q -l log.txt`

Remarks

- The `l` option enables logging. If you enable logging, you must specify a log file name (log.txt in these examples).
- Use the `-norestart` parameter to suppress the automatic restart of the computer if the Nuance extension setups require a restart.

Uninstalling

You can uninstall the Nuance RDS Client Audio Extension and Nuance PowerMic RDS Client Extension via the command line. For example:

- Nuance RDS Client Audio Extension
`"<path>\Nuance RDS Client Audio Extension.exe" /uninstall -i -q -l log.txt`
- Nuance PowerMic RDS Client Extension
`"<path>\Nuance PowerMic RDS Client Extension.exe" /uninstall -i -q -l log.txt`

Note: Use the `-norestart` parameter to suppress the automatic restart of the computer if the Nuance extension setups require a restart.

Supported microphones

	Audio	Controls
Nuance PowerMic II	yes	yes*
Nuance PowerMic II with barcode scanner	yes	yes*
Nuance PowerMic III	yes	yes*
Nuance PowerMic 4	yes	yes*
Philips SpeechMike Air	yes	yes**
Philips SpeechMike Premium	yes	yes**
Philips SpeechMike III	yes	yes**
Grundig Digta SonicMic II	yes	yes**
Grundig Digta SonicMic II (US edition)	yes	yes**
Grundig Digta SonicMic 3	yes	yes**

* To enable Nuance PowerMic controls, [install the Nuance PowerMic RDS Client Extension](#).

** To enable button controls for third-party devices, install the corresponding redistributable packages.

Third-party microphones

The Nuance 3rd party device drivers folder contains redistributable packages for Philips and Grundig devices.

Install the redistributables on the remote server where your application is hosted and on the client end point. For more information, see the documentation delivered with the redistributable package.

Note: The quality of third-party device drivers is the responsibility of the device vendor. Nuance does not guarantee that third-party drivers are error free and suitable for your requirements. Redistributed drivers might not be the most recent versions; contact your vendor for up-to-date drivers that support your speech recognition system.

Troubleshooting audio

This section deals with problems related to the RDS virtual audio channel. For problems with button controls on Nuance PowerMic devices, see: [Troubleshooting PowerMic controls](#).

See also: [Enabling logging](#) and [Contacting support](#).

Third-party software updates

- UDP transport must be disabled on Remote Desktop Protocol (RDP) clients. To disable UDP transport, add the following registry value to the Remote Desktop client:
Keys:
HKEY_LOCAL_MACHINE\Software\Microsoft\Terminal Server Client
HKEY_LOCAL_MACHINE\Software\Wow6432Node\Microsoft\Terminal Server Client
Value: DisableUDPTransport = 1
- On Windows Server 2012, Microsoft hotfix KB2802311 must be installed. For more information, see the Microsoft Knowledge Base, [article 2802311](#).

Common issues

In case of problems, check the following:

- The client component of the Nuance RDS Audio Extension is correctly installed. For more information, see: [Verifying the installation](#).
- The audio device you want to use is listed as the default audio device on the client end point, and this device is also available to the application hosted on the server. For more information, see: [Microphone unavailable](#).

Verifying the installation

To verify that the Nuance RDS Client Audio Extension is correctly installed on the client end point, do the following:

1. On the client end point, open the Control Panel and click **Programs and Features**.
2. Check that **Nuance RDS Client Audio Extension** is listed.
Note: If the RDS session (mstsc.exe process) was running during the installation of the Nuance PowerMic RDS Client Extension, the extension might not work properly.
3. Check that the version number corresponds to your download.
4. Go to C:\Windows\System32 (64-bit Windows) and check that the following files exist:
 - NcaAudiodev.dll
 - PspLog.dll
 - PspMixerWtsCInt.dll
 - pspsbext.dll
 - PspSbExtWtsCInt.dll
 - NuCaRDSRecorder.dll
 - NuCaRDSPlayer.dll
 - NuCaRDSCommunication.dll
 - NuCaVDIClient.dll
5. Go to C:\Windows\SysWOW64 (64-bit Windows) and check that the following files exist:
 - NcaAudiodev.dll
 - PspLog.dll
 - PspMixerWtsCInt.dll
 - pspsbext.dll
 - PspSbExtWtsCInt.dll
 - NuCaRDSRecorder.dll
 - NuCaRDSPlayer.dll
 - NuCaRDSCommunication.dll
 - NuCaVDIClient.dll
6. On a 64-bit Windows system:
 - Browse for HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Terminal Server Client\Default\AddIns\PspMix and check that the Name string value contains PspmixerwtscInt.dll.
 - Browse for HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Terminal Server Client\Default\AddIns\PspSbEx and check that the Name string value contains PpsbextwtscInt.dll.
 - Browse for HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Microsoft\Terminal Server Client\Default\AddIns\PspMix and check that Name string value contains PspmixerwtscInt.dll.
 - Browse for HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Microsoft\Terminal Server Client\Default\AddIns\PspSbEx and check that Name string value contains PpsbextwtscInt.dll.
 - Browse for HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Terminal Server Client\Default\AddIns\nuarec and check that the Name string value contains NuCaRDSRecorder.dll.

Browse for HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Terminal Server Client\Default\AddIns\nuaplay and check that the Name string value contains NuCaRDSPlayer.dll.

Browse for HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Terminal Server Client\Default\AddIns\nuacom and check that the Name string value contains NuCaRDSCommunication.dll.

Browse for HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Microsoft\Terminal Server Client\Default\AddIns\nuarec and check that the Name string value contains NuCaRDSRecorder.dll.

Browse for HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Microsoft\Terminal Server Client\Default\AddIns\nuaplay and check that the Name string value contains NuCaRDSPlayer.dll.

Browse for HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Microsoft\Terminal Server Client\Default\AddIns\nuacom and check that the Name string value contains NuCaRDSCommunication.dll.

Remote Desktop client does not start

- After you install the Nuance RDS Client Audio Extension, the Remote Desktop client does not start.

Make sure the Nuance RDS Audio Extension is correctly installed; for more information, see: [Verifying the installation](#).

Microphone unavailable

- The audio device is not available to the speech recognition application. Proceed as follows:
 1. Make sure the audio device is switched on and connected to the client end point.
 2. Make sure your system fulfills the [Requirements](#).
 3. Make sure the speech recognition application has permission to use the audio device.
 4. Make sure the Nuance RDS Audio Extension is correctly installed; for more information, see: [Verifying the installation](#).
- Your speech recognition application lists **Remote Audio** as an audio device.

The Nuance RDS Client Audio Extension is not installed; for more information, see: [Verifying the installation](#).

- Your speech recognition application lists an audio device from the Terminal Server, not the client end point.

The Nuance RDS Client Audio Extension is not installed; for more information, see: [Verifying the installation](#).

- Your speech recognition application lists an audio device, but not the one you want to use.

The Nuance RDS Client Audio Extension always uses the default device on the client end point. To verify/set the default audio device, do the following:

1. Make sure the audio device is switched on and connected to the client end point.
2. On the client end point, open the Control Panel and click **Sound**.
3. Open the **Recording** tab and make sure the device you want to use is set as the default device.
4. Open the **Playback** tab and make sure the device you want to use is set as the default device.

Record/playback not working

- Recording and playing back audio work at first, but a failure occurs during record or playback.

See: [Application performance and stability issues](#).

- Recording and playing back audio do not work.

Proceed as follows:

1. Make sure the audio device is switched on and connected to the client end point.
 2. Make sure your system fulfills the [Requirements](#).
 3. Make sure the Nuance RDS Audio Extension is correctly installed; for more information, see: [Verifying the installation](#).
- Recording does not start; a **Device in use** error is displayed.

The audio device is in use by another process.

Make sure that other processes are not using the recording device when you start to record.

- Half-duplex devices (e.g. Philips SpeechMike with firmware lower than version 1.25): Recording does not start; a **Device in use** error is displayed.

Another application might be playing audio.

Upgrade the device firmware, and/or ensure that different devices are selected as default devices for recording and playing back audio.

Application performance and stability issues

- Your speech recognition application reacts slowly in general.

This can be caused by low network bandwidth or high latency. Make sure that your network fulfills the [network requirements](#).

This can be caused by your server architecture. Microsoft Windows Server has a longer thread quantum than desktop PCs; this means that foreground applications are not prioritized as much.

- Your speech recognition application launches slowly or reacts slowly to record/playback start/stop.

This can be caused by low network bandwidth or high latency. Make sure that your network fulfills the [network requirements](#).

- Your speech recognition application stops with an error during recording.

This can be caused by low network bandwidth or high latency. Make sure that your network fulfills the [network requirements](#).

This can be caused by latency peaks. Monitor your network performance over a long enough timeframe to detect latency peaks.

This can be caused by the audio device or the USB port on the client end point. Make sure you have the latest firmware installed. Do a longer recording on the client end point using a different application (e.g. Sound Recorder) to try to replicate the issue.

File-based recording: Make sure that the sound file is located on the server and not on a network share.

Enabling logging

Nuance RDS Client Audio Extension

1. On the client end point, browse for the C:\Windows\System32 folder (64-bit Remote Desktop Connection application) or C:\Windows\SysWOW64 folder (32-bit Remote

Desktop Connection application).

2. Open `PspSbExtWtsClnt.ini` and `PspMixerWtsClnt.ini` in a text editor.
3. In both files, change the `Enable` line to: `Enable=yes`
4. In both files, change the `File` line to define an output folder and file name for logs. You must have write access to this folder.

Speech recognition application

Applications based on SpeechMagic SDK or the SmAudio SDK from Capture Services:

1. Open the `SpeechMagic.AudioFull` or `SpeechMagic.AudioMinimum` folder of your application.
2. Rename `smxlog.ini.template` to `smxlog.ini`.
3. Open `smxlog.ini` and change the `LogDirectory` line to define an output folder for logs. You must have write access to this folder. The default folder is:
`C:\TEMP\SpeechMagic\SMXLOG`

Contacting support

When you request support for Microsoft RDS-related problems, provide the following information:

- The troubleshooting steps you have already carried out and your results.
- Detailed steps describing how to reproduce the problem.
- The version number of the Nuance RDS Client Audio Extension.
- The audio devices used.
- The type and operating system versions of thin clients used.
- The Windows, Windows Server and RDP versions used on your system.
- The Microsoft RDS settings in use: Desktop or Application publishing.
- The Remote Desktop client used.

Troubleshooting PowerMic controls

This section deals with problems related to the button controls on the Nuance PowerMic. For audio problems, see: [Troubleshooting audio](#).

Common issues

In case of problems, check the following:

- The Nuance PowerMic RDS Client Extension is correctly installed. For more information, see: [Verifying the installation](#).

Verifying the installation

To verify that the Nuance PowerMic RDS Client Extension is correctly installed on the client end point, do the following:

1. On the client end point, open the Control Panel and click **Programs and Features**.
2. Check that **Nuance PowerMic RDS Client Extension** is listed.
Note: If the RDS session (mstsc.exe process) was running during the installation of the Nuance PowerMic RDS Client Extension, the extension might not work properly.
3. On a 64-bit Microsoft Windows system, go to C:\Windows\System32 (64-bit dll files) and C:\Windows\SysWOW64 (32-bit dll files) and check that the following files exist:

PowerMicClient.dll
psplog.dll
PowerMicRDSCInt.dll
4. On a 64-bit Microsoft Windows system, go to C:\Program Files (x86)\Common Files\Nuance\PowerMic (32-bit dll files) and C:\Program Files\Common Files\Nuance\PowerMic (64-bit dll files) and check that the following files exist:

PowerMicHid.dll
psplog.dll
5. Open the Registry Editor.
6. On a 64-bit Microsoft Windows system, browse for HKEY_LOCAL_MACHINE\Software\Microsoft\Terminal Server Client\Default\AddIns\PMRDSCl and check that the Name value is set to PowerMicRDSCInt.

7. On a 64-bit Microsoft Windows system, browse for HKEY_LOCAL_MACHINE\Software\Wow6432Node\Microsoft\Terminal Server Client\Default\AddIns\PMRDSCl and check that the Name value points to C:\windows\SysWOW64\PowerMicRDSCInt.dll.

Contacting support

The PowerMic SDK logging framework was changed; please contact support for instructions on how to enable logging for PowerMic SDK.

When you request support for RDS-related problems, please provide the following information:

- The troubleshooting steps you have already carried out and your results.
- Detailed steps describing how to reproduce the problem.
- The version number of the Nuance PowerMic RDS Client Extension.
- The Windows, Windows Server and RDP versions used.
- The Microsoft RDS settings in use: Desktop or Application publishing.
- The Remote Desktop client used.