

Deployment and Configuration for RDS Environments

Version 2026.2

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Overview

The Dragon RDS Client Audio Extension and Dragon 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 apps:
 - Dragon Medical One Desktop Application
 - Dragon Medical Direct
 - Dragon Case and Care
 - Apps based on Dragon Medical SpeechKit (.NET and COM editions)
 - Apps based on SpeechMagic SDK

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

App deployment

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

This has the following implications:

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

Note: In Windows Server 2019 and higher, apps must be given explicit access to hardware devices via Group Policy. To allow the speech recognition app to access the microphone device that's 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 app hosted on the server.

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

The corresponding improvements in app 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 app.

To enable this for the Nuance PowerMic in a Microsoft RDS system, the [Dragon 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

Dragon RDS Client Audio Extension

A virtual audio channel for Microsoft RDS systems:

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

Dragon PowerMic RDS Client Extension

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

- Client component:
Dragon RDS Audio and Button Extensions\Client folder, Dragon 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 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
- One of the following apps:
 - Microsoft Remote Desktop Connection (mstsc.exe)
 - Microsoft Remote Desktop (msrdc.exe) to connect to Azure Virtual Desktop

Note: The Remote Desktop app for Azure Virtual Desktop must be installed by an administrator for all users in C:\Program Files\Remote Desktop.

Windows App - access to Windows 365 and Azure Virtual Desktop.

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 Dragon 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 Dragon RDS Audio and Button Extensions\Client folder and select Dragon 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 doesn't need to be installed on the server/virtual desktop; the required server binaries are already included in the app folder.
- Make sure you uninstall the Dragon RDS Server & Virtual Desktop Audio Extension setup unless it's used by other products.
- The 32-bit and 64-bit versions of the Dragon 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 Dragon 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 Dragon RDS Audio and Button Extensions\Client folder and select Dragon PowerMic RDS Client Extension.exe.
3. Follow the installation wizard.

Remarks

- The extension doesn't need to be installed on the server; the required server binaries are already included in the app folder.
- The 32-bit and 64-bit versions of the Dragon PowerMic RDS Client Extension are installed together.

Silent setup

Installation

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

- Dragon RDS Client Audio Extension
`"<path>\Dragon RDS Client Audio Extension.exe" -i -q -l log.txt`
- Dragon PowerMic RDS Client Extension
`"<path>\Dragon 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 Dragon extension setups require a restart.

Uninstalling

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

- Dragon RDS Client Audio Extension
`"<path>\Dragon RDS Client Audio Extension.exe" /uninstall -i -q -l log.txt`
- Dragon PowerMic RDS Client Extension
`"<path>\Dragon 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 Dragon 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 Dragon PowerMic RDS Client Extension](#).

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

Third-party microphones

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

Install the redistributables on the remote server where your app 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. Microsoft doesn't 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](#).

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

Common issues

In case of problems, check the following:

- The client component of the Dragon 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 app hosted on the server. For more information, see: [Microphone unavailable](#).

Verifying the installation

To verify that the Dragon 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 select **Programs and Features**.
2. Check that **Dragon RDS Client Audio Extension** is listed.
Note: If the RDS session (mstsc.exe process) was running during the installation of the Dragon 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:
 - NuCaRDSRecorder.dll
 - NuCaRDSPlayer.dll
 - NuCaRDSCommunication.dll
 - NuCaVDIClient.dll
 - Microsoft.CognitiveServices.Speech.core.dll
 - Microsoft.CognitiveServices.Speech.extension.audio.sys.dll
 - Microsoft.CognitiveServices.Speech.extension.codec.dll
 - Microsoft.CognitiveServices.Speech.extension.kws.dll
 - Microsoft.CognitiveServices.Speech.extension.kws.ort.dll
 - Microsoft.CognitiveServices.Speech.extension.lu.dll
 - nuance_highfa.table
5. Go to C:\Windows\SysWOW64 (64-bit Windows) and check that the following files exist:
 - NuCaRDSRecorder.dll
 - NuCaRDSPlayer.dll
 - NuCaRDSCommunication.dll
 - NuCaVDIClient.dll
 - Microsoft.CognitiveServices.Speech.core.dll
 - Microsoft.CognitiveServices.Speech.extension.audio.sys.dll
 - Microsoft.CognitiveServices.Speech.extension.codec.dll
 - Microsoft.CognitiveServices.Speech.extension.kws.dll
 - Microsoft.CognitiveServices.Speech.extension.kws.ort.dll
 - Microsoft.CognitiveServices.Speech.extension.lu.dll
 - nuance_highfa.table
6. On a 64-bit Windows system:
 - 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 doesn't start

- After you install the Dragon RDS Client Audio Extension, the Remote Desktop client doesn't start. Make sure the Dragon RDS Audio Extension is correctly installed; for more information, see: [Verifying the installation](#).

Microphone unavailable

- The audio device isn't available to the speech recognition app. 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 app has permission to use the audio device.
 4. Make sure the Dragon RDS Audio Extension is correctly installed; for more information, see: [Verifying the installation](#).
- Your speech recognition app lists **Remote Audio** as an audio device.

The Dragon RDS Client Audio Extension isn't installed; for more information, see: [Verifying the installation](#).
- Your speech recognition app lists an audio device from the Terminal Server, not the client end point.

The Dragon RDS Client Audio Extension isn't installed; for more information, see: [Verifying the installation](#).
- Your speech recognition app lists an audio device, but not the one you want to use.

The Dragon 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 select **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: [App performance and stability issues](#).

- Recording and playing back audio don't 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 Dragon RDS Audio Extension is correctly installed; for more information, see: [Verifying the installation](#).

- Recording doesn't start; a **Device in use** error is displayed.

The audio device is in use by another process.

Make sure that other processes aren't using the recording device when you start to record.

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

Another app 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.

App performance and stability issues

- Your speech recognition app 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 apps aren't prioritized as much.

- Your speech recognition app 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 app 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 app (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.

Contacting support

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

- The troubleshooting steps you've already carried out and your results.
- Detailed steps describing how to reproduce the problem.
- The version number of the Dragon 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 Dragon PowerMic RDS Client Extension is correctly installed. For more information, see: [Verifying the installation](#).

Verifying the installation

To verify that the Dragon 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 select **Programs and Features**.
2. Check that **Dragon PowerMic RDS Client Extension** is listed.
Note: If the RDS session (mstsc.exe process) was running during the installation of the Dragon 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
pmlog.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
pmlog.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\PowerMicRDSClnt.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've already carried out and your results.
- Detailed steps describing how to reproduce the problem.
- The version number of the Dragon 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.

Medical device disclaimer

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