AVAYA

DevConnect Program

Application Notes for Krisp for Windows with Avaya one-X® Agent - Issue 1.0

Abstract

These Application Notes describe the configuration steps required to integrate Krisp for Windows version 23.Q2.4 with Avaya one-X® Agent version 2.5.16. Krisp is an AI-based, bi-directional noise cancellation application that eliminates background noise from a microphone or speaker to maintain clear audio quality. In addition, it can remove background voices received by the microphone. Krisp sits in front of a communication application, such as Avaya one-X® Agent, and serves as a hardware driver in front of the actual hardware.

Readers should pay attention to **Section 2**, in particular the scope of testing as outlined in **Section 2.1** as well as the observations noted in **Section 2.2**, to ensure that their own use cases are adequately covered by this scope and results.

Information in these Application Notes has been obtained through DevConnect compliance testing and additional technical discussions. Testing was conducted via the Avaya DevConnect Program.

1. Introduction

These Application Notes describe the configuration steps required to integrate Krisp for Windows version 23.Q2.4 with Avaya one-X® Agent. Krisp is an AI-based, bi-directional noise cancellation application that eliminates background noise from a microphone or speaker to maintain clear audio quality. In addition, it can remove background voices received by the microphone. Krisp sits in front of a communication application, such as Avaya one-X® Agent, and serves as a hardware driver in front of the actual hardware.

2. General Test Approach and Test Results

The interoperability compliance test included feature and serviceability testing. The feature testing focused on establishing calls with one-X Agent using Krisp and verifying that background noise can be removed in the audio heard by one-X Agent and the far-end. In addition, removing background voices in the audio received by the far-end was also covered. Calls were established between one-X Agent, local IP deskphones, and the PSTN.

The serviceability testing focused on verifying the usability of Krisp after restarting the Krisp application, restarting one-X Agent, and rebooting the desktop PC.

Avaya's formal testing and Declaration of Conformity is provided only on the headsets/handsets that carry the Avaya brand or logo. Avaya may conduct testing of non-Avaya headset/handset to determine interoperability with Avaya phones. However, Avaya does not conduct the testing of non-Avaya headsets/handsets for: Acoustic Pressure, Safety, Hearing Aid Compliance, EMC regulations, or any other tests to ensure conformity with safety, audio quality, long-term reliability or any regulation requirements. As a result, Avaya makes no representations whether a particular non-Avaya headset will work with Avaya's telephones or with a different generation of the same Avaya telephone.

Since there is no industry standard for handset interfaces, different manufacturers utilize different handset/headset interfaces with their telephones. Therefore, any claim made by a headset vendor that its product is compatible with Avaya telephones does not equate to a guarantee that the headset will provide adequate safety protection or audio quality.

Avaya recommends our customers implement Avaya solutions using appropriate security and encryption capabilities enabled by our products. The testing referenced in this DevConnect Application Note included the enablement of supported encryption capabilities in the Avaya products. Readers should consult the appropriate Avaya product documentation for further information regarding security and encryption capabilities supported by those Avaya products.

Support for these security and encryption capabilities in any non-Avaya solution component is the responsibility of each individual vendor. Readers should consult the appropriate vendor-supplied product documentation for more information regarding those products.

2.1. Interoperability Compliance Testing

Interoperability compliance testing covered the following features and functionality:

- Removing background noise from audio heard by one-X Agent.
- Removing background noise from audio heard by the far-end (i.e., Avaya IP deskphone, PSTN endpoint).
- Removing background voices from audio heard by the far-end (i.e., Avaya IP deskphone, PSTN endpoint).
- Verifying one-X Agent can leave voice messages with good audio quality with Krisp noise cancellation enabled.
- Toggling the "Cancel Noise and Room Echo" option at the Krisp microphone. Enabling this option to the microphone removes background noise from the audio heard by the far-end.
- Toggling the "Background Voice Cancellation" option. Enabling the "Background Voice Cancellation" option to the microphone removes background voices from the audio heard by the far-end.
- Toggling the "Cancel Noise" option at the Krisp speaker. Enabling the "Cancel Noise" option to the speaker removes background noise from the audio heard on one-X Agent.
- Verifying ring, ringback, call forwarding tone and message recording beep are heard by one-X Agent.
- Verifying that Busy tone is heard by one-X Agent when a busy phone is called and intercept tone is heard when an invalid number is dialed.

Note: Examples of background noise tested and removed by Krisp included telephone ringing, keyboard typing, music, fan, airplane, rain and thunder. Background voices tested and cancelled by Krisp included separate male and female voices, as well as groups.

The serviceability testing focused on verifying that Krisp continues to remove background noise and voices after restarting the Krisp application, restarting one-X Agent, and rebooting the desktop PC.

2.2. Test Results

All test cases passed with the following observation.

- When the far-end places a call on hold, Music on Hold is heard cutting in and out on one-X Agent, when "Cancel Noise" is automatically enabled on the Krisp speaker. Music on Hold is heard unaltered when "Cancel Noise" is manually disabled on the Krisp speaker.

2.3. Support

For technical support and information on Krisp for Windows, contact the Krisp help center at https://help.krisp.ai/hc/en-us.

MAA; Reviewed:
SPOC 10/11/2023
Avaya DevConnect Application Notes
©2023 Avaya Inc. All Rights Reserved.
3 of 13
Krisp23Q2_4-1XA

3. Reference Configuration

Figure 1 illustrates the test configuration used to verify the Krisp noise-cancelling solution.

- Avaya Aura® Communication Manager.
- Media resources in Avaya G430 Media Gateway and Avaya Aura® Media Server.
- Avaya Aura® Session Manager connected to Communication Manager via a SIP trunk and acting as a Registrar/Proxy for Avaya SIP deskphones.
- Avaya Aura® System Manager used to configure Session Manager.
- Avaya Messaging serving as the voicemail system.
- Avaya Session Border Controller to provide connectivity to a simulated SIP service provider.
- Avaya 96x1 Series H.323 Deskphones and Avaya J100 Series SIP Deskphones.
- Avaya one-X® Agent and Krisp for Windows running on a Windows 10 desktop PC.
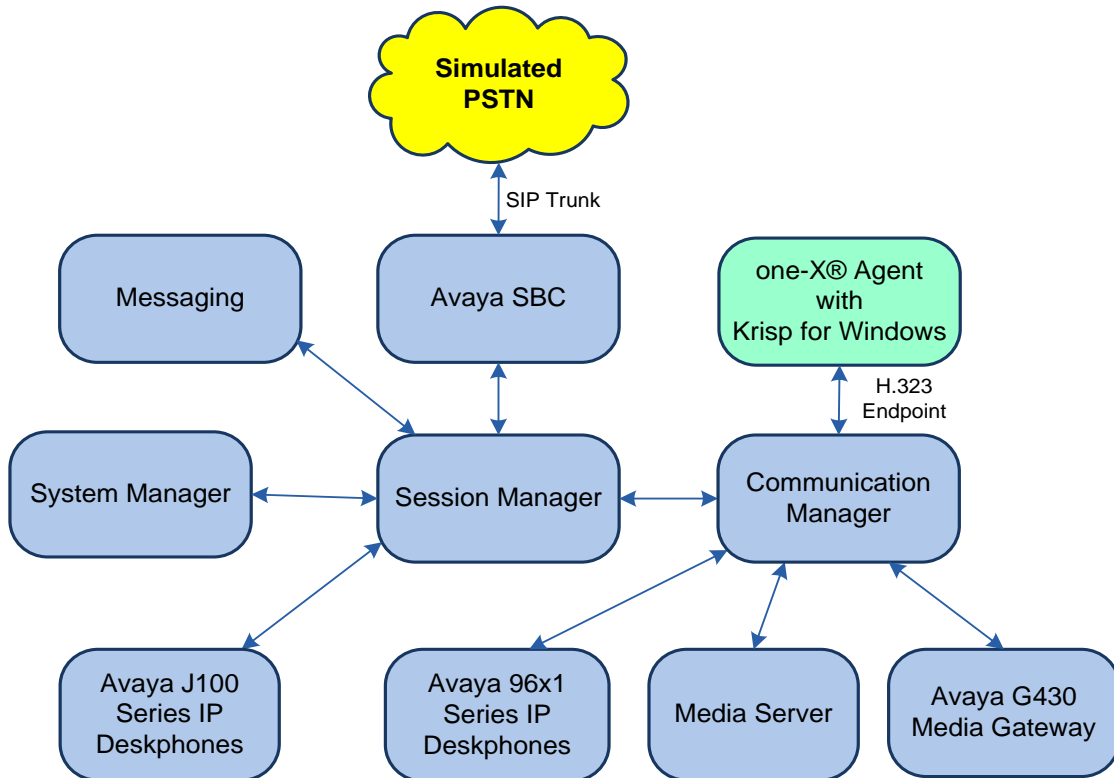
Figure 1: Avaya one-X® Agent with Krisp for Windows

MAA; Reviewed:
SPOC 10/11/2023

Avaya DevConnect Application Notes
©2023 Avaya Inc. All Rights Reserved.

4 of 13
Krisp23Q2_4-1XA

4. Equipment and Software Validated

The following equipment and software were used for the sample configuration provided:

| Equipment/Software	Release/Version
Avaya Aura® Communication Manager	10.1.2 (Feature Pack 2) Update ID 01.0.974.0-27783.tar
Avaya G430 Media Gateway	42.18
Avaya Aura® Media Server	10.1.0.125
Avaya Aura® System Manager	10.1.2.0715476 Service Pack 2
Avaya Aura® Session Manager	10.1.2.1012016
Avaya Session Border Controller	10.1.2.0-64-23285
Avaya Messaging	10.8 SP1
Avaya one-X® Agent on Microsoft Windows 10	2.5.16 Patch 10
Avaya 96x1 Series IP Deskphones	6.8532 (H.323)
Avaya J100 Series IP Deskphones	4.1.0.0.7 (SIP)
Krisp for Windows	23.Q2.4

5. Configure Avaya one-X® Agent

Prior to configuring one-X Agent, install the Krisp application on the same desktop PC running one-X Agent.

> **Note:** The Communication Manager configuration needed to add a H.323 station and an agent for one-X Agent it is assumed to be already in place, and it is not covered here.

After logging into one-X Agent, click on [≡▾] and then select **Agent Preferences** as shown below to configure the audio preferences.
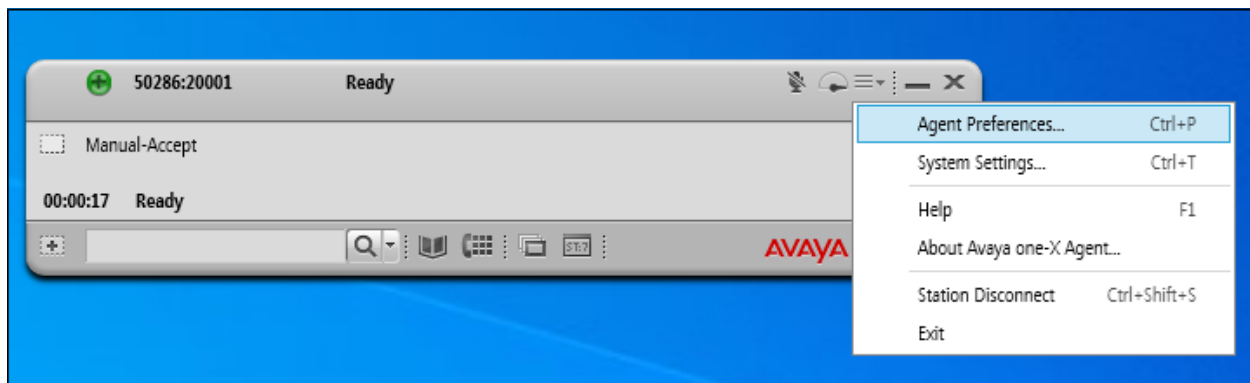
The virtual Krisp Microphone and Krisp Speaker are automatically detected by one-X Agent after the Krisp application is installed. In the **Agent Preferences** window, click on **Audio** and then select the **Basic** tab. The **Play ringing through the internal PC speakers** box could be optionally enabled to play ringing for incoming calls on the PC speakers, instead of the device controlled by the Krisp speaker.
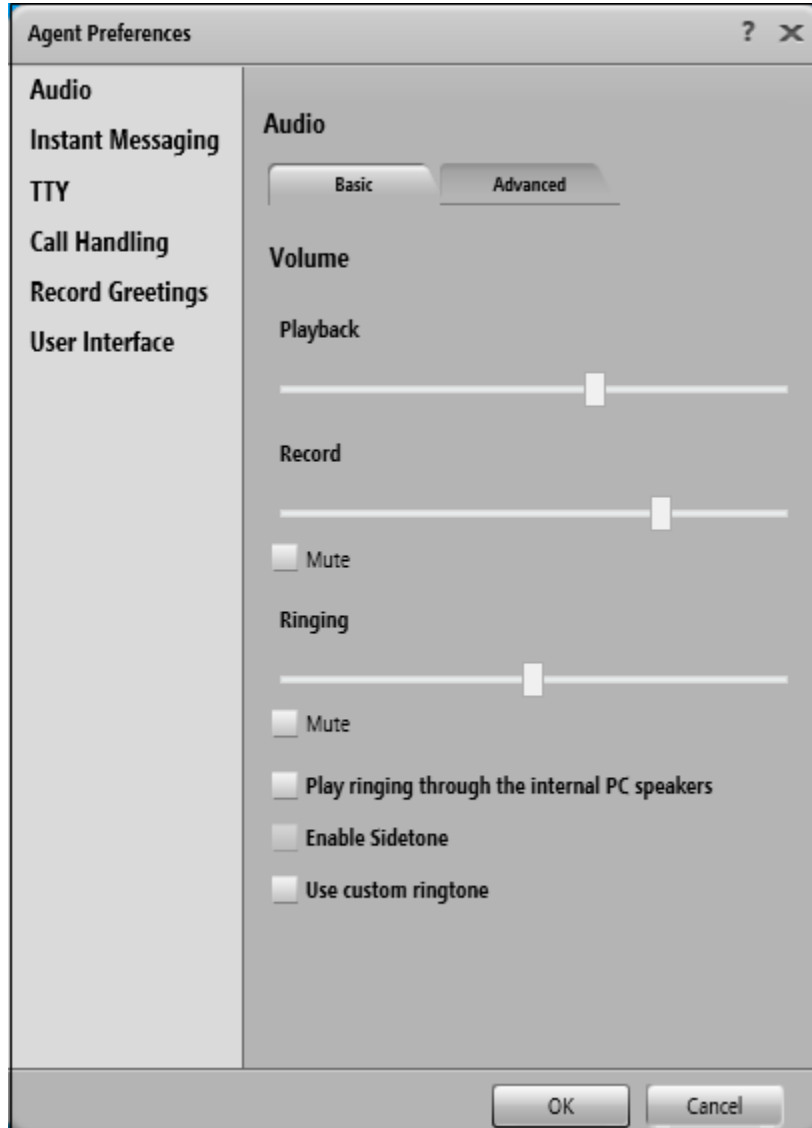
Next, select the **Advanced** tab. Set the **Playback Device** and **Record Device** fields to *Krisp Speaker (Krisp Audio)* and *Krisp Microphone (Krisp Audio)*, respectively, as shown below.
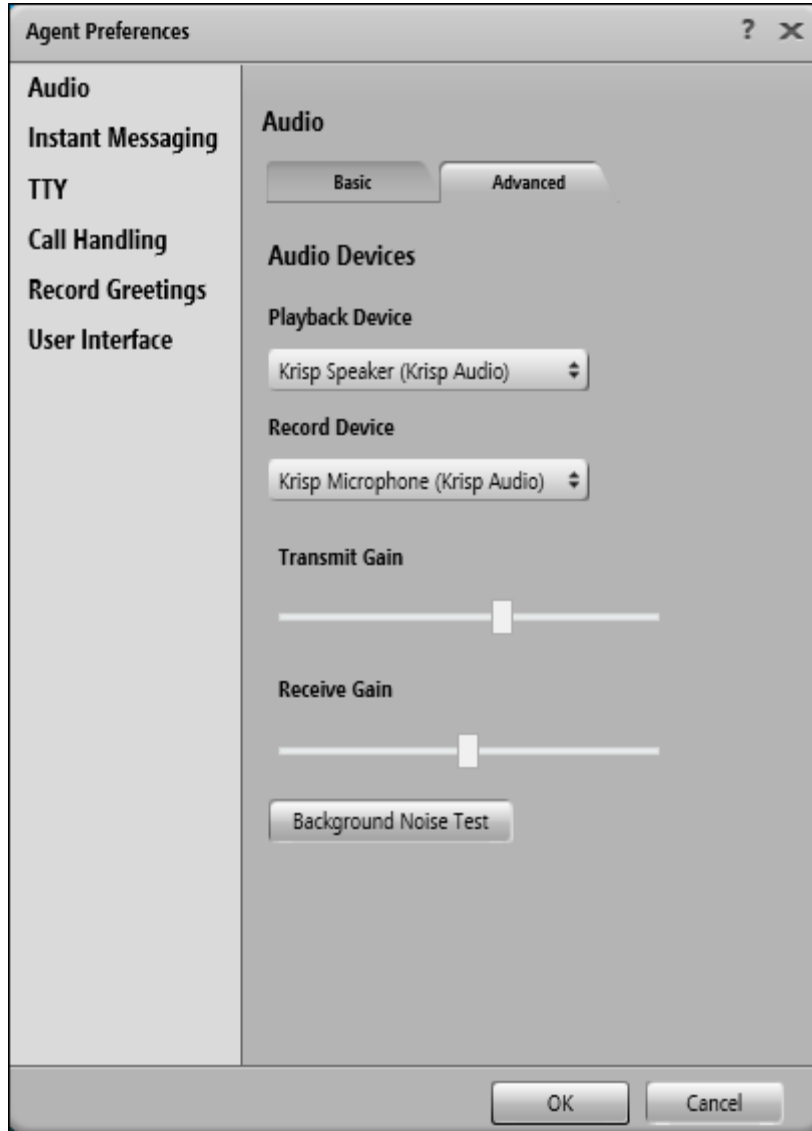
6. Configure Krisp for Windows

Krisp Microphone and Krisp Speaker are virtual devices, created on the desktop PC after Krisp is installed. Open the Krisp application and choose the physical microphone and speaker to be used. Enable the **Cancel Noise and Room Echo** option for the **Microphone**, and **Cancel Noise** for the **Speaker**.
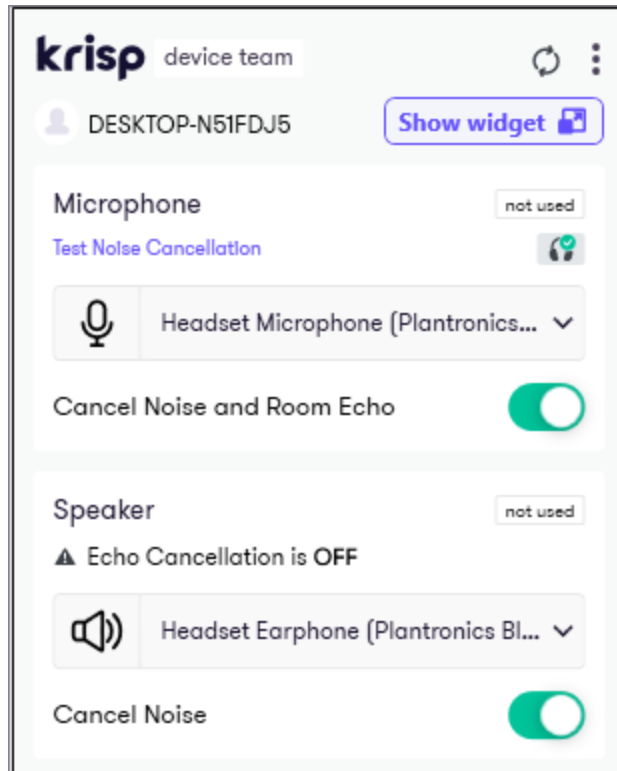
To enable **Background Voice Cancellation**, open the **Krisp Preferences** and select **Audio** from the left pane. This option will remove background voices received by the microphone used by one-X Agent.

MAA; Reviewed:
SPOC 10/11/2023

Avaya DevConnect Application Notes
©2023 Avaya Inc. All Rights Reserved.

10 of 13
Krisp23Q2_4-1XA
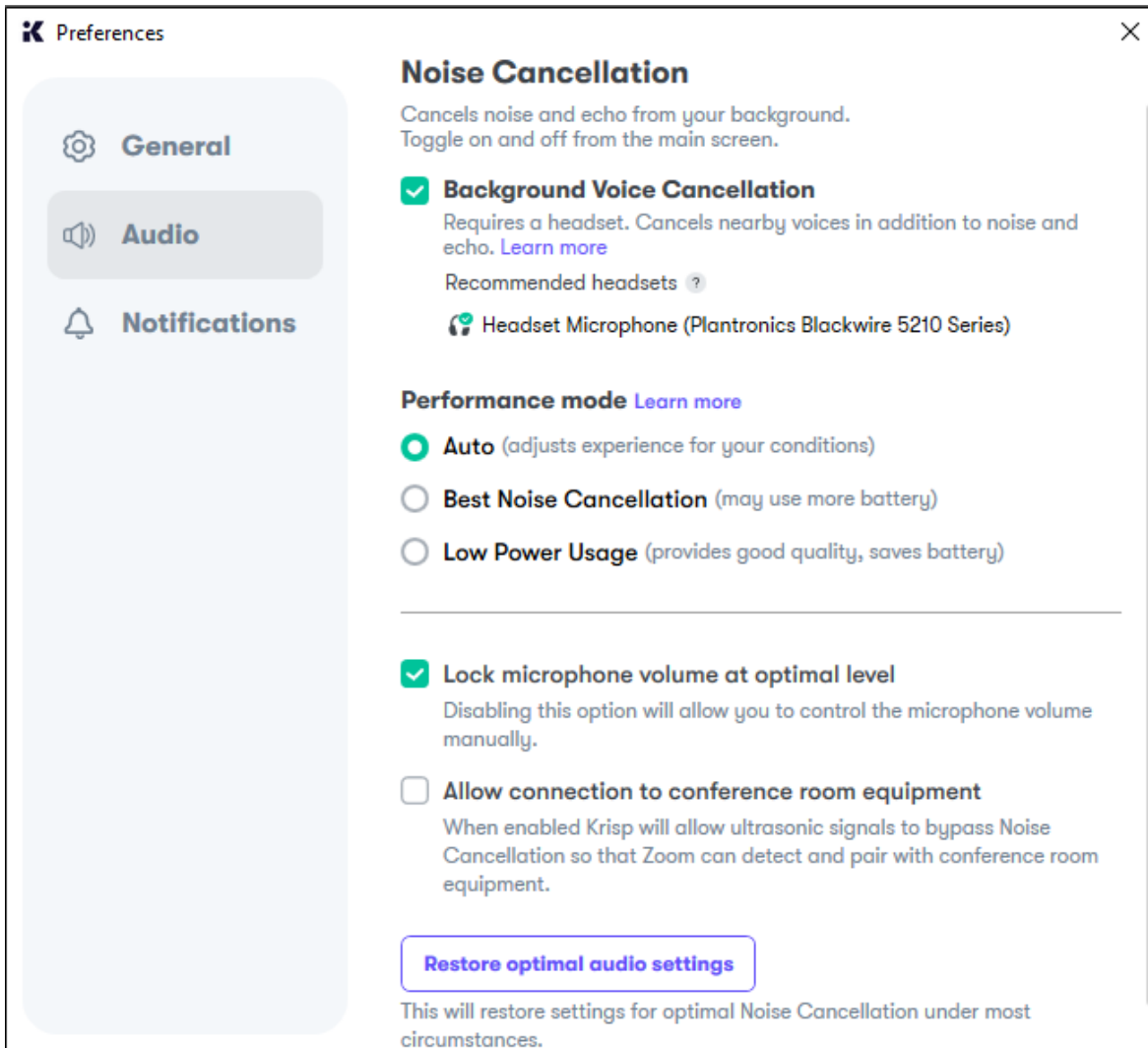
7. Verification Steps

This section provides the tests that can be performed to verify proper installation and configuration of Krisp for Windows with one-X Agent.

1. Start one-X Agent.
2. Establish a call between one-X Agent and an Avaya IP deskphone.
3. Verify that Krisp is being used by one-X Agent as indicated by *Used by Spark Endpoint Emulator* shown below.
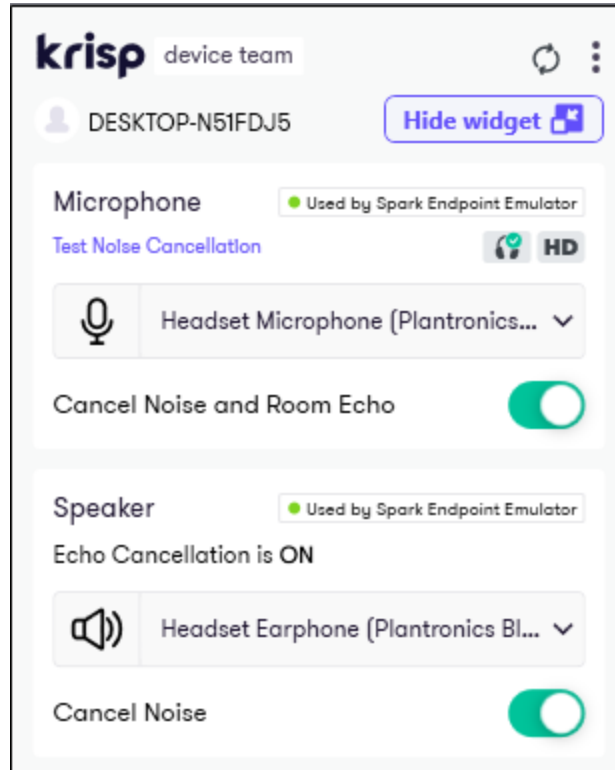
4. Verify that the widget is displayed while the call is active. This allows the user to toggle the **Cancel Noise** option for the microphone and speaker, and to check the sound levels.
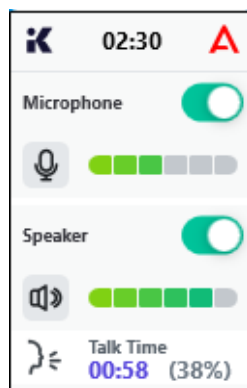
5. Generate background noise at each end, such as typing on keyboard or playing music, and verify that the background noise is eliminated in the audio at both ends.

8. Conclusion

These Application Notes describe the configuration steps required to integrate Krisp for Windows version 23.Q2.4 with Avaya one-X® Agent. Background noise was removed from the audio at both ends of the call. All test cases were completed successfully with observations noted in **Section 2.2**.

9. Additional References

This section references the Avaya documentation that are relevant to these Application Notes.

[1] *Installing Avaya one-X® Agent*, Release 2.5.16 (H.323), Issue 1, November 2021, available at http://support.avaya.com.
[2] *Administering Avaya one-X® Agent*, Release 2.5.4 (H.323), Issue 1, December 2013, available at http://support.avaya.com.