

Selecting Audio and Video Devices for Use with Polycom PVX



You can select from a number of different audio and video input devices to use with your Polycom® PVX™ application, version 8.0.1.

This document lists the advantages and disadvantages of various audio devices so you can choose the correct one for your work or home environment. It also describes the factors you should consider when selecting a video input device.

Once you have selected your audio and video devices, you need to configure them for optimum performance. This document describes how to use the PVX user interface to specify the audio and video device settings. If you plan on using PVX with the Computer Calling Kit for SoundStation2™ and SoundStation2W™, this document also describes how to configure the PVX settings for use with this kit.

The final section of this document provides information on how to avoid audio and video issues.

Audio

Audio Input Devices Supported by PVX

Polycom PVX offers you the flexibility of using a number of different audio input devices along with your webcam.

These industry-standard webcams have been tested with Polycom PVX version 8.0.1:

- AVerMedia® AVerTV™ GO 007 FM Plus PCI
- Creative® WebCam Live!® Motion
- Creative WebCam Live!® Pro
- GlobalMedia® iREZ™ KD 1394
- GlobalMedia iREZ K2 USB 2.0
- Logitech® QuickCam® Pro 4000
- Logitech QuickCam Pro 5000

- Logitech QuickCam Fusion
- Logitech QuickCam Orbit MP
- Veo™ Velocity Connect
- V-Stream TV2800 (V-Stream Xpert DVD Maker USB 2.0)



As of driver version 9.0.2, the Logitech QuickCam Fusion audio echo canceller appears to add delay and introduce audible artifacts into the audio.

These industry-standard headsets have been tested with Polycom PVX version 8.0.1:

- GlobalMedia AMH-300V headset
- GN Netcom® 2110-ST 01 USB headset
- Plantronics® DSP-400 USB headset

The advantages and disadvantages of various audio input devices are listed in the following table:

Audio Input Device	Advantages	Disadvantages
Webcam's built-in microphone	<ul style="list-style-type: none"> • Does not require an external microphone • Does not occupy additional desk space • Distance between microphone and speakers is usually far enough not to interfere with audio quality 	<ul style="list-style-type: none"> • Some microphones have limited audio quality (lower than wideband PVX audio and comparable to traditional telephone quality) • The built-in audio echo cancellers of some cameras greatly burden the CPU, making the computer run slowly • The built-in audio echo cancellers of some cameras introduce extended audio delay, causing lip-sync issues • The Windows® XP echo canceller may not work properly because audio input and output are routed through different devices • Sound from the speakers at the far site may be louder than expected and audio echo cancellation may be less effective during calls with webcam microphones that are very sensitive (such as the Logitech QuickCam Pro 4000)

Audio Input Device	Advantages	Disadvantages
Computer's built-in microphone	<ul style="list-style-type: none"> • Does not require an external microphone • Does not occupy additional desk space 	<ul style="list-style-type: none"> • Limited audio quality (lower than wideband PVX audio and comparable to traditional telephone quality) • Acoustic coupling, which the Windows XP echo canceller cannot correct, is more likely to occur because of the close proximity of the microphone to the speakers
External analog microphone	<ul style="list-style-type: none"> • Synchronization is excellent when plugged into the same device as the playback speakers, thus providing the best echo cancellation from the Windows XP echo canceller • Provides the maximum flexibility in the distance between the speakers and the microphone • Provides a range of choices when selecting a high-quality microphone with good directionality and frequency response 	<ul style="list-style-type: none"> • Occupies additional desk space • Audio is limited to 7 kHz by the Windows XP echo canceller
Headset	<ul style="list-style-type: none"> • Some headsets offer the full 14 kHz audio experience since no echo cancellation is required • Provides a range of choices when selecting a high-quality microphone with good directionality and frequency response • Provides maximum privacy 	<ul style="list-style-type: none"> • Connects to the desktop or laptop computer, which may already have a number of devices connected to it • Some people do not like to wear a headset • Some headsets, such as cellphone and Bluetooth® headsets, have limited audio quality (lower than wideband PVX audio and comparable to traditional telephone quality)

Specifying Audio Devices

Once you have selected the audio hardware you want to use and you have connected it, you need to specify the audio input and output devices in the Polycom PVX application.

To specify the audio devices:

1. From the PVX Main page, select **Setup > Audio**.

2. From the **Audio Output Device** drop-down list, select the audio output device you want to use, or select one of these:
 - **Auto** specifies that the system should automatically select the audio output device. The system will use the sound playback device specified in the Windows Sounds and Audio Devices control panel.
 - **None** specifies that no audio output device should be used.
3. From the **Audio Input Device** drop-down list, select the audio input device you want to use, or select one of these:
 - **Auto** specifies that the system should automatically select the audio input device. The system will use the sound recording device specified in the Windows Sounds and Audio Devices control panel.
 - **None** specifies that no audio input device should be used.
4. If you have connected a headset, disable echo cancellation by clicking **None** in the **Echo Cancellation** field.



When a headset is connected, ringing for incoming calls is played through the default Windows speakers.

Using PVX with the Computer Calling Kit for SoundStation2 or SoundStation2W

The Computer Calling Kit allows you to make calls with PVX using the Polycom SoundStation2 or SoundStation2W. The minimum software requirements to use this kit are:

- SoundStation2 version SS2.CON.01.115 or later
- SoundStation2W version S2W.CON.01.2xx or later

For complete information about the Computer Calling Kit, refer to the *Instructions for Computer Calling Kit* document, which is shipped with the kit.

When you have completed following the instructions in the *Instructions for Computer Calling Kit* document, you must configure PVX.

To configure PVX when you have a webcam:

1. From the PVX Main page, select **Setup > Audio**.
2. From the **Audio Output Device** drop-down list, select **Auto**. If **Auto** does not work in your case, select the computer's sound card instead.
3. From the **Audio Input Device** drop-down list, select **Auto**. If **Auto** does not work in your case, select your computer's sound card instead.
4. Set **Echo Cancellation** to **External**.

Video

Video Devices Supported by PVX

Polycom PVX supports a wide variety of video input devices. The quality of your PVX video largely depends on the quality and design of your video input device.

When you select a video input device, an important factor to consider is the CPU load it imposes on the system to capture the video. PVX is a CPU-intensive application and was designed to include the CPU load of the video capture device. However, as cameras become more capable, both in resolution and supported features, the CPU load imposed by the camera driver may exceed the load that was designed into PVX.

The **For the camera you have selected, specify the camera driver's load on the system** setting on the Advanced tab of the PVX Video page allows you to configure PVX properly, especially if you need to compensate for a higher CPU load from the camera driver. This setting enables you to lower the estimated CPU power by a fixed amount so that you can enhance the quality of your PVX video.

The original capture driver load for PVX is approximately 150 MHz worth of CPU resources. Therefore, on a 1.5 GHz computer, the video capture driver will use 10% of the CPU (you can check this using the Windows Task Manager). On a faster computer, the load will be less, such as 5% on a 3.0 GHz system. If your computer runs near this level while not in a call, you can select **Low** for the **For the camera you have selected, specify the camera driver's load on the system** setting.

For example, suppose you have a 2.8 GHz computer and a camera with a face-tracking feature enabled. If you check the Task Manager, you will see that your computer is running at just over 25% of the CPU while sitting idle. This is about 700 MHz of the CPU resources, which is 550 MHz higher than the original load assumed by PVX. Therefore, you should select **High** for the **For the camera you have selected, specify the camera driver's load on the system** setting. By doing so, PVX will treat the CPU as a 2.2 GHz computer in order to compensate for the CPU resources that are being used by the video capture driver.

Specifying Advanced Video Properties

To optimize the video from your PVX, you need to correctly specify the PVX video settings. These settings are located on the Advanced tab of the Setup > Video page. The following steps describe what you should set depending on the type of camera and computer you have.

To specify the advanced video properties:

1. From the PVX Main page, select **Setup > Video**.
2. Click the **Advanced** tab.
3. In the **Enable VGA People Encoding** field:

Do This...	If...
Check the box	Your computer uses less than 15% of the CPU when it's idle and set to capture VGA. Try setting this option and then checking if your computer is using more than 15% of the CPU while not in a call; if it is, then you should not check this box. If you do check this box, you may want to set the For the camera you have selected, specify the camera driver's load on the system setting to High in order to maintain the video quality in the call.
Do not check the box	Your computer uses more than 15% of the CPU while not in a call.

4. In the **Video Quality** field:

Select...	If...
Smoother motion	You want motion in the video to appear smooth, even though the picture may lose detail. For example, you may want to select this option when you expect call participants to move around the room and you are not sharing any documents during the call.
Sharper image	You want the picture to appear sharp and clear, even though the motion may not be as smooth. For example, you may want to select this option when all participants are seated and you need to show slides or another type of document during the call.

5. In the *Enable VGA 30 frames per second* field:

Do This...	If...
Check the box	You have a camera with an extremely low load that is capable of supporting VGA at 30 frames per second while maintaining a low CPU load. Most cameras are not capable of doing this. Those that are supported by PVX include: <ul style="list-style-type: none"> • PCI video capture cards • AVerMedia • V-Stream
Do not check the box	Your camera cannot support VGA at 30 frames per second while maintaining a low CPU load. Choose this setting in most cases.

6. In the *For the camera you have selected, specify the camera driver's load on the system* field, select one of these:

Select...	If...	The impact on the CPU load is...
Low	The camera's driver load is equivalent to the driver load for cameras supported in earlier versions of PVX. For example: A webcam that captures 320 x 240 video or a PCI video capture card.	None
Medium	The camera driver moderately increases the CPU load. Newer cameras (usually those supporting VGA resolutions and higher) tend to compress the video before sending it to the computer. The drivers for these cameras need to decode the video before passing it to PVX. This adds more load than older drivers that pass uncompressed video straight from the camera. For example: A webcam that captures 640 x 480 at 30 fps or a DV input device (such as Firewire™ IEEE-1394).	200 MHz
High	The camera driver has very CPU-intensive features enabled. For example: A camera with face tracking, video special effects, wide-angle lens distortion correction, or audio echo-cancellation enabled.	600 MHz

The following table lists what you should select in the **For the camera you have selected, specify the camera driver’s load on the system** field for some of the webcams supported by PVX:

For this camera...		Select this setting...
AVerMedia® AVerTV™ GO 007 FM Plus PCI		Low
Creative WebCam Live!® Motion		High
Creative WebCam Live!® Pro		Medium
GlobalMedia® iREZ™ KD 1394		Low
GlobalMedia iREZ K2 USB 2.0		Medium
Logitech® QuickCam® Pro 4000	Driver version 7.3.0	Low
	Driver version 8.4.8	Low
	Driver version 9.0.2	Medium
Logitech QuickCam Pro 5000	Driver version 9.0.2	Low
Logitech QuickCam Fusion	Driver version 9.0.2	Medium Note: If the Logitech Audio Echo Canceller (AEC) is enabled, select High .
Logitech QuickCam Orbit MP	Driver version 9.0.2	Medium
Veo™ Velocity Connect		Medium
V-Stream TV2800 (V-Stream Xpert DVD Maker USB 2.0)		Low

Troubleshooting

Audio

The following table lists audio issues and describes how to solve them:

Audio Issue	Solution
Unable to access audio adjustment settings, such as the Microphone Volume sidebar on the Setup > Audio page.	When adjusting audio settings, ensure that your system is not muted and that you are not in a call.

Audio Issue	Solution
<p>The audio from a system using the computer's built-in microphone and a webcam is loud and distorted.</p>	<p>Check the Automatic Gain Control setting on the Setup > Audio page.</p> <p>In extreme circumstance, you can uncheck Automatic Gain Control. Then click the Calibrate Microphone button and manually adjust the gain control using the Microphone Volume slider.</p>
<p>Far-site participants hear an echo.</p>	<p>Reduce the volume of your speakers.</p>
	<p>Separate the microphone and speakers as far as possible.</p>
	<p>Check the Automatic Gain Control setting on the Setup > Audio page.</p>
	<p>If you are using a webcam or the computer's integrated microphone, consider using an external analog microphone, and connect it to the same device as the external speakers.</p>
<p>In a multipoint call, the audio from a Polycom PVX with a webcam sounds either too loud or too soft compared to the other sites in the call.</p>	<p>Check the Automatic Gain Control setting on the Setup > Audio page.</p> <p>In extreme circumstances, you can uncheck Automatic Gain Control. Then click the Calibrate Microphone button and manually adjust the gain control using the Microphone Volume slider.</p>
<p>Not achieving the best audio performance.</p>	<p>Use an external microphone and connect it to the same device to which your external speaker set is connected. Once you connect the external microphone, select it from the Audio Input Device drop-down list on the Setup > Audio page.</p>
<p>The audio volume level may increase or decrease slightly when you start the Polycom PVX application.</p>	<p>The audio returns to its normal level automatically.</p>
<p>When using a SoundStation2 or SoundStation2W with the Computer Calling Kit, the volume from the SoundStation2 or SoundStation2W is too loud or too soft.</p>	<p>Adjust your Windows volume control settings:</p> <ol style="list-style-type: none"> 1. Select Start > Control Panel > Sounds and Audio Devices. 2. Select the Volume tab. 3. Click Speaker Volume and adjust the Left and Right volume. 4. Return to the Volume tab, click Advanced, and adjust the Line In volume.

Audio Issue	Solution
The audio is delayed (lip sync is off).	If you are using PVX with a new Logitech camera (such as the QuickCam Fusion and the QuickCam Pro 5000), check if the camera has built-in audio echo cancellation (AEC). If it does, disable AEC using the camera's configuration software. You may also want to disable all other Logitech features, such as face tracking. If you are using Windows XP, you can use the PVX internal echo cancellation instead. To do so, set Echo Cancellation to Internal on the Setup > Audio page.

Video

The following table lists video issues and describes how to solve them:

Video Issue	Solution
High CPU load or slow or freezing video	<p>Correctly specify these PVX video settings located on the Advanced tab of the Setup > Video page:</p> <ul style="list-style-type: none"> • Enable VGA People Encoding • Video Quality • Enable VGA 30 frames per second • For the camera you have selected, specify the camera driver's load on the system <p>For complete information about how to set these settings for your particular system and camera, refer to the Specifying Advanced Video Properties section on page 6.</p>
	<p>On systems with less than a 2.0 GHz Pentium 4 or equivalent, the software is very busy with media processing with only a modest amount left for other applications. Changing the resource allocation under the Setup > General > Performance page to favor Other Applications can reduce the load for video processing.</p>
	<p>On systems with some video capture devices, including some USB 2.0 cameras, the camera driver can use a high percentage of the CPU to do video capture. If you see the CPU load above 40% while previewing local video when not in a call, this can be the cause. Changing the system resource allocation to favor Other Applications under the Setup > General > Performance page can help. Also verify that you have the latest video capture drivers for your device.</p>
	<p>When sending the desktop to the far site, you should see the CPU at or above 95%. This is normal because the desktop capture and encoder are busy running to provide the best desktop video quality.</p>
	<p>Connect only one USB camera at a time to your PC.</p>