vaddio

Easy**USB**

IP Streaming Interoperability FAQ

Contents

1   Vaddio IP Streaming Features and Functionality

Table 1.0 lists the current EasyUSB Tool products that support IP streaming in addition to the USB Streaming functions.

Table 1.0- EasyUSB Tools Products with IP Streaming Support

EasyUSB Tools Product	Release Version	Comment
ClearView HD-USB PTZ Camera	Release 2.0.0	Video Only device
AV Bridge	Release 2.0.0	Includes both Audio and Video IP Streaming

1.1   Frequently Asked Questions

Table 1.1- IP Streaming FAQ for EasyUSB Tools

| General Questions	
Question	**What IP Streaming Protocols are supported?**
Answer	Real Time Streaming Protocol (RTSP) or HTTP Live Streaming (HLS)
Explanation	Vaddio IP Streaming product will support either RTSP or HLS protocols.
Question	**What is the Encoding format for the IP Stream?**
Answer	Video: H.264 Main Profile Audio: AAC
Explanation	The video source of the device is encode as H.264. On the AV Bridge the stereo audio sources are encoded as AAC
Question	**What Video Resolutions can be streamed?**
Answer	Up to 1080p/30
Explanation	The encoding is user selectable for video resolution to include 1080p, 720p, 576p, 480p,CIF
Question	**What Media Players are supported for the IP Streaming device?**
Answer	QuickTime, VLS, and Real Player
Explanation	Additional Players may be supported if they support either RTSP or HLS formats and are capable of decoding an H.264 steam.
Question	**Are Flash Media Player and Windows Media Player Supported?**
Answer	No
Explanation	Windows Media Player (WMP) does not natively support RTSP protocol. WMP uses Microsoft Media Server (MMS) which is a proprietary protocol. Flash Player uses Real Time Messaging Protocol (RTMP). Both these protocols are not currently supported on the Vaddio IP Streaming devices.
Question	**Can IP Stream be sent to a Content Delivery Network (CDN) Service?**
Answer	Depends if CDN support ingest RTSP Stream

Explanation	You will need to check with the CDN Service Provider if their media server can accept a direct RTSP stream. If not, most Service Providers have desktop soft client that accepts USB WebCam and USB Audio. The Vaddio device can be place in USB Streaming mode for these instances.
Question	**How many Clients (media players) can connect to the Vaddio Device?**
Answer	Only one is recommended.
Explanation	The Vaddio devices were designed to support a push model to a Media Server for multiparty distribution. Video drop outs may occur with multiple clients connected to the Vaddio device due to CPU limitations on the embedded processor.
Question	**Can the Vaddio device stream IP and USB at the same time?**
Answer	No.
Explanation	The user will need to determine if USB mode or IP Streaming mode. This is due to limited CPU resource on the hardware platform to support simultaneous operations.
Configuration Questions	
Question	**What is the Quality Setting in the Streaming Configuration Page mean?**
Answer	This is composite of encoder setting optimize by Vaddio engineering to produce high quality video.
Explanation	The H.264 encoder on the Vaddio devices are based on variable bit rate (VBR) scheme. The VBR scheme dynamically adjusts frame rate and encoding profiles based upon available network bandwidth. The Quality Setting of "High Quality, Standard, and Low Bandwidth" represent the optimum encoder profile for selected Video resolution.
Question	**Can the Audio and Video synchronization be adjusted**
Answer	Yes for the AV Bridge
Explanation	The AV Bridge includes an audio delay feature that allows buffer audio based upon user setting (in 30msec increments). This allows the installer manually synchronize the audio and video streams compensating for any video frame delay occurring upstream of the encoding.
Question	**Can the Web Pages be used for Remote-Real Time PTZ Controls during streaming operation?**
Answer	Not Recommended
Explanation	The Media Players can introduce significant amounts of delay (up to 15 seconds in HLS mode) associated with buffering. The Web PTZ control pages are near instantaneous. For example a Pan Control issues on the Web Page may not be seen in the Media Player until 15-seconds later.
Question	**Can the RTSP Port be assigned to any value?**
Answer	Not completely
Explanation	The Streaming configuration page has a editable text box allowing the installer to set desired port. The Vaddio device will support port 554 and anything above 1024.
Question	**The USB Streaming has support for two Color Space formats, what does the IP Streaming support?**
Answer	4:2:2 Only

Explanation	The IP Stream support only the 4:2:2 color space format.

1.2   Streaming Configuration

The IP Streaming function can be enabled from the embedding web pages under the Administrator account. To enable the IP Streaming mode use the following steps

Illustration 1.2- AV Bridge Streaming Configuration Page
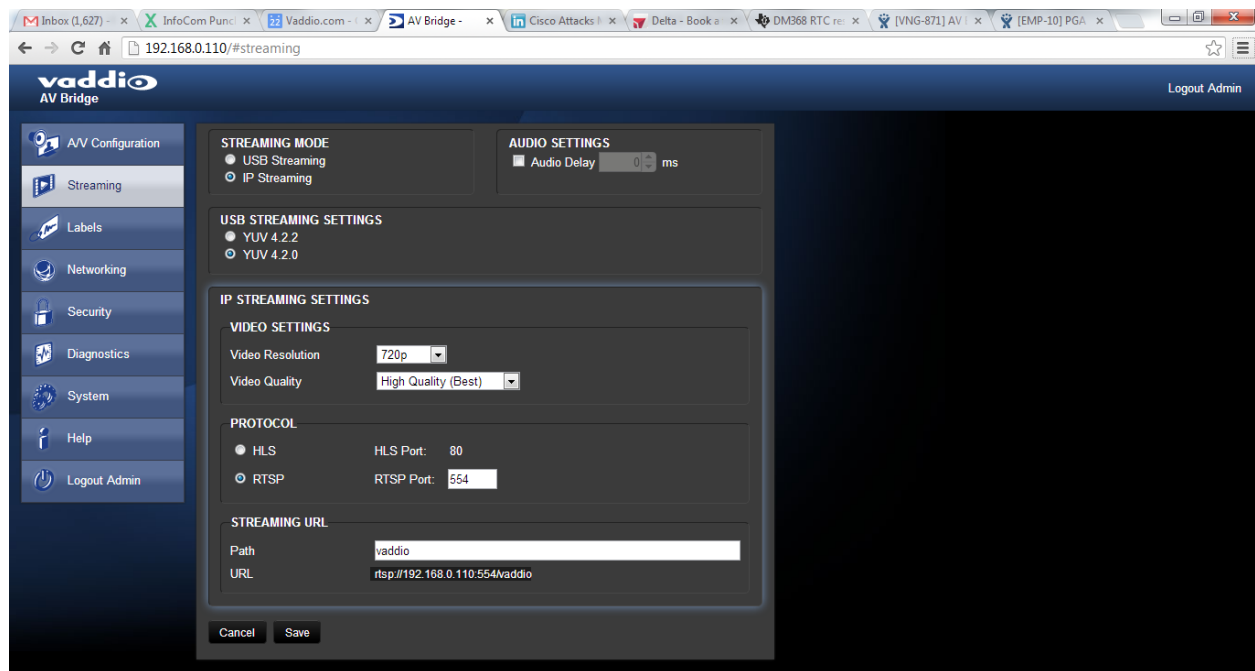
- • **STEP 1:** Set Streaming mode to IP Streaming
- • **STEP 2:** Set the Video Resolution to desired value (1080p, 720p, 576p, 480p, 352X222). For 1080p/30 IP streaming sustained network bandwidth will need to be up to 4mbs. Reduce frame rates will occur with inadequate bandwidth.   If streaming HD over the internet, 720p resolution is recommended.
- • **STEP 3:** Set the Video Quality Setting to desired value. High Quality (best), Standard (better), Low Bandwidth(good). Set to Standard or Low Bandwidth if major network bandwidth fluctuations are expected during the session.
- • **STEP 4:** Pick the IP Streaming Protocol. HLS will use the Port 80 (HTTP Port). With RTSP, user can use RTSP default port of 554 or set their own value (>1024)
- • **STEP 5:** Set Path for URL address that the IP steam will be posted at. The URL address can be highlighted and copied from the browser. The copied URL then can be pasted into the Media Players address.
- • **STEP 6:** Press Save Button. This will persist all setting to the EasyUSB Tool Device.
- • **STEP 7:** Launch Media Player and enter URL address of the IP Stream into the player.

1.3   Application Examples

This section describes two primary applications that the IP Streaming functions associated with the EasyUSB Tool product were designed for.

1.3.1   Distribution Application (Single Stream-to-Multiple Clients)

The EasyUSB Tool product with IP Streaming was designed and optimized to support a single client (Media Player) to Server (Vaddio Device) relationship. If a Multiple-Client to Server relationship is required intermediate Media Server will be required.

Table 1.3.1- Distribution Application System Diagram

In this system diagram, the Wowza Media Server functions as the Streaming Engine for Content Delivery Network. The Wowza Media Server ingests the RTSP Stream from the AV Bridge and then Transcodes to multiple protocols (HLS, RTSP, RTMP, and Microsoft Smooth-Streaming). After AV Bridge media stream is transcoded to various protocols, it is then broadcasted to multiple media player clients for playback at end-user's desktop.

1.3.2 Recording/Archive Application

In this example, only a single Server to Client connection is required. An AV Bridge streams the video/audio via HLS. QuickTime (MacOS) receives and records the stream to local hard drive using Movie Maker option within Quicktime.

Table 1.3.2- Recording Application

2   Compatibility Summary

2.1   Vaddio Lab Tested Interoperability

The compatibility table below represents the Media Players and Servers that have been tested and validated by Vaddio Engineering for interoperability with the EasyUSB Tool products that support IP Streaming function.

Table 2.1- EasyUSB Tools IP Streaming Interoperability

Players or Media Servers	Tested Version	Major Findings	Comment
QuickTime	10.2 (Mac) 7.7 (Win7)	None	Windows may need ActiveX plugins disabled.
VLC	2.0.x	None	
Real Player	16.0	None	
Wowza Media Server	5.4	None	Tested with RTSP Stream to Wowza Server.

2.2   Field Test Media Players or Server

Field testing Media Player or Servers are defined of known customer deployment of the EasyUSB Tools product are using the IP Streaming function.

Table 2.2- Field Tested Interoperability

| Player/Server	Description	Comment
TBA	TBA	TBA

3   Media Player/Server Interoperability

3.1   Quicktime Media Player

- **General:** Apple's media player supporting both RTSP and HLS protocols. Media Players available for both Mac, Widows, and IOS devices.

Table 2.8- Tested Versions

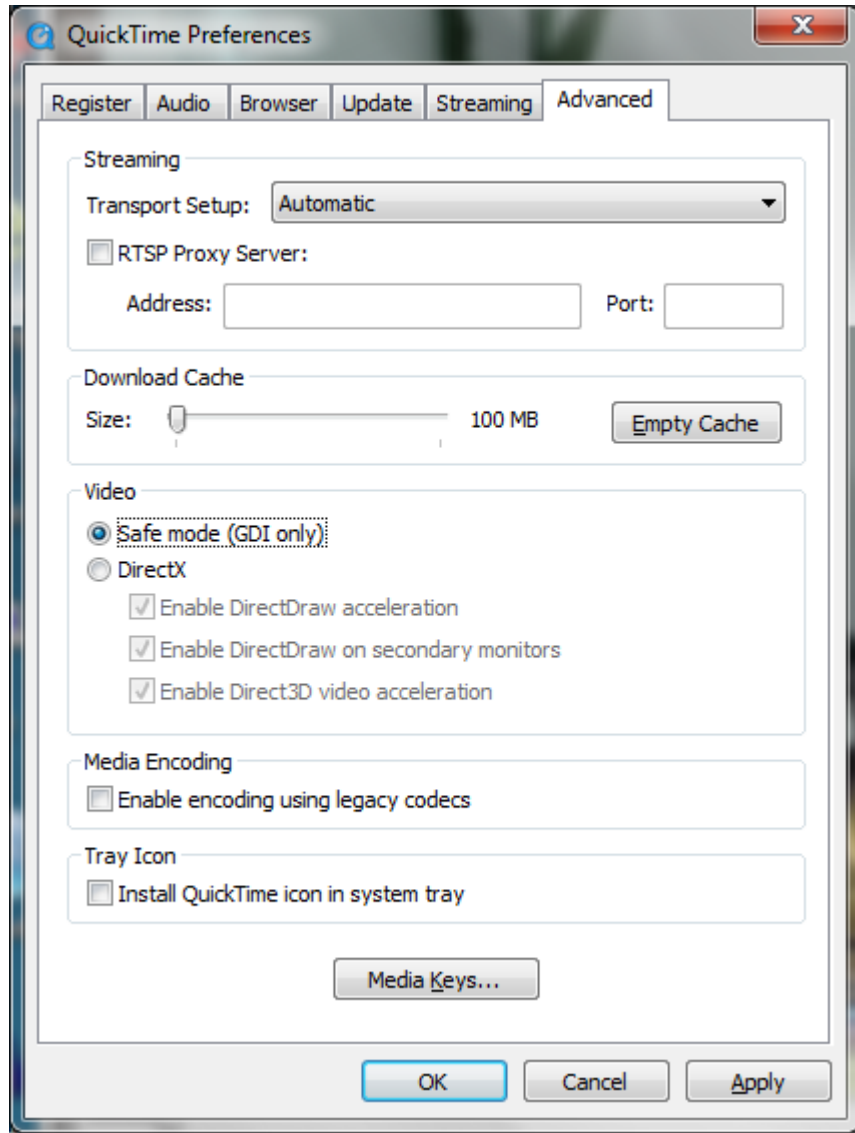| Quicktime Version	Operating Systems	EasyUSB Tools Product
10.2	Mac OS 10	ClearView HD USB
		AV Bridge
7.7	Windows 7	ClearView HD-USB
		AV Bridge

- **Recommended Configuration (Windows):**

   STEP 1: Launch QuickTime applications. Go to File<Open URL selection from the menu. Enter the URL (HLS or RTSP) of the IP Stream obtained from the EasyUSB Tools device Press OK.
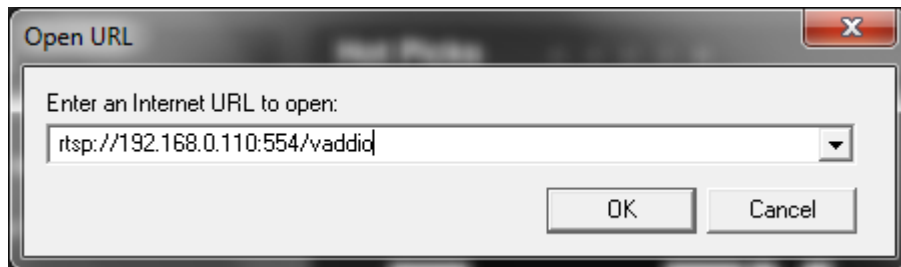
   STEP 2: QuickTime will connect to IP Stream and display buffering until video signal is rendered on screen. (See Below)
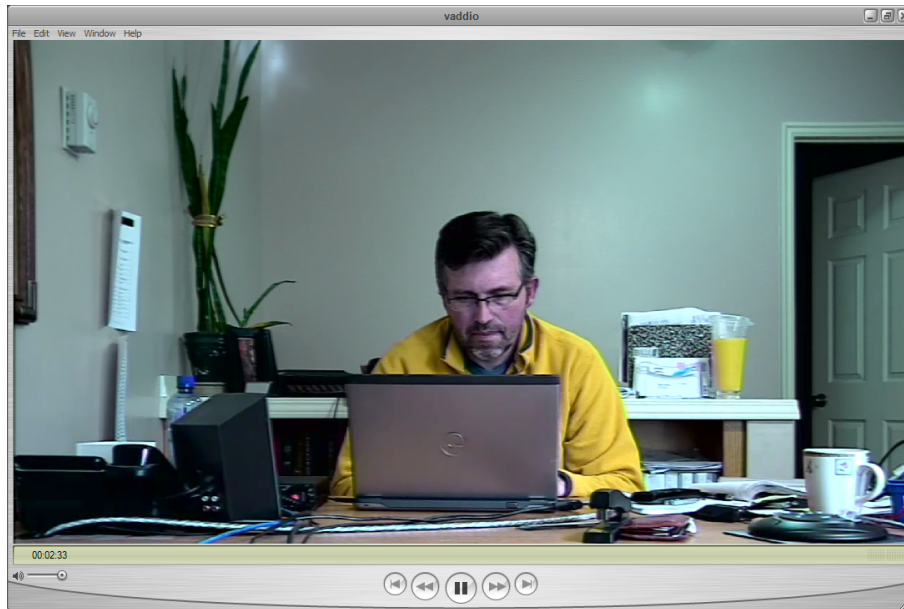
- **STEP 4 (if problems occur):** If QuickTime does not connect to the Vaddio device, there may be an interoperability issue with the media player. Some DirectX plug-in may be in conflict with the ingesting the RTSP Stream. The DirectX plugins can be disabled by going to Edit>Preferences>QuickTime Preference in the main menu. Tab to the Advanced Page. On the Video panel, select Safe mode (GDI only). Reconnect player to stream and see if video is present.

3.2 VLC Player

- **General:** VLC is an open source client media player and has support for Windows, Mac OS, and Linux operating systems
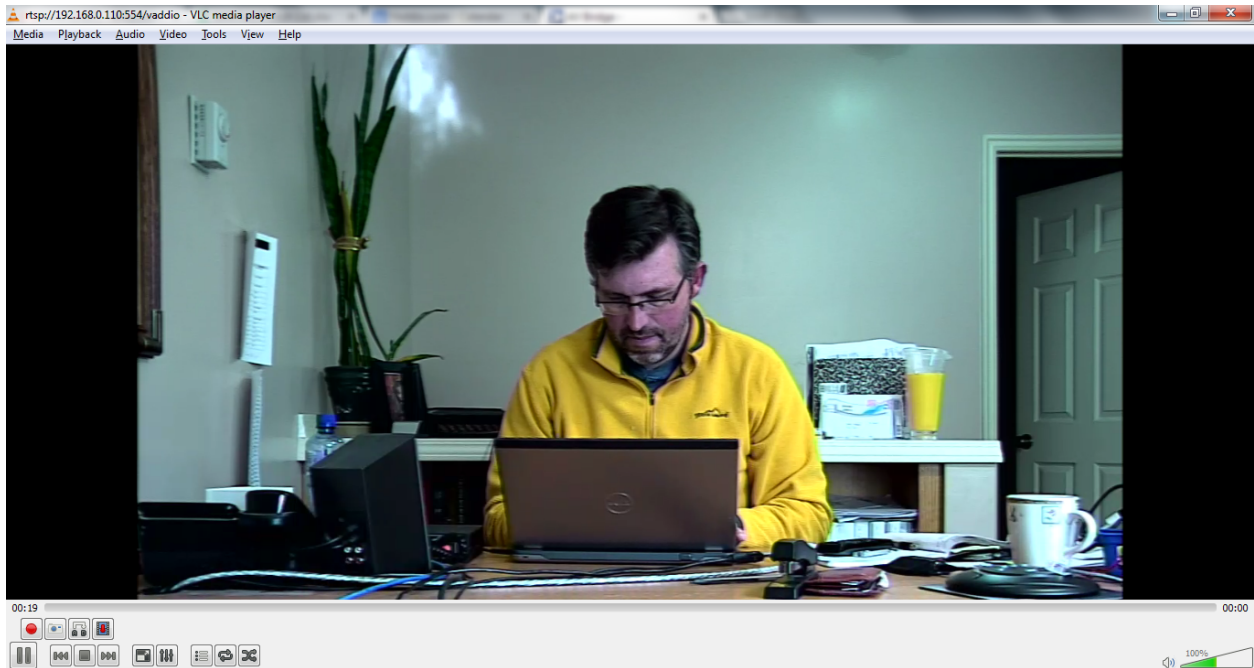
Table 3.2- Tested Versions

VLC Version	Operating Systems	EasyUSB Tools Product
2.0.5	Windows 7	ClearView HD USB
		AV Bridge

- **Recommended Configuration (Windows):**

STEP 1: Launch VLC application. Go to main menu and select Media>Open Network Stream. The panels below will pop-up. Enter the URL address of the EasyUSB Tools device stream and press play.
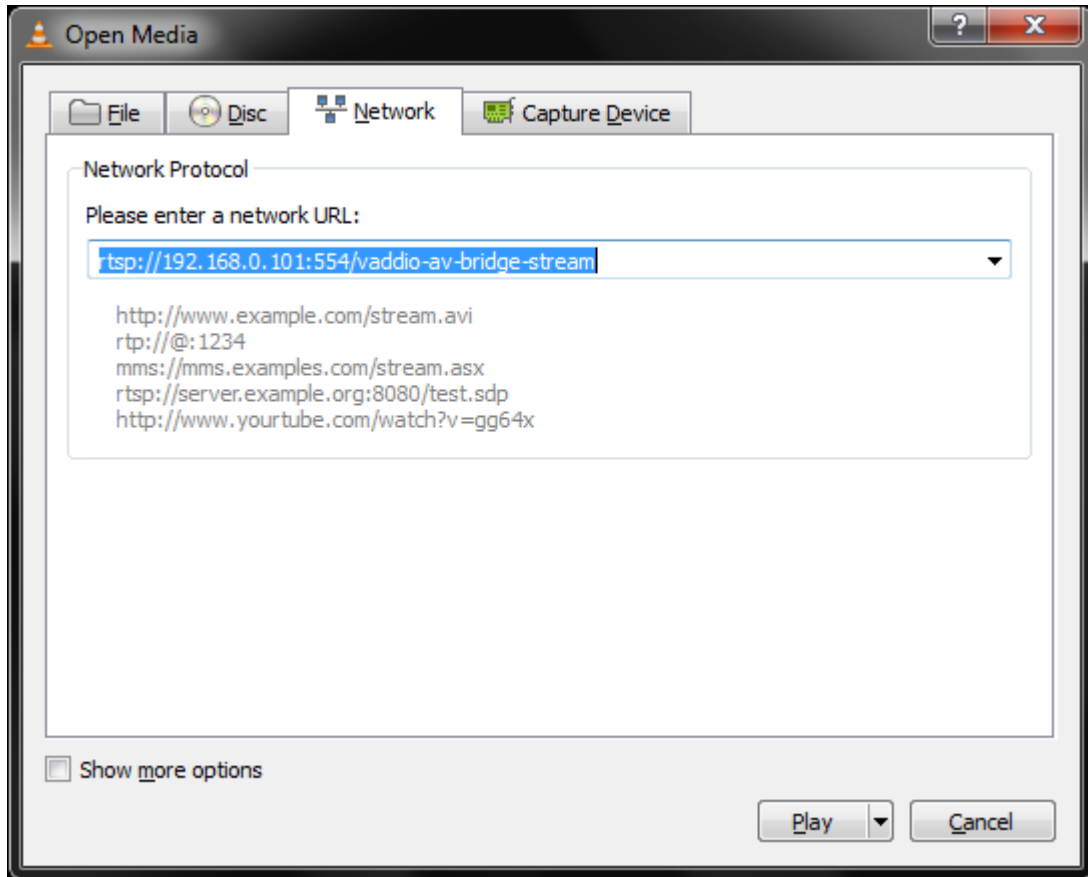
STEP 2: Below is the example of rendered video.   VLC can sometimes default to wrong aspect ratio. This can be easily change under Video>Aspect Ratio in the menu.

3.3 Real Player

- **General:** Real Player is a free media play that support both Windows and Mac Operating Systems.

Table 3.3- Tested Versions

Real Player Version	Operating Systems	EasyUSB Tools Product
16.0	Windows 7	ClearView HD USB
		AV Bridge

- **Recommended Configuration (Windows):**

  STEP 1: Launch Real Player. Go to main menu and select realPlayer<file<open. The panels below will pop-up. Enter the URL address of the EasyUSB Tools device stream and press play.
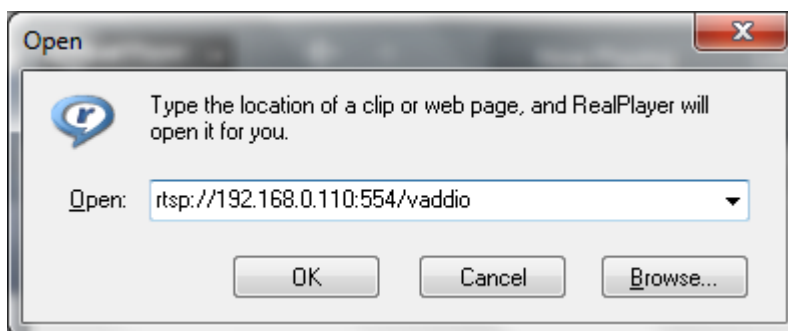
  STEP 2: Video will start playing as seen below.
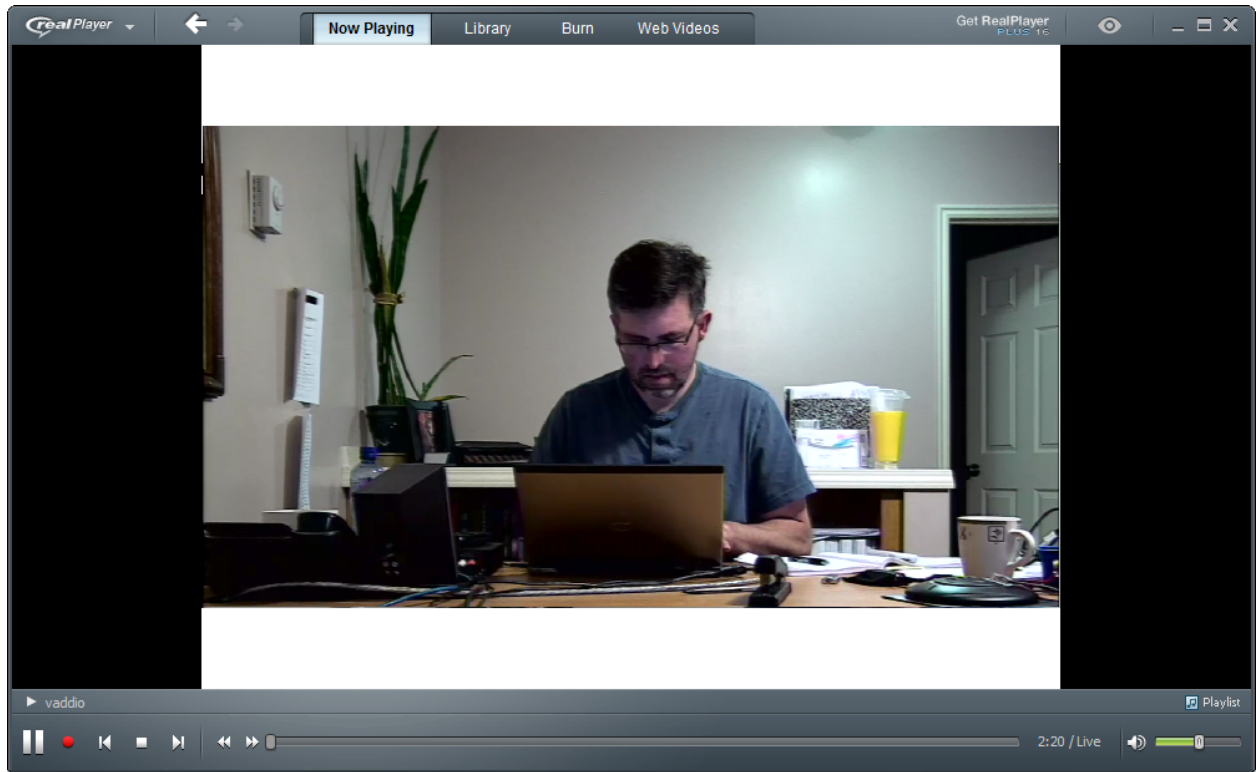
Vaddio – 131 Cheshire Lane – Suite 500 – Minnetonka – MN – 55305 – www.vaddio.com - ph: (763) 971-4400

4 General Troubleshooting

Symptom	Potential Issue	Resolution
Choppy Video	Limited Network Bandwidth	Check the streaming statistics in the player(support by VLC, QT, and realPlayer). See if video frames are dropouts are occurring. Reduce Resolution or Quality setting in the Vaddio device if network bandwidth is limited.
	CPU Limitation	The Media Players requires an H.264 decoder to render the video and require significant CPU/Memory. Check the CPU stats in the operating system if utilization is above 80%. Reduce Video Resolution or Quality setting to reduce CPU load on PC.