

Third Party or Open Source Software Integration

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Introduction

The client-server concept of networking makes programs more flexible and easier to adapt to different applications. Take video streaming for example, the source may be a web server or an IP camera, and the destination may be an IE browser or a player program. Users may consider the source as the “server” and the destination as the “client”. Both server side and client side will agree to talk to each other under certain constraints.

Users may setup an ACTi camera and view video streams from various video player software. In this document, we would like to introduce a few popular programs that can communicate with ACTi products to provide more variety for users. There is no guarantee from ACTi to promise that ACTi products are fully compatible with certain third party software. If users have any software related technical questions, please contact ACTi support from <http://www.acti.com/support/case/index.asp>

Protocol introduction

User Datagram Protocol

Many real-time streaming applications utilize the UDP protocol. The reasons are:

1. UDP is a fast transmission protocol and is suitable for conferencing and real-time applications.
2. A few lost data packets will not hurt the audio/video user experience.
3. UDP can save transmission time without data re-transmission and recovery.

However, the drawback of UDP is that this protocol does not guarantee data delivery. Since there is no traffic control over UDP and the server is not aware of transmission failures, it will send data without holding back. Some programs will never hold back their transmission rate which result in traffic congestions or even break down the whole network. Therefore, some gateways and routers may discard certain UDP-based application packets to prevent against network breakdown.

Transmission Control Protocol

Compared to UDP streaming, TCP streaming is more reliable, and self-constrained. In a local area network, TCP streaming is fast enough for video live viewing without noticeable latency. The performance may vary with network conditions when viewing TCP streaming over the internet. ACTi products support TCP streaming, and we suggest our users to use TCP as the default protocol.

Real time Transport Protocol & Real time Streaming Protocol

Currently, one of the most common UDP-based applications is RTP streaming. ACTi products support RTP streaming (RTP over UDP) as well as RTSP over HTTP (RTP over TCP) which is meant to go through routers without being filtered out. RTSP/HTTP is a standard method of reliable streaming which makes use of HTTP connections [RFC 2326]. So web clients (browsers or programs) complying with this protocol can build up connections with RTSP/HTTP-supported servers without further implementation. However, RTP over TCP may have variable implementations which MUST be deployed at both server side and client side [RFC 4571]. Currently, ACTi products do not support any non-standardized RTP/TCP applications.

Video streaming and encoding schemes

ACTi has two popular series of IP cameras ACM-series and TCM-series. The ways of directing streams between the two platforms are slightly different. In this document, users can refer to the following chapters for more information. Here, we would like to talk about the relation of video streaming and encoding schemes.

IP devices provide flexibility of video viewing for users to fulfill their requirement. Different applications may demand for different levels of data transmission and reliability. ACTi products comply with standard OSI model to implement the following protocols: TCP, UDP, RTP, and multicast.

ACM-series provides two types of codec—MPEG4-SP, and MJPEG; while TCM-series provides three—H.264, MPEG4-SP, and MJPEG. Regarding different encoding schemes at

the server-side, the client-side MUST implement the same type of decoding schemes. Otherwise, the video data cannot be decoded and displayed.

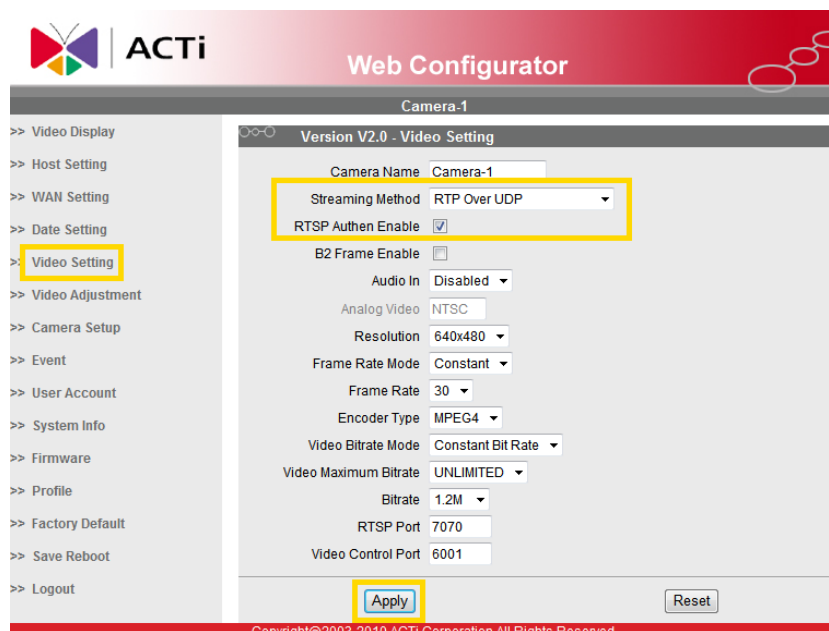
Since networking protocols are for communications between servers and clients, and video encoding schemes are for image display, combinations of streaming protocols and encoding schemes are available. Users only need to make sure that third-party software supports these standard protocols, and encoding schemes as well, and then they can integrate video streams with their applications.

How to stream RTP?

Web Configurator setup (Camera)

Please go to Setup-> Video Setting-> Streaming Method-> select RTP Over UDP.

Please enable “RTSP Authen Enable”



Web Configurator setup (Video Server)

Step 1: TCP-v2.0-compliant firmware versions.

Please upgrade your device firmware to version v2.0X or later.

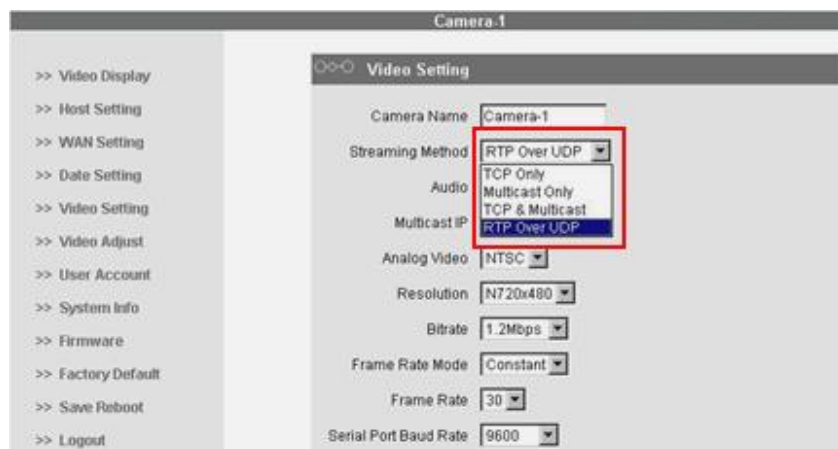


IMPORTANT: Please notice that for firmware versions v 2.04 or later, RTSP will need account & password authentication.

Step 2: Select a streaming type
Please go to Setup->Video Setting->select **Version 2.0**



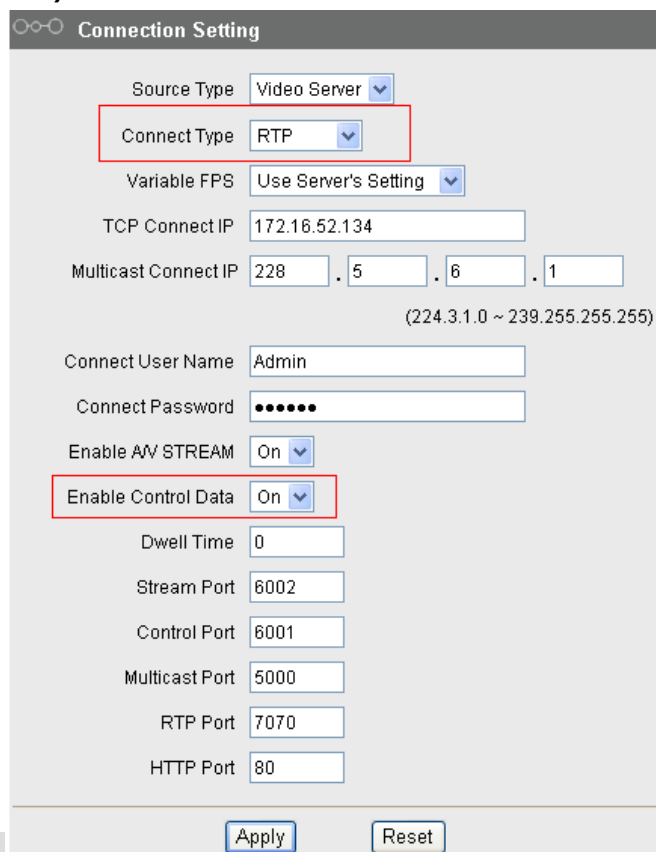
Choose **RTP over UDP**



Web Configurator setup (Video Decoder)

Please go to Connection Setting->select "Connect Type" as RTP

Please switch on "Enable Control Data" to signal PTZ positioning.



Web Configurator setup (Camera TCM-series)

Please go to Setup -> Network -> and Port Mapping then enter 7070 in the RTSP Server port bubble.

Port Mapping

HTTP Port	80
HTTPS Port	443
Search Server Port1	6005
Search Server Port2	6006
Control Server Port	6001
Streaming Server Port	6002
Multicast Server Port for Media1	5000
Multicast Server Port for Media2	5001
RTSP Server Port	7070
RTP Multicast Video Port for Media1	5100
RTP Multicast Audio Port for Media1	5102
RTP Multicast Video Port for Media2	5104
RTP Multicast Audio Port for Media2	5106

Multicast Setting

Multicast IP: 228 . 5 . 6 . 1
[224.5.0.1 ~ 239.255.255.255]

Multicast TTL: 16 [1~255]

IGMP: Disable

Apply Reset

Step 2:

Please go to Setup -> Video and Audio -> and Basic then "Disable" RTP B2 Frame.

Basic

Video

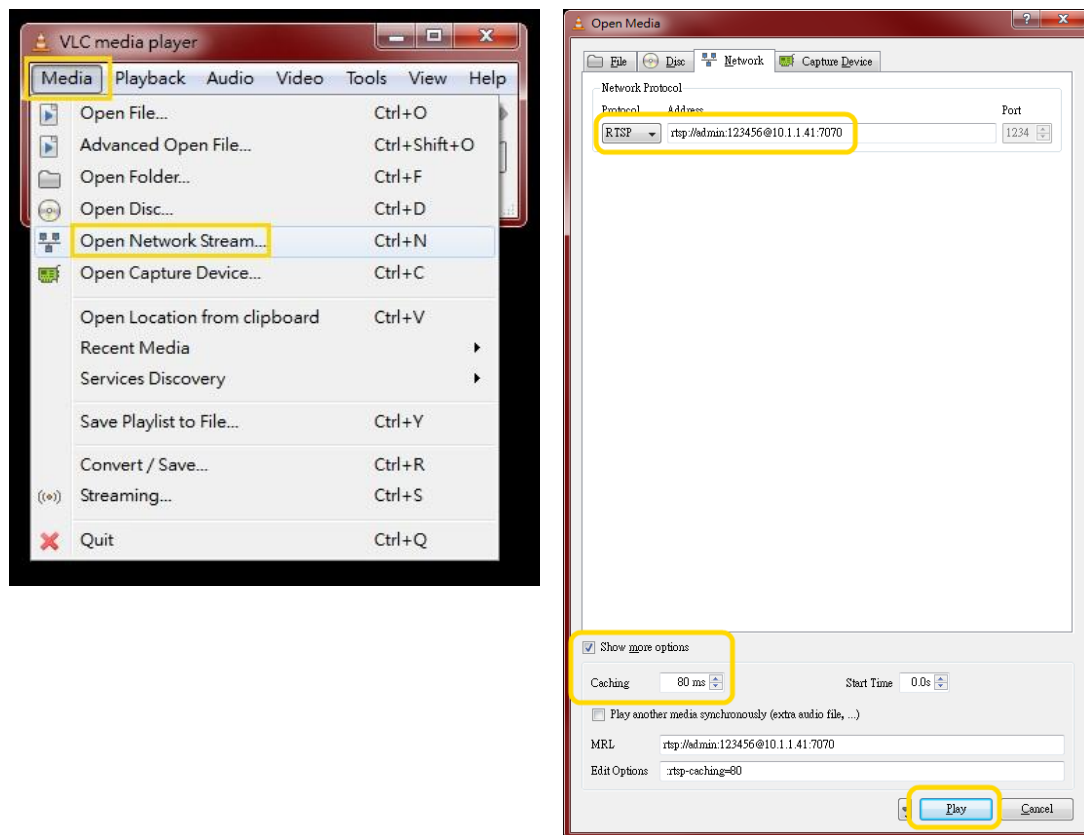
Max Stream Time: 0 seconds
0~86400 Secs
0=No time limitation for streaming

RTSP Authen Enable: Enable

RTP B2 Frame Enable: Disable

A Quick VLC configuration to start RTP streaming

Go to Media-> Open Network Stream (Ctrl + N)-> enter URL and “Play”

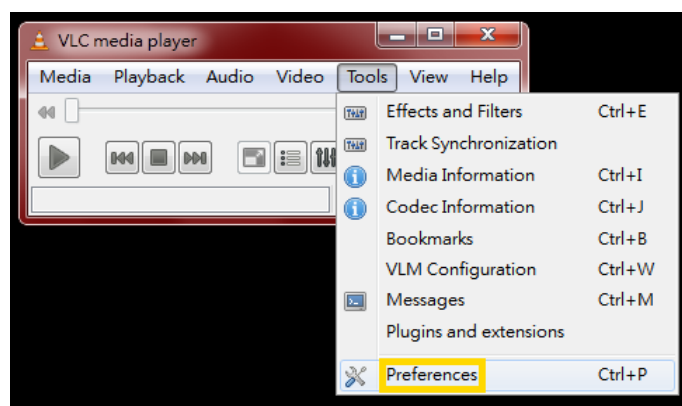


VLC configuration to mount RTP over TCP

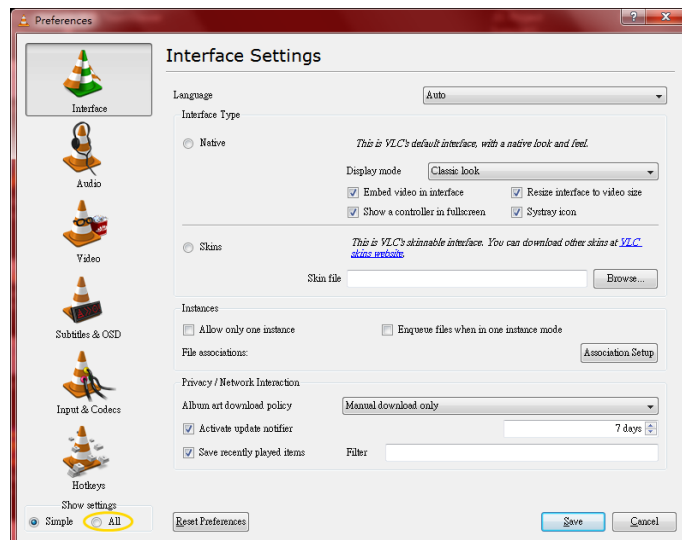
If users would like to get video streams over WAN, they may make use of RTSP/TCP to go through Firewalls or routers without being blocked out. Please keep in mind that ACTi device streaming type should be set to RTP over UDP.

IMPORTANT: Please make sure that your device supports RTSP/HTTP. Users are welcome to download ACTi user manuals or release notes on the website.

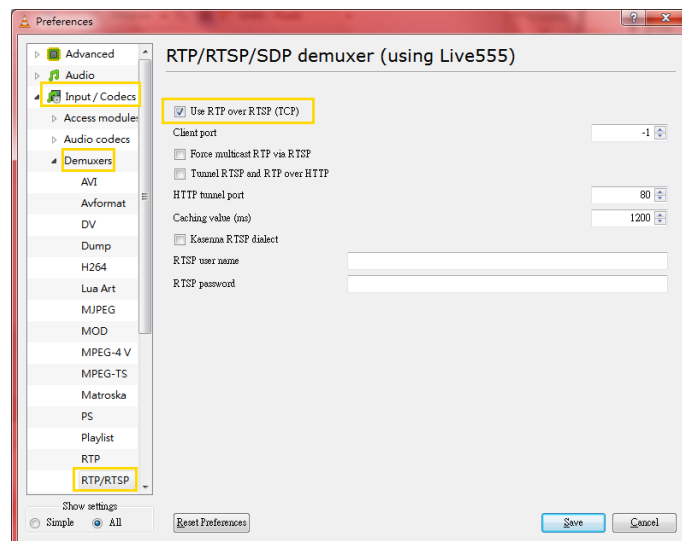
Please go to Tools-> Preferences



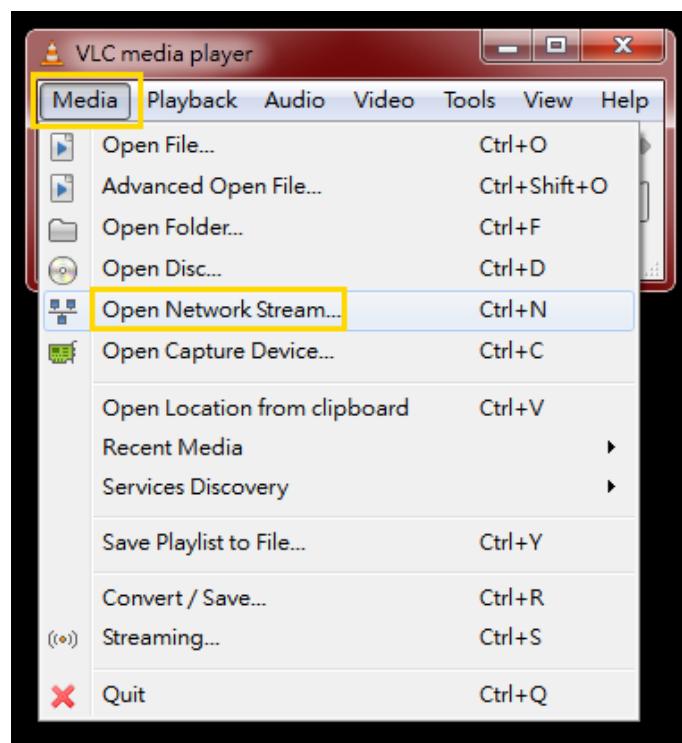
Please select “Show settings”->
All



Select Input/Codecs-> Demuxers
-> RTP/RTSP-> Use RTP over RTSP (TCP)



To start streaming, please go to
Media-> Open Network Stream



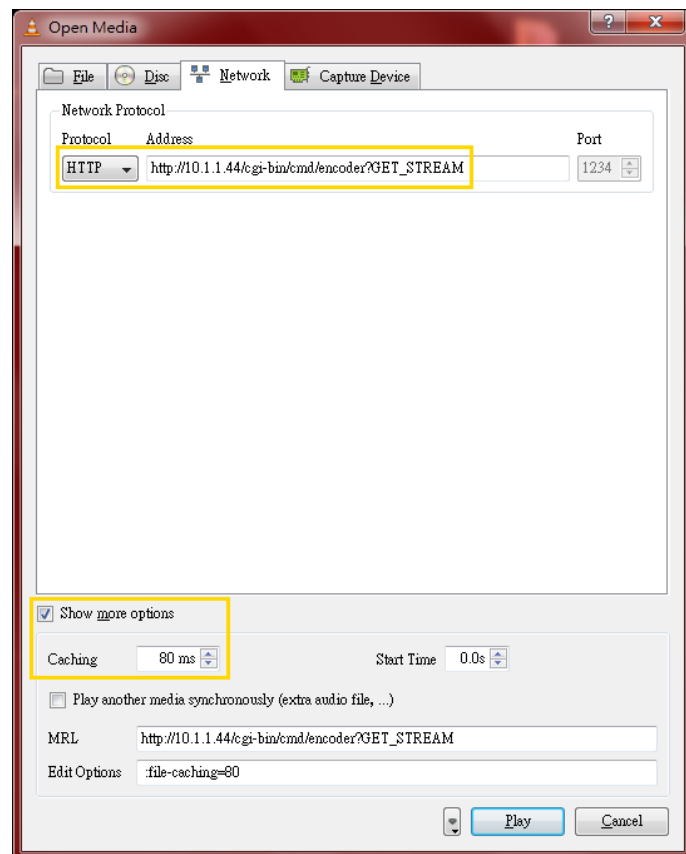
Now, it is time to get a video stream! Please paste this URL command into the Address Bar.

http://ip:port/cgi-bin/cmd/encoder?GET_STREAM

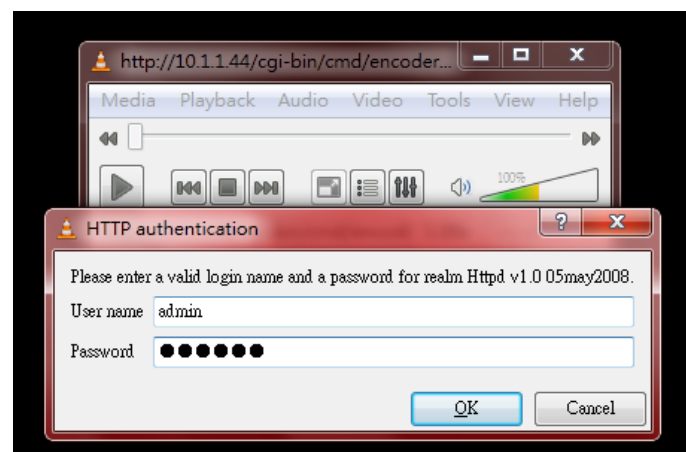
Remember to change the ip / port to your actual numbers, an example of which would be :

http://192.168.0.100:80/cgi-bin/cmd/encoder?GET_STREAM

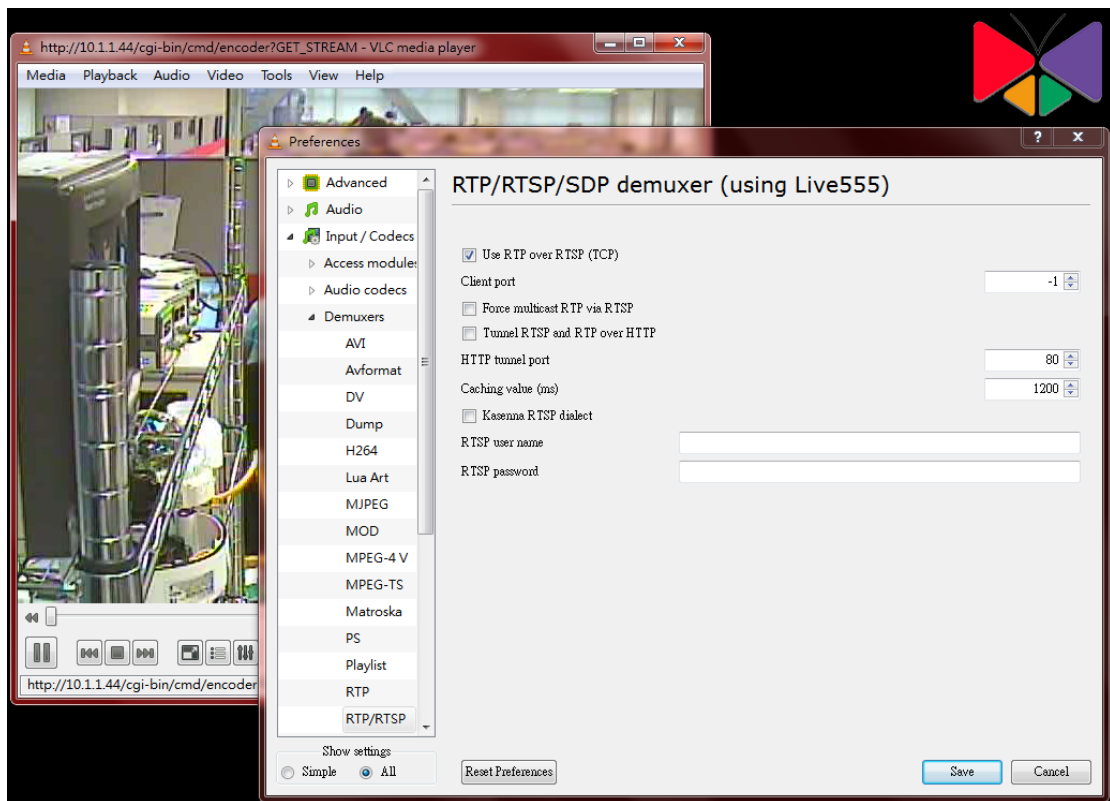
Please click on “Show more options”-> Caching-> set 80ms. Video latency of RTP/RTSP will be minimized without sacrificing video quality.



When you click on “Play”, a prompt will let you log into your device.



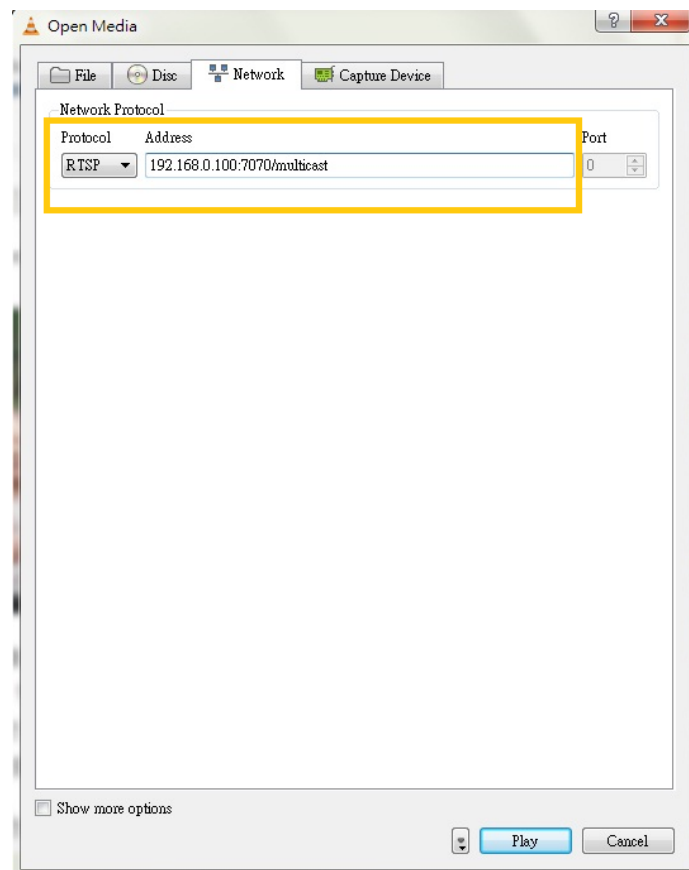
Viewing streaming!!



VLC configuration to start RTSP streaming

Please go to Media -> Open Network Stream and you will find options as shown below: please select RTSP from list of selections in Protocol and enter your IP/port with connection commands shown below: in this example “multicast”.

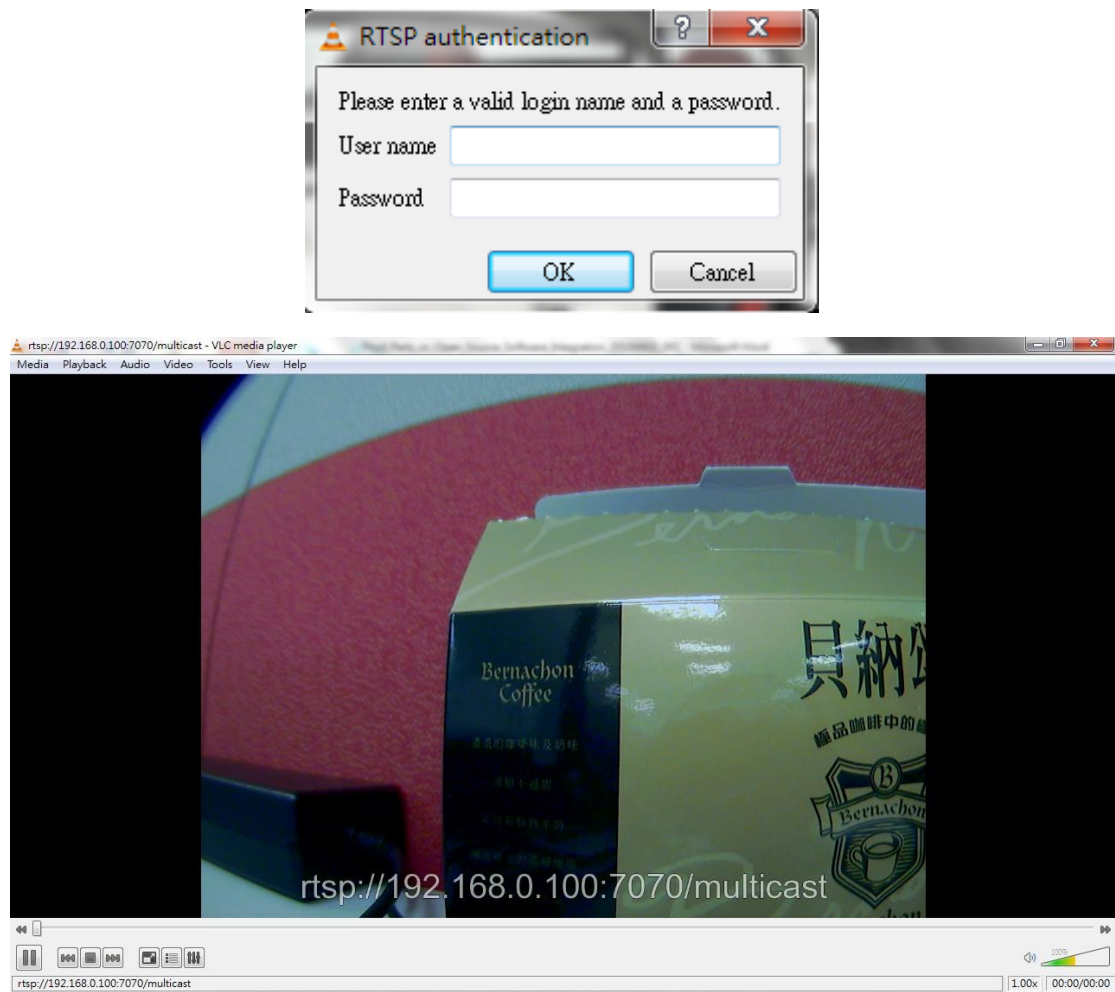
Note: you can also configure more options by clicking on “Show more options” check box, for settings please refer to “VLC configuration to mount RTP over TCP section”.



RTSP Connection Command	Server's Response
rtsp://DeviceIP:RtspPort	
rtsp://DeviceIP:RtspPort/udp	describe all available media and streaming the media based on the setup commands
rtsp://DeviceIP:RtspPort/multicast	
rtsp://DeviceIP:RtspPort/track1	describe all available media and streaming the media based on the setup commands. The track 1 is only expected in the RTSP setup session. However, the server could provide other media streams if the client setup other tracks in the RTSP setup session.
rtsp://DeviceIP:RtspPort/udp/track1	
rtsp://DeviceIP:RtspPort/multicast/track1	The server has to be able to parse the parameter, track1, udp/track1, and multicast/track1 to response the setup request.
rtsp://DeviceIP:RtspPort/trackn	n : the track number.
rtsp://DeviceIP:RtspPort/udp/trackn	describe all available media and streaming the media based on the setup commands. The track n is only expected in the RTSP setup session. However, the server could provide other media streams if the client setup other tracks in the RTSP setup session.
rtsp://DeviceIP:RtspPort/multicast/trackn	The server has to be able to parse the parameter, trackn, udp/trackn, and multicast/trackn to response the setup request

Note: Please make sure your IP and port is changed to your settings before you put the whole command line into the address bar.

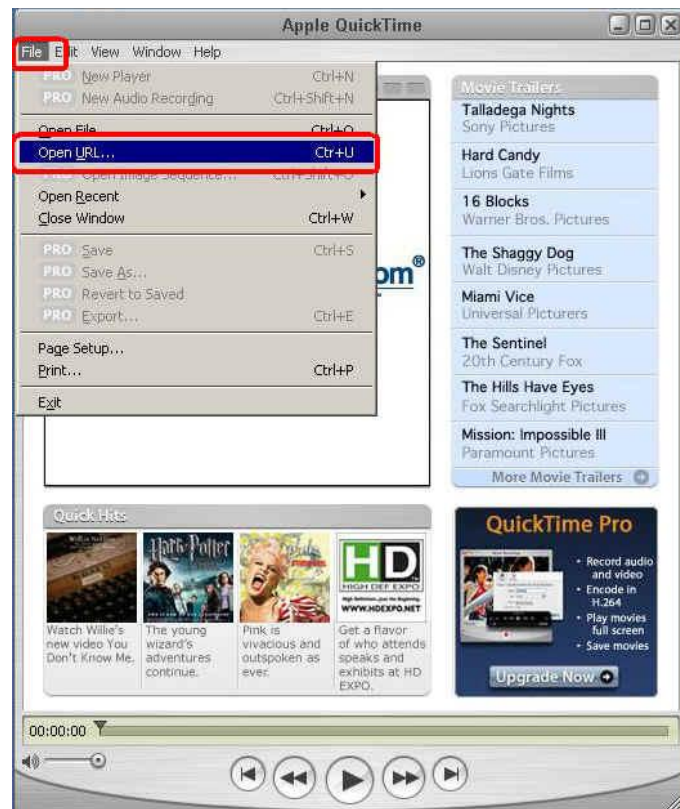
Now click “Play” and enter your authentication then you should get your video stream as shown.



Apple QuickTime Player

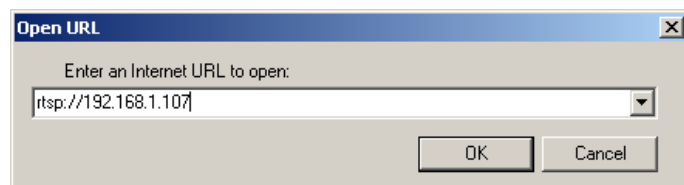
Step 1: Download it from Apple web site <http://www.apple.com/quicktime/download/win.html>

Step 2: Click on File -> Open URL

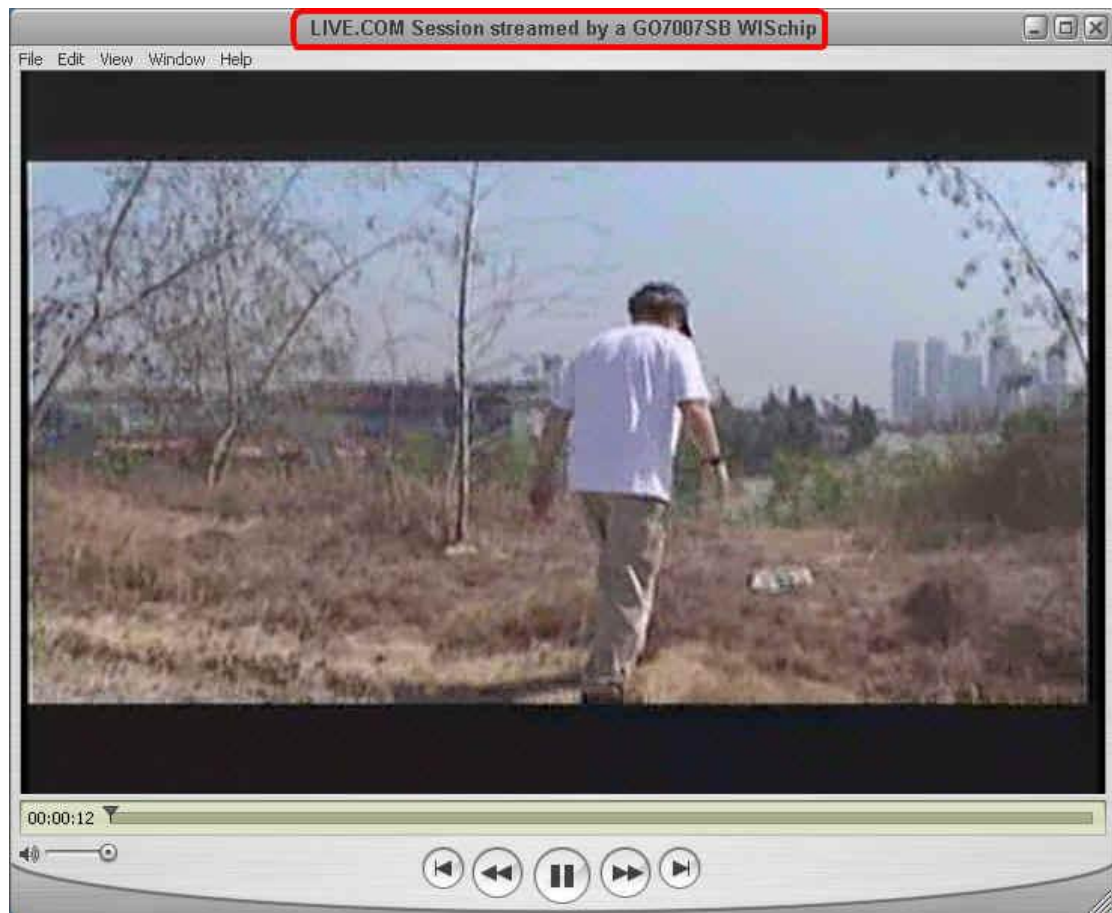


Step 3: Enter URL:

rtsp://<IP Address>



Step 4: Apple QuickTime Player plays video from ACTi device



IMPORTANT: RTSP will need account/password authentication. Users may have an alternative option to carry out the URL command as in the following:
rtsp://username:password@ip:port

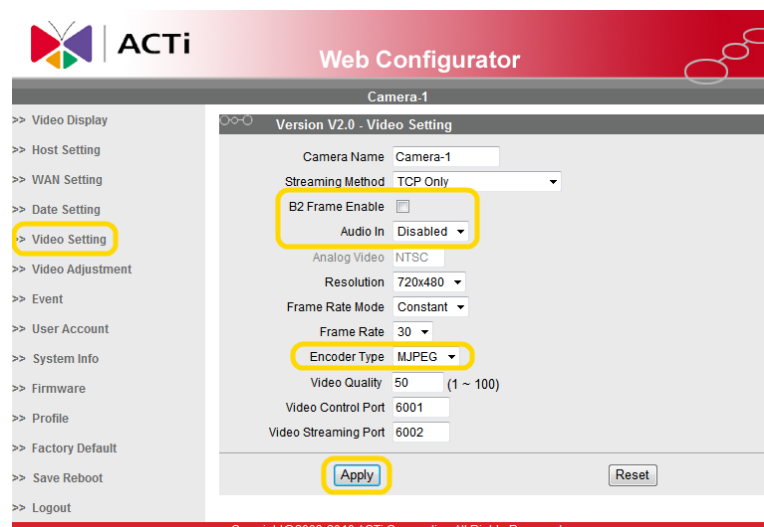
When receiving RTP video streams over Internet routers, you have to enable RTP over TCP in VLC.

Currently, all ACTi products only support one way audio on RTP streaming.

VidBlaster

Step 1: Camera setting:

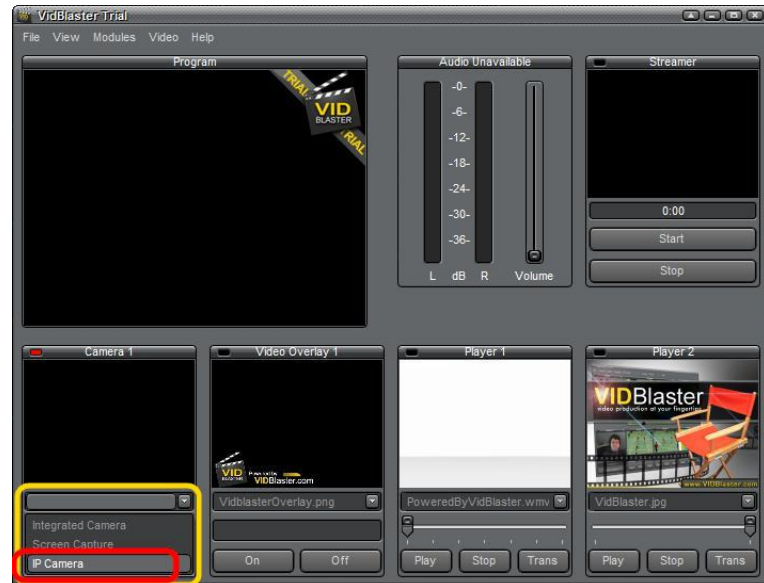
1. Log on camera in Web Configurator -> Video Setting
2. Uncheck "B2 Frame Enable"
3. Audio In: Disabled
4. Encoder Type: MJPEG



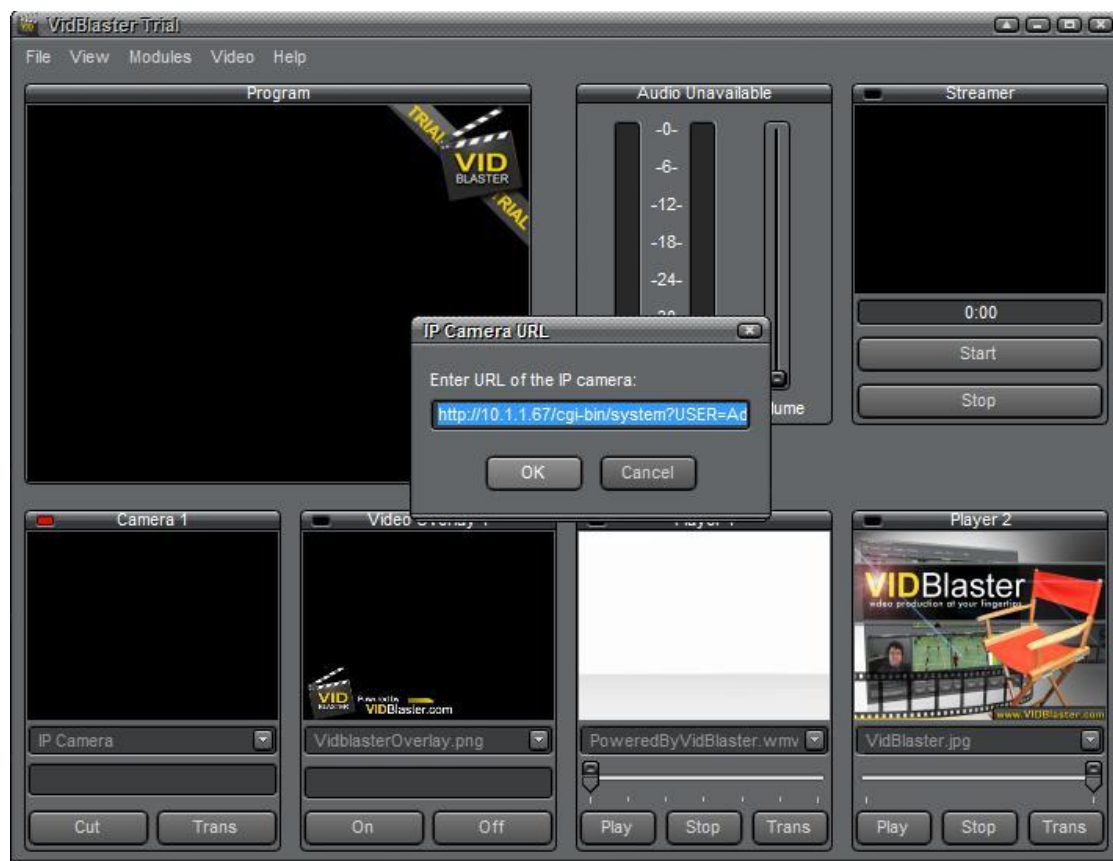
Step 2:

VidBlaster setting:

1. Select "IP Camera" in camera module
2. Right click on camera module -> select IP Camera URL



3. Type in " `http://ip:port/cgi-bin/system?USER=Admin&PWD=123456&GET_STREAM` "



4. You may go to 'Module -> Add -> Camera' to add several cameras.





How to Get ACTi MPEG4 and RTP/RTSP Specs

Please contact ACTi Sales representatives or sales@acti.com for the detailed specification of MPEG-4 and RTP/RTSP specifications.

Reference or Specifications

RFC 2326: Real Time Streaming Protocol (RTSP) <http://www.ietf.org/rfc/rfc2326.txt>

RFC 4571: Framing Real-time Transport Protocol (RTP) and RTP Control Protocol (RTCP)

Packets over Connection-Oriented Transport <http://www.ietf.org/rfc/rfc4571.txt>