Category: Application NoteSub-category: Streaming & NetworkingModel: All ACM-series, TCM-seriesFirmware: 3.11.13 or later, 4.06.09 or laterSoftware: N/AAuthor: Jane.ChenPublished: 2009/11/30Reviewed: 2010/06/02



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"

АСТі	Web C	onfigurator	G
	Cai	mera-1	U
>> Video Display	^{⊖o-⊖} Version V2.0 - Vid	eo Setting	
>> Host Setting	Camera Name	Camera-1	
>> WAN Setting	Streaming Method	RTP Over UDP 🔹	
>> Date Setting	RTSP Authen Enable		
> Video Setting	B2 Frame Enable		
>> Video Adjustment	Audio In	Disabled -	
	Analog Video	NTSC	
>> Camera Setup	Resolution	640x480 🔻	
>> Event	Frame Rate Mode	Constant -	
>> User Account	Frame Rate	30 🔻	
>> System Info	Encoder Type	MPEG4 -	
>> Firmware	Video Bitrate Mode	Constant Bit Rate 🔻	
b Deefle	Video Maximum Bitrate	UNLIMITED -	
>> Profile	Bitrate	1.2M 🔻	
>> Factory Default	RTSP Port	7070	
>> Save Reboot	Video Control Port	6001	
>> Logout	Copyright@2002-2010 ACT	Cornoration All Dights Reserved	Reset

Web Configurator setup (Video Server)

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

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

АСТІ	Web Configurator	É
_	2400-107	
>> Video Display	○○○ System Information	
>> Host Sotting	System Information :	
>> WAN Setting	Firmware Version = A1D-P2N-V2.02.05-AC MAC Address = 00.0F7C:00.1A:4D Production ID = SED2400-051-1-00041	<u>*</u>
>> Date Setting	Factory Default Type = NTSC, Composite, Two Ways Audio (0x71)	
>> Video Setting		-
>> Midoo ādiņet	WAN Status :	
>> User Account	IP Address : 10.0.0.1 Netmask : 255.255.255.0 (Sateway :	*
>> System Info	DNS Server :	
>> Firmware	DDNS Host: WAN Connect Status : Disconnect DNS Connect Status : Disconnect	
>> Factory Default	DDNS Connect Status : Disconnect	
>> Save Reboot		~
>> Logout	System Loa :	

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

Step 2: Select a	Camera-1	
streaming type	>> Video Display Or Streaming Type	
Please go to Setup->	>> Host Setting Streaming Type Version V2.0	
Video Setting->	>> Date Setting Apply Reset	
select Version 2.0	>> Video Setting >> Video Adjust >> User Account >> System Info >> Firmware >> Factory Default >> Save Reboot >> Legoot	
Choose RTP over	Coorright@2003-2005 ACTI Corporation All Rights Reserved Camera.1	
UDP	>> Video Display Or Video Setting >> Host Setting Camera Name >> WAN Setting Streaming Method >> Date Setting Audio >> Video Setting Audio >> Video Setting Multicast IP >> Video Adjust Analog Video >> User Account Resolution	

Bitrate 1.2Mbps 💌

com

Frame Rate Mode Constant

Frame Rate 30 💌

Serial Port Baud Rate 9600 💌

Web Configurator setup (Video Decoder)

>> System Info

>> Firmware

>> Factory Default

>> Save Reboot

>> Logout

Please go to Connection	○○○ Connection Settin	ıg
Setting->select "Connect Type" as	Source Type	Video Server 💌
RTP	Connect Type	RTP 💌
	Variable FPS	Use Server's Setting 🔽
Please switch on "Enable Control	TCP Connect IP	172.16.52.134
Data" to signal PTZ positioning.	Multicast Connect IP	228 . 5 . 6 . 1
		(224.3.1.0 ~ 239.255.255.255)
	Connect User Name	Admin
	Connect Password	•••••
	Enable AV STREAM	On 🐱
	Enable Control Data	On 🐱
	Dwell Time	0
	Stream Port	6002
	Control Port	6001
	Multicast Port	5000
	RTP Port	7070
	HTTP Port	80
	A	Apply Reset

Web Configurator setup (Camera TCM-series)

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

Po	ort 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
1270 S212	

Step 2:

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

		Basi	c
Video			
	Max Stream Time	0	seconds
		0~864 0=No t	00 Secs ime 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"

≜.v	LC media player		Open Media
Med	dia Playback Audio Video To	ools View Help	Ele O Disc . Vetwork Capture Device
	Open File Advanced Open File Open Folder Open Disc Open Network Stream	Ctrl+O Ctrl+Shift+O Ctrl+F Ctrl+D Ctrl+N	Protocol Address Port RTSP rtp://wdmin.123456@10.1.1.41.7070
(*)	Open Capture Device Open Location from clipboard Recent Media Services Discovery Save Playlist to File Convert / Save Streaming	Ctrl+C Ctrl+V , Ctrl+Y Ctrl+R Ctrl+S	
×	Quít	Ctrl+Q	Show more options Caching 90 ms ? Start Time 0.0s ? Play another media synchronously (extra audio file,) MRL rtsp://edmin.122455@10.1.1.41:7070 Edit Options rtsp:/caching=80

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

Preferences		· · · · · · · · · · · · · · · · · · ·
4	Interface Settings	
Interface	Language Interface Tyme	(Auto 👻
	 Native 	This is VLC's default interface, with a native look and feel.
Audio		Display mode Classic look 🖵
	Skins	Show a controller in fullscreen Systaxy icon This is VLC's skinnable interface. You can download other skins at <u>VLC</u> skins metaint.
1 aleo	Skin fil	ile Browse
	Instances	Transa filmular in en indus ande
Subtitles & OSD	File associations:	Association Setup
- \$ -	Privacy / Network Interaction	
Input & Codecs	Album art download policy	Manual download only
	 Activate update notifier Save recently played items 	7 days 🚖 Filter
Hotkeys Show settings		
Simple All	Reset Preferences	Save Cancel

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



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

<u>a</u> v	LC m	nedia player				. 🗆	x
Med	dia	Playback	Audio	Video	Tools	View	Help
	Ор	en File			Ctr	l+O	Þ
	Adv	/anced Ope	n File		Ctr	l+Shift+	o h
	Ор	en Folder			Ctr	l+F	P
0	Ор	en Disc			Ctr	l+D	
문	Ор	en Network	Stream		Ctr	l+N	
	Open Capture Device			Ctr	l+C		
	Op Rec Ser	en Location cent Media vices Discov	from clip very	board	Ctr	l+V	•
	Save Playlist to File		Ctr	l+Y			
	Convert / Save		Ctr	l+R			
((•))	Streaming			Ctr	l+S		
×	Qui	it			Ctr	l+Q	

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 <u>Media</u> -> <u>Open Network Stream</u> and you will find options as shown below: please select <u>RTSP</u> from list of selections in <u>Protocol</u> 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".

Network Protocol	
Protocol Address RTSP • 192.168.0.100:7070/multicest	Port
Shau wax asting	

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://DevieIP:RtspPort/multicast		
rtsp://DeviceIP:RtspPort/track1	describe all available media and streaming the media based on the setup commands. The track 1 is expected in the RTSP setup session. However, the server could provide other media streams if the c	
rtsp://DeviceIP:RtspPort/udp/track1	setup other tracks in the RTSP setup session.	
tsp://DevieIP:RtspPort/multicast/track1	The server has to be able to parser the parameter, track1, upd/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. 	
tsp://DevieIP:RtspPort/multicast/trackn	The server has to be able to parser the parameter, trackn, upd/trackn, and multicast/trackn to response the setup request	

Note: Please make sure your <u>IP</u> and <u>port</u> 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 <u>http://www.apple.com/quicktime/download/win.html</u> Step 2: Click on File -> Open URL

New Player	Ctrl+N	(Internet Statements)
PRO New Audio Recording	Ctrl+Shift+N	Tolladora Nichta
Inan Fila	CHILO	Sony Pictures
open URL	Ctr+U	Hard Candy Lions Gate Films
Open <u>R</u> ecent [lose Window	Ctrl+W	16 Blocks Warner Bros. Pictures
PRO Save PRO Save As	Ctri+S	The Shaggy Dog Walt Disney Pictures
PRO Revert to Saved PRO Export	Ctrl+E	Miami Vice Universal Picturers
'age Setup	Ctrl+P	The Sentinel 20th Century Fox
zit		The Hills Have Eyes Fox Searchlight Pictures
		Mission: Impossible III Paramount Pictures
		More Movie Trailers
Varch Hite Watch Wille's new video You Don't Know Me, adventures continue.	Vivacious and Justopolena ever	QuickTime Pro QuickTime Pro • Record audio and video • Record audio and video • Record audio Children • Record audio Chiller • Re
:00:00 🔻	0705AV	

Step 3: Enter URL: rtsp://<IP Address>

Open URL		×
Enter an Internet UI	RL to open:	
rtsp://192.168.1.107]
	OK Cancel	
QuickTime Intern	net 認識	×
在「192.168.1.2」。 使用者名稱:	輸入「Session streamed by RTP/RTSP server」的	
使用者識別碼:		
密碼:		
	取消 確定	

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

АСТІ	Web C	onfigurator				
Camera 1						
>> Video Display	^{⊖o-⊖} Version V2.0 - Vid	eo Setting				
>> Host Setting	Camera Name	Camera-1				
>> WAN Setting	Streaming Method	TCP Only				
>> Date Setting	B2 Frame Enable					
> Video Setting	Audio In	Disabled -				
>> Video Adjustment	Analog Video	NTSC				
>> Event	Resolution	720x480 👻				
PP Lyont	Frame Rate Mode	Constant 👻				
>> User Account	Frame Rate	30 -				
>> System Info	Encoder Type	MJPEG -				
>> Firmware	Video Quality	50 (1 ~ 100)				
>> Profile	Video Control Port	6001				
>> Factory Default	Video Streaming Port	6002				
A factory behadit	Apply	Reset				
>> Save Reboot	Appiy	Reset				
>> Logout						

Step 2:

VidBlaster setting:

1. Select "IP Camera" in camera module

2. Right click on camera moduel -> select IP Camera URL





WidBlaster Trial			
File View Modules Video He	ŧlp		
Progr	am	Audio Unavailable	Streamer
	IP Camera URL Enter URL of the IF	-0- -6- -12- -18- -24- -0- Camera:	0:00 Start Stop
	ОК	Cancel	
Camera 1 IP Camera Cut Trans	Video	PoweredByVidBlaster.wmv Play Stop Trans	Player 2 THE Stop Trans

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) <u>http://www.ietf.org/rfc/rfc2326.txt</u> RFC 4571: Framing Real-time Transport Protocol (RTP) and RTP Control Protocol (RTCP) Packets over Connection-Oriented Transport <u>http://www.ietf.org/rfc/rfc4571.txt</u>