

RTSP Fundamentals VS Auto-Start Streaming

There is a wealth of information available on internet about RTSP if you're looking for detailed specifications. This document attempts solely to provide a very simple description for how RTSP is used in streaming video applications.

RTSP or Real Time Streaming Protocol in simplest terms is a protocol used to request the video quality of your choice from an IP video server. This is in contrast to auto streaming (unicast or multicast) the video from a source video server to a destination (decoder). Think of RTSP as yourself being the client ordering a video having a certain size (resolution), a certain number of pictures per second, and delivered with a quality to match your pocketbook. RTSP effectively provides you with a structured phrase for use in your video client software for requesting the video of your choice.

Everybody today is familiar with the use of internet browsers and that these simply require the user to enter a URL (or destination) for connecting to web servers containing all type of media available via internet. One of the forms a URL can have is the common <http://www.yoursite.com>.

Where a video server (i.e. a video encoder or IP camera) is concerned, a special URL described by the RTSP specification might be in the form of `rtsp://<server's IP address>:<RTSP Port><optional setup parameters>`. A viable address with a server at the given address might be `rtsp://192.168.32.62:5000`. The video server may also require User Name and Password credentials included in the URL resulting in `rtsp://<username>:<passwords>@192.168.32.62:5000`.

Depending on the brand of video server, the User Name/Password, the RTSP Port # and the optional parameters may all be optional. In this case the server interprets that the client is requesting a video stream having the parameters set by default (or configured by the user) in the video server's configuration. The setup parameters can include but not limited to such as the image size (ex. 4CIF, CIF, QCIF etc.), the frame rate per second (i.e. 30fps, 25fps, 15fps, etc.), the port number in the case of multi port video servers, and the bandwidth usage (i.e. Constant Bit rate, Variable Bit Rate, Constant Quality). In addition, the RTSP URL can also be used to specify whether you want a Unicast or Multicast stream. Those of you familiar with HTML programming will instinctively recognize the format of the URL.

Example RTSP URLs:

- 1) Request the default H.264 stream
`rtsp://192.168.32.62/H264`
- 2) Request multicast stream, QCIF resolution, H264 Compression Protocol
`rtsp://192.168.32.62/?multicast&mcast_addr=224.168.34.64/H264?Imgsize=QCIF`
- 3) Request default RTP stream with a CIF resolution and a frame rate of 30fps (note: the framerate parameter can be a divider instead of an explicit number of frames)
`rtsp://192.168.32.70/H264?Imgsize=CIF&framerate=1`

The advantage of RTSP becomes evident when the video server is intended for "serving" video to multiple users or client applications. In the latter case a stream with D1 resolution can be requested for viewing on large monitors, a CIF stream requested by a Network Video recorder, and a QCIF/6fps stream requested by a mobile client.

So you see now RTSP provides an overwhelming flexibility to the client for ordering the video exactly as required. RTSP is fast becoming the desired standard by security video applications developers. The actual parameter name may vary between video servers so make sure to study the documentation if you must be creative in requesting a specific type of video from your video server.

Auto-Start Streaming

In the event that constant non-user solicited streaming is required between an encoder and decoder, Impath video servers also support auto-start streaming.

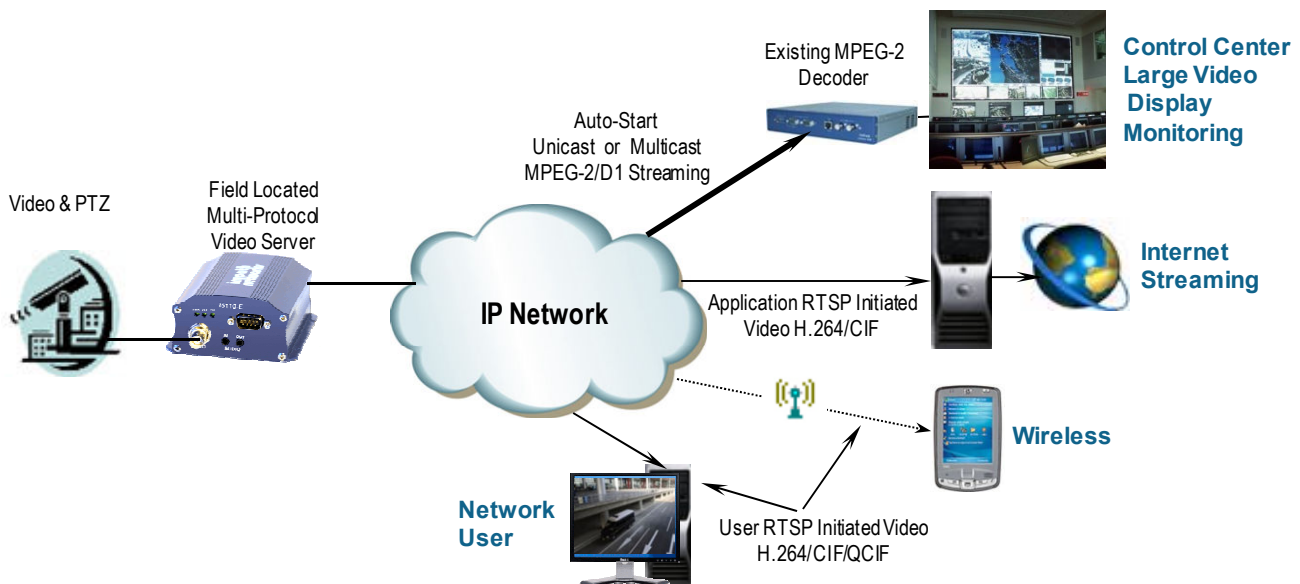
Transmission technology at its most basic involves a transmitter and a receiver for carrying information between two points. In terms of video transmission this scenario was first served by a Video Transmitter device and a matching Video Receiver regardless of the protocol or media used in between.

Auto-Start streaming provides a means of replicating this well known architecture between the video server and the receiver, typically a video decoder over an IP network. Once started, an Auto-Start stream will effectively continue streaming non-stop, will recover streaming to destination when a network interruption is recovered and when the video server or decoder power is cycled. Auto-Start streaming can also be considered a means of maintaining a backwards compatibility with existing video decoders that cannot actively issue RTSP URL for requesting the video stream. These decoders effectively "listen" for the Unicast or Multicast video stream.

Auto-Start streaming in Unicast ensures that the IP video begins streaming video to a destination as configured by the installer. Unicast is effectively a point-point relationship so only the designated receiver will receive the video. The IP network is responsible for routing and error handling as required. Auto-Start streaming in Multicast, similar to point-multipoint, packages the video stream in a form that the IP network layer recognizes manages the routing of the same data to multiple receivers (i.e. listeners). Regardless whether Unicast or Multicast, the video server will begin streaming toward the given destination upon power up.

Some video servers are capable of streaming both auto-start streams concurrently with stream requested via RTSP URL. In addition, the newer video servers can be capable of streaming multiple protocols concurrently. All together Auto-Start streaming and Multi-Protocol video encoding provides a very versatile engine for video applications.

The image below shows some of the many possibilities.



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