**What is rtsp?**

Transfer real time data from multimedia (audio/video) to endpoint device

Time synchronized streams

It does not stream the multimedia itself, it communicate with the server that streams it

- RTSP typically uses a TCP connection for control of the streaming media session, although it is also possible to use UDP for this purpose.

Rtsp application layer rtp transport layer

**How does it work?**

-client device send rtsp request to determine the available options (pause, play, record…)

-server return list of the types of the requests it can accept through rtsp

-Once the client knows how to make a request, it transmits a media description request to the streaming server //commands

-the server responds with a description of the media.

-From there, the client sends a setup request

-the server responds with information about the transport mechanism.

-Once the setup process is complete, the client initiates the streaming process by telling the server to send the bitstream

**Why to use it?**

* RTSP uses the same concepts as basic HTTP, which makes it easily compatible with existing HTTP networks:

-same control mechanism, client-server architecture

-request-response model, client sends request and server respond accordingly

-use of urls to identify resources

* The protocol also allows for a great deal of flexibility. Clients can request the features they want to use in an effort to find out if the media server supports them.
* Whoever owns the media can deliver media streams from multiple servers.
* The protocol is also designed to accommodate for future growth of the media so the media creator can amend the protocol moving forward if necessary:

-handle various types of media

-add new features and methods without affecting the old ones

-handle lots of people streaming at once

RTSP started as a way to allow users to play audio and video straight from the internet, rather than having to download media files to their devices. The protocol has been applied for various uses, including internet camera sites, online education and internet radio.

**Key components:**

Essential parts or elements that make up the protocol's structure and functionality, rtsp may work in a limited capacity and functionality with absence of a component

Client: device/software that sends request to play a stream

Server: hosting and delivering the multimedia content requested by the user

Urls: to identify and locate streams

Sessions: allows continuous delivery of multimedia content

Media type: audio, video…

Commands: to control the streaming session

Response codes: to indicate status of requests made by the client (succecful, client erroe, server error…)

**Methods:**

* Options: This request determines what other types of requests the media server will accept.
* Describe: A describe request identifies the URL and type of data.
* Announce: The announce method describes the presentation when sent from the client to the server and updates the description when sent from server to client.
* Setup: Setup requests specify how a media stream must be transported before a play request is sent.
* Play: A play request starts the media transmission by telling the server to start sending the data.
* Pause: Pause requests temporarily halt the stream delivery.
* Record: A record request initiates a media recording.
* Teardown: This request terminates the session entirely and stops all media streams.
* Set\_Parameter. Set\_Parameter can test whether the client or server is active

**conclusion**

**Advantages of RTSP:**

* Real-Time Control: Users can control, start and stop media streaming in real time.
* Remote Access: It provides remote access on IP-based systems, so users can monitor media streams from anywhere.
* Various Usage Areas: RTSP can be used in various fields such as video monitoring, video conferencing, and media broadcasts.

**Weaknesses of RTSP:**

* Vulnerabilities: RTSP may contain security vulnerabilities and requires protection against malicious use.
* Connectivity Issues: Low bandwidth or network problems can interrupt media streaming.

**Security:**

RTSP for streaming multimedia on the internet, like youtube, is secured by applying https,but ip cameras does not support https, so it has security issues.

## What is Camera RTSP Authentication?

Camera RTSP authentication is a security measure used to ensure that only authorized users can access video footage captured by a camera. Camera RTSP authentication uses standard security protocols, such as SSL/TLS, to protect the privacy and security of the camera footage.

RTSP lets you view a live video stream from your camera from anywhere.

Camera RTSP authentication is a security feature that allows authorized devices to access the camera feed directly or through a proxy server. This helps to ensure that only authorized users have access to the footage captured by the camera and prevents unauthorized users from interfering with or tampering with the footage. camera RTSP authentication can be implemented using a variety of different technologies, including:

1. **Basic authentication:**This type of authentication uses a username and password combination to access the camera feed.
2. **Digest authentication:**This type of authentication uses a digest algorithm (hashing algorithm is a one-way cryptographic function that accepts a message of any length as input and returns as output a fixed-length digest value to be used for authenticating the original message.) to protect the username and password information from being accessed by unauthorized individuals.
3. **TLS/SSL encryption:** This type of authentication uses [SSL/TLS encrypting technology](https://www.f5.com/glossary/ssl-tls-encryption) to protect the username and password information from being accessed by unauthorized individuals.

SSL (Secure Sockets Layer) encryption, and its more modern and secure replacement, TLS (Transport Layer Security) encryption, protect data sent over the internet or a computer network. This prevents attackers (and Internet Service Providers) from viewing or tampering with data exchanged between two nodes

SSL/TLS uses both asymmetric and symmetric encryption to protect the confidentiality and integrity of data-in-transit. Asymmetric encryption is used to establish a secure session between a client and a server, and symmetric encryption is used to exchange data within the secured session.

1. **IP address restriction:**This type of authentication allows administrators to restrict access to the camera feed based on the IP address of the device accessing it.

## How does Camera RTSP Authentication Work?

Camera RTSP authentication works by transmitting a security code along with the video feed in order to ensure that only authorized users are able to access the footage. This code is typically sent directly to the camera and must be entered in order for the user to view the footage.

[Understanding RTSP: The Real-Time Streaming Protocol Explained | CQR](https://cqr.company/wiki/protocols/understanding-rtsp-the-real-time-streaming-protocol-explained/)

[RFC 2326 - Real Time Streaming Protocol (RTSP) (ietf.org)](https://datatracker.ietf.org/doc/html/rfc2326#page-14)

[What is Real Time Streaming Protocol (RTSP)? | Definition from TechTarget](https://www.techtarget.com/searchvirtualdesktop/definition/Real-Time-Streaming-Protocol-RTSP)

[Introducing A Safer Alternative to RTSP: Secure Raw Streaming | Blog (rhombus.com)](https://www.rhombus.com/blog/secure-raw-streaming/)

[Real Time Streaming Protocol (RTSP) (tutorialspoint.com)](https://www.tutorialspoint.com/real-time-streaming-protocol-rtsp)

[What is SSL/TLS Encryption? | F5](https://www.f5.com/glossary/ssl-tls-encryption)

[What is Camera RTSP Authentication? How does it Work? (gadgetpursuit.com)](https://gadgetpursuit.com/what-is-camera-rtsp-authentication/)