RTCP

- RTCP is primarily used for quality monitoring and control in real-time multimedia streaming sessions.
- It operates alongside RTP (Real-Time Transport Protocol) to provide feedback on the quality of the media transmission.
- Including metrics such as
    - packet loss,
    - jitter,
    - and round-trip time.
- RTCP packets are periodically exchanged between participants in a session to gather and report this feedback information.

Use cases for RTCP:

- Quality monitoring and analysis of real-time media streams
- Synchronization of multimedia streams
- Participant control and management in conferencing applications

RTSP

- RTSP is a network control protocol designed for establishing and controlling media sessions between a client and a server.
- It provides the framework for client-server interaction to facilitate the control of streaming media
- Including
    - session setup,
    - media description exchange,
    - and control commands such as play,
    - pause, and stop.
- RTSP is commonly used for managing live streaming sessions, video-on-demand services, and interactive multimedia applications.

Use cases for RTSP:

- Session setup and control for streaming media
- Media server communication and control
- Interactive multimedia applications

Summary, RTCP vs RTSP

- RTCP is primarily focused on monitoring and control of real-time media streams, providing feedback on quality metrics.
- RTSP is used for session control and management of streaming media, allowing clients to establish, control, and interact with media sessions on servers.
- The choice between RTCP and RTSP depends on the specific requirements

and objectives of the real-time communication application or service being implemented.

A comparision between RTCP, RTSP and Similarity with HTTP

Aspect	RTSP	RTCP	HTTP
Protocol Purpose	Session control and coordination	Control and monitoring of media	Data transfer and resource retrieval
Header Format	Line-by-line text-based	Binary	Line-by-line text-based
Port Number	Default: 554	N/A (Uses same port as RTP)	Default: 80
Message Structure	Request and response messages	Packet-based	Request and response messages
URI Scheme	rtsp://	N/A	http:// or https://
Transport Layer	Typically over TCP	Typically over UDP	Typically over TCP
Media Transport	Not responsible for media transport	Not responsible for media transport	Not responsible for media transport
Control Information	Session setup, play, pause, teardown	Quality feedback, control statistics	N/A
Session Management	Yes	N/A	N/A
Data Transfer	No	No	Yes
Authentication and Security Mechanism	Supported	N/A	Supported

A Visual representation of RTCP and RTSP Packet

- RTCP

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|V=2|P|   RC    |   PT=RR=201   |             length            |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                        SSRC of sender                         |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                            SSRC_1                             |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
| fraction lost |       cumulative number of packets lost       |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|         extended highest sequence number received             |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                      interarrival jitter                      |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                         last SR (LSR)                         |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                   delay since last SR (DLSR)                  |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                          (optional)                          |
|                  feedback control information                |
|                          (optional)                          |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

- RTSP

```
RTSP/1.0 200 OK
CSeq: 1
Date: Wed, 26 Jan 2022 10:30:00 GMT
Content-Length: 0
Session: 12345678
```