PACKET TYPE AND FORMAT

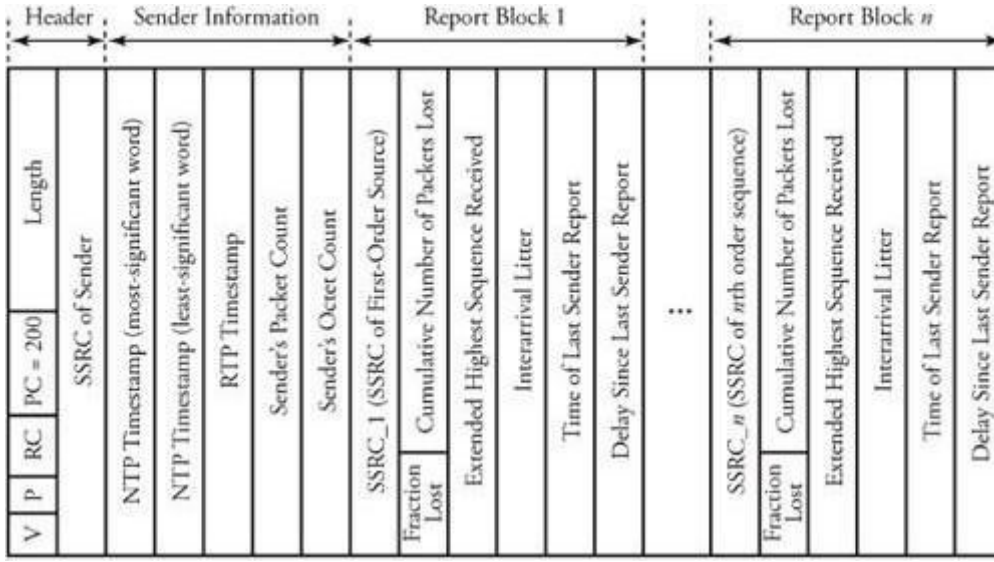
RTCP transmits control information by combining a number of RTCP packets in a single UDP datagram. The RTCP packet types are sender reports (SR), receiver reports (RR), source descriptor (SDES), goodbye (BYE), and application-specific types. Figure 7.9 shows some RTCP packet formats. The fields common to all packet types are as follows:

- Version, a 2-bit field that indicates the current version.
- Padding, a 1-bit field that indicates the existence of padding bytes at the end of the control data.
- Count, a 5-bit field that indicates the number of SR or RR reports or the number of source items in the SDES packet.
- Packet type, an 8-bit field that indicates the type of RTCP packet. (Four RTCP packet types were specified earlier.)
- Length, a 16-bit field that represents the length of packet in 32-bit words minus 1.
- Synchronization source identifier, a field common to the SR and RR packet types; it indicates the source of the RTCP packets.

Figure 7.9 also shows a typical format of a sender report. The report consists of the common header fields and a block of sender information. The sender report may also contain zero or more receiver report blocks, as shown in the figure. The fields in the sender information block are:

- NTP timestamp, a 64-bit field that indicates when a sender report was sent. The sender can use this field in combination with the timestamp field returned in receiver reports to estimate the round-trip delay to receivers.

Figure 7.9. Format of the SR packet in RCTP



- RTP timestamp, a 32-bit field used by a receiver to sequence RTP data packets from a particular source.
- Sender's packet count, a 32-bit field that represents the number of RTP data packets transmitted by the sender in the current session.
- Sender's byte count, a 32-bit field that represents the number of RTP data octets transmitted by the sender in the current session.

The SR packet includes zeros or more RR blocks. One receiver block is included for each sender from which the member has received data during the session. The RR block includes the following fields:

- SSRC_n, a 32-bit field that identifies the source in the report block, where n is the number of sources.
- Fraction lost, an 8-bit field indicating the fraction of data packet loss from source SSRC_n since the last SR or RR report was sent.
- Cumulative number of packets lost, a 24-bit field that represents the total number of RTP data packets lost from the source in the current active session identified by SSRC_n.
- Extended highest sequence number received, the first 16 least-significant bits, used to indicate the highest sequence number for packets received from source SSRC_n. The first 16 most-significant bits indicate the number of times that the sequence number has been wrapped back to zero.
- Interarrival jitter, a 32-bit field used to indicate the jitter variations at the receiver for the source SSRC_n.
- Last SR timestamp, a 32-bit field indicating the timestamp for the last SR packet received from the source SSRC_n.
- Delay since last SR, a 32-bit field indicating the delay between the arrival time of the last SR packet from the source SSRC_n and the transmission of the current report block.

Receivers in RTCP can provide feedback about the quality of reception through a receiver report. A receiver that is also a sender during a session, it also sends the sender reports.

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