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RTCP XR Blocks for layered Stream statistics metric reporting
draft-xia-xrblock-rtcp-xr-layered-statistics-01

Abstract

This document defines an RTCP XR Report Block and associated SDP parameters that allow the reporting of layered stream statistics metrics for use in a range of RTP applications.

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1. Introduction

This draft defines a new block type to augment those defined in [RFC3611], for use in a range of RTP applications.

The new block type provides layered streams statistics beyond the information carried in the Statistics Summary Report Block RTCP packet specified in the section 4.6 of RFC 3611 [RFC3611]. Information is recorded about lost layered component packets, duplicated layered component packets.

The metrics belong to the class of transport level metrics defined in [MONARCH] (work in progress).

2. Terminology

2.1. Standards Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 [RFC2119].

In addition, the following terms are defined:

Layered Component Packet

a RTP packet using layered codecs containing the specified layered component, e.g., encoded stream at the base layer or at the enhancement layer.

3. Applicability

Layered Streams Statistics Metrics Block can be applied to any real time applications that use layered or multi-description video coding.

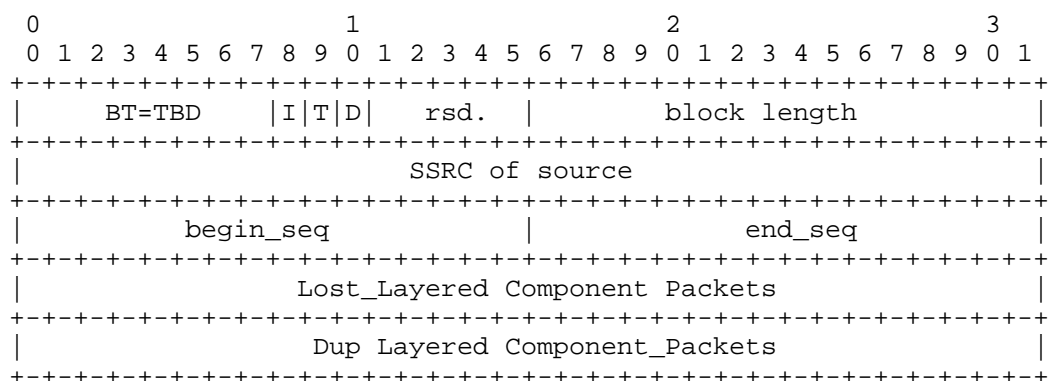
4. Layered Streams Statistics Metrics Block

Metrics in this block report on lost packets, duplicated packets in the layered stream arriving at the RTP system.

4.1. Metric Block Structure

The report block contents are dependent upon a series of flag bits carried in the first part of the header. Not all parameters need to be reported in each block. Flags indicate which are and which are not reported. The fields corresponding to unreported parameters **MUST** be present, but are set to zero. The receiver **MUST** ignore any Perceptual Quality Metrics Block with a non-zero value in any field flagged as unreported.

The Layered Stream Statistics metrics Block has the following format:



4.2. Definition of Fields in layered stream statistics Metrics Block

Block type (BT): 8 bits

The Layered stream Statistics Metrics Block is identified by the constant <LSSM>.

Interval Metric flag (I): 1 bit

This field is used to indicate whether the Basic Loss/Discard metrics are Interval or Cumulative metrics, that is, whether the reported values applies to the most recent measurement interval duration between successive metrics reports (I=1) (the Interval Duration) or to the accumulation period characteristic of cumulative measurements (I=0) (the Cumulative Duration).

Layer Type flag (T): 1 bit

This field is used to indicate the Layer Type of layered video to be reported. LT is set to 0 if the loss_component_packet field and dup_component packet contain the base layer packet in layered codecs, e.g., SVC in [RFC6190], 1 if the loss_component packet field and dup_component packet contain enhancement layer packet in layered codec.

Layer Dependency (D): 1 bit

This field is used to indicate the layer dependency between different enhancement layers if there is more than one enhancement layers. D is set to 0 if there is no layer dependency between different enhancement layers, 1 if there is layer dependency between different enhancement layers.

Rsd.: 5 bits

This field is reserved for future definition. In the absence of such a definition, the bits in this field MUST be set to zero and MUST be ignored by the receiver.

Block length: 16 bits

The constant 3, in accordance with the definition of this field in Section 3 of RFC 3611 [RFC3611].

begin_seq: 16 bits

As defined in Section 4.1 of RFC 3611 [RFC3611].

end_seq: 16 bits

As defined in Section 4.1 of RFC 3611 [RFC3611].

Lost_Layered Component Packets: 32 bits

Number of lost_component packets in the above sequence number interval.

Dup_Layered Component Packets: 32 bits

Number of dup_component packets in the above sequence number interval.

5. SDP Signaling

One new parameter is defined for the report block defined in this document to be used with Session Description Protocol (SDP) [RFC4566] using the Augmented Backus-Naur Form (ABNF) [RFC5234]. It has the following syntax within the "rtcp-xr" attribute [RFC3611]:

```
rtcp-xr-attrib = "a=rtcp-xr:"  
                [xr-format *(SP xr-format)] CRLF  
    xr-format = layered-stream-stat-metrics  
        layered-stream-stat-metrics = "layered-stream-stat-metrics"  
            ["=" stat-flag *("," stat-flag)]  
        stat-flag = "base layer packet"  
            / "enhancement layer packet"
```

Refer to Section 5.1 of RFC 3611 [RFC3611] for a detailed description

and the full syntax of the "rtcp-xr" attribute.

6. IANA Considerations

New report block type for RTCP XR is subject to IANA registration. For general guidelines on IANA allocations for RTCP XR, refer to Section 6.2 of [RFC3611].

This document assigns one new block type value in the RTCP XR Block Type Registry:

Name:	LSSM
Long Name:	Layered Stream Statistics Metrics
Value	<LSSM>
Reference:	Section 4

This document also registers one new SDP [RFC4566] parameter for the "rtcp-xr" attribute in the RTCP XR SDP Parameters Registry:

* "layered-stream-stat-metrics"

The contact information for the registrations is:

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7. Security Considerations

The new RTCP XR report blocks proposed in this document introduces no new security considerations beyond those described in [RFC3611].

8. Acknowledgements

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9. References

9.1. Normative References

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9.2. Informative References

- [MONARCH] Wu, Q., "Monitoring Architectures for RTP", ID draft-ietf-avtcore-monarch-00, April 2011.

Appendix A. Change Log

A.1. draft-xia-xrblock-rtcp-xr-layered-statistics-01

- The following are the major changes compared to previous version 00:
- o Add the layer dependency field in the format of this metric block.
 - o Clear unused references.
 - o Other Editorial changes.

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