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RTCP XR Report Block for Discard metric Reporting
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Abstract

This document defines an RTCP XR Report Block that allows the reporting of a simple discard count metric for use in a range of RTP applications.

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1. Introduction

1.1. Discard Report Block

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 supports the reporting of the number of packets which are received correctly but are never played out, typically because they arrive too late to be played out (buffer underflow) or too early (buffer overflow). The metric is applicable both to systems which use packet loss repair techniques (such as forward error correction [RFC5109] or retransmission [RFC4588]) and to those which do not.

This metric is useful for identifying the existence, and characterising the severity, of a packet transport problem which may affect users' perception of a service delivered over RTP.

The metric belongs to the class of transport-related terminal metrics defined in [MONARCH] (work in progress).

1.2. RTCP and RTCP XR Reports

The use of RTCP for reporting is defined in [RFC3550]. [RFC3611] defined an extensible structure for reporting using an RTCP Extended Report (XR). This draft defines a new Extended Report block that MUST be used as defined in [RFC3550] and [RFC3611].

1.3. Performance Metrics Framework

The Performance Metrics Framework [RFC6390] provides guidance on the definition and specification of performance metrics. The RTP Monitoring Architectures [MONARCH] provides guideline for reporting block format using RTCP XR. The Metrics Block described in this document are in accordance with the guidelines in [RFC6390] and [MONARCH].

1.4. Applicability

This metric is believed to be applicable to a large class of RTP applications which use a jitter buffer.

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:

Received, Lost and Discarded

A packet shall be regarded as lost if it fails to arrive within an implementation-specific time window. A packet that arrives within this time window but is too early or late to be played out shall be regarded as discarded. A packet shall be classified as one of received (or OK), discarded or lost. The Discard Metric counts only discarded packets. The metric "cumulative number of packets lost" defined in [RFC3550] reports a count of packets lost from the media stream (single SSRC within single RTP session). Similarly the metric "number of packets discarded" reports a count of packets discarded from the media stream (single SSRC within single RTP session) arriving at the receiver. Another metric defined in [RFC5725] is available to report on packets which are not recovered by any repair techniques which may be in use.

3. Discard Metric Report Block

3.1. Report Block Structure

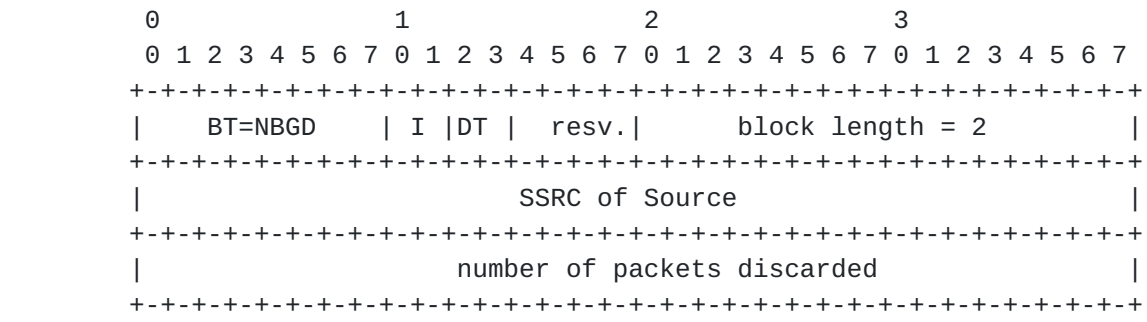


Figure 1: Report Block Structure

3.2. Definition of Fields in Discard Metric Report Block

Block type (BT): 8 bits

A Discard Metric Report Block is identified by the constant ND.

[Note to RFC Editor: please replace ND with the IANA provided RTCP XR block type for this block.]

Interval Metric flag (I): 2 bits

This field is used to indicate whether the Discard metric is an Interval or Cumulative metric, that is, whether the reported values applies to the most recent measurement interval duration between successive metrics reports (I=10) (the Interval Duration) or to the accumulation period characteristic of cumulative measurements (I=11) (the Cumulative Duration).

Discard Type (DT): 2bits

This field is used to identify the discard type used in this report block. The discard type is defined as follows:

00: packets are discarded due to other reasons than late arrival, early arrival, or both (e.g., duplicate, redundant packets).

01: packets are discarded due to too early arrival.

10: packets are discarded due to too late arrival.

11: packets are discarded due to both early arrival and late arrival.

Reserved (resv): 5 bits

These bits are reserved. They SHOULD be set to zero by senders and MUST be ignored by receivers.

block length: 16 bits

The length of this report block in 32-bit words, minus one. For the Delay block, the block length is equal to 2.

SSRC of source: 32 bits

As defined in Section 4.1 of [RFC3611].

number of packets discarded: 32 bits

Number of packets discarded over the period (Interval or Cumulative) covered by this report.

If the measured value exceeds 0xFFFFFFFD, the value 0xFFFFFFFE SHOULD be reported to indicate an over-range measurement. If the measurement is unavailable, the value 0xFFFFFFFF MUST be reported.

Note that the number of packets expected in the period covered by the metric (whether interval or cumulative) is available from the difference between a pair of extended sequence numbers in the Measurement Identity block, so need not be repeated in this block.

4. SDP Signaling

[RFC3611] defines the use of SDP (Session Description Protocol) [RFC4566] for signaling the use of XR blocks. XR blocks MAY be used without prior signaling.

This section augments the SDP [RFC4566] attribute "rtcp-xr" defined in [RFC3611] by providing an additional value of "xr-format" to signal the use of the report block defined in this document.

```
rtcp-xr-attrib = "a=" "rtcp-xr" ":" [xr-format *(SP xr-format)] CRLF

(defined in [RFC3611])

xr-format =/ xr-pd-block

 xr-pd-block = "pkt-dscrd"
```

5. IANA Considerations

New block types for RTCP XR are subject to IANA registration. For general guidelines on IANA considerations for RTCP XR, refer to [RFC3611].

5.1. New RTCP XR Block Type value

This document assigns the block type value ND in the IANA "RTCP XR Block Type Registry" to the "Discard Metrics Block".

[Note to RFC Editor: please replace ND with the IANA provided RTCP XR block type for this block.]

5.2. New RTCP XR SDP Parameter

This document also registers a new parameter "pkt-dscrd" in the "RTCP XR SDP Parameters Registry".

5.3. Contact information for registrations

The contact information for the registrations is:

Geoff Hunt (r.geoff.hunt@gmail.com)

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6. Security Considerations

It is believed that this proposed RTCP XR report block introduces no new security considerations beyond those described in [RFC3611]. This block does not provide per-packet statistics so the risk to confidentiality documented in Section 7, paragraph 3 of [RFC3611] does not apply.

7. Acknowledgments

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