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RTP Control Protocol (RTCP) Extended Report (XR) Block for Jitter Buffer
Metric Reporting
draft-ietf-xrblock-rtcp-xr-jb-01.txt

Abstract

This document defines an RTP Control Protocol (RTCP) Extended Report (XR) Block that allows the reporting of Jitter Buffer metrics for a range of RTP applications.

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1. Introduction

1.1. Jitter Buffer Metrics 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 provides information on jitter buffer configuration and performance.

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

Instances of this Metrics Block refer by SSRC to the separate auxiliary Measurement Information block [MEASI] which contains information such as the SSRC of the measured stream, and RTP sequence numbers and time intervals indicating the span of the report.

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 for use with [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. Metrics described in this draft are in accordance with the guidelines in [RFC6390][MONARCH].

1.4. Applicability

These metrics are applicable to a range of RTP applications.

Editor Note: What the use is for reporting jitter buffer metrics?

2. Jitter Buffer Metrics Block

This block describes the configuration and operating parameters of the jitter buffer in the receiver of the RTP end system or RTP mixer which sends the report. Instances of this Metrics Block refer by SSRC to the separate auxiliary Measurement Information block [MEASI] which contains measurement intervals. This metric block relies on the measurement interval in the Measurement Information block indicating the span of the report and should be sent in the same compound RTCP packet as the measurement information block. If the measurement interval is not received in the same compound RTCP packet as this metric block, this metric block should be discarded.

2.1. Report Block Structure

JB Metrics Block

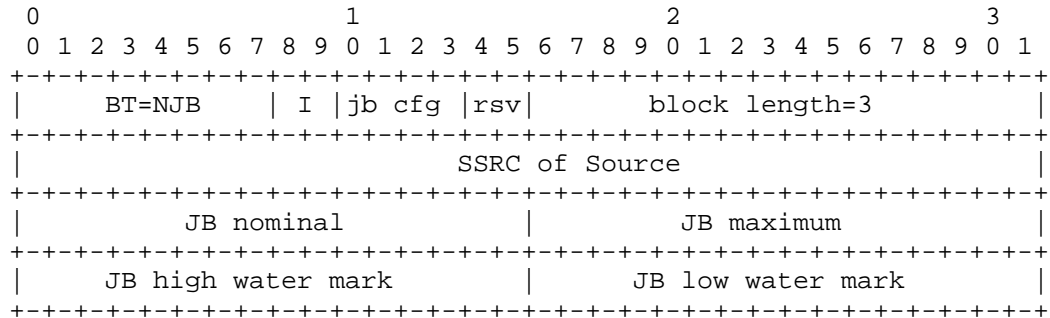


Figure 1: Report Block Structure

2.2. Definition of Fields in Jitter Buffer Metrics Block

Block type (BT): 8 bits

A Jitter Buffer Metrics Report Block is identified by the constant NJB.

[Note to RFC Editor: please replace NJB 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 Jitter Buffer metrics are Sampled, Interval or Cumulative metrics, 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) or is a sampled instantaneous value (I=01) (Sampled Value).

Jitter Buffer Configuration (jbcfg): 4 bits

This field is used to identify the jitter buffer method in use at the receiver, according to the following code:

bits 014-011

0 = Fixed jitter buffer

1 = Adaptive jitter buffer

Other values reserved

Reserved (rsv): 2 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 and MUST be set to 3, in accordance with the definition of this field in [RFC3611]. The block MUST be discarded if the block length is set to a different value.

jitter buffer nominal delay (JB nominal): 16 bits

This is the current nominal jitter buffer delay in milliseconds, which corresponds to the nominal jitter buffer delay for packets that arrive exactly on time. This parameter MUST be provided for both fixed and adaptive jitter buffer implementations.

If the measured value exceeds 0xFFFFD, the value 0xFFFFE SHOULD be reported to indicate an over-range measurement. If the measurement is unavailable, the value 0xFFFF SHOULD be reported.

jitter buffer maximum delay (JB maximum): 16 bits

This is the current maximum jitter buffer delay in milliseconds which corresponds to the earliest arriving packet that would not be discarded. In simple queue implementations this may correspond to the nominal size. In adaptive jitter buffer implementations, this value may dynamically. This parameter MUST be provided for both fixed and adaptive jitter buffer implementations.

If the measured value exceeds 0xFFFFD, the value 0xFFFFE SHOULD be reported to indicate an over-range measurement. If the measurement is unavailable, the value 0xFFFF SHOULD be reported.

jitter buffer high water mark (JB high water mark): 16 bits

This is the highest value of the jitter buffer nominal delay in milliseconds which occurred at any time during the reporting interval.

If the measured value exceeds 0xFFFFD, the value 0xFFFFE SHOULD be reported to indicate an over-range measurement. If the measurement is unavailable, the value 0xFFFF SHOULD be reported.

jitter buffer low water mark (JB low water mark): 16 bits

This is the lowest value of the jitter buffer nominal delay in milliseconds which occurred at any time during the reporting interval.

If the measured value exceeds 0xFFFFD, the value 0xFFFFE SHOULD be reported to indicate an over-range measurement. If the measurement is unavailable, the value 0xFFFF SHOULD be reported.

3. 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.

xr-format =/ xr-jb-block

xr-jb-block = "jitter-bfr"

4. 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].

4.1. New RTCP XR Block Type value

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

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

4.2. New RTCP XR SDP Parameter

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

4.3. Contact information for registrations

The contact information for the registrations is:

Qin Wu (sunseawq@huawei.com)
101 Software Avenue, Yuhua District
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5. 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.

6. Contributors

Geoff Hunt wrote the initial draft of this document.

7. Acknowledgments

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8. References

8.1. Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", March 1997.
- [RFC3550] Schulzrinne, H., "RTP: A Transport Protocol for Real-Time Applications", RFC 3550, July 2003.
- [RFC3611] Friedman, T., Caceres, R., and A. Clark, "RTP Control Protocol Extended Reports (RTCP XR)", November 2003.
- [RFC4566] Handley, M., Jacobson, V., and C. Perkins, "SDP: Session Description Protocol", July 2006.

8.2. Informative References

- [MEASI] Hunt, G., "Measurement Identity and information Reporting using SDES item and XR Block", ID draft-ietf-xrblock-rtcp-xr-meas-identity-10, August 2012.
- [MONARCH] Hunt, G., "Monitoring Architectures for RTP", ID draft-ietf-avtcore-monarch-22, September 2012.
- [RFC6390] Clark, A. and B. Claise, "Framework for Performance Metric Development", RFC 6390, October 2011.

Appendix A. Change Log

Note to the RFC-Editor: please remove this section prior to publication as an RFC.

A.1. draft-ietf-xrblock-rtcp-xr-jb-01

The following are the major changes to previous version :

- o Outdated reference update
- o Add one Editor notes to ask clarification on the use of reporting jitter buffer metrics.
- o Other Editorial changes.

A.2. draft-ietf-xrblock-rtcp-xr-jb-00

The following are the major changes to previous version :

- o Boilerplate updates.
- o references updates
- o allocate 32 bit field in report block for SSRC
- o Other editorial changes to get alignment with MONARCH draft.

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