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             RTCP XR Report Block for Jitter Buffer Metric Reporting
                    draft-ietf-xrblock-rtcp-xr-jb-00.txt

Abstract

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

Status of this Memo

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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] (work in progress).

   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 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.  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.

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

```
        0                   1                   2                   3
        0 1 2 3 4 5 6 7 0 1 2 3 4 5 6 7 0 1 2 3 4 5 6 7 0 1 2 3 4 5 6 7
       +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
       |     BT=NJB    | I |jb cfg |rsv|         block length=3        |
       +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
       |                        SSRC of Source                        |
       +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
       |         JB nominal          |         JB maximum             |
       +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
       |      JB high water mark      |     JB low water mark         |
       +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```
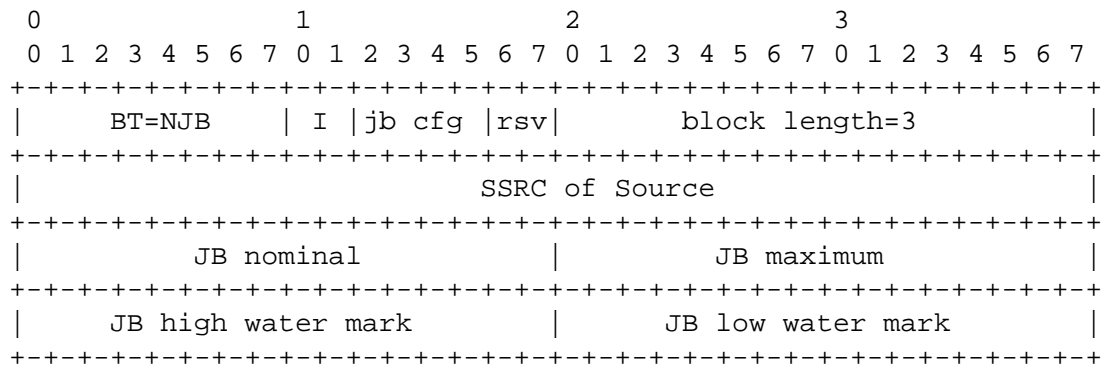
                    Figure 1: Report Block Structure

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 (jb cfg): 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 (resv): 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.  For
   the Delay block, the block length is equal to 3.


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 0xFFFD, the value 0xFFFE 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 0xFFFD, the value 0xFFFE 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 which
occurred at any time during the reporting interval.

If the measured value exceeds 0xFFFD, the value 0xFFFE 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 which
occurred at any time during the reporting interval.

If the measured value exceeds 0xFFFD, the value 0xFFFE 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.

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

   (defined in [RFC3611])

   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:

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

   Orion 2 PP3, Adastral Park, Martlesham Heath, Ipswich IP5 3RE, United
   Kingdom

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.  Acknowledgments

   The authors gratefully acknowledge the comments and contributions
   made by Bruce Adams, Philip Arden, Amit Arora, Bob Biskner, Kevin
   Connor, Claus Dahm, Randy Ethier, Roni Even, Jim Frauenthal, Albert
   Higashi, Tom Hock, Shane Holthaus, Paul Jones, Rajesh Kumar, Keith
   Lantz, Mohamed Mostafa, Amy Pendleton, Colin Perkins, Mike Ramalho,
   Ravi Raviraj, Albrecht Schwarz, Tom Taylor, and Hideaki Yamada.

7.  References

7.1.  Normative References

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              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.

7.2.  Informative References

   [MEASI]    Hunt, G., "Measurement Identity and information Reporting
              using SDES item and XR Block",
              ID draft-ietf-xrblock-rtcp-xr-meas-identity-06,
              April 2012.

   [MONARCH]  Hunt, G., "Monitoring Architectures for RTP",
              ID draft-ietf-avtcore-monarch-12, April 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-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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