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Measurement Identity and information Reporting using SDES item and XR Block
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Abstract

This document defines an RTP Control Protocol (RTCP) Source Description (SDES) item and an RTCP Extended Report (XR) Block carrying parameters that identify and describe a measurement period, to which one or more other RTCP XR Report Blocks may refer.

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1. Introduction

This document defines one new RTP Control Protocol (RTCP) Source Description (SDES) [RFC3550] item, and one new Extended Report (XR) Report Block carrying parameters that identify and describe a measurement period, to which one or more other RTCP XR Report Blocks may refer.

The SDES item provides a field for an application specific auxiliary identifier. This identifier may be used to correlate data in XR Blocks within an RTP session with data from a non-RTP session.

A RTCP Measurement Identity SDES packet may be associated with a set of RTCP XR metrics blocks which share the same application specific measurement identifier.

The XR Report Block does not contain any measurement results (metrics). Instead, it provides information relevant to a measurement reported in one or more other block types, including:

- the sequence number of the first packet of the RTP session,
- the extended sequence numbers of the first packet of the current measurement interval, and the last packet included in the measurement,
- the duration of the most recent measurement interval and
- the duration of the interval applicable to cumulative measurements (which may be the duration of the RTP session to date).

The method for calculation of the extended RTP sequence number is provide in Real-time Transport Protocol (RTP) [RFC3550].

The RTCP XR Report Block containing the measurement information is intended to provide a single copy of the information necessary to relate measurement data in the RTCP XR blocks to the stream, and measurement period, to which they refer. Commonly, multiple other small metric blocks contain measurement data for the same stream and period, and it would be a large overhead if all of these metric blocks carried duplicated data for measurement identification.

The RTCP XR Report Block may be associated with a set of RTCP XR metrics blocks which share the same information relevant to a reported measurement. There may be several such sets in an RTCP packet, in which each set share the same information relevant to a reported measurement. There may also be RTCP XR blocks in the packet which are not associated with a Measurement Information block, for

example blocks which were defined before the Measurement Identity and information mechanism was introduced by this document.

1.1. RTCP and RTCP XR Reports

The use of RTCP for reporting is defined in [RFC3550]. [RFC3611] defines an extensible structure for reporting using an RTCP Extended Report (XR). This document defines a new Extended Report block. The use of Extended Report blocks is defined by [RFC3611].

1.2. 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 SDES item and XR Block described in this document are in accordance with [RFC6390] and [MONARCH].

1.3. Applicability

The RTCP SDES item and the RTCP XR block defined in this document provides information relevant to the measurements for members of a family of RTCP XR metrics blocks which are designed to use it. To use the mechanism defined here, the RTCP XR block containing measurement information is not required to be in the same RTCP packet as the SDES item containing measurement identity.

2. Terminology

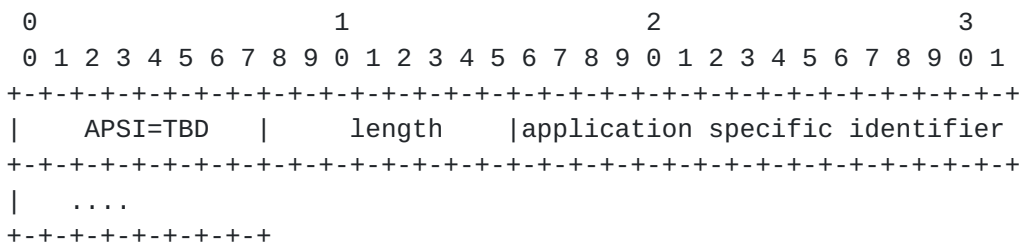
2.1. Standards Language

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].

3. Measurement Identity SDES Item

This section defines the format of the Measurement Identity SDES item. The SDES item is carried in the RTCP SDES packet. The packet format for the RTCP SDES is defined in Section 6.5 of [RFC3550]. Each SDES packet is composed of a header with fixed-length fields for version, source count, packet type (PT), and length, followed by zero of more SDES items. In the SDES packet, the PT field is set to SDES (202).

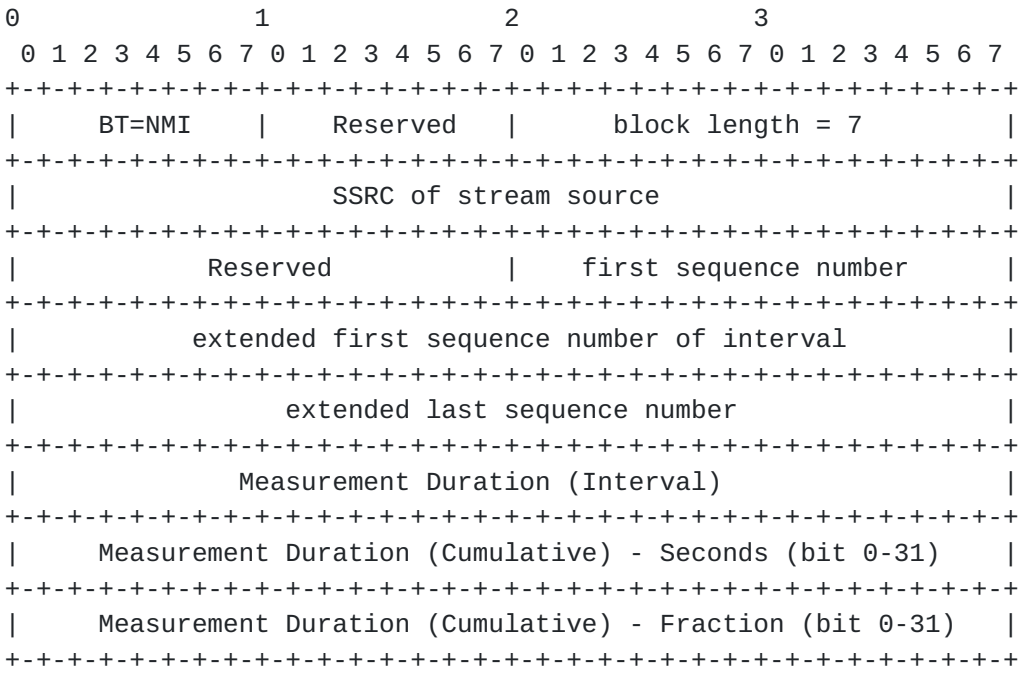
3.1. APSI: Application Specific Identifier SDES Item



Application specific identifier is an additional identifier which is useful in the context of a specific application, e.g. an MPEG-2 transport identifier [MPEG2]. This item MUST be ignored by applications that are not configured to make use of it. The identifier is variable length. Its length is described by the length field. The value of the length field does not include the two octet SDES item header.

4. Measurement Information XR Block

4.1. Report Block Structure



Report Block Structure

4.2. Definition of Fields in Measurement Information Report Block

Block type (BT): 8 bits

A Measurement Information Report Block is identified by the constant NMI.

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

Reserved.: 8 bits

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

Block Length: 16 bits

The length of this report block in 32-bit words minus one. For the Measurement Information block, the block length is equal to 7.

SSRC of source: 32 bits

As defined in Section 4.1 of [RFC3611].

Reserved: 16 bits

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

First sequence number: 16 bits

The RTP sequence number of the first received RTP packet of the session, used to determine the number of packets contributing to cumulative measurements.

Extended first sequence number of interval: 32 bits

The extended RTP sequence number of the first received RTP packet of the current measurement interval. The extended sequence number is expressed as the low 16 bits value containing the sequence number received in an RTP data packet and the most significant 16 bits value containing the corresponding count of sequence number cycles. For additional information on extended sequence numbers see "extended highest sequence number received" definition in RFC 3550 section 6.4.1 and RFC 3550 Appendix A.1.

Extended last sequence number: 32 bits

The extended RTP sequence number of the last received RTP packet which contributed to this measurement. The extended sequence number is expressed as the low 16 bits value containing the sequence number received in an RTP data packet and the most significant 16 bits value containing the corresponding count of sequence number cycles. For additional information on extended sequence numbers see "extended highest sequence number received" definition in RFC 3550 section 6.4.1 and RFC 3550 Appendix A.1.

Measurement Duration (Interval): 32 bits

The duration, expressed in units of 1/65536 seconds, of the reporting interval applicable to Interval reports which use this Measurement Information block . The value of this field can be calculated by the receiver of the RTP media stream, for example,

based on received RTP media packets or using RTCP method described in [RFC3550].

Measurement Duration (Cumulative): 64 bits

The duration of the reporting interval applicable to Cumulative reports which use this Measurement Information block. The value of this field is represented using a 64-bit NTP-format timestamp as defined in [RFC5905], which is 64-bit unsigned fixed-point number with the integer part in the first 32 bits and the fractional part in the last 32 bits. It can be calculated by the receiver of the RTP media stream, for example, based on received RTP media packets or using RTCP method described in [RFC3550].

5. IANA Considerations

New SDES types for RTCP SDES are subject to IANA registration. For general guidelines on IANA considerations for RTCP SDES, refer to [RFC3550].

5.1. New RTCP SDES Type value

This document assigns one additional SDES type in the IANA "RTCP XR Block Type Registry" to the Measurement Identity SDES items as follow:

abbrev.	name	value
APSI:	Application Specific Identifier	TBD

[Note to RFC Editor: please replace APSI with the IANA provided RTCP SDES type for the SDES item.]

5.2. New RTCP XR Block Type value

This document assigns the block type value NMI in the IANA "RTCP XR Block Type Registry" to the "Measurement Information Block".

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

5.3. Contact information for registrations

The contact information for the registrations is:

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101 Software Avenue, Yuhua District
Nanjing, Jiangsu 210012
China

6. Security Considerations

RTCP reports can contain sensitive information, including information about the nature and duration of a session established between two or more endpoints. Therefore, the use of security mechanisms with RTP, as documented in Section 9 of [RFC3550] applies.

7. References

7.1. 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.

[RFC5905] Mills, D., Matin, J., Ed., Burbank, J., and W. Kasch, "Network Time Protocol Version 4: Protocol and Algorithms Specification", RFC 5905, June 2010.

7.2. Informative References

[MONARCH] Wu, Q., Hunt, G., and P. , "Monitoring Architectures for RTP", ID draft-ietf-avtcore-monarch-17, June 2012.

[MPEG2] "ISO/IEC, "Standard 13818-1"", December 2000.

[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-xr-rtcp-meas-identity-09

The following are the major changes to draft-ietf-xrblock-xr-rtcp-meas-identity-08:

- Change header from "Measurement Reporting" to "Measurement Identity and Duration".

A.2. draft-ietf-xrblock-xr-rtcp-meas-identity-08

The following are the major changes to draft-ietf-xrblock-xr-rtcp-meas-identity-07:

- Expand 32-bit measurement interval (cumulative) into 64 bits and use NTP timestamp format.
- Delete the last sentence in the sub-section 3.1.
- Block length change for consistency.
- Other editorial changes.

A.3. draft-ietf-xrblock-xr-rtcp-meas-identity-07

The following are the major changes to draft-ietf-xrblock-xr-rtcp-meas-identity-06:

- One more Editorial change.

A.4. draft-ietf-xrblock-xr-rtcp-meas-identity-06

The following are the major changes to draft-ietf-xrblock-xr-rtcp-meas-identity-05:

- Editorial changes.

A.5. draft-ietf-xrblock-xr-rtcp-meas-identity-05

The following are the major changes to draft-ietf-xrblock-xr-rtcp-meas-identity-04:

- Clarify the definition of extended sequence number.

A.6. draft-ietf-xrblock-xr-rtcp-meas-identity-04

The following are the major changes to draft-ietf-xrblock-xr-rtcp-meas-identity-03:

- Change unit of measurement duration from ms to 1/65536 seconds.

A.7. draft-ietf-xrblock-xr-rtcp-meas-identity-03

The following are the major changes to draft-ietf-xrblock-xr-rtcp-meas-identity-02:

- The Editorial changes.

A.8. draft-ietf-xrblock-xr-rtcp-meas-identity-02

The following are the major changes to draft-ietf-xrblock-xr-rtcp-meas-identity-01:

- Relocating information that belong to SDES item and XR Block respectively in the section 1.

- Rephrasing the text that describes SDES packet composition.

- Rephrasing identifier description.

- Other Editorial changes.

A.9. draft-ietf-xrblock-xr-rtcp-meas-identity-01

The following are the major changes to draft-ietf-xrblock-xr-rtcp-meas-identity-00:

- Replace SDES item containing additional measurement information with XR Block.

- Add section 2 to describe following RFC2119 language.

- Add Section 1.2 to make SDES item and XR Report be compliant with RFC3550 and RFC3611

- Add Section 1.3 to make SDES item and XR Report follow Performance Metrics Framework and RTP Monitoring Architecture.

- Add section5.2 to register the new RTCP XR Block Type value.

- Remove RTCP SDES Type values that are needed.

A.10. draft-ietf-xrblock-xr-rtcp-meas-identity-00

The following are the major changes to draft-ietf-avt-rtcp-xr-meas-identity-02:

- Change the use of SDES item to convey measurement identity instead of XR Block in section 2.
- Update references.
- Update security section and remove SDP signaling section.

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