**3GPP TSG-SA4 Meeting #131 *S4-250259***

**Geneva, , 17th Feb 2025 - 21st Feb 2025 In revision of *S4-250130***

|  |
| --- |
| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **26.522** | **CR** | **0006** | **rev** | **4** | **Current version:** | **18.1.0** |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network |  | Core Network | **x** |

|  |
| --- |
|  |
| ***Title:***  | RTP Header Extension for Dynamically Changing Traffic Characteristics |
|  |  |
| ***Source to WG:*** | Huawei, Hisilicon |
| ***Source to TSG:*** | S4 |
|  |  |
| ***Work item code:*** | 5G\_RTP\_Ph2 |  | ***Date:*** | 2025-01-13 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-19 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | From TR 26.8227.13 Conclusions for Key Issue #12**Enhancements of Data Burst Marking**The following aspects are concluded as principles for normative work:- Do normative work for signaling burst size, when deterministically known, from RTP senders in a HE. |
|  |  |
| ***Summary of change:*** | This CR provides support for dynamic traffic characteristics by means of RTP HE |
|  |  |
| ***Consequences if not approved:*** | Recommendations from TR not met, 5GA features not supported |
|  |  |
| ***Clauses affected:*** | 4 (new section) D (new section) |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **x** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **x** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **x** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** | Revision 1. to address comments from nokia,, lenovo:* Address the naming convention from SA2
* Add support for TTNB
* Different updates to the text
* Addressed different comments from the teleconference on 5th of february

Revision 2: * Addressed comments from AhG telco
 |
|  | Revision 3:* Removed the end of data burst signal
* Removed references to PDU Set HE as that was not correct
* Revision 4
* Add some detail on the overhead
* Not use capitalization
* Add example when a burst is not generated at once
* Change the resolution to tenth of milliseconds
 |
|  |  |

|  |
| --- |
| \*\*\*CHANGE (all new text) \*\*\* |

## 4.X RTP header extension for dynamically changing traffic characteristics

### 4.X.1 Description

Data bursts can be present in RTP streams, such as video, audio or other RTP streams quite often, due to the periodic nature of the streams. Determining dynamically changing traffic characteristics regarding data bursts can be beneficial for the 5GS network, e.g., for power saving and efficient radio resource management.

The RTP HE for dynamically changing Traffic Characteristics is defined in this clause for marking dynamically changing traffic characteristics at an RTP sender.

The dynamically changing traffic characteristics are in 3GPP TS 23.501 [12], clause 5.37.10 and currently the following characteristics are supported in the RTP HE for dynamically changing Traffic Characteristics:

* Data Burst Size
* Time to Next Burst

Dynamically changing Traffic Characteristics marking can be performed by an RTP sender, such as an Application Server, a sender UE that sends media to an RTP receiver, such as a UE.

Endpoints that support the RTP HE for dynamically changing Traffic Characteristics shall support both RTP HE formats (i.e., the one-byte and the two-byte formats) according to RFC 8285 [11].

If the RTP HE for dynamically changing Traffic Characteristics is the only RTP HE used, the endpoints shall use the 1-byte header format. If other 2-byte RTP HE elements are used in the same RTP stream, then the 2-byte header shall be used, unless the "a=extmap-allow-mixed" is successfully negotiated through SDP offer/answer, as described by RFC 8285 [11].

NOTE: The headers are not shown with padding as this depends on other prospective extension elements in use, as per RFC 8285 [11] alignment specifications.

The IANA registration information for the RTP HE for RTP HE for dynamically changing Traffic Characteristics is presented in Annex D.Y.

### 4.X.2 One-byte RTP header extension format

The one-byte RTP HE for the marking of dynamically changing traffic characteristics is defined as follows:

 0 1 2 3

 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1

 +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

 | 0xBE | 0xDE | length |

 +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

 | ID | len | R | BSSize

 +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

 | TTNB |

 +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

### 4.X.3 Two-byte RTP Header Extension Format

The two-byte RTP HE for the marking of dynamically changing traffic characteristics is defined as follows:

 0 1 2 3

 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1

 +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

 | 0x100 |appbits| length |

 +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

 | ID | len | R | BSSize

 +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

 | TTNB |

 +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

### 4.X.4 Semantics

The semantics of the fields of the RTP HE for marking dynamically changing traffic characteristics are defined as follows:

- **Reserved [R] 8 bits):** This field is reserved for future usage It shall be set to 0 by the RTP sender and shall be ignored by the RTP receiver.

- **Burst Size [BSSize] (24 bits):** The Burst Size indicates the total size of the burst to be transmitted (in bytes). If the burst size is not known it shall be set to 0 (including the overhead of the RTP Header).

NOTE 1: If a packager generates all packets of the burst at once, no additional delay is introduced when setting the burst size, as the packets can be marked with the complete burst size. If this is not the case (e.g. multiple frames combined in one burst) a delay as large as the burst duration could be introduced by marking the entire burst. Therefore, this approach may not be suitable for all types of packagers/encoders, especially those that gradually produce packets additional latency may be introduced if the size is not known in advance.

- **Time To Next Burst [TTNB] (16 bits):** Indicates the approximate time in tenth of milliseconds to the next burst in milliseconds. If the time to next burst is not known, it shall be set to 0.

### 4.X.5 SDP Signaling

An RTP sender capable of sending RTP HE for dynamically changing traffic characteristics shall use the SDP extmap attribute for RTP HE for Dynamically changing Traffic Characteristics in the media description of the RTP stream(s) carrying the RTP HE for Dynamically changing Traffic Characteristics. An RTP receiver that does not support RTP HE for Dynamic Traffic Characteristics can ignore that RTP HE when included. The signaling of the RTP HE for Dynamically Changing Traffic Characteristics shall follow the SDP signaling design and the syntax and semantics of the "extmap" attribute as outlined in RFC 8285. The URN for the dynamically changing traffic characteristics marking shall be set to "**urn:3gpp:dynamic-traffic-characteristics:rel-19**".

The ABNF syntax for the extmap attribute for the signaling of RTP HE for dynamically changing traffic characteristics is defined as follows, extending the ABNF in RFC 8285:

*extensionname = "urn:3gpp:dynamic-traffic-characteristics:rel-19"*

*format = "short" / "long"*

The extension attributes have the following semantics:

- format: indicates if the RTP HE for Dynamically changing Traffic Characteristics uses the 1-byte (short) or the 2-byte (long) format. This extension attribute can not be included more than once.

NOTE: Regardless of whether this extension attribute is present or not, the use of long or short format is determined as described by section 4.1.2 of RFC 8285, i.e., based on what format other RTP HEs use in the same RTP session, unless both endpoints announced support for handling mixed format with "a=extmap-allow-mixed" as described by section 6 of RFC 8285 [7].

Below is an example:

 a=extmap:7 dynamic-traffic-characteristics:rel-19 long

### 4.X.6 Guidelines forsignallingdynamically changing traffic characteristics

It is recommended that the first several RTP packets and the last few packets contain the dynamically changing traffic characteristics signalling. In addition, some additional RTP packets may contain the RTP HE for dynamically changing traffic characteristics.

The RTP sender/application may decide on how frequently to add the RTP HE for dynamically changing traffic characterstics based on different factors such as estimated packet losses or other network conditions.The RTP HE for dynamically changing traffic characteristics are consumed by the core network, i.e., the UPF, as defined in 3GPP TS 23.501 [12], clause 5.37.10.

|  |
| --- |
| \*\* CHANGE 2 (all new text)\*\* |

## D.Y Annex

The desired extension naming URI:

urn:3gpp:sa4:5grtp:dynamic-traffic-characteristics:rel-19

A formal reference to the publicly available specification:

[TS 26.522]

A short phrase describing the function of the extension:

Marking of dynamically changing traffic characteristics such as burst size and time to next burst

Contact information for the organization or person making the registration:

3GPP Specifications Manager

3gppContact@etsi.org

+33 (0)492944200