**3GPP TSG-SA WG4 Meeting #132S4-250996r2**

**Japan, Fukuoka, 19 – 23 May 2025**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
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|  |  | **CR** |  | **rev** | **-**  | **Current version:** |  |  |
|  |
| *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)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network | **X** |

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|  |
| ***Title:***  | [5G\_RTP\_Ph2] RTP Header Extension for Expedited Transfer Indication |
|  |  |
| ***Source to WG:*** | Lenovo, CATT |
| ***Source to TSG:*** | S4 |
|  |  |
| ***Work item code:*** | 5G\_RTP\_Ph2 |  | ***Date:*** | 2025-05-13 |
|  |  |  |  |  |
| ***Category:*** |  |  | ***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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
|  |  |
| ***Reason for change:*** | Stage 2 definition of Expedited Transfer Indication (ETI) in TS 23.501 expects packets at N6 to be marked with ETI when expedited data transfer is enabled. For RTP traffic over the service data flow, the ETI marking is supposed to be part of an RTP header extension captured in TS 26.522. However, such ETI signalling in an RTP header extension is currently missing from TS 26.522. |
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| ***Summary of change:*** | Added new RTP HE for ETI |
|  |  |
| ***Consequences if not approved:*** | Incomplete Stage 3 specification for ETI signalling over user plane. |
|  |  |
| ***Clauses affected:*** | 3.3, 4.x (new), Annex D.X (new) |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS 26.113 CR 0008r1 |
| ***affected:*** |  |  |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  |  |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\* \* \* \* First change \* \* \* \*

## 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1].

AP Aggregation Packet

AVC Advanced Video Coding

BLA Broken Link Access

CRA Clean Random Access

DoF Degrees of Freedom

ETI Expedited Transfer Indication

FU Fragmentation Unit

HE (RTP) Header Extension

HEVC High Efficiency Video Coding

IDR Instantaneous Decoder Refresh

IRAP Intra Random Access Picture

NAL Network Abstraction Layer

NRI nal\_ref\_idc

NTP Network Time Protocol

OS Operating System

PACI Payload Content Information

PPS Picture Parameter Set

PSI PDU Set Importance

PTP Precision Time Protocol

RADL Random Access Decodable Leading

RASL Random Access Skipped Leading

RTCP RTP Control Protocol

RTCP XR RTCP eXtended Report

SPS Sequence Parameter Set

SRS Split Rendering Server

SRTP Secure RTP

TID Temporal Identifier

UPF User Plane Function

UDP User Datagram Protocol

VCL Video Coding Layer

VPS Video Parameter Set

XR eXtended Reality

\* \* \* \* Next change \* \* \* \*

## 4.x RTP header extension for expedited transfer indication

### 4.x.1 Description

The RTP HE for ETI marking is defined in this clause. ETI marking can be performed by an RTP sender, such as an Application Server or a sender UE, that sends media to an RTP receiver, such as a UE.

The XR traffic characteristics can be dynamic and vary greatly based on user interactions. The associated media payloads (e.g., video key frames, avatar representations) can, at times, have larger sizes challenging for networks to handle with short delays. It can be therefore desirable for an RTP sender to dynamically request access to expedited data transfer for a flow when media payloads are large.

NOTE 1: An expedited transfer indication is a dynamically changing traffic characteristic, and the expedited data transfer is applicable to both downlink and uplink in the 5G System only when the 5G NR modem at the RTP receiver supports Reflective QoS, as defined in clause 5.37.10.3 of [12].

Endpoints that support the RTP HE for ETI marking shall support marking 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 ETI marking is the only RTP HE used, the endpoints shall use the one-byte header format. If other 2-byte RTP HE elements are used in any other RTP stream, then the two-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 2: 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 ETI marking is provided in Annex D.X.

### 4.x.2 One-byte RTP Header Extension Format

The one-byte RTP HE for ETI marking 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 |B|

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

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

The two-byte RTP HE for ETI marking 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 |B|

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

### 4.x.4 Semantics

The semantics of the RTP HE for ETI marking fields are defined as follows:

- **Reserved [R] (7 bits):** This field is reserved for future use. It shall be set to 0 by the RTP sender and shall be ignored by the RTP receiver.

- **Expedited Transfer Indication [B] (1 bit):** This field indicates the RTP sender preference for expedited data transfer for the current PDU. It shall be set to 1 to indicate RTP sender preference to enable expedited data transfer. Otherwise, it shall be set to 0.

### 4.x.5 SDP Signalling

An RTP sender capable of sending RTP HE for ETI Set marking shall use the SDP extmap attribute for RTP HE for ETI marking in the media description of the RTP stream carrying the RTP HE for ETI marking. An RTP receiver that does not support RTP HE for ETI marking can ignore that RTP HE when included. The signaling of the ETI marking RTP HE shall follow the SDP signaling design and the syntax and semantics of the "extmap" attribute as outlined in RFC 8285 [11]. The URN for the RTP HE for ETI marking shall be set to "**urn:3gpp:expedited-transfer-indication-marking:rel-19**".

The ABNF syntax for the extmap attribute for the signaling of RTP HE for ETI marking is defined as follows, extending the ABNF in RFC 8285 [11]:

*extensionname = "urn:3gpp:expedited-transfer-indication -marking:rel-19"*

*extensionattributes = [format]*

*format = "short" / "long"*

The extension attributes have the following semantics:

- format: indicates if the RTP HE for ETI marking uses the one-byte (short) or the two-byte (long) format

NOTE: Regardless if this extension attribute is present or not, the use of short or long format is determined as described by section 4.1.2 of RFC 8285 [11], 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 [11].

Below is an example:

 a=extmap:7 urn:3gpp:expedited-transfer-indication:rel-19 short

### 4.x.6 Usage of ETI Marking

When an RTP sender uses expedited data transfer in an RTP session, the RTP sender shall mark all the RTP PDUs with the RTP HE for ETI marking according to semantics defined in Clause 4.x.4. Specifically, if expedited data transfer is desired for RTP PDUs of a media payload (e.g., a video frame), then the RTP sender shall mark the RTP PDUs with RTP HE for ETI marking with the Expedited Transfer Indication bit set to value “1”.

NOTE 1: It is up to an RTP sender implementation to decide when an expedited data transfer is desired or not for an RTP media payload and its associated RTP PDUs.

NOTE 2: Non-RTP PDUs (e.g., RTCP or STUN PDUs) cannot be marked with RTP HE for ETI marking and thus are not expedited. For example, this applies to RTCP PDUs when the RTP sender multiplexes RTP and RTCP at session level.

NOTE 3: When expedited data transfer is used, any PDUs that are not marked by the RTP sender with RTP HE for ETI marking (including RTCP, STUN or other PDUs) can be handled by the 5G System according to a default QoS treatment.

\* \* \* \* Next change \* \* \* \*

# D.X urn:3gpp:expedited-transfer-indication:rel-19

The desired extension naming URI:

urn:3gpp:expedited-transfer-indication:rel-19

A formal reference to the publicly available specification:

TS 26.522

A short phrase describing the function of the extension:

Expedited transfer indication marking signalling for expedited data transfer, see clause 4.x

Contact information for the organization or person making the registration:

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\* \* \* \* End of changes \* \* \* \*