**3GPP TSG-SA WG4 Meeting #132 *S4-250889r01***

**Japan, Fukuoka, 19 – 23 May 2025**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
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|  | **26.522** | **CR** | **0018** | **rev** |  | **Current version:** | **18.1.0** |  |
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| *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] Correction of Guidelines for PDU Set identification |
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| ***Source to WG:*** | Nokia |
| ***Source to TSG:*** |  S4 |
|  |  |
| ***Work item code:*** | 5G\_RTP |  | ***Date:*** | 2025-05-13 |
|  |  |  |  |  |
| ***Category:*** | F |  | ***Release:*** |  Rel-18 |
|  | *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)* |
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| ***Reason for change:*** | 1. Protocol Description indicates the transport protocol used by the media flow as well as information on RTP header extensions RTP payload that can be used by the UPF for PDU Set identification. Annex A.1 contains an Editor’s Note on potential guidelines on usage of the Protocol Description. However, conditions for the usage of Protocol Description seems already well described in the related data model defined in TS 29.571, clause 5.5.4.13. Therefore, it seems unnecessary for SA4 to provide any guidelines on this matter.
2. There is an inconsistency between the title of Annex A.2 and its subclauses. While the subclauses describe how the PDU Set information can be derived from the RTP header and/or RTP payload, the title only mentions the RTP payload.
3. Annex A.2.0 states that the PDU Set information can be derived from RTP header extensions when the RTP HE for PDU Marking is not used. However, this information is already reflected in A.1 and is not pertinent to A.2 which describes the derivation from RTP header and/or payload.
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| ***Summary of change:*** | 1. Remove EN on the potential guidelines for usage of Protocol Description.
2. Add RTP header to the title of Annex A.2.
3. Remove RTP HE from A.2, as this option is already described in A.1.
4. Improve the introduction in A.2.0.
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| ***Consequences if not approved:*** | * Unnecessary EN is kept on usage guidelines for Protocol Description.
* Title of Annex A.2 is misleading, the introduction in A.2.0 lacks clarity.
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| ***Clauses affected:*** | A.1, A.2, A.2.0 |
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|  | **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 ...  |
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| ***Other comments:*** | No changes are proposed for Annex A.0, A.2.1 and A.2.2; they are only included for reference. |
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| ***This CR's revision history:*** |  |
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\* \* \* \* First change \* \* \* \*

Annex A (informative):
Guidelines for PDU Set identification

# A.0 General

This informative annex provides guidelines for network functions like the UPF, which needs to determine PDU Set information, as described in TS 23.501 [12], clause 5.37.5. The network function is typically provisioned with at least the Service Data Flow Filter to identify the Service Data Flow, and optionally additional information about the presence of RTP HEs according to IETF RFC 8285 [11], the used RTP Payload Type, the used RTP Payload Format and other information.

When the RTP sender multiplexes RTP data and control packets onto the same Service Data Flow using a single port, the RTP Sender should implement the Payload Type separation according to IETF RFC 5761, clause 4 [10] and the network function should separate RTP data from RTCP data accordingly.

To avoid IP fragmentation, the RTP sender should select a sufficiently small RTP payload.

# A.1 Leveraging RTP Header Extensions

When the PDU Set related RTP HEs are available within the RTP headers, the network function only needs to parse the RTP header and the RTP HEs. The RTP HE for PDU Set Marking is defined in clause 4.2.

An intermediate network function determines based on the RTP header X bit being set to 1, whether the optional HE fields are present in the RTP packet, after the SSRC and the (optional) CSRC fields in the RTP header. All information for the PDU Set identification is present within the RTP HE and the network function does not need to know the RTP Payload format. The RTP Payload may be encrypted (i.e. SRTP).

When multiple RTP HEs are present within the RTP header, the network function uses the RTP HE ID for finding the PDU Set related HE.

\* \* \* \* Second change \* \* \* \*

# A.2 Obtaining PDU Set information from RTP Header or Payload

## A.2.0 General

When the RTP HE for PDU Set marking is not available, some or all of PDU Set information can be derived from the RTP/SRTP header and/or payload, e.g., by a network function like the UPF. The following clauses describe how the PDU Set information can be derived from the RTP/SRTP header and/or payload.

## A.2.1 RTP/SRTP header

When RFC 6184 [5] or RFC 7798 [6] are used as payload formats, a network function can obtain some of the PDU Set information from RTP headers by following these guidelines.



Figure A.2.1-1: RTP header fields as defined in RFC 3550 [4]

When the RTP/SRTP is used to convey the video content and when the PDU Set represents a video frame, the video frame may be identified based on the RTP header fields as following:

- The "marker (M)" bit is used with the video payload formats in clause A.2 to indicate the frame boundary, by setting the M bit on the last PDU of a frame. With the "M" bit and the sequence number in RTP header, the Indication of End PDU of a PDU Set and PDU SN within a PDU Set/frame can be derived. The network function should monitor the preceding packets to detect and compensate for potential packet reordering.

- The "timestamp" field indicates the sampling instant of the first octet in the RTP data packet and all RTP packets in the video frame is generally marked with the same timestamp. Therefore, with the "timestamp" field and the sequence number in RTP header, the Indication of End PDU of a PDU Set and PDU SN within a PDU Set/frame can be derived.

NOTE 1: When multiple RTP streams multiplexed over a single RTP session, the "M" bit, "timestamp" field, and sequence number information can be used together with the synchronization source (SSRC) in the RTP header to identify the boundary of video frame for each of the RTP streams that can be separated by their different SSRC values.

NOTE 2: For the timestamp-based solution, generally, the end PDU of the PDU Set can only be determined when a PDU with new RTP timestamp arrives, which may introduce additional latency.

- PDU Set Size can only be determined by a network function with reception of the last PDU belonging to the PDU Set, by summing up the individual PDU contributions to the PDU Set Size. PDU Set Importance cannot be derived using the RTP header fields.

## A.2.2 RTP payload

### A.2.2.1 General

When the RTP Payload is not encrypted, intermediate network functions may obtain additional information from the RTP payload.

The PDU Set information identification based on the RTP payload format is presented in this clause, including information on the RTP payload formats for H.264/AVC [5] and H.265/HEVC [6] codecs. The information about the used RTP Payload format for a service data flow is provided in advance to 5GC (e.g., UPF).

It is generally recommended that the network function considers non-VCL NAL units as part of the PDU Set of the associated VCL NALUs, e.g. identified by the same timestamp.