**3GPP TSG-SA WG4 Meeting #132 *S4-250876***

**Japan, Fukuoka, 19 – 23 May 2025 revision of S4aR250106**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **26.113** | **CR** | **0005** | **rev** | **7** | **Current version:** | **18.2.0** |  |
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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\_Ph2] Enhancements to RTC Dynamic Policy API for N6-unmarked PDUs | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, Lenovo | | | | | | | | | |
| ***Source to TSG:*** | S4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5G\_RTP\_Ph2 | | | | |  | ***Date:*** | | | 2025-05-13 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | C |  | | | | | ***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 can be 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:*** | | PDU Set and End of Data Burst marking only applies to RTP PDUs since marking is done via an RTP header extension. Hence, PDUs belonging to protocols such as RTCP, STUN, etc. cannot be marked i.e., they do not carry the PDU Set Information.  In Rel-18, SA2 has agreed that the PSA UPF marks, in the downlink, each N6-unmarked PDU (“lone PDU”) with PDU Set Information into a PDU Set. If the UPF receives a PDU that does not belong to a PDU Set based on Protocol Description for PDU Set identification, the UPF still maps it to a PDU Set and determines the PDU Set Information by implementation-specific means.  This means that for N6-unmarked PDUs, PDU Set Information must be determined by the UPF. For some elements of the PDU Set Information, this is straightforward, e.g., PSN=0 since the PDU Set has only one PDU, PSSize is equal to the size of the N6-unmarked PDU (since there is only one PDU in the PDU Set). However, for PSI, the UPF may only assign a preconfigured value (e.g. by the network operator) which may not reflect the application requirements.  SA4 concluded in TR 26.822 that it would be beneficial for senders to signal application-defined PDU Set Importance (PSI) values to the 5GC for N6-unmarked PDUs. This signaling requires extensions to the Dynamic Policy API defined in TS 26.113. | | | | | | | | |
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| ***Summary of change:*** | | The Media Session Handler in the Media Client includes a list of *unmarkedPDUInfo* objects in the *mediaTransportParameters* property of the *ApplicationFlowDescription* object when it invokes the Dynamic Policy API, if specific QoS with PDU Set parameters is desired for the application flows of an RTC session.  If PDU Set marking is enabled, *unmarkedPDUInfoList* may be used to indicate the PSI values for N6-unmarked PDUs, i.e., PDUs of protocols that cannot be marked using the RTP HE for PDU Set marking such as RTCP or STUN packets. | | | | | | | | |
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| ***Consequences if not approved:*** | | Not possible to indicate sender-defined PSI values to the 5GC for N6-unmarked PDUs. | | | | | | | | |
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| ***Clauses affected:*** | | 3.3, 10.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |
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| ***This CR's revision history:*** | | **Rev7:**   * Correction to the title of clause 10.3.2. * Remove the editor’s notes.   **Rev6:**   * Fixes to usage when audio and video streams are multiplexed.   **Rev5:**   * Editorial improvements * Change RTCP to SRTCP, clarified that STUN can also be an unmarked protocol.   **Rev4:**   * Specify the condition required in the SDP signaling to set unmarkedProtocol property as RTCP.   **Rev3:**   * enabled default PSI signaling for audio PDUs (multiplexed with video) when PDU Set marking is not enabled for audio * improved description of the unmarkedPduInfo object.   **Rev2:**   * removed packetType from unmarkedPDUInfo | | | | | | | | |
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\* \* \* \* 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].

API Application Programming Interface

AR Augmented Reality

DTLS Datagram Transport Layer Security

FFS For Further Study

FoV Field of View

HTTP Hyper-Text Transfer Protocol

ICE Interactive Connectivity Establishment

IMU Inertial Measurement Unit

MNO Mobile Network Operator

NAT Network Address Translation

OTT Over-The-Top

PSI PDU Set Importance

RGB Red-Green-Blue colour space

RTC Real-Time Communication

RTP Real-time Transport Protocol

RWT Response Wait Time

SCTP Stream Control Transmission Protocol

SRTCP Secure Real-time Transport Control Protocol

SRTP Secure Real-time Transport Protocol

SSE Server-Sent Events

STUN Session Traversal Utilities for NAT

SWAP Simple WebRTC Application Protocol

TLS Transport Layer Security

TURN Traversal Using Relays around NAT

WebRTC Web Real-Time Communication

XR Extended Reality

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

## 10.3 Dynamic Policy API

### 10.3.1 Introduction

The Dynamic Policy API allows the RTC Media Session Handler of the RTC Client or the ICE Function of the RTC AS or the WebRTC Signalling Function of the RTC AS to request a specific QoS and/or charging policy to be applied to the application flows of an RTC session. The Dynamic Policy API is invoked as a result of SDP negotiation during the WebRTC signalling phase of the RTC session.

The relevant procedures are specified in clause 5.3.3 of TS 26.510 [3].

The resource structure and the data model are specified in clause 9.3 of TS 26.510 [3].

### 10.3.2 Enabling PDU Set handling in dynamic policies

If specific QoS with PDU Set parameters is desired, and PDU Set marking is not enabled for the selected Policy Template as specified in clause 5.3.3.2 of TS 26.510 [3], the Media Session Handler shall additionally populate the mediaTransportParameters property of the Application‌Flow‌Description object (see clause 5.5.4.13 of TS 29.571 [36]) as follows when creating or updating a Dynamic Policy Instance based on that Policy Template:

- The transportProto property shall be set to the value SRTP.

- The rtpHeaderExtInfo object (see clause 5.5.4.14 of TS 29.571 [36]) shall be omitted.

- The rtpPayloadInfoList property shall contain a single member populated as follows:

- rtpPayloadTypeList shall be set to the *RTP Payload Type* value(s) to be used by the RTC endpoint (e.g., the RTC Access Function of an RTC Client) for the negotiated SRTP session(s) to be carried by the application flow in question.

- rtpPayloadFormat shall be populated as appropriate in the absence of RTP header extensions.

- When the unmarked-pdu-info attribute (as specified in clause 6.1 of TS 26.522 [37]) is present in the SDP offer/answer, the unmarkedPduInfoList property shall contain at least one unmarkedPduInfo member. The properties of the unmarkedPduInfo members of the unmarkedPduInfoList shall be negotiated by the RTC Access Function of the RTC Client via the SDP offer/answer procedure during the WebRTC signalling phase of the RTC session using the SDP attribute a=unmarked-pdu-info. The properties of each unmarkedPduInfo object (see clause 5.5.4.17 in TS 29.571 [36]) shall be populated as follows, in order of presence in the SDP offer/answer message:

- unmarkedProtocol shall indicate the application protocol used by N6-unmarked PDUs on the application flow in question*.*

- If the corresponding SDP media description includes an a=rtcp-mux or an a=rtcp-mux-only attribute, at least one unmarkedPduInfo member shall be present with its unmarkedProtocol property set to the value *SRTCP*.

- If the sender intends to indicate a default PDU Set Importance (PSI) value for N6-unmarked audio PDUs, an unmarkedPduInfo member shall be present with its unmarkedProtocol property set to the value *SRTP*. A default PSI value for N6-unmarked audio PDUs may only be indicated if audio and video streams are multiplexed in the same RTP session.

NOTE 1: unmarkedProtocol may instead be set to the value *STUN.*

- pduSetImportance shall be set to the desired PSI value for N6-unmarked PDUs on the application flow in question which uses the application protocol indicated by unmarkedProtocol. The setting shall follow the semantics defined for PSI in clause 4.2.4 of TS 26.522 [37], with a value in the range of 1 to 15 (inclusive).

If PDU Set marking is enabled for the selected Policy Template as specified in clause 5.3.3.2 of TS 26.510 [3], the Media Session Handler shall additionally populate the mediaTransportParameters property of the Application‌Flow‌Description object (see clause 5.5.4.13 of TS 29.571 [36]) as follows when creating or updating a Dynamic Policy Instance based on that Policy Template:

- The transportProto property shall be set to the value SRTP.

- The properties of the rtpHeaderExtInfo object (see clause 5.5.4.14 of TS 29.571 [36]) shall be populated as follows:

- rtpHeaderExtType shall be set to PDU\_SET\_MARKING.

- rtpHeaderExtId shall be set to the value of the *ID* field to be used by the RTC endpoint (e.g., the RTC Access Function of an RTC Client) in the *RTP Header Extension for PDU Set Marking* on the application flow in question, as specified in clause 4.2 of TS 26.522 [37]. The value of this parameter is negotiated via the SDP offer/answer procedure during the WebRTC signalling phase of the RTC session.

- longFormat shall be set according to the use of the one- or two-byte *RTP Header Extension for PDU Set Marking*, as specified in clause 4.2.1 of TS 26.522 [37]. The value of this parameter is negotiated via the SDP offer/answer procedure during the WebRTC signalling phase of the RTC session.

- pduSetSizeActive shall be set to reflect the presence of the *PDU Set Size* field in the *RTP Header Extension for PDU Set Marking*, as specified in clause 4.2.4 of TS 26.522 [37]. The value of this parameter is negotiated via the SDP offer/answer procedure during the WebRTC signalling phase of the RTC session.

NOTE 2: The intention of the RTC Access Function of the RTC Client to include the optional NPDS (Number of PDUs in the PDU Set) field in the *RTP Header Extension for PDU Set Marking* is not yet signalled in advance to the 5G Core by means of a Boolean flag in the RtpHeaderExtInfo specified in clause 5.5.4.14 of TS 29.571 [36].

- The rtpPayloadInfoList property shall contain a single member populated as follows:

- rtpPayloadTypeList shall be set to the *RTP Payload Type* value(s) to be used by the RTC endpoint (e.g., the RTC Access Function of an RTC Client) for the negotiated SRTP session(s) to be carried by the application flow in question.

- rtpPayloadFormat shall be omitted because RTP header extensions are present.

- When the unmarked-pdu-info attribute (as specified in clause 6.1 of TS 26.522 [37]) is present in the SDP offer/answer, the unmarkedPduInfoList property shall contain at least one unmarkedPduInfo member. The properties of the unmarkedPduInfo members of the unmarkedPduInfoList shall be negotiated by the RTC Access Function of the RTC Client via the SDP offer/answer procedure during the WebRTC signalling phase of the RTC session using the SDP attribute a=unmarked-pdu-info. The properties of each unmarkedPduInfo object (see clause 5.5.4.17 in TS 29.571 [36]) shall be populated as follows, in order of presence in the SDP offer/answer message:

- unmarkedProtocol shall indicate the application protocol used by N6-unmarked PDUs on the application flow in question*.*

- If the corresponding SDP media description includes an a=rtcp-mux or an a=rtcp-mux-only attribute, at least one unmarkedPduInfo member shall be present with its unmarkedProtocol property set to the value *SRTCP*.

- If the sender intends to indicate a default PDU Set Importance (PSI) value for N6-unmarked audio PDUs, an unmarkedPduInfo member shall be present with its unmarkedProtocol property set to the value *SRTP*. A default PSI value for N6-unmarked audio PDUs may only be indicated if audio and video streams are multiplexed in the same RTP session and PDU Set marking is used for the video stream(s).

NOTE 3: unmarkedProtocol may instead be set to the value *STUN.*

- pduSetImportance shall be set to the desired PSI value for N6-unmarked PDUs on the application flow in question which uses the application protocol indicated by unmarkedProtocol. The setting shall follow the semantics defined for PSI in clause 4.2.4 of TS 26.522 [37], with a value in the range of 1 to 15 (inclusive).

In all PDUs it contributes at reference point RTC‑4m or RTC‑12 that fall within the scope of the application flow description, the RTC Access Function (Media Access Function) shall use the protocol indicated in transportProto or *unmarkedProtocol*; it shall set the SRTP header fields in accordance with rtpPayloadInfoList; and it shall include a one- or two- byte (consistent with the signalled length) *RTP Header Extension for PDU Set Marking* in the SRTP header with fields set according to the values declared in the rtpHeaderExtInfo property per above.