

# Export of GTP-U Information in IPFIX

draft-ietf-opsawg-ipfix-gtpu-03

Enabling insights in GTP forwarding plane by adding GTP-U dimensions

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# GTP-U @ IPFIX

Draft Status since last review @ IETF121

## **Updates since IETF 121**

- Liaison statement issued with 3GPP and requested 3GPP TSG SA WG5 and 3GPP TSG CT WG4 to review this draft.
- Addressed initial comments (version 01 thro 02) from Med on updating the IE description (Sec-5) and Use case section (Sec-4) by giving additional references to slicing related info.

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## IPFIX entities in context of the GTP-U (1)

3GPP TS 29.281 version 17.4.0 Release 17

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ETSI TS 129 281 V17.4.0 (2022-10)

- **gtpuFlags IE-505**

8-bit flags field defined in the GTP-U which indicates the version of GTP-U protocol, protocol type and presence of extension header, sequence number and N-PDU number in the GTP-U header.

- **gtpuMsgType IE-506**

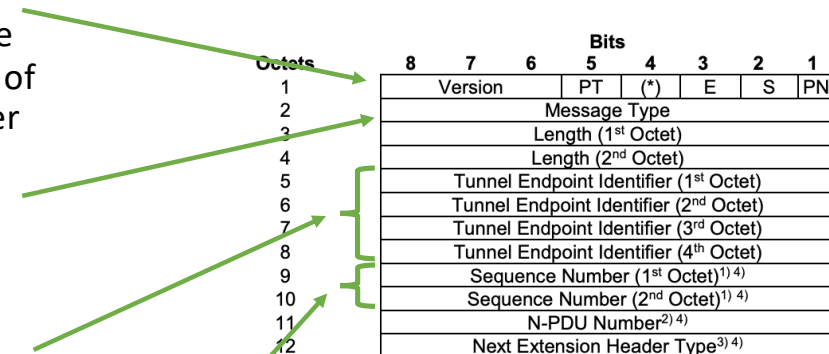
8-bit message type field defined in the GTP-U which indicates the type of GTP-U message.

- **gtpuTEid IE-507**

32-bit tunnel endpoint identifier field defined in GTP-U which unambiguously identifies a tunnel endpoint in the receiving GTP-U protocol entity for a given UDP/IP endpoint..

- **gtpuSequenceNum IE-508**

16-bit sequence number field defined in the GTP-U. This field is interpreted based on the corresponding flag value from gtpuFlags



NOTE 0: (\*) This bit is a spare bit. It shall be sent as '0'. The receiver shall not evaluate this bit.  
NOTE 1: 1) This field shall only be evaluated when indicated by the S flag set to 1.  
NOTE 2: 2) This field shall only be evaluated when indicated by the PN flag set to 1.  
NOTE 3: 3) This field shall only be evaluated when indicated by the E flag set to 1.  
NOTE 4: 4) This field shall be present if and only if any one or more of the S, PN and E flags are set.

Figure 5.1-1: Outline of the GTP-U Header

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## IPFIX entities in context of the GTP-U (2)

- **gtpuQFI IE-509**

8-bit QoS flow identifier field defined in PDU Session Container extension header of GTP-U. This is defined in section 5.5.3 of PDU session spec [TS.38415]. This is used to determine the QoS flow and QoS profile which are associated with the received packet.

- **gtpuPduType IE-510**

8-bit PDU type field defined in PDU Session Container extension header of GTP-U. This is defined in section 5.5.3 of PDU session spec [TS.38415]. This field indicates the structure of the PDU session UP frame..

Bits								Number of Octets
7	6	5	4	3	2	1	0	
PDU Type (=0)				QMP	SNP	MSNP	Spare	1
PPP	RQI	QoS Flow Identifier						1
PPI				Spare				0 or 1
DL Sending Time Stamp								0 or 8
DL QFI Sequence Number								0 or 3
DL MBS QFI Sequence Number								0 or 4
Padding								0-3

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## Comments received on version -03

Reference - <https://mailarchive.ietf.org/arch/msg/opsawg/btkgFDOLGXZ7tp2Onh1pGwA-bVQ/>

1. Should we add a statement about the base 3GPP release used to define the IEs?
2. Is it worth to also report the extension header chain? Also, the peer tunnel endpoint?
3. gtpuFlags
  - This also cover the version. Not sure «flags» is accurate here. A better name is needed if the version is also included.
  - (5.1 description) I would say this corresponds to the first byte of the header. The internal structure may change in the future (associate a meaning with the remaining bit, etc.). The current description may be stale then.
  - I would insist that the bits are exported as observed. This allows, for example, to export the current unassigned bit even if no meaning is associated with it yet.
4. As the header length is variable, is it worth to also export the length as a separate IE?
5. At the collector side, the presence of this IE when the S bit is unset should be handled as an anomaly. I would add some text to cover this. Also, indicate which one takes precedence.
6. pduType: I like the new text (s/presense/presence, though). However, I would be more explicit that if this IE is present when E bit is not set is considered as an anomaly. In such case, which information takes precedence?
7. Can we cover how IPFIX can help to cover: «When using GTP-U over IPv6 (see IETF RFC 8200 [36]), the UDP checksum shall not be set to zero by the sending GTP-U entity unless it is ensured that the peer GTP-U entity and the path in-between supports UDP zero checksum. NOTE 1: GTP-U entities complying with an earlier version of the specification or on path IPv6 middleboxes can implement IPv6 as specified in IETF RFC 2460 [15] and discard UDP packets containing a zero checksum. »
8. What is an “intermediate UPF”? “or Uplink Classifier”: This corresponds to which entity in the 3GPP architecture?

Addressed comments – 1, 3, 5 - 8, Seeking inputs from WG on 2 & 4

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## Questions to the working group

1. *Is it worth to also report the extension header chain?*

We could think of two options to report the GTP-U extension header chain

- a) Export complete GTP-U header, for example gtpuHeaderSection
- b) Export only the extension headers, for example gtpuExtHeaderSection

2. *As the header length is variable, is it worth to also export the length as a separate IE*

*We authors believe these are good IEs to include. Our preference on (1) would be option 'a'. Any objections on the same?*

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## Next Steps for -04

- Updated IE description will be reflected to IANA registry
- Pending output of working group discussion, adding additional IPFIX entities as example: gtpuHeaderSection, gtpuTotalHeaderLength
- Review and address further comments from Med's on version 03 – In progress