**3GPP TSG-RAN3 Meeting #107-e *R3-200392***

**E-Meeting, 24 February – 6 March, 2020**

**Title:** (TP for WWC BL CR for TS 29.413) Support for interfacing wireline 5G access networks to the 5GC

**Source:** Huawei, Telecom Italia, BT, Broadcom

**Agenda item:** 21.2.3

**Document for:** Other

# 1. Introduction

The support of wireline 5G access networks to the 5GC was discussed at RAN3#106 meeting, with the following remaining issues:

* *It is FFS on the detailed format of the RG level wireline access characteristics;*
* *It is FFS on the detailed format and composition of the Global Line Identifier and the Global Cable Identifier;*
* *It is FFS on the detailed format of the W-AGF ID*.

This contribution will address these issues and provide their potential impact on TS 38.413 and TS 29.413.

# 2. Discussion

## 2.1 Encoding of W-AGF ID

At RAN3#106 meeting, the W-AGF ID was agreed to be used to identify a W-AGF for the wireline 5G access network during the NG interface setup and configuration update procedure. Regarding the exact format, it is proposed to take the similar format as N3IWF ID as follows, where the IE type is BIT STRING.

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| --- | --- | --- | --- | --- |
| >>N3IWF ID | M |  | BIT STRING (SIZE(16)) |  |

And the W-AGF ID can be set extensbile.

1. The IE type for the W-AGF ID is defined as the BIT STRING.

## 2.2 Encoding of RG Level Wireline Access Characteristics

The RG-LWAC is provided by the AMF to the W-AGF to be used to indicate the wireline access technology specific QoS information corresponding to a specific wireline access subscription.

As described in TS 23.316, the RG-LWAC structure is out of scope in 3GPP specifications and they are handled as a transparent data container, where the BBF or CableLabs define the exact content. Hence it is proposed to add the OCTET STRING in the IE type and add reference to TS 23.003. Note that [1] has provided the RgWirelineCharacteristics as follows.

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| --- | --- | --- | --- | --- | --- | --- |
| *5.5.2 Simple Data Types* */\*\*Skip the unrevelant\*\*/*   |  |  |  | | --- | --- | --- | | RgWirelineCharacteristics | Bytes | RG Level Wireline Access Characteristics, it is encoded using base64. | | RgWirelineCharacteristicsRm | Bytes | This data type is defined in the same way as the "RgWirelineCharacteristics" data type, but with the OpenAPI "nullable: true" property. | |

1. The IE type for the RG-LWAC is defined as OCTET STRING, where the exact encoding can be left to other group.

## 2.3 User location information

As agreed in [2] at SA2#136 meeting, for the RG connecting to the network, the Global Line Identifier is used as user location information on wireline access. In addition, the Global Line Identifier is a variable length identifier.

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| *4.7.x Global Line Identifier* *For usage with 5GC, a Global Line Identifier (GLI) is specified in order to define a globally unique identifier of the line connecting the RG to the network. In this release an RG is associated with a unique GLI.*  *For FNBRG, the GLI is used to build a SUCI. For FN-BRG the GLI may be used to build a SUPI. See clause 4.7.3. For all types of RG, the GLI is used as User Location Information on wireline access.*  *The GLI contains an identifier of the Line ID source and the Line ID value. The identifier of the Line ID source ensures the unicity of the GLI while the Line ID may not be unique in some deployments. The identifier of the Line ID source and Line ID are administered by the W-AGF operator (e.g. by the provider of access network when different from the 5GC operator).*  *The Global Line Identifier is a variable length identifier encoded as defined in TS 23.003 and in BBF WT-456 [9].* |

Further the SA2 sent a LS to RAN3 related to the global line identifier, where BBF has provided the definition of GLI [5]. Regarding the IE type, it can be defined as the OCTET STRING, and CT4 can define the exact format.

1. The IE type for the Global Line Identifier in ULI is defined as OCTET STRING, where the exact encoding refers to TS 23.003.

Also as agreed in [4] at SA2#136bis meeting, for the CRG connecting to the network, the HFC Node ID is used to build the user location information on cable access.

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| *10.1 User Location Information* *The User Location Information may correspond to:*  *- In the case of W-5GCAN: HFC node ID.*  *NOTE 1: HFC node ID identifies the point of attachment of the 5G-CRG.*  *- In the case of W-5GBAN: GLI which contains an identifier of the Line ID source and the Line ID value.*  *NOTE 2: A combination of Line ID and identifier of the Line ID source identifies the attachment point of the 5G-BRG.*  *- In the case of 5G-RG connected via 3GPP access: Cell Information (as described in TS 23.502 [3] clause 4.10 and TS 23.401 [24] clause 5.9.1).* |

Therefore, the BL CR should be updated to replace the Global Cable ID with the HFC Node ID as the User Location Information on Cable access, where the reference to TS 23.003 can be given.

1. The HFC Node ID is used as the User Location Information on Cable access.

In addition, for the WWC, it is proposed to add the HFC, TWAP and TNAP in the abbreviations, while remove some unused abbreviations, e.g. 5G-BRG, 5G-CRG, 5G-RG, FN-BRG, and FN-CRG.

1. Update the abbreviations for the WWC in the BL CR for TS 38.413.

# 3. Conclusion

This contribution discussed RAN impact to support the wireline 5G access networks connecting to 5GC. Based on the discussion in this paper, the following proposals are proposed.

1. The IE type for the W-AGF ID is defined as the BIT STRING.
2. The IE type for the RG-LWAC is defined as OCTET STRING, where the exact encoding can be left to other group.
3. The IE type for the Global Line Identifier in ULI is defined as OCTET STRING, where the exact encoding refers to TS 23.003.
4. The HFC Node ID is used as the User Location Information on Cable access.
5. Update the abbreviations for the WWC in the BL CR for TS 38.413.

# 4. Reference

1. C4-195594, QoS for wireline access network, Huawei.
2. S2-1912555, Line ID uniqueness, Nokia, Nokia Shanghai Bell, Huawei, HiSilicon, Ericsson.
3. S2-2001106, Access type and RAT type per non-3GPP accesses, Nokia, Nokia Shanghai Bell.
4. S2-2001619, TS 23.316 – Correction on user location information, Huawei, HiSilicon, Nokia, Nokia Shanghai Bell.
5. S2-2001617 Forwarding LS on definition of GLI, SA2

# 5. Annex – TP

5.3 Exceptions for NGAP message contents and information element coding when used for non-3GPP access

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The *User Location Information* IE in the applicable NGAP messages between the N3IWF and the AMF includes the IP address and port number as specified in TS 38.413 [2].

The *User Location Information* IE in the applicable NGAP messages between the TNGF and the AMF includes the TNAP ID, IP address and port number as specified in TS 38.413 [2].

The *User Location Information* IE in the applicable NGAP messages between the W-AGF and the AMF includes the Global Line Identifier or the HFC Node ID as specified in TS 38.413 [2].

The Security Key IE in the applicable NGAP messages includes the N3IWF key as specified in TS 33.501 [5].

The *RAN UE NGAP ID* IE in the applicable NGAP messages identifies the UE association over the NG interface within the N3IWF node, or the TNGF node, or the TWIF node, or the W-AGF node, as specified in TS 38.413 [2].