**3GPP TSG-CT WG1 Meeting #124-eC1-20XXXX**

**Electronic meeting, 2-10 June 2020**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **24.502** | **CR** | **0136** | **rev** | **1** | **Current version:** | **16.3.0** |  |
|  |
| *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:***  | Correcting reference |
|  |  |
| ***Source to WG:*** | Motorola Mobility, Lenovo |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | 5WWC |  | ***Date:*** | 2020-06-02 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-16 |
|  | *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-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
|  |  |
| ***Reason for change:*** | The current added TS is not for NG-AP for non-3GPP access. |
|  |  |
| ***Summary of change:*** | * Added right spec for NG-AP between N3IWF and AMF.
* Added a note that the radio network layer related IEs in TS 38.314 are valid for NG-AP for non-3GPP access.
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| ***Consequences if not approved:*** | Specification has an incorrect reference. |
|  |  |
| ***Clauses affected:*** | 2, 7.3.2.3, 9.3.1.1 |
|  |  |
|  | **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:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Next Change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".

[3] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".

[4] 3GPP TS 24.501: "Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3".

[5] 3GPP TS 33.501: "Security architecture and procedures for 5G System".

[6] IETF RFC 7296: "Internet Key Exchange Protocol Version 2 (IKEv2)".

[7] 3GPP TS 24.302: "Access to the 3GPP Evolved Packet Core (EPC) via non-3GPP access networks; Stage 3".

[8] 3GPP TS 23.003: "Numbering, addressing and identification".

[9] IETF RFC 3748: "Extensible Authentication Protocol (EAP)".

[10] 3GPP TS 33.402: "3GPP System Architecture Evolution (SAE); Security aspects of non-3GPP accesses."

[11] IETF RFC 4303: "IP Encapsulating Security Payload (ESP)".

[12] IETF RFC 4301: "Security Architecture for the Internet Protocol".

[13] 3GPP TS 23.122: "Non-Access-Stratum (NAS) functions related to Mobile Station (MS) in idle mode".

[14] IETF RFC 2784: "Generic Routing Encapsulation (GRE)".

[15] IETF RFC 2890: "Key and Sequence Number Extensions to GRE".

[16] 3GPP TS 23.503: "Policy and Charging Control Framework for the 5G System".

[17] 3GPP TS 24.526: "User Equipment (UE) policies for 5G System (5GS); Stage 3".

[18] 3GPP TS 23.402: "Architecture enhancements for non-3GPP accesses".

[19] IEEE Std 802.11-2016: "IEEE Standard for Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements - Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications".

[20] Wi-Fi Alliance: "Hotspot 2.0 (Release 2) Technical Specification, version 1.0.0", 2014-08-08.

[21] ITU-T Recommendation E.212: "The international identification plan for public networks and subscriptions", 2016-09-23.

[22] 3GPP TS 24.007: "Mobile radio interface signalling layer 3; General aspects".

[23] IETF RFC 4555: "IKEv2 Mobility and Multihoming Protocol (MOBIKE)".

[24] IETF RFC 791: "INTERNET PROTOCOL".

[25] IETF RFC 8200: "Internet Protocol, Version 6 (IPv6) Specification".

[26] IETF RFC 2474: "Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers".

[27] IETF RFC 793: "Transmission Control Protocol".

[28] 3GPP TS 24.008: "Mobile radio interface Layer 3 specification; Core network protocols; Stage 3".

[29] 3GPP TS 38.413: "NG Application Protocol (NGAP)".

[30] IEEE Std 802.1X™-2010: "IEEE Standard for Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Port-based Network Access Control".

[31] IETF RFC 4284 (January 2006): "Identity Selection Hints for the Extensible Authentication Protocol (EAP)".

[32] IETF RFC 1661: "The Point-to-Point Protocol (PPP)".

[33] IETF RFC 1570: "PPP LCP Extensions".

[34] IETF RFC 2410: " The NULL Encryption Algorithm and Its Use With IPsec".

[35] 3GPP TS 31.102: "Characteristics of the Universal Subscriber Identity Module (USIM) application".

[36] CableLabs WR-TR-5WWC-ARCH-V01-190820: "5G Wireless Wireline Converged Core Architecture".

[37] IETF RFC 7542: "The Network Access Identifier".

[XX] 3GPP TS 29.413: "Application of the NG Application Protocol (NGAP) to non-3GPP access".

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Next Change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#### 7.3.2.3 IKE SA and signalling IPsec SA establishment not accepted by the network

If IKE SA and signalling IPsec SA establishment is not accepted by the network, the UE receives from the N3IWF an IKE\_AUTH response message including a Notify payload with an error type.

Upon receiving the IKE\_AUTH response message with a Notify payload with an error type other than a CONGESTION Notify payload, the UE shall pass the error indication to the upper layer along with the encapsulated NAS messages, if any, within EAP/5G-NAS packet.

After the N3IWF receives from the UE an IKE\_AUTH request message, if the N3IWF does not accept the IKE SA and signalling IPsec SA establishment due to:

a) the AMF congestion as indicated in the OVERLOAD START message; or

b) the requested NSSAI included in the IKE\_AUTH request message, only including one or more S-NSSAIs indicated in the OVERLOAD START message;

where the OVERLOAD START message is specified in 3GPP TS 29.413[XX], the N3IWF shall construct an IKE\_AUTH response message including a CONGESTION Notify payload as defined in subclause 9.2.4.2 and a N3GPP\_BACKOFF\_TIMER Notify payload as defined in subclause 9.3.1.7. The N3IWF shall send the IKE\_AUTH response message to the UE.

Upon reception of the IKE\_AUTH response message including:

a) a CONGESTION Notify payload as defined in subclause 9.2.4.2; and

b) a N3GPP\_BACKOFF\_TIMER Notify payload as defined in subclause 9.3.1.7; and

after the UE authenticates the network or the N3IWF as specified in 3GPP TS 33.501 [5], the UE shall discard all states associated with the IKE SA and any child SAs that were negotiated using that IKE SA as specified in IETF RFC 7296 [6]. In addition, the UE shall inform the upper layers that the access stratum connection has been released, and:

a) if the back-off timer value in N3GPP\_BACKOFF\_TIMER Notify payload indicates neither zero nor deactivated, the UE shall start the Tw3 timer with the value provided and the UE shall not retry the IKE SA and signalling IPsec SA establishment procedure to the same N3IWF until:

- timer Tw3 expires;

- the UE is switched off; or

- the UICC containing the USIM is removed;

b) if the back-off timer value in N3GPP\_BACKOFF\_TIMER Notify payload indicates that this timer is deactivated, the UE shall not retry the IKE SA and signalling IPsec SA establishment procedure to the same N3IWF until:

- the UE is switched off; or

- the UICC containing the USIM is removed; and

c) if the back-off timer value in N3GPP\_BACKOFF\_TIMER Notify payload indicates zero, the UE may retry the IKE SA and signalling IPsec SA establishment procedure to an N3IWF from the same PLMN.

Upon receiving the IKE\_AUTH response message with a Notify payload with an error type, if the EAP-5G session establishment has already been started, the UE shall perform a local termination of the EAP-5G session.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Next Change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#### 9.3.1.1 5G\_QOS\_INFO Notify payload

The 5G\_QOS\_INFO payload is used to indicate the:

a) PDU session identity;

b) zero or more QFIs;

c) optionally a DSCP value associated with the child SA;

d) an indication of whether the child SA is the default child SA; and

e) if trusted non-3GPP access, Additional QoS Information or if untrusted non-3GPP access, optionally Additional QoS Information.

The 5G\_QOS\_INFO payload is coded according to figure 9.3.1.1-1 and table 9.3.1.1-1.

|  |  |
| --- | --- |
| Bits |  |
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | Octets |
| Protocol ID | 1 |
| SPI Size | 2 |
| Notify Message Type | 3 - 4 |
| Length | 5 |
| PDU Session Identity | 6 |
| Number of QFIs | 7 |
| QFI List | 8 - x |
| 0Spare | 0Spare | 0Spare | 0Spare | 0Spare | QoSI | DCSI | DSCPI | x+1 |
| DSCP | x+2\* |
| Additional QoS Information | x+3\* - x+y\* |

Figure 9.3.1.1-1: 5G\_QOS\_INFO Notify payload format

|  |  |
| --- | --- |
| Bits |  |
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | Octets |
| Number of parameters | x+3 |
| Parameters list | x+4 – x+y |

Figure 9.3.1.1-2: Additional QoS Information

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | Octets |
| Parameter 1 | x+4 – x+k |
| Parameter 2 | x+k+1 – x+p |
| … | x+p+1 – x+q |
| Parameter m | x+q+1 – x+y |

Figure 9.3.1.1-3: Parameters list

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | Octets |
| Parameter identifier | x+4 |
| Length of parameter contents | x+5 |
| Parameter contents | x+6 – x+k |

Figure 9.3.1.1-4: Parameter

Table 9.3.1.1-1: 5G\_QOS\_INFO Notify payload value

|  |
| --- |
| Octet 1 is defined in IETF RFC 7296 [6] |
| Octet 2 is SPI Size field. It is set to 0 and there is no Security Parameter Index field. |
| Octet 3 and Octet 4 is the Notify Message Type field. The Notify Message Type field is set to value 55501 to indicate the 5G\_QOS\_INFO. |
| Octet 5 is the Length field. This field indicates the length in octets of the 5G\_QOS\_INFO Value field. |
| Octet 6 is PDU Session Identity field. This field indicates the PDU session associated with the child SA for user plane. |
| Octet 7 is Number of QFIs field. This field indicates the number of QFIs in the QFI list. |
| Octets 8 to octet x is QFI List field. This field indicates those QoS flows associated with the child SA. Every QFI is coded as the QFI field in the QoS rule defined in 3GPP TS 24.501 [4]. |
| Octet x+1, bit 0 is the DSCP included field (DSCPI).0 DSCP field is not included.1 DSCP field is included. |
| Octet x+1, bit 1 is the indication of whether the child SA is the default child SA (DCSI).0 the child SA is not the default child SA.1 the child SA is the default child SA. |
| Octet x+1, bit 2 is the Additional QoS Information indication field (QoSI)0 Additional QoS Information is not included.1 Additional QoS Information is included. |
| Octet x+2 is the DSCP field. If included, this field indicates the DSCP marking for all IP packets sent over this child SA. |
| Octet x+3 to octet x+y is the Additional QoS Information field which is included if the access network is the trusted non-3GPP access network. This field is encoded as defined in table 9.3.1.1-2. |
|  |

Table 9.3.1.1-2: Additional QoS Information

|  |
| --- |
| Octet x+4 is number of parametersThe number of parameters field contains the binary coding for the number of parameters in the parameters list field. The number of parameters field is encoded in bits 7 through 0 of octet 4 where bit 7 is the most significant and bit 0 is the least significant bit.  |
| The parameter identifier field is used to identify each parameter included in the parameters list and it contains the binary coding of the parameter identifier. Bit 7 of the parameter identifier field contains the most significant bit and bit 0 contains the least significant bit. The following parameter identifiers are specified:Bits7 6 5 4 3 2 1 00 0 0 0 0 0 0 1 QoS charactristics;0 0 0 0 0 0 1 0 Maximum Flow Bit Rate downlink (MFBR downlink); 0 0 0 0 0 0 1 1 Maximum Flow Bit Rate uplink (MFBR uplink); 0 0 0 0 0 1 0 0 Guaranteed Flow Bit Rate downlink (GFBR downlink); 0 0 0 0 0 1 0 1 Guaranteed Flow Bit Rate uplink (GFBR uplink); 0 0 0 0 0 1 1 0 Notification Control; 0 0 0 0 0 1 1 1 Maximum Packet Loss Rate downlink; and0 0 0 0 1 0 0 0 Maximum Packet Loss Rate uplink.All other values are spare.If the parameters list contains a parameter identifier that is not supported by the receiving entity the corresponding parameter shall be discarded. |
| If the parameter identifier indicates QoS charateristics, the parameter contents field contains the following representation:Octet 1 is resource type with binary representation:Bits7 6 5 4 3 2 1 00 0 0 0 0 0 0 0 GBR0 0 0 0 0 0 0 1 Delayed critical GBR0 0 0 0 0 0 1 0 Non GBRAll other values are spare.Octet 2 is priority level with 1 as the highest priority and 127 as the lowest priority ((see subclause 9.3.1.84 in 3GPP TS 38.413 [29], see NOTE), and the binary representation is:Bits7 6 5 4 3 2 1 00 0 0 0 0 0 0 1thru0 1 1 1 1 1 1 1All other values are spare.Octets 3 and 4 are packet delay budget and is a factor of 0.5ms (see subclause 9.3.1.80 in 3GPP TS 38.413 [29], see NOTE), where the factor has the following binary representation:Bits7 6 5 4 3 2 1 0 7 6 5 4 3 2 1 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0thru0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1All other values are spare.Octets 5 and 6 are packet error rate where octet 5 scalar and octet 6 represent exponent. The packet error rate is calculated as {scalar x10 – exponent} (see subclause 9.3.1.81 in 3GPP TS 38.413 [29], see NOTE) The binary representation of scalar and exponent are:Bits7 6 5 4 3 2 1 00 0 0 0 0 0 0 0thru0 0 0 0 1 0 0 1All other values are spare.Octets 7 and 8 are averaging window and is included if the resource type is GBR. Averaging window is a factor of 0.5ms with default value of 2000ms (see subclause 9.3.1.82 in 3GPP TS 38.413 [29], see NOTE), where the factor has the following binary representation:Bits7 6 5 4 3 2 1 0 7 6 5 4 3 2 1 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0thru0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1All other values are spare.Octets 9 and 10 are maximum data burst volume and is included if the resource type is delayed critical GBR. Maximum data burst volume is the maximum number of the bytes for the data volume (see subclause 9.3.1.83 in 3GPP TS 38.413 [29], see NOTE), where the maximum number of bytes has the following binary representation:Bits7 6 5 4 3 2 1 0 7 6 5 4 3 2 1 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0thru0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1All other values are spare.For GBR and delayed critical GBR resource types if the parameter identifier indicates "MFBR downlink", the parameter contents field contains one octet indicating the unit of the guaranteed flow bit rate for downlink followed by two octets containing the value of the guaranteed flow bit rate for downlink.Unit of the guaranteed flow bit rate for downlink (octet 1)Bits7 6 5 4 3 2 1 00 0 0 0 0 0 0 0 value is not used0 0 0 0 0 0 0 1 value is incremented in multiples of 1 Kbps0 0 0 0 0 0 1 0 value is incremented in multiples of 4 Kbps0 0 0 0 0 0 1 1 value is incremented in multiples of 16 Kbps0 0 0 0 0 1 0 0 value is incremented in multiples of 64 Kbps0 0 0 0 0 1 0 1 value is incremented in multiples of 256 Kbps0 0 0 0 0 1 1 0 value is incremented in multiples of 1 Mbps0 0 0 0 0 1 1 1 value is incremented in multiples of 4 Mbps0 0 0 0 1 0 0 0 value is incremented in multiples of 16 Mbps0 0 0 0 1 0 0 1 value is incremented in multiples of 64 Mbps0 0 0 0 1 0 1 0 value is incremented in multiples of 256 Mbps0 0 0 0 1 0 1 1 value is incremented in multiples of 1 Gbps0 0 0 0 1 1 0 0 value is incremented in multiples of 4 Gbps0 0 0 0 1 1 0 1 value is incremented in multiples of 16 Gbps0 0 0 0 1 1 1 0 value is incremented in multiples of 64 Gbps0 0 0 0 1 1 1 1 value is incremented in multiples of 256 Gbps0 0 0 1 0 0 0 0 value is incremented in multiples of 1 Tbps0 0 0 1 0 0 0 1 value is incremented in multiples of 4 Tbps0 0 0 1 0 0 1 0 value is incremented in multiples of 16 Tbps0 0 0 1 0 0 1 1 value is incremented in multiples of 64 Tbps0 0 0 1 0 1 0 0 value is incremented in multiples of 256 Tbps0 0 0 1 0 1 0 1 value is incremented in multiples of 1 Pbps0 0 0 1 0 1 1 0 value is incremented in multiples of 4 Pbps0 0 0 1 0 1 1 1 value is incremented in multiples of 16 Pbps0 0 0 1 1 0 0 0 value is incremented in multiples of 64 Pbps0 0 0 1 1 0 0 1 value is incremented in multiples of 256 PbpsOther values shall be interpreted as multiples of 256 Pbps in this version of the protocol.Value of the guaranteed flow bit rate for downlink (octets 2 and 3)Octets 2 and 3 represent the binary coded value of the guaranteed flow bit rate for downlink in units defined by the unit of the guaranteed flow bit rate for downlink.For GBR and delayed critical GBR resource types if the parameter identifier indicates "MFBR uplink", the parameter contents field contains one octet indicating the unit of the guaranteed flow bit rate for uplink followed by two octets containing the value of the guaranteed flow bit rate for uplink.Unit of the guaranteed flow bit rate for uplink (octet 1)The coding is identical to that of the unit of the guaranteed flow bit rate for uplink.Value of the guaranteed flow bit rate for uplink (octets 2 and 3)Octets 2 and 3 represent the binary coded value of the guaranteed flow bit rate for uplink in units defined by the unit of the guaranteed flow bit rate for uplink.For GBR and delayed critical GBR resource types if the parameter identifier indicates "GFBR downlink", the parameter contents field contains the one octet indicating the unit of the maximum flow bit rate for downlink followed by two octets containing the value of maximum flow bit rate for downlink.Unit of the maximum flow bit rate for downlink (octet 1)The coding is identical to that of the unit of the guaranteed flow bit rate for downlink.Value of the maximum flow bit rate for downlink (octets 2 and 3)Octets 2 and 3 represent the binary coded value of the maximum flow bit rate for downlink in units defined by the unit of the maximum flow bit rate for downlink.For GBR and delayed critical GBR resource types if the parameter identifier indicates "GFBR uplink", the parameter contents field contains one octet indicating the unit of the maximum flow bit rate for uplink followed by two octets containing the value of the maximum flow bit rate for uplink.Unit of the maximum flow bit rate for uplink (octet 1)The coding is identical to that of the unit of the guaranteed flow bit rate for uplink.Value of the maximum flow bit rate for uplink (octets 2 and 3)Octets 2 and 3 represent the binary coded value of the maximum flow bit rate for uplink in units defined by the unit of the maximum flow bit rate for uplink.For GBR and delayed critical GBR resource types if the parameter identifier indicates "Notification Control", the parameter identifier shall be ignored in this release.For GBR and delayed critical GBR resource types if the parameter identifier indicates "Maximum Packet Loss Rate downlink", the parameter contents field contains ratio of the lost downlink packets per number of downlink packets sent, expressed in tenth of percent (see subclause 9.3.1.79 in 3GPP TS 38.413 [29], see NOTE), with the binary representation:Bits7 6 5 4 3 2 1 0 7 6 5 4 3 2 1 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0thru0 0 0 0 0 0 1 1 1 1 1 0 1 0 0 0All other values are spare.For GBR and delayed critical GBR resource types if the parameter identifier indicates "Maximum Packet Loss Rate uplink", the parameter contents field contains ratio of the lost uplink packets per number of uplink packets sent, expressed in tenth of percent (see subclause 9.3.1.79 in 3GPP TS 38.413 [29], see NOTE), with the binary representation:Bits7 6 5 4 3 2 1 0 7 6 5 4 3 2 1 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0thru0 0 0 0 0 0 1 1 1 1 1 0 1 0 0 0All other values are spare. |
|  |
| NOTE: The protocol specified in 3GPP TS 29.413 [XX] uses IEs specified in 3GPP TS 38.413 [29].  |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* End of Change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*