**3GPP TSG-RAN WG3 #117-eR3-22xxxx**

**Online, 15th - 24th August 2022 was R3-224469**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** | **0864** | **rev** | **1** | **Current version:** |  |  |
|  | | | | | | | | |
| *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 |  | Radio Access Network | **X** | Core Network | **X** |

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| ***Title:*** |  | | | | | | | | | |
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| ***Source to WG:*** | , Nokia, Nokia Shanghai Bell, Qualcomm, Verizon Wireless, AT&T, China Unicom | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** |  | | | | |  | ***Date:*** | | | 2022-08-08 |
|  |  | | | |  | |  | | |  |
| ***Category:*** |  |  | | | | | ***Release:*** | | | *Rel-17* |
|  | *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:*** | | 1/ Usage, semantics and allocation of MRB IDs is not sufficiently specified  2/ A reference to the term *MBS session resource* is missing and the term is not consistently used.  2.2a/ For broadcast MBS sessions there is no need to distinguish between “MBS context” and “MBS session resources”.  7.1/ The procedure text of the Multicast Session Update procedure in the “General” section needs to be simplified and the term “MBS information” should be replaced by the defined term “NG-RAN MBS session resource”. Also the case where the *Multicast Session Update Request Transfer* IE is including the *MBS Session TNL Information 5GC* IE is missing in the procedure text. Also, the *MBS Session TNL Information 5GC* IE is applicable for broadcast and multicast MBS sessions.  7.2/ The MBS Session ID, according to TS 23.247, identifies an MBS session, not an MBS service, as stated in the respective IE subclause §9.3.1.206 for the *MBS Session ID* IE.  7.3/ The term “flow” as a short form for “MBS QoS flow” is used.  7.4/ In addition, TS 23.247, the term “MBS QoS profile” is used to denote the set of MBS QoS flow level QoS paramters information for all MBS QoS flows associated with an MBS Session. However, this term is not used consistently.  7.5/ Minor updates on errors and incosistencies in the specification text are necessary. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1/ For MRB ID IE a reference to TS 38.401 is included where the usage and allocation of MRB IDs is specified  2/ a reference to the term *MBS session resource* is included and its usage aligned within specification text  2.2a/ For broadcast MBS session NGAP protocol definition, the term “MBS session resources” is used instead of “MBS context”.  7.1/ The term “NG-RAN MBS session resource context” is introduced in the definition section and referenced within the Multicast Session Update procedure and the procedure text of that EP completed to also cover the case where the *Shared NG-U Multicast TNL Information* is modified (at the 5GC) and remove the restriction that the *MBS Session TNL Information 5GC* IE is applicable for broadcast MBS sessions only.  7.2/ Correct in §9.3.1.206 that the MBS Session ID identifies an MBS session rather than an MBS service.  7.3/ The term “MBS QoS flow” is introduced where only its short form “flow” is used.  7.4/ The term “MBS QoS profile” is used consistently.  7.5/ Minor updates on errors and incosistencies in the specification text are performed.  Impact Analysis:  Impact assessment towards the previous version of the specification (same release):  This CR has isolated impact with the previous version of the specification (same release) because it corrects incomplete, contradicting and erroneous definitions of the NR MBS function only.  The impact can be considered isolated because the change affects only the NR MBS function.  The extension of the *MRB ID* IE range has protocol and ASN.1 impact. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Incomplete, contradicting and erroneous specification text will remain. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 3.1, 8.5.2.1, 8.17.1, 8.17.2, 8.17.3, 8.17.4, 8.18.1, 8.18.2, 8.18.3, 8.18.4, 8.18.5, 9.2.4.2, 9.2.16.1, 9.2.16.4, 9.2.16.7, 9.2.16.9, 9.2.17.1, 9.2.17.3, 9.2.17.6, 9.2.17.7, 9.2.17.8, 9.2.17.9, 9.17.10, 9.2.17.11, 9.3.1.29, 9.3.1.30, 9.3.1.206, 9.3.1.218, 9.3.2.15, 9.4.5 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | |  | | |
| ***affected:*** | |  | **X** | Test specifications | | | |  | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

<<<<<<<<<<<<<<<<<<<< First Change >>>>>>>>>>>>>>>>>>>>

## 3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

**ACL functionality:** as defined in TS 36.413 [16].

**CAG cell:** as defined in TS 38.300 [8].

**DAPS Handover**: as defined in TS 38.300 [8].

**Elementary Procedure:** NGAP consists of Elementary Procedures (EPs). An Elementary Procedure is a unit of interaction between the NG-RAN node and the AMF. These Elementary Procedures are defined separately and are intended to be used to build up complete sequences in a flexible manner. If the independence between some EPs is restricted, it is described under the relevant EP description. Unless otherwise stated by the restrictions, the EPs may be invoked independently of each other as standalone procedures, which can be active in parallel. The usage of several NGAP EPs together or together with EPs from other interfaces is specified in stage 2 specifications (e.g., TS 38.401 [2], TS 38.410 [3] and TS 38.300 [8]).

An EP consists of an initiating message and possibly a response message. Two kinds of EPs are used:

- **Class 1:** Elementary Procedures with response (success and/or failure).

- **Class 2:** Elementary Procedures without response.

For Class 1 EPs, the types of responses can be as follows:

Successful:

- A signalling message explicitly indicates that the elementary procedure successfully completed with the receipt of the response.

Unsuccessful:

- A signalling message explicitly indicates that the EP failed.

- On time supervision expiry (i.e., absence of expected response).

Successful and Unsuccessful:

- One signalling message reports both successful and unsuccessful outcome for the different included requests. The response message used is the one defined for successful outcome.

Class 2 EPs are considered always successful.

**en-gNB**: as defined in TS 37.340 [32].

**gNB:** as defined in TS 38.300 [8].

**MBS session resource**: as defined in TS 38.401 [2].

**NB-IoT:** as defined in TS 36.300 [17].

**ng-eNB:** as defined in TS 38.300 [8].

**NG-RAN node:** as defined in TS 38.300 [8].

**Non-CAG cell:** as defined in TS 38.300 [8].

**PDU session resource:** as defined in TS 38.401 [2].

**Public Network Integrated NPN:** as defined in TS 23.501 [9].

**Stand-alone Non-Public Network:** as defined in TS 23.501 [9].

<<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

### 8.5.2 Multicast Group Paging

#### 8.5.2.1 General

The purpose of the Multicast Group Paging procedure is to enable the AMF to notify CM-IDLE UEs which have joined a multicast MBS session about its activation. The procedure uses non-UE associated signalling.

#### 8.5.2.2 Successful Operation



Figure 8.5.2.2-1: Multicast Group Paging

The AMF initiates the Multicast Group Paging procedure by sending the MULTICAST GROUP PAGING message to the NG-RAN node.

At the reception of the MULTICAST GROUP PAGING message, the NG-RAN node shall perform multicast group paging of the MBS session identified by the *MBS Session ID* IE utilising information provided by the AMF.

If the *Paging DRX* IE is included in the MULTICAST GROUP PAGING message, the NG-RAN node shall use it according to TS 38.304 [12].

If the *MBS Service Area* IE is included in the MULTICAST GROUP PAGING message, the NG-RAN node shall take it into account during multicast group paging, as specified in TS 23.247 [44].

#### 8.5.2.3 Abnormal Conditions

Void.

<<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

## 8.17 Broadcast Session Management Procedures

### 8.17.1 Broadcast Session Setup

#### 8.17.1.1 General

The purpose of the Broadcast Session Setup procedure is to request the NG-RAN node to setup MBS session resources for a broadcast MBS session. The procedure uses non-UE associated signalling.

#### 8.17.1.2 Successful Operation



Figure 8.17.1.2-1: Broadcast Session Setup, successful operation.

The AMF initiates the procedure by sending a BROADCAST SESSION SETUP REQUEST message to the NG-RAN node. If the NG-RAN node accepts all the MBS QoS flows in the MBS session at least in one of its cells, the NG-RAN node responds with the BROADCAST SESSION SETUP RESPONSE message.

If the *MBS Service Area* IE is included in the BROADCAST SESSION SETUP REQUEST message, the NG-RAN node shall take it into account as specified in TS 23.247 [44].

If the *MBS Session FSA ID List* IE is included in the BROADCAST SESSION SETUP REQUEST message, the NG-RAN node shall take it into account to determine cells/frequencies within the MBS service area to broadcast MBS session data as specified in TS 23.247 [44].

#### 8.17.1.3 Unsuccessful Operation



Figure 8.17.1.3-1: Broadcast Session Setup, unsuccessful operation.

If the NG-RAN node is not able to provide the requested MBS session resources for all the MBS QoS flows in the MBS session in any of its cells, it shall send the BROADCAST SESSION SETUP FAILURE message.

#### 8.17.1.4 Abnormal Conditions

Void.

### 8.17.2 Broadcast Session Modification

#### 8.17.2.1 General

The purpose of the Broadcast Session Modification procedure is to request the NG-RAN node to update the MBS session resources or the area related to a previously established broadcast MBS session. The procedure uses non-UE associated signalling.

#### 8.17.2.2 Successful Operation



Figure 8.17.2.2-1: Broadcast Session Modification, successful operation.

The AMF initiates the procedure by sending a BROADCAST SESSION MODIFICATION REQUEST message to the NG-RAN node.

If the *MBS Service Area* IE is included in the BROADCAST SESSION MODIFICATION REQUEST message, the NG-RAN node shall update the MBS service area and send the BROADCAST SESSION MODIFICATION RESPONSE message.

If the *MBS Session Modification Request Transfer* IE is included in the BROADCAST SESSION MODIFICATION REQUEST message, the NG-RAN node shall replace the previously provided information by the newly received one and update the MBS session resources and area as requested and send the BROADCAST SESSION MODIFICATION RESPONSE message.

#### 8.17.2.3 Unsuccessful Operation



Figure 8.17.2.3-1: Broadcast Session Modification, unsuccessful operation.

If the NG-RAN node fails to update any requested modification, the NG-RAN node shall send the BROADCAST SESSION MODIFICATION FAILURE message.

#### 8.17.2.4 Abnormal Conditions

Void.

### 8.17.3 Broadcast Session Release

#### 8.17.3.1 General

The purpose of the Broadcast Session Release procedure is to release the MBS session resources related to a previously established broadcast MBS session. The procedure uses non-UE assocated signalling.

#### 8.17.3.2 Successful Operation



Figure 8.17.3.2-1: Broadcast Session Release, successful operation.

The AMF initiates the procedure by sending a BROADCAST SESSION RELEASE REQUEST message to the NG-RAN node.

Upon reception of the BROADCAST SESSION RELEASE REQUEST message, the NG-RAN node shall respond with the BROADCAST SESSION RELEASE RESPONSE message. The NG-RAN node node shall stop broadcasting and release all MBS session resources associated with the broadcast session.

Upon reception of the BROADCAST SESSION RELEASE RESPONSE message, the AMF shall transfer transparently the *Broadcast Session Release Response Transfer* IE, if available, to the MB-SMF.

#### 8.17.3.3 Unsuccessful Operation

Not applicable.

#### 8.17.3.4 Abnormal Conditions

Void.

### 8.17.4 Broadcast Session Release Required

#### 8.17.4.1 General

The purpose of the Broadcast Session Release Required procedure is to trigger the AMF to release the MBS session resources related to apreviously established broadcast MBS session. The procedure uses non-UE associated signalling.

#### 8.17.4.2 Successful Operation



Figure 8.17.4.2-1: Broadcast Session Release Required, successful operation.

The NG-RAN node initiates the procedure by sending a BROADCAST SESSION RELEASE REQUIRED message to the AMF.

Upon receiption of the BROADCAST SESSION RELEASE REQUIRED message, the AMF shall realize that the NG-RAN node is lacking adequate MBS session resources for a previously established broadcast MBS session and initiate the release of the MBS session resources.

#### 8.17.4.3 Abnormal Conditions

Void.

## 8.18 Multicast Session Management Procedures

### 8.18.1 Distribution Setup

#### 8.18.1.1 General

The purpose of the Distribution Setup procedure is to assign NG-U resources for a multicast MBS session. The procedure uses non-UE-associated signalling.

#### 8.18.1.2 Successful Operation



Figure 8.18.1.2-1: Distribution Setup, successful operation.

The NG-RAN node initiates the procedure by sending a DISTRIBUTION SETUP REQUEST message to the AMF. The AMF responds with a DISTRIBUTION SETUP RESPONSE message.

For location dependent multicast sessions, the NG-RAN node shall include the *MBS Area Session ID* IE in the DISTRIBUTION SETUP REQUEST message, and the AMF shall provide the same value of the *MBS Area Session ID* IE in the DISTRIBUTION SETUP RESPONSE message.

If the *Shared NG-U Unicast TNL Information* IE is included in the *MBS* *Distribution Setup Request Transfer* IE in the DISTRIBUTION SETUP REQUEST message, the MB-SMF shall use the included information as the downlink termination point for the shared NG-U transport.

If the *Shared NG-U Unicast TNL Information* IE is not included in the *MBS Distribution Setup Request Transfer* IE in the DISTRIBUTION SETUP REQUEST message, the MB-SMF shall interpret that the IP multicast is used for this shared NG-U transport, and include the *Shared NG-U Multicast TNL Information* IE in the *MBS* *Distribution Setup Response Transfer* IE in the DISTRIBUTION SETUP RESPONSE message.

#### 8.18.1.3 Unsuccessful Operation



Figure 8.18.1.3-1: Distribution Setup, unsuccessful operation.

In case the shared NG-U transport cannot be setup successfully, the AMF shall respond with the DISTRIBUTION SETUP FAILURE message to the NG-RAN node with an appropriate cause value.

#### 8.18.1.4 Abnormal Conditions

Void.

### 8.18.2 Distribution Release

#### 8.18.2.1 General

The purpose of the Distribution Release procedure is to enable the release of already established NG-U resources for a given multicast MBS session, or for a given area session of the multicast MBS session. The procedure uses non-UE-associated signalling.

#### 8.18.2.2 Successful Operation



Figure 8.18.2.2-1: Distribution Release, successful operation.

The NG-RAN node initiates the procedure by sending a DISTRIBUTION RELEASE REQUEST message.

Upon receipt of the DISTRIBUTION RELEASE REQUEST message, the AMF shall send the DISTRIBUTION RELEASE RESPONSE message after successfully removing the corresponding NG-U resource for the MBS session.

For location dependent multicast session, the NG-RAN node shall include the *MBS Area Session ID* IE in the DISTRIBUTION RELEASE REQUEST message, and the AMF shall provide the same value of the *MBS Area Session ID* IE in the DISTRIBUTION RELEASE RESPONSE message.

If unicast shared NG-U transport is used, the NG-RAN node shall include the *Shared NG-U TNL Information* IE in the *MBS Distribution Release Request Transfer* IE in the DISTRIBUTION RELEASE REQUEST message, and the MB-SMF shall release the corresponding shared NG-U transport as specified in TS 23.247 [44].

#### 8.18.2.3 Unsuccessful Operation

Not applicable.

#### 8.18.2.4 Abnormal Conditions

Void.

### 8.18.3 Multicast Session Activation

#### 8.18.3.1 General

The purpose of the Multicast Session Activation procedure is to request a NG-RAN node to activate the MBS session resources of a multicast MBS session. The procedure uses non-UE-associated signalling.

#### 8.18.3.2 Successful Operation



Figure 8.18.3.2-1: Multicast Session Activation, successful operation.

The AMF initiates the procedure by sending a MULTICAST SESSION ACTIVATION REQUEST message to the NG-RAN node.

Upon receipt of the MULTICAST SESSION ACTIVATION REQUEST, the NG-RAN nodeactivates the previously requested MBS session resources corresponding to the MBS session indicated in the MULTICAST SESSION ACTIVATION REQUEST message and indicates in the MULTICAST SESSION ACTIVATION RESPONSE message for which MBS session the request was fulfilled.

#### 8.18.3.3 Unsuccessful Operation



Figure 8.18.3.3-1: Multicast Session Activation, unsuccessful operation.

If the NG-RAN node cannot activate the previously requested MBS session resources indicated by the MULTICAST SESSION ACTIVATION REQUEST message, it shall respond with a MULTICAST SESSION ACTIVATION FAILURE message with an appropriate cause value.

#### 8.18.3.4 Abnormal Conditions

Void.

### 8.18.4 Multicast Session Deactivation

#### 8.18.4.1 General

The purpose of the Multicast Session Deactivation procedure is to request a NG-RAN node to deactivate the multicast MBS session resources of one MBS session. The procedure uses non-UE-associated signalling.

#### 8.18.4.2 Successful Operation



Figure 8.18.4.2-1: Multicast Session Deactivation, successful operation.

The AMF initiates the procedure by sending a MULTICAST SESSION DEACTIVATION REQUEST message to the NG-RAN node.

Upon receipt of this message, the NG-RAN nodeshall deactivate the previously requested MBS session resources corresponding to the MBS session indicated in the MULTICAST SESSION DEACTIVATION REQUEST message and shall indicate in the MULTICAST SESSION DEACTIVATION RESPONSE message for which MBS session the request was fulfilled.

#### 8.18.4.3 Unsuccessful Operation

Not applicable.

#### 8.18.4.4 Abnormal Conditions

Void.

### 8.18.5 Multicast Session Update

#### 8.18.5.1 General

The purpose of the Multicast Session Update procedure is to request the NG-RAN node to update the NG-RAN MBS session resources or area related to a multicast MBS session. The procedure uses non-UE associated signalling.

#### 8.18.5.2 Successful Operation



Figure 8.18.5.2-1: Multicast Session Update, successful operation.

The AMF initiates the procedure by sending a MULTICAST SESSION UPDATE REQUEST message to the NG-RAN node.

Upon receipt of the MULTICAST SESSION UPDATE REQUEST message, the NG-RAN node shall, if requested, update the MBS QoS profile and/or MBS Service Area for the multicast service and send the MULTICAST SESSION UPDATE RESPONSE message to the AMF.

For location dependent multicast session, the AMF shall include the *MBS Area Session ID* IE in the MULTICAST SESSION UPDATE REQUEST message, and the NG-RAN node shall provide the same value of the *MBS Area Session ID* IE in the MULTICAST SESSION UPDATE RESPONSE message.

In case the *MBS Service Area Information* IE is included in the *Multicast Session Update Request Transfer* IE in the MULTICAST SESSION UPDATE REQUEST message, the NG-RAN node shall update the stored MBS Service Area Information for that service, as specified in TS 23.247 [44].

In case the *MBS QoS Flows To Be Setup or Modify List* IE is included in the *Multicast Session Update Request Transfer* IE in the MULTICAST SESSION UPDATE REQUEST message, the NG-RAN node shall setup or modify the MBS QoS profile accordingly.

In case the *MBS QoS Flows To Be Release List* IE is included in the *Multicast Session Update Request Transfer* IE in the MULTICAST SESSION UPDATE REQUEST message, the NG-RAN node shall release the indicated MBS QoS flows.

In case the *MBS Session TNL Information 5GC* IE is included in the *Multicast Session Update Request Transfer* IE in the MULTICAST SESSION UPDATE REQUEST message, the NG-RAN node shall take the information into account and update related NG-U resources.

#### 8.18.5.3 Unsuccessful Operation



Figure 8.18.5.3-1: Multicast Session Update, unsuccessful operation.

If the NG-RAN node is not able to perform any of the requested update, it shall respond with a MULTICAST SESSION UPDATE FAILURE message with an appropriate cause value.

#### 8.18.5.4 Abnormal Conditions

Void.

<<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

#### 9.2.4.2 MULTICAST GROUP PAGING

This message is sent by the AMF and is used to notify involved UEs about the activation of a multicast MBS session.

Direction: AMF → NG-RAN node

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.3.1.1 |  | YES | ignore |
| MBS Session ID | M |  | 9.3.1.206 |  | YES | ignore |
| MBS Service Area | O |  | 9.3.1.208 |  | YES | ignore |
| **Multicast Group Paging Area List** |  | *1* |  |  | YES | ignore |
| **>Multicast Group Paging Area Item** |  | *1..<maxnoofPagingAreas>* |  |  | - |  |
| >>Multicast Group Paging Area | M |  | 9.3.1.216 |  | - |  |
| **>>UE Paging List** |  | *0..1* |  |  | - |  |
| **>>>UE Paging Item** |  | *1..<maxnoofUEsforPaging>* |  |  | - |  |
| >>>>UE Identity Index Value | M |  | 9.3.3.23 |  | - |  |
| >>>>Paging DRX | O |  | 9.3.1.90 |  | - |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofPagingAreas | Maximum no. of paging areas for multicast group paging. Value is 64. |
| maxnoofUEsforPaging | Maximum no. of UEs allowed within one paging area for multicast group paging. Value is 4096. |

<<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

#### 9.2.16.1 BROADCAST SESSION SETUP REQUEST

This message is sent by the AMF to establish MBS session resources for a broadcast MBS session.

Direction: AMF → NG-RAN node

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| MBS Session ID | M |  | 9.3.1.206 |  | YES | reject |
| S-NSSAI | M |  | 9.3.1.24 |  | YES | reject |
| MBS Service Area | M |  | 9.3.1.208 |  | YES | reject |
| MBS Session Setup Request Transfer | M |  | OCTET STRING | Containing the *MBS Session Setup or Modification Request Transfer* IE specified in subclause 9.3.5.3 | YES | reject |

#### 9.2.16.2 BROADCAST SESSION SETUP RESPONSE

This message is sent by the NG-RAN node to report the successful outcome of the request from the BROADCAST SESSION SETUP REQUEST message.

Direction: NG-RAN node → AMF

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| MBS Session ID | M |  | 9.3.1.206 |  | YES | reject |
| MBS Session Setup Response Transfer | O |  | OCTET STRING | Containing the *MBS Session Setup or Modification Response Transfer* IE specified in subclause 9.3.5.5 | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

#### 9.2.16.3 BROADCAST SESSION SETUP FAILURE

This message is sent by the NG-RAN node to report the unsuccessful outcome of the request from the BROADCAST SESSION SETUP REQUEST message.

Direction: NG-RAN node → AMF

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| MBS Session ID | M |  | 9.3.1.206 |  | YES | reject |
| MBS Session Setup Failure Transfer | O |  | OCTET STRING | Containing the *MBS Session Setup or Modification Failure Transfer* IE specified in subclause 9.3.5.6 | YES | ignore |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

#### 9.2.16.4 BROADCAST SESSION MODIFICATION REQUEST

This message is sent by the AMF to modify MBS session resources or the MBS session broadcast area of a previously established broadcast MBS session.

Direction: AMF → NG-RAN node

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| MBS Session ID | M |  | 9.3.1.206 |  | YES | reject |
| MBS Service Area | O |  | 9.3.1.208 |  | YES | reject |
| MBS Session Modification Request Transfer | O |  | OCTET STRING | Containing the *MBS Session Setup or Modification Request Transfer* IE specified in subclause 9.3.5.3 | YES | reject |

#### 9.2.16.5 BROADCAST SESSION MODIFICATION RESPONSE

This message is sent by the NG-RAN node to report the successful outcome of the request from the BROADCAST SESSION MODIFICATION REQUEST message.

Direction: NG-RAN node → AMF

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| MBS Session ID | M |  | 9.3.1.206 |  | YES | reject |
| MBS Session Modification Response Transfer | O |  | OCTET STRING | Containing the *MBS Session Setup or Modification Response Transfer* IE specified in subclause 9.3.5.5 | YES | reject |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

#### 9.2.16.6 BROADCAST SESSION MODIFICATION FAILURE

This message is sent by the NG-RAN node to report the unsuccessful outcome of the request from the BROADCAST SESSION MODIFICATION REQUEST message.

Direction: NG-RAN node → AMF

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| MBS Session ID | M |  | 9.3.1.206 |  | YES | reject |
| MBS Session Modification Failure Transfer | O |  | OCTET STRING | Containing the *MBS Session Setup or Modification Failure Transfer* IE specified in subclause 9.3.5.6 | YES | ignore |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

#### 9.2.16.7 BROADCAST SESSION RELEASE REQUEST

This message is sent by the AMF to release the MBS session resources of a previously established broadcast MBS session.

Direction: AMF → NG-RAN node

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| MBS Session ID | M |  | 9.3.1.206 |  | YES | reject |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |

#### 9.2.16.8 BROADCAST SESSION RELEASE RESPONSE

This message is sent by the NG-RAN node to acknowledge the BROADCAST SESSION RELEASE REQUEST message.

Direction: NG-RAN node → AMF

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| MBS Session ID | M |  | 9.3.1.206 |  | YES | reject |
| MBS Session Release Response Transfer | O |  | OCTET STRING | Containing the *MBS Session Release Response Transfer* IE specified in subclause 9.3.5.14 | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

#### 9.2.16.9 BROADCAST SESSION RELEASE REQUIRED

This message is sent by the NG-RAN node to trigger the AMF to initiate the release of corresponding MBS session resources.

Direction: NG-RAN node → AMF

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| MBS Session ID | M |  | 9.3.1.206 |  | YES | reject |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |

### 9.2.17 Multicast Session Management Messages

#### 9.2.17.1 DISTRIBUTION SETUP REQUEST

This message is sent by the NG-RAN node to request the setup of the NG-U transport for a multicast MBS session, or for one area session of a location dependent multicast MBS session.

Direction: NG-RAN node → AMF

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| MBS Session ID | M |  | 9.3.1.206 |  | YES | reject |
| MBS Area Session ID | O |  | 9.3.1.207 |  | YES | reject |
| MBS Distribution Setup Request Transfer | M |  | OCTET STRING | Containing the *MBS Distribution Setup Request Transfer* IE specified in subclause 9.3.5.7. | YES | reject |

#### 9.2.17.2 DISTRIBUTION SETUP RESPONSE

This message is sent by the AMF to confirm the setup of the NG-U transport.

Direction: AMF → NG-RAN node

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| MBS Session ID | M |  | 9.3.1.206 |  | YES | reject |
| MBS Area Session ID | O |  | 9.3.1.207 |  | YES | reject |
| MBS Distribution Setup Response Transfer | M |  | OCTET STRING | Containing the *MBS Distribution Setup Response Transfer* IE specified in subclause 9.3.5.8. | YES | reject |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

#### 9.2.17.3 DISTRIBUTION SETUP FAILURE

This message is sent by the AMF to indicate that the setup of the NG-U transport was unsuccessful.

Direction: AMF → NG-RAN node

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| MBS Session ID | M |  | 9.3.1.206 |  | YES | reject |
| MBS Area Session ID | O |  | 9.3.1.207 |  | YES | reject |
| MBS Distribution Setup Unsuccessful Transfer | M |  | OCTET STRING | Containing the *MBS Distribution Setup Unsuccessful Transfer* IE specified in subclause 9.3.5.9. | YES | ignore |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

#### 9.2.17.4 DISTRIBUTION RELEASE REQUEST

This message is sent by the NG-RAN node to request the release of the NG-U transport.

Direction: NG-RAN node → AMF

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| MBS Session ID | M |  | 9.3.1.206 |  | YES | reject |
| MBS Area Session ID | O |  | 9.3.1.207 |  | YES | reject |
| MBS Distribution Release Request Transfer | M |  | OCTET STRING | Containing the *MBS Distribution Release Request Transfer* IE specified in subclause 9.3.5.10. | YES | reject |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |

#### 9.2.17.5 DISTRIBUTION RELEASE RESPONSE

This message is sent by the AMF to confirm the release of the NG-U transport.

Direction: AMF → NG-RAN node

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| MBS Session ID | M |  | 9.3.1.206 |  | YES | reject |
| MBS Area Session ID | O |  | 9.3.1.207 |  | YES | reject |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

#### 9.2.17.6 MULTICAST SESSION ACTIVATION REQUEST

This message is sent by the AMF to a NG-RAN node to request for activating MBS session resources for a multicast MBS session.

Direction: AMF → NG-RAN node

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| MBS Session ID | M |  | 9.3.1.206 |  | YES | reject |
| Multicast Session Activation Request Transfer | M |  | OCTET STRING | Containing the *Multicast Session Activation Request Transfer* IE specified in subclause 9.3.5.11. | YES | reject |

#### 9.2.17.7 MULTICAST SESSION ACTIVATION RESPONSE

This message is sent by the NG-RAN node to the AMF to indicate that the MBS session resources have been activated.

Direction: NG-RAN node → AMF

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| MBS Session ID | M |  | 9.3.1.206 |  | YES | reject |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

#### 9.2.17.8 MULTICAST SESSION ACTIVATION FAILURE

This message is sent by the NG-RAN node to the AMF to indicate that the requested activation of the MBS session resources has failed.

Direction: NG-RAN node → AMF

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.2.13 |  | YES | reject |
| MBS Session ID | M |  | 9.3.1.206 |  | YES | reject |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

#### 9.2.17.9 MULTICAST SESSION DEACTIVATION REQUEST

This message is sent by the AMF to a NG-RAN node to request to deactivate the MBS session resources of a multicast MBS session.

Direction: AMF → NG-RAN node

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| MBS Session ID | M |  | 9.3.1.206 |  | YES | reject |
| Multicast Session Deactivation Request Transfer | M |  | OCTET STRING | Containing the *Multicast Session Deactivation Request Transfer* IE specified in subclause 9.3.5.12. | YES | reject |

#### 9.2.17.10 MULTICAST SESSION DEACTIVATION RESPONSE

This message is sent by the NG-RAN node to the AMF to indicate that the MBS session resources have been deactivated.

Direction: NG-RAN node → AMF

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| MBS Session ID | M |  | 9.3.1.206 |  | YES | reject |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

#### 9.2.17.11 MULTICAST SESSION UPDATE REQUEST

This message is sent by the AMF to a NG-RAN node to update the MBS session resources information.

Direction: AMF → NG-RAN node

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| MBS Session ID | M |  | 9.3.1.206 |  | YES | reject |
| MBS Area Session ID | O |  | 9.3.1.207 |  | YES | reject |
| Multicast Session Update Request Transfer | M |  | OCTET STRING | Containing the *Multicast Session Update Request Transfer* IE specified in subclause 9.3.5.13. | YES | reject |

#### 9.2.17.12 MULTICAST SESSION UPDATE RESPONSE

This message is sent by the NG-RAN node to the AMF to confirm the update of MBS information.

Direction: NG-RAN node → AMF

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| MBS Session ID | M |  | 9.3.1.206 |  | YES | reject |
| MBS Area Session ID | O |  | 9.3.1.207 |  | YES | reject |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

#### 9.2.17.13 MULTICAST SESSION UPDATE FAILURE

This message is sent by the NG-RAN node to the AMF to indicate multicast session update failure.

Direction: NG-RAN node → AMF

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| MBS Session ID | M |  | 9.3.1.206 |  | YES | reject |
| MBS Area Session ID | O |  | 9.3.1.207 |  | YES | reject |
| Cause | M |  | 9.3.1.2 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |

<<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

#### 9.3.1.29 Source NG-RAN Node to Target NG-RAN Node Transparent Container

This IE is produced by the source NG-RAN node and is transmitted to the target NG-RAN node. For inter-system handovers to 5G, the IE is transmitted from the external handover source to the target NG-RAN node.

This IE is transparent to the 5GC.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| RRC Container | M |  | OCTET STRING | Includes the RRC *HandoverPreparationInformation* message as defined in TS 38.331 [18] if the target is a gNB.  Includes the RRC *HandoverPreparationInformation* message as defined in TS 36.331 [21] if the target is an ng-eNB. | - |  |
| **PDU Session Resource Information List** |  | *0..1* |  | For intra-system handovers in NG-RAN. | - |  |
| **>PDU Session Resource Information Item** |  | *1..<maxnoofPDUSessions>* |  |  | - |  |
| >>PDU Session ID | M |  | 9.3.1.50 |  | - |  |
| **>>QoS Flow Information List** |  | *1* |  |  | - |  |
| **>>>QoS Flow Information Item** |  | *1..<maxnoofQoSFlows>* |  |  | - |  |
| >>>>QoS Flow Identifier | M |  | 9.3.1.51 |  | - |  |
| >>>>DL Forwarding | O |  | 9.3.1.33 |  | - |  |
| >>>>UL Forwarding | O |  | 9.3.1.118 |  | YES | ignore |
| >>>>Source Transport Layer Address | O |  | Transport Layer Address  9.3.2.4 | Identifies the TNL address used by the sending node for direct data forwarding  towards the target NG-RAN node | YES | ignore |
| >>>>Source Node Transport Layer Address | O |  | Transport Layer Address  9.3.2.4 | Identifies the TNL address used by the source SN node for direct data forwarding  towards the target NG-RAN node | YES | ignore |
| >>DRBs to QoS Flows Mapping List | O |  | 9.3.1.34 |  | - |  |
| **E-RAB Information List** |  | *0..1* |  | For inter-system handovers to 5G. | - |  |
| **>E-RAB Information Item** |  | *1..<maxnoofE-RABs>* |  |  | - |  |
| >>E-RAB ID | M |  | 9.3.2.3 |  | - |  |
| >>DL Forwarding | O |  | 9.3.1.33 |  | - |  |
| >>Source Transport Layer Address | O |  | Transport Layer Address  9.3.2.4 | Identifies the TNL address used by the sending node for direct data forwarding  towards the target NG-RAN node | YES | ignore |
| >>Source Node Transport Layer Address | O |  | Transport Layer Address  9.3.2.4 | Identifies the TNL address used by the source SN node for direct data forwarding  towards the target NG-RAN node | YES | ignore |
| Target Cell ID | M |  | NG-RAN CGI  9.3.1.73 |  | - |  |
| Index to RAT/Frequency Selection Priority | O |  | 9.3.1.61 |  | - |  |
| UE History Information | M |  | 9.3.1.95 |  | - |  |
| SgNB UE X2AP ID | O |  | 9.3.1.127 | Allocated at the Source en-gNB | - |  |
| UE History Information from UE | O |  | 9.3.1.166 |  | YES | ignore |
| Source Node ID | O |  | 9.3.1.195 | Source SN ID | YES | ignore |
| UE Context Reference at Source | O |  | RAN UE NGAP ID  9.3.3.2 |  | YES | ignore |
| **MBS Active Session Information Source to Target List** |  | *0..1* |  |  | YES | ignore |
| **>MBS Active Session Information Source to Target Item** |  | *1..<maxnoofMBSSessionsofUE>* |  |  | - |  |
| >>MBS Session ID | M |  | 9.3.1.206 |  | - |  |
| >>MBS Area Session ID | O |  | 9.3.1.207 | If included, this IE indicates the MBS Area Session ID of the UE at the NG-RAN node from which the UE context is transferred | - |  |
| >>MBS Service Area | O |  | 9.3.1.208 | Included if available in source NG-RAN node. | - |  |
| >>MBS QoS Flows To Be Setup List | M |  | 9.3.1.236 |  | - |  |
| **>>MBS Mapping and Data Forwarding Request List** |  | *0..1* |  |  | - |  |
| **>>>MBS Mapping and Data Forwarding Request Item** |  | *1..<maxnoofMRBs>* |  |  | - |  |
| >>>>MRB ID | M |  | 9.3.1.218 | Contains the MRB ID value allocated at the source NG-RAN node. | - |  |
| **>>>>MBS QoS Flow List** |  | *1..<maxnoofMBSQoSflows>* |  |  | - |  |
| >>>>>MBS QoS Flow Identifier | M |  | QoS Flow Identifier  9.3.1.51 |  | - |  |
| >>>>MRB Progress Information | O |  | 9.3.1.219 | The SN information of the last packet which has already been delivered for the MRB. | - |  |
| QMC Configuration Information | O |  | 9.3.1.223 | Used for passing the QoE measurement information from the source NG-RAN node to the target NG-RAN node. | YES | ignore |
| **NGAP IE Support Information Request List** |  | *0..1* |  |  | YES | ignore |
| **>NGAP IE Support Information Request Item** |  | *1..<maxnoofIESupportInfo>* |  |  | - |  |
| >>NGAP Protocol IE-Id | M |  | 9.3.1.239 |  | - |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofPDUSessions | Maximum no. of PDU sessions allowed towards one UE. Value is 256. |
| maxnoofQoSFlows | Maximum no. of QoS flows allowed within one PDU session. Value is 64. |
| maxnoofE-RABs | Maximum no. of E-RABs allowed towards one UE. Value is 256. |
| maxnoofMBSSessions | Maximum no. of MBS sessions allowed within one PDU session. Value is 32. |
| maxnoofMBSSessionsofUE | Maximum no. of MBS sessions allowed towards one UE. Value is 256. |
| maxnoofMBSQoSflows | Maximum no. of MBS QoS flows allowed within one MBS session. Value is 64. |
| maxnoofMRBs | Maximum no. of MRBs. Value is 32. |
| maxnoofIESupportInfo | Maximum no. of IE Support Information. Value is 32. |

#### 9.3.1.30 Target NG-RAN Node to Source NG-RAN Node Transparent Container

This IE is produced by the target NG-RAN node and is transmitted to the source NG-RAN node. For inter-system handovers to 5G, the IE is transmitted from the target NG-RAN node to the external relocation source.

This IE is transparent to the 5GC.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| RRC Container | M |  | OCTET STRING | Includes the RRC *HandoverCommand* message as defined in TS 38.331 [18] if the target is a gNB.  Includes the RRC *HandoverCommand* message as defined in TS 36.331 [21] if the target is an ng-eNB. | - |  |
| DAPS Response Information List |  | *0..1* |  |  | YES | ignore |
| >DAPS Response Information Item |  | *1..<maxnoofDRBs>* |  |  | - |  |
| >>DRB ID | M |  | 9.3.1.53 |  | - |  |
| >>DAPS Response Information | M |  | 9.3.1.189 | Indicates the response to a requested DAPS Handover | - |  |
| Direct Forwarding Path Availability | O |  | 9.3.1.64 | Indicates whether a direct forwarding path between the source SN and the target NG-RAN node is available for inter-system handover | YES | ignore |
| **MBS Active Session Information Target to Source List** |  | *0..1* |  |  | YES | ignore |
| **>MBS Active Session Information Target to Source Item** |  | *1..<maxnoofMBSSessionsofUE>* |  |  | - |  |
| >>MBS Session ID | M |  | 9.3.1.206 |  | - |  |
| **>>Data Forwarding Response MRB List** |  | *0..1* |  |  | - |  |
| **>>>Data Forwarding Response MRB Item** |  | *1..<maxnoofMRBs>* |  |  | - |  |
| >>>>MRB ID | M |  | 9.3.1.218 | Contains the MRB ID value allocated at the source NG-RAN node. | - |  |
| >>>>DL Forwarding UP TNL Information | M |  | UP Transport Layer Information  9.3.2.2 |  | - |  |
| >>>>MRB Progress Information | O |  | 9.3.1.219 | This IE includes the information of the oldest packet available at the target NG-RAN node for the MRB. | - |  |
| NGAP IE Support Information Response List | O |  | 9.3.1.242 |  | YES | ignore |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofDRBs | Maximum no. of DRBs allowed towards one UE. Value is 32. |
| maxnoofMBSSessionsofUE | Maximum no. of MBS sessions allowed towards one UE. Value is 256. |
| maxnoofMRBs | Maximum no. of MRBs. Value is 32. |

<<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

#### 9.3.1.206 MBS Session ID

This IE uniquely identifies an MBS session.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| TMGI | M |  | OCTET STRING (SIZE(6)) | Encoded as defined in TS 23.003 [23]. |
| NID | O |  | 9.3.3.42 |  |

#### 9.3.1.207 MBS Area Session ID

This IE indicates the Area Session ID for MBS session with location dependent context.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MBS Area Session ID | M |  | INTEGER (0..65535, …) |  |

#### 9.3.1.208 MBS Service Area

This IE contains the MBS service area.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| CHOICE *Session Type* | M |  |  |  |
| *>location independent* |  |  |  |  |
| >>MBS Service Area Information | M |  | 9.3.1.209 |  |
| *>location dependent* |  |  |  |  |
| **>>MBS Service Area Information List** |  | *1* |  |  |
| **>>>MBS Service Area Information Item** |  | *1..<maxnoofMBSServiceArea Information>* |  |  |
| >>>>MBS Area Session ID | M |  | 9.3.1.207 |  |
| >>>>MBS Service Area Information | M |  | 9.3.1.209 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMBSServiceAreaInformation | Maximum no. of MBS Service Area Information elements in the *MBS Service Area Information Location Dependent List* IE. Value is 256. |

#### 9.3.1.209 MBS Service Area information

This IE contains MBS service area information.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **MBS Service Area Cell List** |  | *0..<maxnoofCellsforMBS>* |  |  |
| *>*NR CGI | M |  | 9.3.1.7 |  |
| **MBS Service Area TAI List** |  | *0..<maxnoofTAIforMBS>* |  |  |
| *>*TAI | M |  | 9.3.3.11 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofCellsforMBS | Maximum no. of cells allowed within one MBS Service Area. Value is 8192. |
| maxnoofTAIforMBS | Maximum no. of TAs allowed within one MBS Service Area. Value is 1024. |

#### 9.3.1.210 MBS Support Indicator

This IE indicates whether MBS is supported for the NG-RAN node.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MBS Support Indicator | M |  | ENUMERATED (true, …) |  |

#### 9.3.1.211 MBS Session Setup Request List

This IE provides information related to MBS sessions joined by the UE.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **MBS Session Setup Request List** |  | *1* |  |  |
| **>MBS Session Setup Request Item** |  | *1..<maxnoofMBSSessions>* |  |  |
| >>MBS Session ID | M |  | 9.3.1.206 |  |
| >>MBS Area Session ID | O |  | 9.3.1.207 |  |
| **>>Associated MBS QoS Flow Setup Request List** |  | *0..1* |  |  |
| >>>**Associated MBS QoS Flow Setup Request Item** |  | *1..<maxnoofMBSQoSflows>* |  |  |
| >>>>MBS QoS Flow Identifier | M |  | QoS Flow Identifier  9.3.1.51 |  |
| >>>>Associated Unicast QoS Flow Identifier | M |  | QoS Flow Identifier  9.3.1.51 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMBSSessions | Maximum no. of MBS sessions allowed within one PDU session. Value is 32. |
| maxnoofMBSQoSflows | Maximum no. of MBS QoS flows allowed within one MBS session. Value is 64. |

#### 9.3.1.212 MBS Session Setup or Modify Request List

This IE provides information related to MBS sessions joined by the UE.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **MBS Session Setup or Modify Request List** |  | *1* |  |  |
| **>MBS Session Setup or Modify Request Item** |  | *1..<maxnoofMBSSessions>* |  |  |
| >>MBS Session ID | M |  | 9.3.1.206 |  |
| >>MBS Area Session ID | O |  | 9.3.1.207 |  |
| **>>Associated MBS QoS Flow Setup or Modify Request List** |  | *0..1* |  |  |
| **>>>Associated MBS QoS Flow Setup or Modify Request Item** |  | *1..<maxnoofMBSQoSflows>* |  |  |
| >>>>MBS QoS Flow Identifier | M |  | QoS Flow Identifier  9.3.1.51 |  |
| >>>>Associated Unicast QoS Flow Identifier | M |  | QoS Flow Identifier  9.3.1.51 |  |
| >>MBS QoS Flow To Release List | O |  | QoS Flow List with Cause  9.3.1.13 | This IE indicates the MBS QoS Flow Identifiers of the MBS QoS Flows to be released. |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMBSSessions | Maximum no. of MBS sessions allowed within one PDU session. Value is 32. |
| maxnoofMBSQoSflows | Maximum no. of MBS QoS flows allowed within one MBS session. Value is 64. |

#### 9.3.1.213 MBS Session Setup Response List

This IE contains a list of information related to MBS sessions.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **MBS Session Setup Response List** |  | *1* |  |  |
| >**MBS Session Setup Response Item** |  | *1..<maxnoofMBSSessions>* |  |  |
| >>MBS Session ID | M |  | 9.3.1.206 |  |
| >>MBS Area Session ID | O |  | 9.3.1.207 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMBSSessions | Maximum no. of MBS sessions allowed within one PDU session. Value is 32. |

#### 9.3.1.214 MBS Session Failed to Setup List

This IE contains a list of information related to MBS sessions.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **MBS Session Failed to Setup List** |  | *1* |  |  |
| >**MBS Session Failed to Setup Item** |  | *1..<maxnoofMBSSessions>* |  |  |
| >>MBS Session ID | M |  | 9.3.1.206 |  |
| >>MBS Area Session ID | O |  | 9.3.1.207 |  |
| >>Cause | M |  | 9.3.1.2 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMBSSessions | Maximum no. of MBS Sessions allowed within one PDU session. Value is 32. |

#### 9.3.1.215 MBS Session To Release List

This IE indicates MBS sessions to be removed.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **MBS Session To Release List** |  | *1* |  |  |
| **>MBS Session To Release Item** |  | *1..<maxnoofMBSSessions>* |  |  |
| >>MBS Session ID | M |  | 9.3.1.206 |  |
| >>Cause | M |  | 9.3.1.2 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMBSSessions | Maximum no. of MBS sessions allowed within one PDU session. Value is 32. |

#### 9.3.1.216 Multicast Group Paging Area

This IE contains a list of TAIs corresponding to the multicast group paging area.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| **MBS Area TAI List** |  | *1..<maxnoofTAIforPaging>* |  |  |
| *>*TAI | M |  | 9.3.3.11 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofTAIforPaging | Maximum no. of TAIs for multicast group paging. Value is 16. |

#### 9.3.1.217 MBS Session Status

This IE indicates whether the MBS session is activated or deactivated.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MBS Session Status | M |  | ENUMERATED (activated, deactivated, …) |  |

#### 9.3.1.218 MRB ID

This IE contains the MRB ID as specified in TS 38.401 [2].

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MRB ID | M |  | INTEGER (1..32, ...) |  |

#### 9.3.1.219 MRB Progress Information

This IE contains the MRB progress information.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| CHOICE *PDCP SN Status* | M |  |  |  |
| *>12bits* |  |  |  |  |
| >>PDCP SN Length 12 | M |  | INTEGER (0..4095) |  |
| *>18bits* |  |  |  |  |
| >>PDCP SN Length 18 | M |  | INTEGER (0..262143) |  |

<<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

#### 9.3.2.15 MBS Session TNL Information 5GC

This IE provides 5GC TNL information for location dependent and location independent MBS sessions.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| CHOICE *Session Type* | M |  |  |  |
| *>location independent* |  |  |  |  |
| >>Shared NG-U Multicast TNL Information | M |  | 9.3.2.16 |  |
| *>location dependent* |  |  |  |  |
| **>>MBS Session TNL Information 5GC List** |  | *1* |  |  |
| **>>>MBS Session TNL Information 5GC Item** |  | *1..<maxnoofMBSServiceAreaInformation>* |  |  |
| >>>>MBS Area Session ID | M |  | 9.3.1.207 |  |
| >>>>Shared NG-U Multicast TNL Information | M |  | 9.3.2.16 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMBSServiceAreaInformation | Maximum no. of MBS Service Area Information. Value is 256. |

#### 9.3.2.16 Shared NG-U Multicast TNL Information

This IE provides the shared NG user plane transport layer information associated with an MBS session at the 5GC.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| IP Multicast Address | M |  | Transport Layer Address  9.3.2.4 |  |
| IP Source Address | M |  | Transport Layer Address  9.3.2.4 |  |
| GTP-TEID at 5GC | M |  | GTP-TEID  9.3.2.5 |  |

#### 9.3.2.17 MBS Session TNL Information NG-RAN

This IE provides NG-RAN TNL information for location dependent and location independent broadcast MBS sessions.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| CHOICE *Session Type* | M |  |  |  |
| >*location independent* |  |  |  |  |
| >Shared NG-U Unicast TNL Information | M |  | UP Transport Layer Information  9.3.2.2 |  |
| >*location dependent* |  |  |  |  |
| **>>MBS Session TNL Information NG-RAN List** |  | *1* |  |  |
| **>>>MBS Session TNL Information NG-RAN Item** |  | *1..<maxnoofMBSServiceAreaInformation>* |  |  |
| >>>>MBS Area Session ID | M |  | 9.3.1.207 |  |
| >>>>Shared NG-U Unicast TNL Information | O |  | UP Transport Layer Information  9.3.2.2 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMBSServiceAreaInformation | Maximum no. of MBS Service Area Information. Value is 256. |

<<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

### 9.3.5 MB-SMF Related IEs

#### 9.3.5.1 Void

#### 9.3.5.2 Void

#### 9.3.5.3 MBS Session Setup or Modification Request Transfer

This IE is transparent to the AMF.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| MBS Session TNL Information 5GC | O |  | 9.3.2.15 |  | YES | reject |
| MBS QoS Flows To Be Setup or Modified List | M |  | MBS QoS Flows To Be Setup List  9.3.1.236 |  | YES | reject |
| **MBS Session FSA ID List** |  | *0..<maxnoofMBSFSAs>* |  |  | YES | ignore |
| >MBS Frequency Selection Area Identity | M |  | OCTET STRING (SIZE(3)) |  | - |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMBSQoSFlows | Maximum no. of QoS Flows allowed within one MBS session. Value is 64. |
| maxnoofMBSFSAs | Maximum no. of FSA IDs for one MBS session. Value is 64. |

#### 9.3.5.4 Void

#### 9.3.5.5 MBS Session Setup or Modification Response Transfer

This IE is transparent to the AMF.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MBS Session TNL Information NG-RAN | O |  | 9.3.2.17 |  |

#### 9.3.5.6 MBS Session Setup or Modification Failure Transfer

This IE is transparent to the AMF.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Cause | M |  | 9.3.1.2 |  |
| Criticality Diagnostics | O |  | 9.3.1.3 |  |

#### 9.3.5.7 MBS Distribution Setup Request Transfer

This IE is transparent to the AMF.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MBS Session ID | M |  | 9.3.1.206 |  |
| MBS Area Session ID | O |  | 9.3.1.207 |  |
| Shared NG-U Unicast TNL Information | O |  | UP Transport Layer Information  9.3.2.2 | NG-RAN node endpoint of the NG-U transport bearer, for delivery of DL PDUs. |

#### 9.3.5.8 MBS Distribution Setup Response Transfer

This IE is transparent to the AMF.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MBS Session ID | M |  | 9.3.1.206 |  |
| MBS Area Session ID | O |  | 9.3.1.207 |  |
| Shared NG-U Multicast TNL Information | O |  | 9.3.2.16 |  |
| MBS QoS Flows To Be Setup List | M |  | 9.3.1.236 |  |
| MBS Session Status | M |  | 9.3.1.217 |  |
| MBS Service Area | O |  | 9.3.1.208 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMBSQoSFlows | Maximum no. of QoS Flows allowed within one MBS session. Value is 64. |

#### 9.3.5.9 MBS Distribution Setup Unsuccessful Transfer

This IE is transparent to the AMF.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MBS Session ID | M |  | 9.3.1.206 |  |
| MBS Area Session ID | O |  | 9.3.1.207 |  |
| Cause | M |  | 9.3.1.2 |  |
| Criticality Diagnostics | O |  | 9.3.1.3 |  |

#### 9.3.5.10 MBS Distribution Release Request Transfer

This IE is transparent to the AMF.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MBS Session ID | M |  | 9.3.1.206 |  |
| MBS Area Session ID | O |  | 9.3.1.207 |  |
| Shared NG-U Unicast TNL Information | O |  | UP Transport Layer Information  9.3.2.2 | NG-RAN node endpoint of the NG-U transport bearer, for delivery of DL PDUs. |
| Cause | M |  | 9.3.1.2 |  |

#### 9.3.5.11 Multicast Session Activation Request Transfer

This IE is transparent to the AMF.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MBS Session ID | M |  | 9.3.1.206 |  |

#### 9.3.5.12 Multicast Session Deactivation Request Transfer

This IE is transparent to the AMF.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MBS Session ID | M |  | 9.3.1.206 |  |

#### 9.3.5.13 Multicast Session Update Request Transfer

This IE is transparent to the AMF.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| MBS Session ID | M |  | 9.3.1.206 |  | YES | reject |
| MBS Service Area | O |  | 9.3.1.208 |  | YES | reject |
| MBS QoS Flows To Be Setup or Modified List | O |  | MBS QoS Flows To Be Setup List  9.3.1.236 |  | YES | reject |
| MBS QoS Flow To Release List | O |  | QoS Flow List with Cause  9.3.1.13 | This IE indicates the MBS QoS flow Identifiers of the MBS QoS flows to be released. | YES | reject |
| MBS Session TNL Information 5GC | O |  | 9.3.2.15 |  | YES | reject |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofMBSQoSFlows | Maximum no. of QoS Flows allowed within one MBS session. Value is 64. |

#### 9.3.5.14 MBS Session Release Response Transfer

This IE is transparent to the AMF.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| MBS Session TNL Information NG-RAN | O |  | 9.3.2.17 |  |

<<<<<<<<<<<<<<<<<<<< Last Change >>>>>>>>>>>>>>>>>>>>

### 9.4.5 Information Element Definitions

-- ASN1START

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

--

-- Information Element Definitions

--

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

NGAP-IEs {

itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)

ngran-Access (22) modules (3) ngap (1) version1 (1) ngap-IEs (2) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

<<<<<<<<<<<<<<<<<<<< Unmodified Text Omitted >>>>>>>>>>>>>>>>>>>>

MDTModeEutra ::= OCTET STRING

MeasurementsToActivate ::= BIT STRING(SIZE(8))

MRB-ID ::= INTEGER (1..512, ...)

MulticastSessionActivationRequestTransfer ::= SEQUENCE {

mBS-SessionID MBS-SessionID,

iE-Extensions ProtocolExtensionContainer { { MulticastSessionActivationRequestTransfer-ExtIEs} } OPTIONAL,

...

}

MulticastSessionActivationRequestTransfer-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

...

}

<<<<<<<<<<<<<<<<<<<< End of Changes >>>>>>>>>>>>>>>>>>>>