**3GPP TSG-CT WG4 Meeting #111-eC4-224xxx**

**E-Meeting, 18th – 26th August 2022** *Revision of C4-224164*

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** |  | **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 |  | Core Network | **X** |

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| ***Title:*** |  | | | | | | | | | |
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| ***Source to WG:*** | , Huawei | | | | | | | | | |
| ***Source to TSG:*** | CT4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5MBS | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***Category:*** |  |  | | | | | ***Release:*** | | |  |
|  | *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:*** | | References to TS 23.247 and TS 38.413 for the Broadcast MBS Session Release Require procedure need to be fixed.  The NGAP MB-SMF related IE specified in clause 9.3.5 of TS 38.413 have been renamed. TS 29.518 needs to be aligned accordingly.  CR 29.518 #0717 ([**C4-222369**](https://www.3gpp.org/ftp/tsg_ct/WG4_protocollars_ex-CN4/TSGCT4_109e_meeting/Docs/C4-222369.zip)) agreed at CT4#109-e has not been implemented completely:  - the editor's note was omitted to be removed from clause 6.5.6.3.4.  - BROADCAST SESSION MODIFICATION REQUEST was omitted to be added in the first row of Table 6.5.6.4.2.2-1. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | References to TS 23.247 and TS 38.413 are fixed.  The name of the NGAP MB-SMF related IEs is aligned with TS 38.413.  The editor's note is removed from clause 6.5.6.3.4.  BROADCAST SESSION MODIFICATION REQUEST is added in the first row of Table 6.5.6.4.2.2-1. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Incomplete specification and misalignments with TS 38.413 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.6.2.2, 5.6.2.3, 5.6.2.5, 6.5.6.2.7, 6.5.6.3.4, 6.5.6.4.2.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 does not cause any OpenAPI change. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Rev. 1: Huawei is added as co-source (merge of CRs) | | | | | | | | |

\* \* \* First Change \* \* \* \*

#### 5.6.2.2 ContextCreate

The ContextCreate service operation shall be used by the NF Service Consumer (e.g. MB-SMF) to request the AMF to create a broadcast MBS session context.

NOTE: For a location dependent MBS service, one single ContextCreate service operation is performed per MBS session (for a given AMF).

It is used in the following procedures:

- MBS Session Start for Broadcast (see clause 7.3.1 of 3GPP TS 23.247 [55]);

- Support for Local Broadcast Service (see clause 7.3.4 of 3GPP TS 23.247 [55]).

There shall be only one broadcast MBS session context per MBS session, or per MBS session and Area Session ID for an MBS session with Location dependent Broadcast service.

The NF Service Consumer (e.g. MB-SMF) shall create a broadcast MBS session context by using the HTTP POST method as shown in Figure 5.6.2.2-1.



Figure 5.6.2.2-1: Broadcast MBS session context creation

1. The NF Service Consumer shall send a POST request targeting the Broadcast MBS session contexts collection resource of the AMF. The payload body of the POST request shall contain the following information:

- MBS Session ID (i.e. TMGI, or TMGI and NID for an MBS session in an SNPN);

- list of Area Session ID and related MBS service area, for a Location dependent broadcast MBS service;

- MBS service area, for a Local broadcast MBS session;

- N2 MBS Session Management container (see MBS Session Setup or Modification Request Transfer IE in 3GPP TS 38.413 [12]);

- Notification URI where to be notified about the status change of the broadcast MBS session context; and

- SNSSAI.

The NF Service Consumer may also include the maxResponseTime IE in the request to indicate the maximum response time to receive information about the completion of the Broadcast MBS session establishment.

2a. On success, "201 Created" shall be returned. The AMF should respond success when it receives the first successful response from the NG-RAN(s). The 201 Created response shall contain MBS session identifier and may contain one or more N2 MBS Session Management containers, if additional information (e.g. MBS Session Setup or Modification Response Transfer IE or MBS Session Setup or Modification Failure Transfer IE in 3GPP TS 38.413 [12]) needs to be transferred to the MB-SMF. If the AMF received the NG-RAN responses from all involved NG-RAN(s), e.g. if the broadccast MBS session involves only one NG-RAN, the AMF shall include an indication of completion of the operation in all NG-RANs in the 201 Created response.

Upon receipt of subsequent responses from other NG-RANs after sending the 201 Created response, if additional information (e.g. MBS Session Setup or Modification Response Transfer IE or MBS Session Setup or Modification Failure Transfer IE in 3GPP TS 38.413 [12]) needs to be transferred to the MB-SMF, the AMF shall transfer such information by sending one or more Namf\_MBSBroadcast\_ContextStatusNotify requests to the MB-SMF. A Namf\_MBSBroadcast\_ContextStatusNotify request may include a list of N2 MBS Session Management containers received from different NG-RANs. When the AMF receives the response from all NG-RANs, the AMF shall include an indication of the completion of the operation in the Namf\_MBSBroadcast\_ContextStatusNotify request.

If the AMF does not receive responses from all NG-RAN nodes before the maximum response time elapses since the reception of the Namf\_MBSBroadcast\_ContextCreate Request, then the AMF should send one Namf\_MBSBroadcast\_ContextStatusNotify request indicating the incompletion of the Broadcast MBS session establishment.

For each N2 MBS Session Management container sent towards the MB-SMF, the AMF shall insert the identifier of the NG-RAN node that generated it in the corresponding entry of the n2MbsSmInfoList attribute.

The AMF may send one or more Namf\_MBSBroadcast\_ContextStatusNotify request including an operationEvent attribute to report the MB-SMF about failure to reach one or more NG-RANs.

2b. On failure or redirection, one of the HTTP status code listed in Table 6.5.3.2.3.1-3 shall be returned. For a 4xx/5xx response, the message body may contain a ProblemDetails structure with the "cause" attribute set to one of the application errors listed in Table 6.5.3.2.3.1-3.

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

#### 5.6.2.3 ContextUpdate

The ContextUpdate service operation shall be used by the NF Service Consumer (e.g. MB-SMF) to request the AMF to update a broadcast MBS session context.

It is used in the following procedures:

- MBS Session Update for Broadcast (see clause 7.3.3 of 3GPP TS 23.247 [55]).

- Broadcast MBS session restoration by MB-SMF (see clause 8.3.2.3 of 3GPP TS 23.527 [33].

- Selecting an alternative AMF for a Broadcast MBS Session at AMF failure (see clause 8.3.2.4 of 3GPP TS 23.527 [33]).

The NF Service Consumer (e.g. MB-SMF) shall update a broadcast MBS session context by using the HTTP POST method as shown in Figure 5.6.2.3-1.



Figure 5.6.2.3-1: Broadcast MBS session context update

1. The NF Service Consumer shall send a POST request targeting the individual Broadcast MBS session context resource to be updated in the AMF. The payload body of the POST request may contain the following information:

- N2 MBS Session Management container (see MBS Session Setup or Modification Request Transfer IE in 3GPP TS 38.413 [12]);

- Notification URI, if the NF Service Consumer wishes to modify the notification URI where to be notified about the status change of the broadcast MBS session context;

- updated MBS service area, for a Local broadcast MBS session;

- updated list of Area Session ID and related MBS service area, for a Location dependent broadcast MBS session.

- the n2MbsInfoChangeInd IE set to "true" or "false" to indicate to the AMF whether the information within the N2 MBS Session Management container has changed or not for the MBS session

The NF Service Consumer may also include the maxResponseTime IE in the request to indicate the maximum response time to receive information about the completion of the Broadcast MBS session update.

During a broadcast MBS session restoration procedure for an NG-RAN failure with restart, the MB-SMF may include one or more ranIds attibutes to request the AMF to setup the Broadcast MBS session in a list of NG-RANs as identified by the NG-RAN ID(s), as specified in clause 8.3.2.3 of 3GPP TS 23.527 [33].

During a restoration procedure upon an AMF failure without restart, for an AMF deployed in an AMF set, the MB-SMF may set the noNgapSignallingIndication IE to "true" when the MB-SMF detects the original AMF has failed and then selects an alternative AMF to take over the MBS session but without a need to trigger any NGAP signalling towards NG-RANs, as specified in clause 8.3.2.4 of 3GPP TS 23.527 [33].

2a. On success, "200 OK" shall be returned if additional information needs to be returned in the response. The 200 OK response may contain one or more N2 MBS Session Management containers, if such information (e.g. MBS Session Setup or Modification Response Transfer IE or MBS Session Setup or Modification Failure Transfer IE in 3GPP TS 38.413 [12]) needs to be transferred to the MB-SMF. If the AMF received the NG-RAN responses from all involved NG-RAN(s), the AMF shall include an indication of completion of the operation in all NG-RANs.

2b. On success, "204 No Content" shall be returned if no additional information needs to be returned in the response.

In both 2a and 2b cases, upon receipt of subsequent responses from other NG-RANs after sending the 200 OK response or the 204 No Content response, if additional information (e.g. MBS Session Setup or Modification Response Transfer IE or MBS Session Setup or Modification Failure Transfer IE in 3GPP TS 38.413 [12]) needs to be transferred to the MB-SMF, the AMF shall transfer such information by sending one or more Namf\_MBSBroadcast\_ContextStatusNotify requests to the MB-SMF. A Namf\_MBSBroadcast\_ContextStatusNotify request may include a list of N2 MBS Session Management containers received from different NG-RANs. When the AMF receives the response from all NG-RANs, the AMF shall include an indication of the completion of the operation in the Namf\_MBSBroadcast\_ContextStatusNotify request.

If the AMF does not receive responses from all NG-RAN nodes before the maximum response time elapses since the reception of the Namf\_MBSBroadcast\_ContextUpdate Request, then the AMF should send one Namf\_MBSBroadcast\_ContextStatusNotify request indicating the incompletion of the Broadcast MBS session update.

If the n2MbsInfoChangeInd IE is present in the request and set to "false", the AMF does not need to contact NG-RAN nodes unaffected by the MBS service area change.

For each N2 MBS Session Management container sent towards the MB-SMF, the AMF shall insert the identifier of the NG-RAN node that generated it in the corresponding entry of the n2MbsSmInfoList attribute.

The AMF may send one or more Namf\_MBSBroadcast\_ContextStatusNotify request including an operationEvent attribute to report the MB-SMF about failure to reach one or more NG-RANs.

2c. On failure or redirection, one of the HTTP status code listed in Table 6.5.3.2.4.2.2-2 shall be returned. For a 4xx/5xx response, the message body may contain a ProblemDetails structure with the "cause" attribute set to one of the application errors listed in Table 6.5.3.2.4.2.2-2.

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

#### 5.6.2.5 ContextStatusNotify

The ContextStatusNotify service operation shall be used by the AMF to notify status change of a broadcast MBS session context to the NF Service Consumer (e.g. MB-SMF).

It is used in the following procedures:

- MBS Session Start for Broadcast (see clause 7.3.1 of 3GPP TS 23.247 [55]);

- MBS Session Update for Broadcast (see clause 7.3.3 of 3GPP TS 23.247 [55]);

- Broadcast MBS Session Release Require (see clause 7.3.6 of 3GPP TS 23.247 [55]).

- Broadcast MBS session restoration by MB-SMF (see clause 8.3.2.3 of 3GPP TS 23.527 [33]).

- Selecting an alternative AMF for a Broadcast MBS Session at AMF failure (see clause 8.3.2.4 of 3GPP TS 23.527 [33]).

The AMF shall notify status change of a broadcast MBS session context to the NF Service Consumer (e.g. MB-SMF) by using the HTTP POST method as shown in Figure 5.6.2.5-1.



Figure 5.6.2.5-1: Broadcast MBS session context status change notification

1. The AMF shall send a POST request targeting the notification URI received from the NF Service Consumer. The payload body of the POST request shall contain the following information:

- MBS Session ID (i.e. TMGI, or TMGI and NID for an MBS session in an SNPN);

- Area Session ID, if this is a Location dependent broadcast MBS service;

- one or more N2 MBS Session Management containers, if N2 MBS Session Management information (e.g. MBS Session Setup or Modification Response Transfer IE, MBS Session Setup or Modification Failure Transfer IE or MBS Session Release Response Transfer IE in 3GPP TS 38.413 [12]) has been received from one or more NG-RANs that needs to be transferred to the NF Service Consumer; for each N2 MBS Session Management container sent towards the MB-SMF, the AMF shall insert the identifier of the NG-RAN node that generated it in the corresponding entry of the n2MbsSmInfoList attribute.

- the operationStatus IE indicating the completion of the Broadcast MBS session establishment or update, if the NF Service Consumer has requested to establish or update the Broadcast MBS session context and a response has been received from all NG-RANs; and

- the operationStatus IE indicating the incompletion of the Broadcast MBS session establishment or update, if the NF Service Consumer has requested to establish or update the Broadcast MBS session context including a maximum response time and the AMF has not received responses from all NG-RANs before the maximum response time elapses.

- The AMF may include an operationEvent attribute in the MBS Context Status Notification request to report the MB-SMF:

- a NG-RAN failure event, e.g. the NG-RAN failure with or without restart, as specified in clause 8.3.2.3 of 3GPP TS 23.527 [33]);

- that a new AMF has taken over the control of the broadcast MBS session upon an AMF failure as specified in clause 8.3.2.4 of 3GPP TS 23.527 [33]).

2a. On success, the NF Service Consumer shall return a "204 No Content" response.

2b. On failure or redirection, one of the HTTP status code listed in Table 6.5.5.2.3.1-3 shall be returned. For a 4xx/5xx response, the message body may contain a ProblemDetails attribute with the "cause" attribute set to one of the application errors listed in Table 6.5.5.2.3.1-3.

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

##### 6.5.6.2.7 Type: N2MbsSmInfo

Table 6.5.6.2.7-1: Definition of type N2MbsSmInfo

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description |
| ngapIeType | NgapIeType | M | 1 | This IE shall indicate the NGAP IE type of the ngapData as specified in clause 6.5.6.3.4. |
| ngapData | RefToBinaryData | M | 1 | This IE shall contain the reference to the binary data part carrying the NGAP data. |
| ranId | GlobalRanNodeId | M | 1 | This IE shall indicate the Global RAN ID of the gNB that generated the N2 MBS Session Management related information. |

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

##### 6.5.6.3.4 Enumeration: NgapIeType

Table 6.5.6.3.4-1: Enumeration NgapIeType

|  |  |
| --- | --- |
| Enumeration value | Description |
| "MBS\_SES\_REQ" | MBS Session Setup or Modification Request Transfer |
| "MBS\_SES\_RSP" | MBS Session Setup or Modification Response Transfer |
| "MBS\_SES\_FAIL" | MBS Session Setup or Modification Failure Transfer |
| "MBS\_SES\_REL\_RSP" | MBS Session Release Response Transfer |

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

###### 6.5.6.4.2.2 NGAP IEs

N2 Information may encode following NGAP MB-SMF related IE specified in clause 9.3.5 of 3GPP TS 38.413 [12], as summarized in Table 6.5.6.4.2.2-1.

Table 6.5.6.4.2.2-1: N2 Information content for class MBS-SM

|  |  |  |
| --- | --- | --- |
| NGAP IE | Reference  (3GPP TS 38.413 [12]) | Related NGAP message |
| MBS Session Setup or Modification Request Transfer | 9.3.5.3 | BROADCAST SESSION SETUP REQUEST  BROADCAST SESSION MODIFICATION REQUEST |
| MBS Session Setup or Modification Response Transfer | 9.3.5.5 | BROADCAST SESSION SETUP RESPONSE  BROADCAST SESSION MODIFICATION RESPONSE |
| MBS Session Setup or Modification Failure Transfer | 9.3.5.6 | BROADCAST SESSION SETUP FAILURE  BROADCAST SESSION MODIFICATION FAILURE |
| MBS Session Release Response Transfer | 9.3.5.14 | BROADCAST SESSION RELEASE RESPONSE  (NOTE) |
| NOTE: An MBS Session Release Response Transfer IE shall only be sent to the MB-SMF during a Broadcast MBS Session Release Require procedure (see clause 7.3.6 of 3GPP TS 23.247 [55]), when unicast transport applies over N3mb, to transfer the DL F-TEID of the NG-RAN node in which the MBS session has been released and towards which the delivery of MBS data shall be stopped. | | |

\* \* \* End of Changes \* \* \* \*