3GPP TSG-RAN WG3 Meeting #120 R3-233416

**Incheon, Korea, 22nd – 26th May 2023 was R3-233390**

Agenda Item: 15.2

Source: Ericsson, Nokia, Nokia Shanghai Bell, Huawei, CATT, ZTE, Samsung, Lenovo, China Mobile, NEC, Qualcomm

Title: [TP for TS 38.413] on RAN sharing optimisations for MBS

Document for: Discussions & Approval

# 1 Introduction

The document provides a TP for TS 38.413 along offlne agreements on RAN sharing optimisations for MBS.

# 2 TP for NGAP

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

### 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].

If the *Associated Session ID* IE is included in the BROADCAST SESSION SETUP REQUEST message the NG-RAN node shall, if supported, take this information into account to determine whether MBS session resource sharing is possible, as specified in TS 38.300 [8]. If the NG-RAN node decides to not establish shared NG-U resources towards the 5GC it shall include the *Shared NG-U Not Established* IE set to "not established" in the *MBS Session Setup or Modification Response Transfer* IE.

#### 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.

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#### 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 |
| Associated Session ID | O |  | 9.3.1.y4 |  | YES | ignore |

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#### 9.3.1.y4 Associated Session ID

This IE is used to associate MBS Session IDs providing identical user data.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| Associated Session ID | M |  | FFS | Editor’s Note: coding is FFS |

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

#### 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 | Criticality | Assigned Criticality |
| MBS Session TNL Information NG-RAN | O |  | 9.3.2.17 |  | - |  |
| Shared NG-U Not Established | O |  | ENUMERATED (true, ...) | Editor’s Note: whether this IE is applicable for both, unicast and multicast NG-U transport or only for unicast transport is FFS | YES | ignore |

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### 9.4.4 PDU Definitions

-- ASN1START

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

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-- PDU definitions for NGAP.

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

NGAP-PDU-Contents {

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

ngran-Access (22) modules (3) ngap (1) version1 (1) ngap-PDU-Contents (1) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

--

-- IE parameter types from other modules.

--

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

IMPORTS

 AllowedNSSAI,

 AMFName,

 AMFSetID,

 AMF-TNLAssociationSetupList,

 AMF-TNLAssociationToAddList,

 AMF-TNLAssociationToRemoveList,

 AMF-TNLAssociationToUpdateList,

 AMF-UE-NGAP-ID,

 AssistanceDataForPaging,

 AssociatedSessionID,

 AuthenticatedIndication,

 BroadcastCancelledAreaList,

 BroadcastCompletedAreaList,

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

 id-AMF-TNLAssociationToUpdateList,

 id-AMFTrafficLoadReductionIndication,

 id-AMF-UE-NGAP-ID,

 id-AssistanceDataForPaging,

 id-AssociatedSessionID,

 id-AuthenticatedIndication,

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

 id-MBS-DistributionSetupResponseTransfer,

 id-MBS-DistributionSetupUnsuccessfulTransfer,

 id-MBSSessionModificationFailureTransfer,

 id-MBSSessionModificationRequestTransfer,

 id-MBSSessionModificationResponseTransfer,

 id-MBSSessionReleaseResponseTransfer,

 id-MBSSessionSetupFailureTransfer,

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

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

--

-- Broadcast Session Modification Elementary Procedure

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

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

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-- BROADCAST SESSION MODIFICATION REQUEST

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

BroadcastSessionModificationRequest ::= SEQUENCE {

 protocolIEs ProtocolIE-Container { {BroadcastSessionModificationRequestIEs} },

 ...

}

BroadcastSessionModificationRequestIEs NGAP-PROTOCOL-IES ::= {

 { ID id-MBS-SessionID CRITICALITY reject TYPE MBS-SessionID PRESENCE mandatory }|

 { ID id-MBS-ServiceArea CRITICALITY reject TYPE MBS-ServiceArea PRESENCE optional }|

 { ID id-MBSSessionModificationRequestTransfer CRITICALITY reject TYPE OCTET STRING (CONTAINING MBSSessionSetupOrModRequestTransfer) PRESENCE optional }|

 { ID id-AssociatedSessionID CRITICALITY ignore TYPE AssociatedSessionID PRESENCE optional },

 ...

}

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

### 9.4.5 Information Element Definitions

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

--

-- Information Element Definitions

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

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

IMPORTS

 id-AdditionalDLForwardingUPTNLInformation,

 id-AdditionalULForwardingUPTNLInformation,

 id-AdditionalDLQosFlowPerTNLInformation,

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

 id-SgNB-UE-X2AP-ID,

 id-SharedNGUNotEstablished,

 id-S-NSSAI,

 id-SONInformationReport,

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

AssociatedQosFlowList ::= SEQUENCE (SIZE(1..maxnoofQosFlows)) OF AssociatedQosFlowItem

AssociatedQosFlowItem ::= SEQUENCE {

 qosFlowIdentifier QosFlowIdentifier,

 qosFlowMappingIndication ENUMERATED {ul, dl, ...} OPTIONAL,

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

 ...

}

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

 { ID id-CurrentQoSParaSetIndex CRITICALITY ignore EXTENSION AlternativeQoSParaSetIndex PRESENCE optional },

 ...

}

AssociatedSessionID ::= OCTET STRING -- coding FFS

AuthenticatedIndication ::= ENUMERATED {true, ...}

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

MBS-ActiveSessionInformation-TargettoSourceList ::= SEQUENCE (SIZE(1..maxnoofMBSSessionsofUE)) OF MBS-ActiveSessionInformation-TargettoSourceItem

MBS-ActiveSessionInformation-TargettoSourceItem ::= SEQUENCE {

 mBS-SessionID MBS-SessionID,

 mBS-DataForwardingResponseMRBList MBS-DataForwardingResponseMRBList OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { { MBS-ActiveSessionInformation-TargettoSourceItem-ExtIEs} } OPTIONAL,

 ...

}

MBS-ActiveSessionInformation-TargettoSourceItem-ExtIEs NGAP-PROTOCOL-EXTENSION ::= {

 ...

}

MBSSessionSetupOrModFailureTransfer ::= SEQUENCE {

 cause Cause,

 criticalityDiagnostics CriticalityDiagnostics OPTIONAL,

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

 ...

}

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

 ...

}

MBSSessionSetupResponseList ::= SEQUENCE (SIZE(1.. maxnoofMBSSessions)) OF MBSSessionSetupResponseItem

MBSSessionSetupResponseItem ::= SEQUENCE {

 mBS-SessionID MBS-SessionID,

 mBS-AreaSessionID MBS-AreaSessionID OPTIONAL,

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

 ...

}

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

 ...

}

MBSSessionSetupOrModRequestTransfer ::= SEQUENCE {

 protocolIEs ProtocolIE-Container { {MBSSessionSetupOrModRequestTransferIEs} },

 ...

}

MBSSessionSetupOrModRequestTransferIEs NGAP-PROTOCOL-IES ::= {

 { ID id-MBS-SessionTNLInfo5GC CRITICALITY reject TYPE MBS-SessionTNLInfo5GC PRESENCE optional }|

 { ID id-MBS-QoSFlowsToBeSetupModList CRITICALITY reject TYPE MBS-QoSFlowsToBeSetupList PRESENCE mandatory }|

 { ID id-MBS-SessionFSAIDList CRITICALITY ignore TYPE MBS-SessionFSAIDList PRESENCE optional },

 ...

}

MBS-SessionFSAIDList ::= SEQUENCE (SIZE(1.. maxnoofMBSFSAs)) OF MBS-SessionFSAID

MBS-SessionFSAID ::= OCTET STRING (SIZE(3))

MBSSessionReleaseResponseTransfer ::= SEQUENCE {

 mBS-SessionTNLInfoNGRAN MBS-SessionTNLInfoNGRAN OPTIONAL,

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

 ...

}

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

 ...

}

MBSSessionSetupOrModResponseTransfer ::= SEQUENCE {

 mBS-SessionTNLInfoNGRAN MBS-SessionTNLInfoNGRAN OPTIONAL,

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

 ...

}

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

 { ID id-SharedNGUNotEstablished CRITICALITY ignore EXTENSION SharedNGUNotEstablished PRESENCE optional }|

 ...

}

MBS-SupportIndicator ::= ENUMERATED {

 true,

 ...

}

MBS-SessionTNLInfo5GC ::= CHOICE {

 locationindependent SharedNGU-MulticastTNLInformation,

 locationdependent MBS-SessionTNLInfo5GCList,

 choice-Extensions ProtocolIE-SingleContainer { {MBS-SessionTNLInfo5GC-ExtIEs} }

}

MBS-SessionTNLInfo5GC-ExtIEs NGAP-PROTOCOL-IES ::= {

 ...

}

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

SharedNGUNotEstablished ::= ENUMERATED {

 true,

 ...

}

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

### 9.4.7 Constant Definitions

-- ASN1START

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

--

-- Constant definitions

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

NGAP-Constants {

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

ngran-Access (22) modules (3) ngap (1) version1 (1) ngap-Constants (4) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

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

 id-ManagementBasedMDTPLMNModificationList ProtocolIE-ID ::= 359

 id-EarlyMeasurement ProtocolIE-ID ::= 360

 id-BeamMeasurementsReportConfiguration ProtocolIE-ID ::= 361

 id-HFCNode-ID-new ProtocolIE-ID ::= 362

 id-GlobalCable-ID-new ProtocolIE-ID ::= 363

 id-TargetHomeENB-ID ProtocolIE-ID ::= 364

 id-AssociatedSessionID ProtocolIE-ID ::= 998 -- to be allocated

 id-SharedNGUNotEstablished ProtocolIE-ID ::= 999 -- to be allocated

END

-- ASN1STOP

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