**3GPP TSG- SA4 Meeting #119e *S4-220691***

**Electronic Meeting, 11th to 20th May 2022** revision of S4-220532

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| *CR-Form-v12.2* | | | | | | | | |
| **draft CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **26.502** | **CR** |  | **rev** | **-** | **Current version:** | **17.0.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network |  | Core Network | **x** |

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| ***Title:*** | [5MBUSA]: Clarification of Nmb8 Protocol stacks wrt Unicast or Multicast usage. | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson LM | | | | | | | | | |
| ***Source to TSG:*** | S4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5MBUSA | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***Category:*** | F |  | | | | | ***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:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | B.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  |  | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  |  | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  |  | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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

# A.5 MBSF/MBSTF-like functions in External DN

Figure A.5-1 depicts a transport-only deployment in which the MBS Application Provider (AF/AS) hosts an "MBSF-like" function that mimics the MBSF at reference point MBS-5 and an "MBSTF-like" function that mimics the MBSTF at reference point MBS-4-MC.

1. The MBSF-like function provisions MBS Services in the MB‑SMF via the Nnef service at reference point N33.

2 The MBS Application Provider (AF/AS) uses an MBSTF-like function to produce packet data compliant with reference point MBS‑4‑MC. The packets are injected directly into the MB-UPF at reference point N6mb (not shown).

3. An MBS Application Provider (AF/AS) in an External DN uses an MBSF-like function to generate a Service Announcement for MBS User Services.

4. The MBS Application Provider (AF/AS) makes file repair available from an MBS AS-like function that is compliant with reference point MBS‑4‑UC.

The MBSF-like, MBSTF-like and MBS AS-like functions produce data streams which are compliant with the present document. Although the 5G System sets up a Transport-only Mode (see configuration option 1 in annex A of TS 23.247 [5]), the MBS Client in the UE follows the procedures defined in the present document.



NOTE: Italic type is used to annotate service-based interfaces.

Figure A.5-1: Deployment with MBSF/MBSTF-like functions in External DN

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

# B.3 Packet Distribution Method

## B.3.1 Proxy mode

Figure B.3.1-1 illustrates a setup in which the MBS Application Provider (AF/AS) injects UDP datagrams directly into the MBSTF at reference point Nmb8. The MBSTF handles all MBS-related functions, e.g. applying the packet distribution methods processing UDP datagram headers and/or the IP packet headers, as required for distribution.



Figure B.3.1-1: Packet Distribution Method using Proxy mode

The following MBS Distribution Session properties are used by the MBS Application Provider (AF/AS) at reference point Nmb10 to provision this setup:

*- Distribution method* is set to *Packet.*

*- Distribution operating mode* is set to *Proxy.*

*-* The MBSF nominates the MBS-4-MC multicast group destination IP address and UDP ports to be used inside the Nmb9 unicast tunnel in the *User plane traffic flow information*.

- The MBSTF provides the *MBSTF ingest endpoint addresses* (property specific to the distribution method) via the MBSF to the MBS Application Provider (AF/AS) in order to receive the UDP datagram stream.

- When the *Packet ingest method* indicates *Multicast ingest*, then either the MBS Application Provider (AF/AS) nominates the multicast IP address and UDP port(s) to be used for reception at reference point Nmb8, or else the MBSF allocates these values.

- When the *Packet ingest method* indicates *Unicast ingest*, the MBSTF allocates a UDP reception port for use at reference point Nmb8 and provides the reception UDP port together with the reception IP address to the MBS Application Provider (AF/AS) via the MBSF. A unicast ingest packet delivery protocol is established that allows the control of the unicast stream.

## B.3.2 Forward-only mode

Figure B.3.2-1 illustrates a setup in which the MBS Application Provider (AF/AS) injects multicast IP packets encapsulated in a unicast UDP/IP tunnel directly into the MBSTF. The MBSTF decapsulates the multicast IP packets from the tunnel and forwards them unmodified to the MBS Session at reference point Nmb9.



Figure B.3.2‑1: Packet Distribution Method using Forward-only mode

The following MBS Distribution Session properties are used by the MBS Application Provider (AF/AS) at reference point Nmb10 to provision this setup:

*- Distribution method* is set to *Packet.*

*- Distribution operating mode* is set to *Forward-only.*

- *User plane traffic flow information* is omitted because ingested multicast packets are not modified.

*-* The MBSTF provides the *MBSTF ingest endpoint addresses* (property specific to the distribution method) via the MBSF to the MBS Application Provider (AF/AS) so that it can establish the UDP/IP tunnel with the MBSTF and start sending tunnelled IP packets. A unicast ingest packet delivery protocol is established that allows the control of the unicast stream.

## B.3.3 Streaming mode

Figure B.3.3-1 illustrates a setup in which the MBS Application Provider (AF/AS) pushes RTP/UDP packets directly into the MBSTF at reference point Nmb8. The MBSTF handles all MBS-related functions, i.e. applying the packet distribution methods processing headers such as adding AL-FEC, etc.



Figure B.3.3-1: Packet Distribution Method using Streaming mode

The following MBS Distribution Session properties are used by the MBS Application Provider (AF/AS) at reference point Nmb10 to provision this setup:

*- Distribution method* is set to *Packet.*

*- Distribution operating mode* is set to *Packet streaming.*

*-* The MBSF nominates the MBS-4-MC multicast group destination IP address and UDP ports to be used inside the Nmb9 unicast tunnel in the *User plane traffic flow information*.

- The MBSTF provides the *MBSTF ingest endpoint addresses* (property specific to the distribution method) to the MBS Application Provider (AF/AS) to receive the RTP stream.

- When the *Packet ingest method* indicates *Multicast ingest*, then either the MBS Application Provider (AF/AS) nominates the multicast IP address and UDP port(s) to be used for reception at reference point Nmb8, or else the MBSF allocates these values.

- When the *Packet ingest method* indicates *Unicast ingest*, the MBSTF allocates a UDP reception port for use at reference point Nmb8 and provides the reception UDP port together with the reception IP address to the MBS Application Provider (AF/AS) via the MBSF.

\*\*\*\* Last Change \*\*\*\*