**3GPP TSG- Meeting #4*****S6-245363***

**Orlando, United States, 18th Nov 2024 - 22nd Nov 2024 was S6-245021**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **379** | **CR** | **447** | **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:*** | MCPTT control plane user plane separation | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Kontron Transportation France, Nokia, Ericsson, Deutsche Bahn AG, UIC, BDBOS | | | | | | | | | |
| ***Source to TSG:*** | SA6 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** |  | | | | |  | ***Date:*** | | | 28 |
|  |  | | | |  | |  | | |  |
| ***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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The FRMCS\_Ph5 WID contains an objective to specify the architecture and procedures to support the separation of the signalling and the media paths within an MC system. This CR contains the necessary changes to allow separate path for signalling and media for MCPTT. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 7.3.1: Add the option to deploy the MDF and the floor control server separate from the MCPTT server  7.4.2.3.4: Add the option to deploy the floor control server separate from the MCPTT server  7.4.2.3.5: Add the option to deploy the MDF separate from the MCPTT server | | | | | | | | |
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| ***Consequences if not approved:*** | | Requirement for FRMCS is not fufilled | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 7.3.1, 7.4.2.3.4, 7.4.2.3.5 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **x** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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

### 7.3.1 On-network functional model

Figure 7.3.1-1 shows the functional model for the application plane of the MCPTT service.



Figure 7.3.1-1: Functional model for application plane of the MCPTT service

In the model shown in figure 7.3.1-1, the following apply:

- The MCPTT server is an instantiation of a MC service server in accordance with 3GPP TS 23.280 [16].

- The MCPTT server is an instantiation of a GCS AS in accordance with 3GPP TS 23.468 [9].

- MCPTT-9 carries multicast floor control signalling between the floor control server of the MCPTT server and the floor participant of the MCPTT UE.

- MCPTT-4 carries unicast floor control signalling between the floor control server of the MCPTT server and the floor participant of the MCPTT UE.

- MCPTT-7 carries unicast media between the media distribution function of the MCPTT server and the media mixer of the MCPTT UE.

- MCPTT-8 carries multicast media from the media distribution function of the MCPTT server to the media mixer of the MCPTT UE.

It is up to implementation whether the media distribution function and the floor control server are deployed inside the MCPTT server or as separate servers. The behaviour of the reference points MCPTT-4/MCPTT-9 and MCPTT-7/MCPTT-8 are not affected by the deployment option.

Figure 7.3.1-2 shows the relationships between the reference points of the application plane and the signalling plane.



Figure 7.3.1-2: Relationships between reference points of MCPTT application and signalling control planes

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

##### 7.4.2.3.4 Floor control server

This functional entity provides support for centralised floor control for on-network and distributed floor control for off-network operation. It may provide arbitration between floor control requests between different users, grant the floor in response to successful requests, and provide queuing in cases of contention. For on-network operation, this functional entity is co-located with the MCPTT server. The Floor control server may use a different IP address for MCPTT-4/MCPTT-9 interfaces than other MCPTT server interfaces (e.g. MCPTT-1). For off-network operation, the floor control server functional entity is located in the UE.

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

##### 7.4.2.3.5 Media distribution function

The media distribution function is responsible for the distribution of media to call participants. It is co-located with the MCPTT server and may utilize different IP address for MCPTT-7/MCPTT-8 interfaces than the other interface served by the MCPTT server. By means of information provided by the MCPTT server (e.g. IP addresses, transport layer ports), it will provide the following functionality:

- provide for the reception of uplink MCPTT UE media transmission by means of the MCPTT-7 reference point;

- replicate the media as needed for distribution to those participants using unicast transport;

- distribute downlink media to MCPTT UEs by IP unicast transmission to those participants utilizing unicast transport by means of the MCPTT-7 reference point;

- distribute downlink media to MCPTT UEs using multicast downlink transport of media for the call by means of the MCPTT-8 reference point; and

- provide a media mixing function where multiple media streams are combined (e.g. multi-talker control) into a single media stream for transmission to the MCPTT UE.

NOTE 1: If media mixing function occurs within the media distribution function, it operates independently of the media mixer in the UE.

NOTE 2: A media mixing function within the media distribution function is not possible where the media is end to end encrypted.

Group configuration data determines whether audio mixing for multi-talker control is applied by the media mixing function in the MCPTT server.

NOTE 3: If media mixing in the network is utilized, care should be taken to minimize the feedback of the user's own voice from the mixed audio in order to avoid echoes.

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