**3GPP TSG-SA WG6 Meeting #40-e S6-20xxxx**

**e-meeting, 16th – 24th November 2020 (revision of S6-202197)**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **23.286** | **CR** | **0035** | **rev** | **1** | **Current version:** | **16.4.0** |  |
|  | | | | | | | | |
| *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:*** | Relay the V2X traffic from Uu to PC5 broadcast | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, Hisilicon | | | | | | | | | |
| ***Source to TSG:*** | S6 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eV2XAPP | | | | |  | ***Date:*** | | | 2020-11-08 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The Relay UE (RSU) will act as unicast or multicast receiver and will broadcast packets across the PC5 link (V2V) with the UEs it servers.  In early LTE-V2X deployments, mostly the RSU supports MBMS while the V2X UEs perform V2V communications with RSU. | | | | | | | | |
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| ***Summary of change:*** | | Introduce the procedures for V2X traffic relay configuration and related V2X traffic flows | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Enable the V2X traffic message relaying and related configurations. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 9.x, 9.x.1, 9.x.2, 9.x.2.1, 9.x.2.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **N** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **N** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **N** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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

## 9.x V2X traffic relay management

### 9.x.1 General

The VAE capabilities provide support for delivering the V2X traffic to a group of UEs (e.g., Platoon) or multiple UEs which should receive the same V2X traffic via a common data flow enabled via a relay VAE client. The relay VAE client receives the V2X traffic via Uu and supports delivery of the V2X traffic to the remote VAE clients over PC5.

### 9.x.2 Procedure

#### 9.x.2.1 Establish a common data flow configuration for the remote VAE clients

Figure 9.x.2.1-1 illustrates the procedure where the VAE server selects the VAE client to relay the V2X traffic received via Uu to the remote VAE clients via PC5 by establishing a common data flow configuration at the relay VAE client.

Pre-conditions:

1. The remote VAE clients have already connected to the relay VAE client.

2. The remote VAE clients and the Relay VAE client may belongs to the same group.



Figure 9.x2.1-1: Procedure for establish the common data flow for the remote VAE clients

1. The VAE clients in the coverage performs the registration or registration update to the VAE server. The V2X UE ID, UE location, relay supporting, communicating range, numbers of connections or remote UE being supported, etc are included in the registration request towards the VAE server. Also the number of remote VAE clients, the locations of the remote clients, the V2X services requested by the remote VAE clients are also included.

2. The VAE server determines whether MBMS delievery can be used based on e.g. the number of the VAE clients in coverage reaches the threshold to activate the MBMS. If MBMS is used then the VAE server activates the MBMS bearer or uses the pre-established MBMS bearer, if any. The VAE server also checks whether the remote VAE clients connected to the relay VAE client which have requested the same V2X service have reached a certain count (e.g. at least two such remote VAE clients). Then the VAE server determines to establish a common data flow for all the remote VAE clients requesting the same V2X service.

3. The VAE server sends the common data flow establish request to the relay VAE client(s) to negotiate the common data flow used for delivering the V2X traffic to the remote VAE clients. The traffic filter (e.g. target multicast address and port, source IP address and port) which indicates the V2X traffic to be relayed to the remote VAE clients is included. In addition, the frequency or message repeat number for the V2X traffic may also included.

4. The relay VAE client stores the traffic filter configuration. The relay VAE client also informs the remote VAE clients about the V2X traffic information (e.g. target multicast address and port, source IP address and port), so that the remote VAE client associates the received V2X traffic to the requested V2X service.

5. The relay VAE client provides the common data flow establish response to the VAE server to confirm the successful or failure of establishing the common data flow.

#### 9.x.2.2 Relay the V2X traffic to the remote VAE clients

Figure 9.x.2.2-1 illustrates the procedure where the relay VAE client relays the V2X traffic to the remote VAE clients via the common data flow established in clause 9.x.2.1.

Pre-conditions:

1. The remote VAE clients has already connected to the relay VAE clients.

2. The relay VAE client and the VAE serve already established the common data flow as described in clause 9.x.2.1.

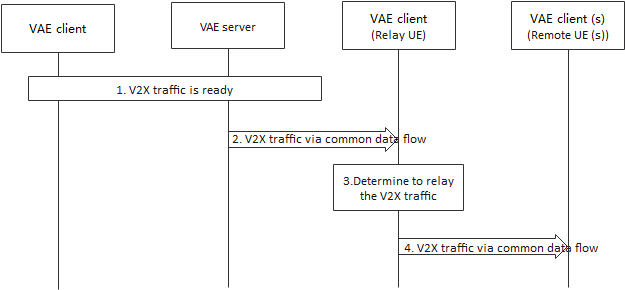


Figure 9.x2.2-1: Procedure for relaying the V2X traffic to the remote VAE clients

1. The V2X traffic is ready at the VAE server either from other VAE clients or locally.

2. The VAE server sends the V2X traffic via the common data flow towards the relay VAE client.

3. Based on the traffic filter, the relay VAE client determines to relay the V2X traffic to the remote VAE clients.

4. The relay VAE client sends the V2X traffic to the remote VAE clients via PC5. The frequency or the message repeat number is applied, if available.

\* \* \* End of all the Changes \* \* \* \*