**3GPP TSG-SA WG6 Meeting #41-e S6-210176**

**e-meeting, 18th – 26th January 2021 (revision of S6-21xxxx)**

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| --- |
| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  |  **23.286** | **CR** |  | **rev** |  | **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 | **X** | Radio Access Network |  | Core Network | **X** |

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|  |
| ***Title:***  | Support for enhancements to V2X group management and group communication |
|  |  |
| ***Source to WG:*** | Samsung |
| ***Source to TSG:*** | S6 |
|  |  |
| ***Work item code:*** | eV2XAPP |  | ***Date:*** | 2021-01-13 |
|  |  |  |  |  |
| ***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 canbe 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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | In 3GPP TR 23.764, key issues#16 realted to enhancements to V2X group management and group communication has been studied and solution has been provided in solution#14. |
|  |  |
| ***Summary of change:*** | Taking solution#14 of TR23.764 into normative specification |
|  |  |
| ***Consequences if not approved:*** | The capabilities related to additional aspects of group management and communications – which are required at enabler layer to support the V2X applications may not be specified or may be underspecified |
|  |  |
| ***Clauses affected:*** | 9.12.2.A (NEW), 9.12.2.B (NEW), 9.12.2.C (NEW), 9.12.2.D (NEW), 9.12.2.E (NEW), 9.12.2.F (NEW), 9.12.2.G (NEW), 9.12.2.H (NEW), 9.12.X (NEW), 9.12.X.1 (NEW), 9.12.X.2 (NEW), 9.12.X.3 (NEW), 9.12.Y (NEW) |
|  |  |
|  | **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 \* \* \* \*

#### 9.12.2.A Group information update request

Table 9.12.2.A-1 describes the information flow for group information update request from the VAE Client to the VAE server.

Table 9.12.2.A-1: Group information update request

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| Dynamic group information to update | M | Group information to update, e.g. group leader ID |
| Endpoint information | M | End point information to which response has to be sent |

#### 9.12.2.B Group information update response

Table 9.12.2.B-1 describes the information flow for group information update response from the VAE server to the VAE client.

Table 9.12.2.B-1: Group information update consent response

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| Result | M | Result from the VAE server in response to the Group information update request. |

#### 9.12.2.C Group information update consent request

Table 9.12.2.C-1 describes the information flow for group information update consent request from the VAE Server to the VAE client from whom consent is required.

Table 9.12.2.C-1: Group information update consent request

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| Information for consent | M | Group information for consent, e.g. group leader ID |

#### 9.12.2.D Group information update consent response

Table 9.12.2.D-1 describes the information flow for group information update consent response from the VAE client to the VAE server.

Table 9.12.2.D-1: Group information update consent response

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| Result | M | Result from the VAE server in response to the Group information update consent request. |

#### 9.12.2.E Group information update notification

Table 9.12.2.E-1 describes the information flow for group information update notification from the VAE server to the V2X application specific sever.

Table 9.12.2.E-1: Group information update notification

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| Dynamic group information | M | Group information which has been updated, e.g. group leader ID |

#### 9.12.2.F Group information update indication

Table 9.12.2.F-1 describes the information flow for group information update indication from the VAE server to the VAE client.

Table 9.12.2.F-1: Group information update notification

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| Dynamic group information | M | Group information for which update request has been received, e.g. group leader ID |

#### 9.12.2.G Group information update consent request (Off network)

Table 9.12.2.G-1 describes the information flow for group information update request from the VAE client to the VAE client.

Table 9.12.2.G-1: Group information update request

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| Information for consent | M | Group information for consent, e.g. group leader ID |

#### 9.12.2.H Group information update consent response (Off network)

Table 9.12.2.H-1 describes the information flow for group information update consent response from the VAE client to the VAE server.

Table 9.12.2.H-1: Group information update consent response

|  |  |  |
| --- | --- | --- |
| Information element | Status | Description |
| Result | M | Result from the VAE server in response to the Group information update consent request. |

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

### 9.12.X On network dynamic group information update procedure

#### 9.12.X.1 General

This subclause provides procedures to update dynamic group information of an on-network V2X dynamic group.

#### 9.12.X.2 VAE client initiated on network dynamic group information update procedure

The procedure for on-network dynamic group information (e.g. group leader) update is illustrated in figure 9.12.X.2-1.

Pre-conditions:

1. The on network dynamic group has already been defined and V2X UE A and V2X UE B are members of the group;

2. V2X UE A is the current group leader; and

3. The V2X application specific client in V2X UE A has determined to update the group information (e.g., update group leader ID from identity of V2X UE A to identity of V2X UE B) and informed the updates and other relevant information about the update (e.g. if the update is temporary, like time bound, or permanent) to VAE client A to update the group information.



Figure 9.12.X.2-1: VAE client initiated on network group information update procedure

1. The VAE client A sends a group information update request to the VAE server. The request includes the group-ID of the group for which group information update request is sent. The request also includes the updated group information (e.g. identity of V2X UE B as group leader ID) and other relevant information about the update (e.g. if the update to the group information are temporary and time bound or permanent).

2. Upon receiving the group information update request from VAE client A, the VAE server checks for the V2X user authorization to update the group information. If required, the VAE server also checks validity of the updated group information (e.g. if the request is to update the group leader ID to V2X UE B, the VAE server checks with V2X application specific server about the capabilities of the proposed group leader V2X UE B to ensure it is capable of sufficient fuel, sensors and applications to communicate and coordinate with other group members to act as group leader). If required, then the VAE server consults with V2X application specific server to ratify the updated group information or seek changes to the requested update (e.g. a different V2X UE as group leader). If the authorization fails or if the updated group information is not valid, then steps 3 to 6 are skipped.

3. If the request from the VAE client is authorized and the updated group information is valid, the VAE server acknowledges the VAE client A.

4. If the update in group information requires consent from other group member(s) (e.g. consent from the proposed new group leader, V2X UE B, to accept the role of group leader), then the VAE server obtains the consent from the user as specified in clause 9.12.X.4. This step is skipped is user consent is not required.

5. The VAE server sends the group information update change response to VAE client A indicating success or failure. If:

- the request was authorized but the updated group information was not valid, as determined in step 2; or

- a reject response to the group information update consent request was received from VAE client B;

then, the VAE server may include suggestions for the updated group information (e.g. identity of the V2X UE C as potential group leader). These suggestions are based on consultation with the V2X application specific server.

6. If the group information update request was successful, the VAE server updates the group document.

7. Upon successful update of the group document, the VAE server triggers a group information update notification to other group members and to the V2X application specific server.

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

#### 9.12.X.3 VAE server initiated on network dynamic group information update procedure

The procedure for on-network dynamic group information (e.g. group leader) update is illustrated in figure 9.12.X.3-1.

Pre-conditions:

1. The on network dynamic group has already been defined and V2X UE A and V2X UE B are members of the group;

2. V2X UE A is the current group leader; and

3. The V2X application specific server has determined to update the group information (e.g., update group leader ID from identity of V2X UE A to identity of V2X UE B) and informed the updates and other relevant information about the update (e.g. if the update is temporary, like time bound, or permanent) to the VAE server to update the group information.



Figure 9.12.X.3-1: VAE server initiated on network group information update procedure

1. If the update in group information requires consent from the group member(s) (e.g. consent from the proposed new group leader, V2X UE B, to accept the role of group leader), then the VAE server obtains the consent from the user as specified in clause 9.12.X.4. This step is skipped is user consent is not required.

2. If required (e.g. when group leader ID is being changed from V2X UE A to V2X UE B), the VAE server sends group information update indication to the VAE client A about the possible update to group information.

NOTE: Step 1 and step 2 can happen in parallel.

3. Upon receiving the indication from the VAE server, the VAE client A notifies the V2X application specific client A about the possible update to group information.

4. If group leader information update request is successful, the VAE server updates the group document.

5. Upon successful update of the group document, the VAE server triggers a group information update notification to other group members and to the V2X application specific server.

#### 9.12.X.4 VAE Server taking consent from user

The procedure for the VAE server to take consent form the user is illustrated in figure 9.12.X.4-1.

Pre-conditions:

1. VAE client A has initiated dynamic group information update procedure as specified in clause 9.12.X.2, or the V2X application specific server has determined toupdate the dynamic group information.



Figure 9.12.X.4-1: VAE Server taking consent from user procedure

1. If the update in group information requires consent from other group member(s) (e.g. consent from the proposed new group leader, V2X UE B, to accept the role of group leader), then the VAE server sends a group information update consent request to VAE client B. The request includes the group-ID of the group for which the request is sent. The request also includes other relevant information about the update (e.g. if the update to the group information are temporary and time bound or permanent).

2. The VAE client B notifies the V2X application specific client B about group information update consent request. The V2X application specific client or the V2X user decides to accept or reject the request.

3. The VAE client B sends group information update consent response to the VAE server. The response includes the decision whether the request is accepted or rejected.

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

### 9.12.Y Off network dynamic group information update procedure

This subclause provides procedures to update dynamic group information of an off-network V2X dynamic group.

The procedure for off-network dynamic group information update procedure is illustrated in figure 9.12.Y-1.

Pre-conditions:

1. The off network dynamic group has already been defined and V2X UE A and V2X UE B are members of the group;

2. V2X UE A is the current group leader;

3. The V2X application specific client in V2X UE A has determined to update the group information (e.g., update group leader ID from identity of V2X UE A to identity of V2X UE B) and informed the updates and other relevant information about the update (e.g. if the update is temporary, like time bound, or permanent) to the VAE client in V2X UE A to update the group information.



Figure 9.12.Y-1: Off network group information update procedure

1. If the update in group information requires consent from other group member(s) (e.g. consent from the proposed new group leader, V2X UE B, to accept the role of group leader), then the VAE client sends a group information update consent request to VAE client B. The request includes the updated group information along with the group-ID of the group. The request also includes other relevant information about the update (e.g. if the update to the group information are temporary and time bound or permanent).

2. The VAE client B notifies the V2X application specific client B about group information update consent request and the V2X application specific client or the V2X user decides to accept or reject the request.

3. The VAE client B sends group information update response to the VAE client A. The response includes the decision whether the request is accepted or rejected.

4. If the group information update consent request is successful, then the VAE client A sends notification to other group members.

\* \* \* End of Change \* \* \* \*