Group Management in 5GMARCH

Basavaraj (Basu)

Samsung

Background

SA1 requirements for Group Management

5.4   Group message

5.4.1   Description
In 5G IoT communication, there is a need that a group of devices can communicate with each other, which means the message sent by a device will be received by all the other devices in the group. The members of a group can be devices for persons and smart things that are located in different geographical areas. Group management mechanism is required to support the members joining or leaving a group.

5.4.2   Requirements
[R-5.4.2-001] The MSGin5G Service shall support group message communication, i.e. a UE sends a message to a group of UEs. All the members in a group can send messages. The UEs in a group can be located in different geographical areas.
[R-5.4.2-002] The MSGin5G Service shall support group management for message communication:
- **establishing/deleting a group**

- **adding UEs to the group or removing UEs from the group**

- **configuration of a maximum number of members in a group**

Two Group Management related contributions postponed from SA6#43-e

1)   **S6-211429** - usage of SEAL group management
   a.   List of group management operations to be supported for MSGin5G Service
   b.   Format for specifying the usage of group management by MSGin5G Service

2)   **S6-211428** - group notification to Message Gateway
   a.   How to Notify a non-MSGin5G group member about newly created group on SEAL Group Management Server
   b.   What information to include in the Notify message to non-MSGin5G group member

S6-211429 - usage of SEAL group management

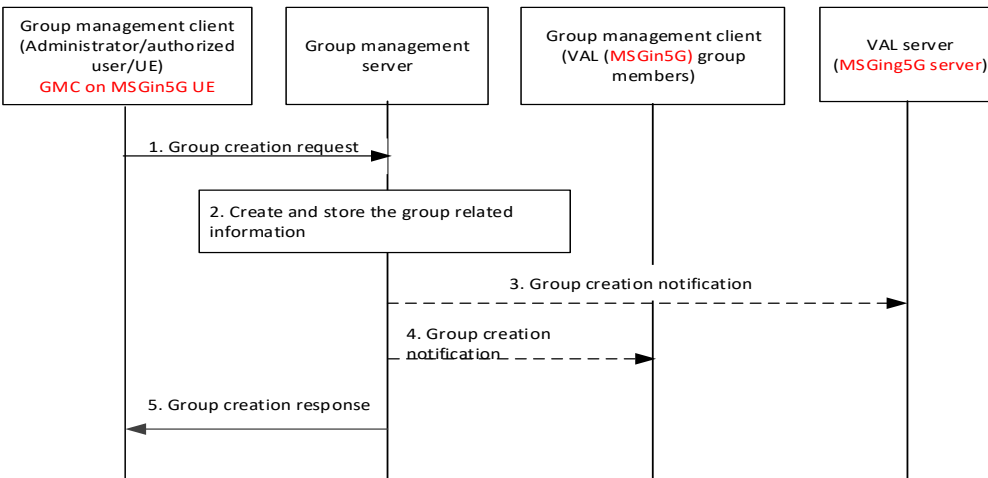**Issue 1a**: List of group management operations to be supported for MSGin5G Service

SEAL TS 23.434 specified procedures include:

- Group creation
- Group membership notification – any changes to group info
- Group information query
- Group configuration management
  - Store group configurations at the group management server
  - Retrieve group configurations
  - Subscription and notification for group configuration data
- Location-based group creation
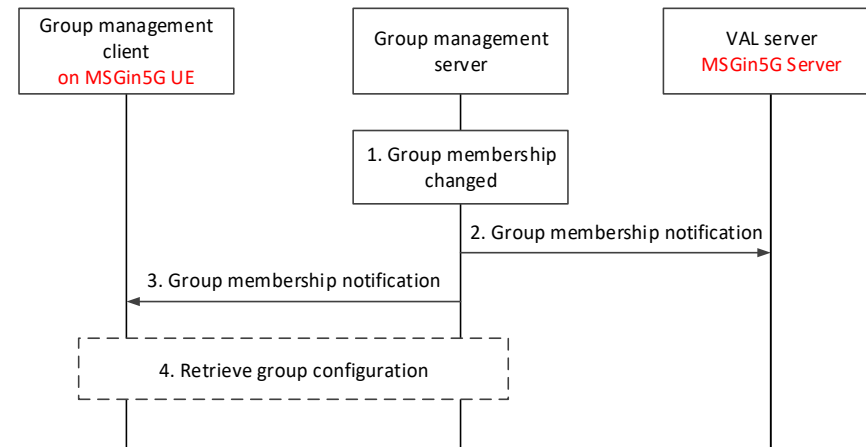- Group announcement and join
  - Group member leave

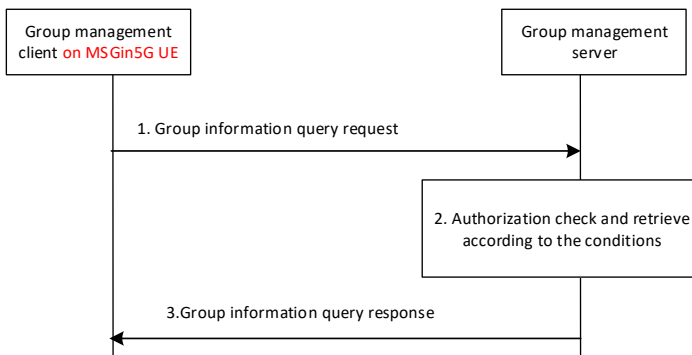# SEAL supported procedures* (1/3)
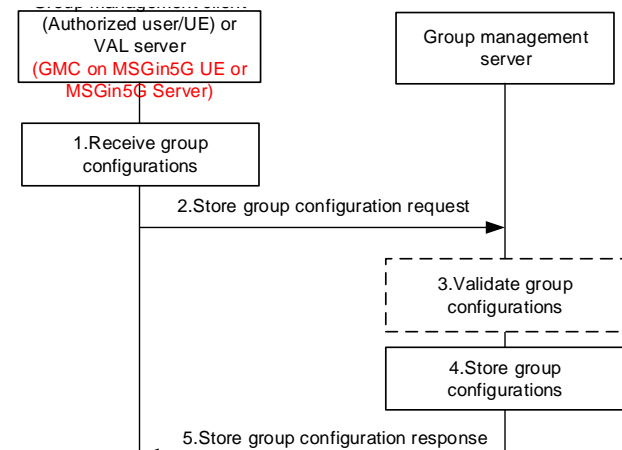
1. Group creation – includes notification

2. group membership notification

3. Group information query

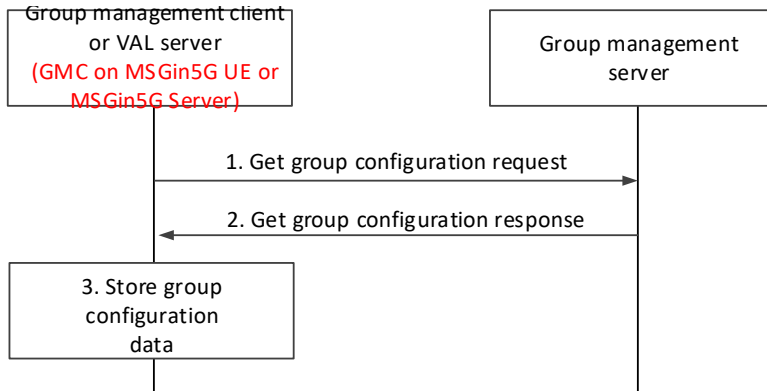

4. Store group configurations at GMS

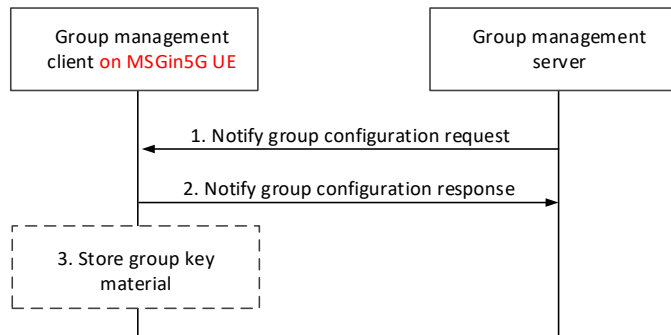*** SEAL Procedures will be referred and not added in TS 23.554**
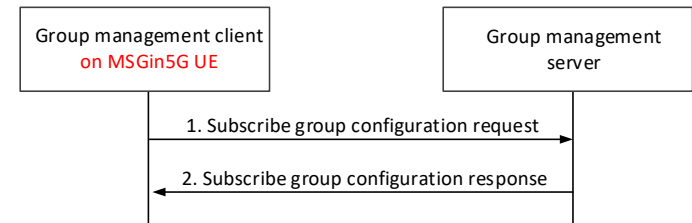
© 3GPP 2021

4

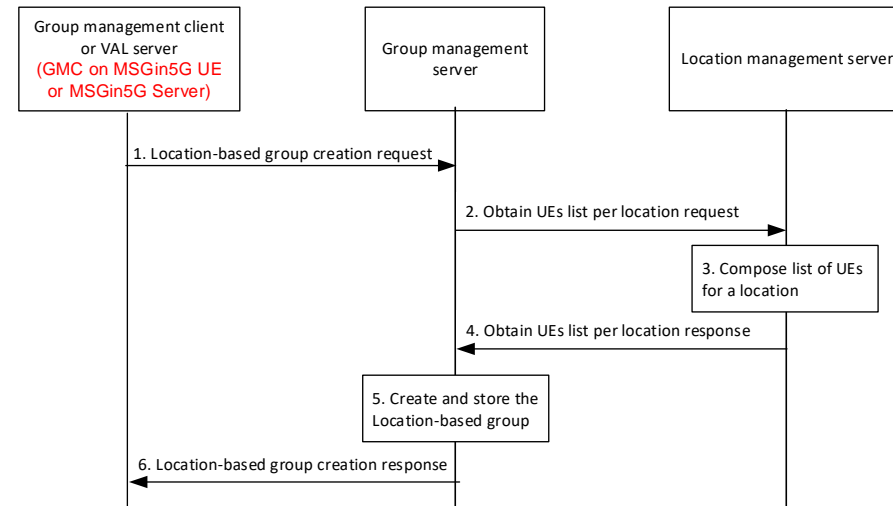# SEAL supported procedures* (2/3)

5. Retrieve group configurations

Group management client or VAL server (GMC on MSGin5G UE or MSGin5G Server)

Group management server

1. Get group configuration request
2. Get group configuration response
3. Store group configuration data

7. Notification of group configurations

Group management client on MSGin5G UE

Group management server

1. Notify group configuration request
2. Notify group configuration response
3. Store group key material

6. Subscription for group configurations

Group management client on MSGin5G UE

Group management server

1. Subscribe group configuration request
2. Subscribe group configuration response

8. Location-based group creation

Group management client or VAL server (GMC on MSGin5G UE or MSGin5G Server)

Group management server

Location management server

1. Location-based group creation request
2. Obtain UEs list per location request
3. Compose list of UEs for a location
4. Obtain UEs list per location response
5. Create and store the Location-based group
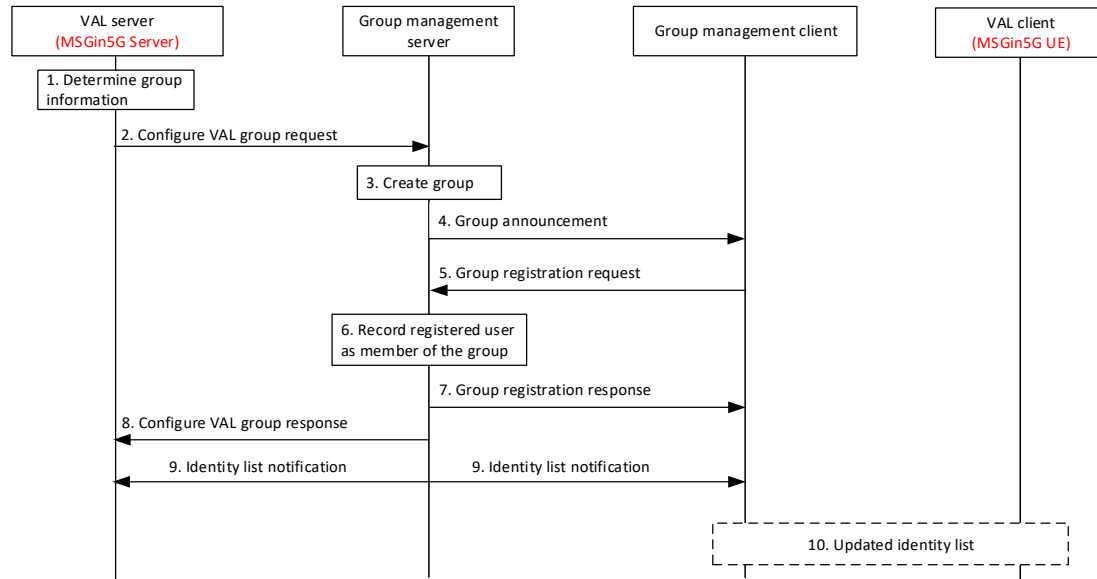6. Location-based group creation response

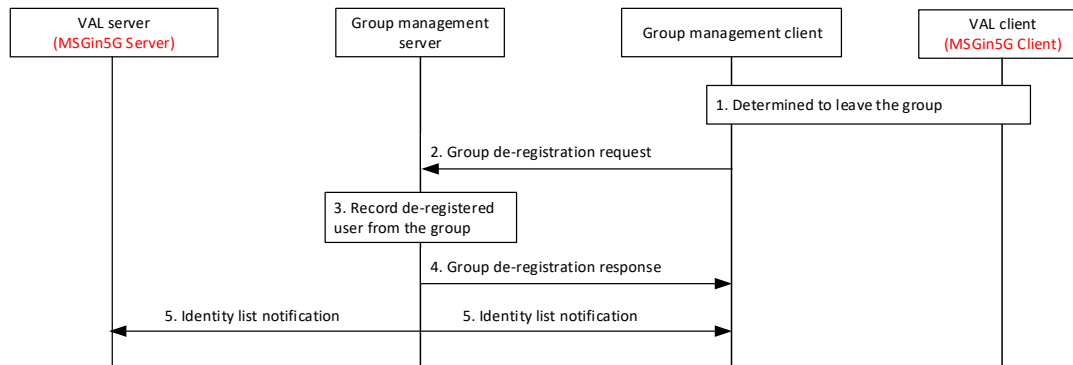*** SEAL Procedures will be referred and not added in TS 23.554**

SEAL supported procedures* (3/3)

9. Group announcement and join

10. Group member leave

* SEAL Procedures will be referred and not added in TS 23.554
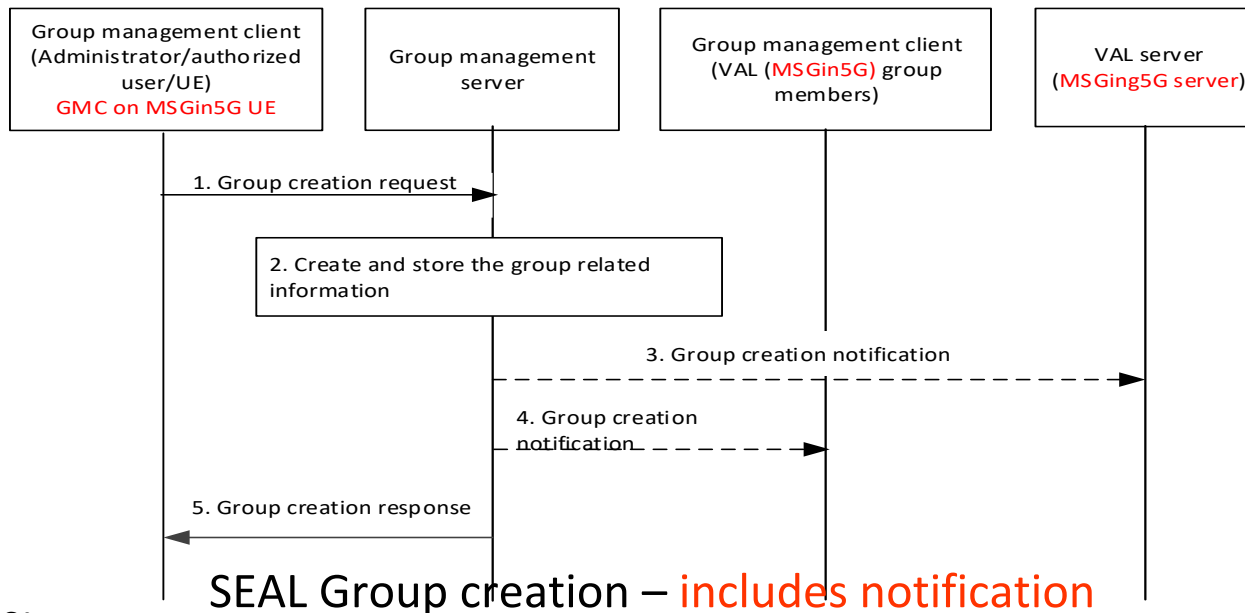
Proposal to progress S6-211429 - usage of SEAL group management

- **Issue 1a**: List of group management operations to be supported for MSGin5G Service
- Based on requirements analysis and available SEAL procedures, following procedures need to be referred from SEAL specification:
  - **Group creation**
  - Group membership notification – any changes to group info
  - Group information query
  - Group configuration management
    - **Store group configurations at the group management server**
    - **Retrieve group configurations**
    - Subscription and notification for group configuration data
  - Location-based group creation
  - **Group announcement and join**
    - **Group member leave**

- **Issue 1b**: Format for specifying the usage of group management by MSGin5G Service
  - Follow standard approach as specified in V2X (TS 23.286) and UASAPP (23.xxx) specifications keeping consistency between SA6 specifications

S6-211428 - group notification to Message Gateway

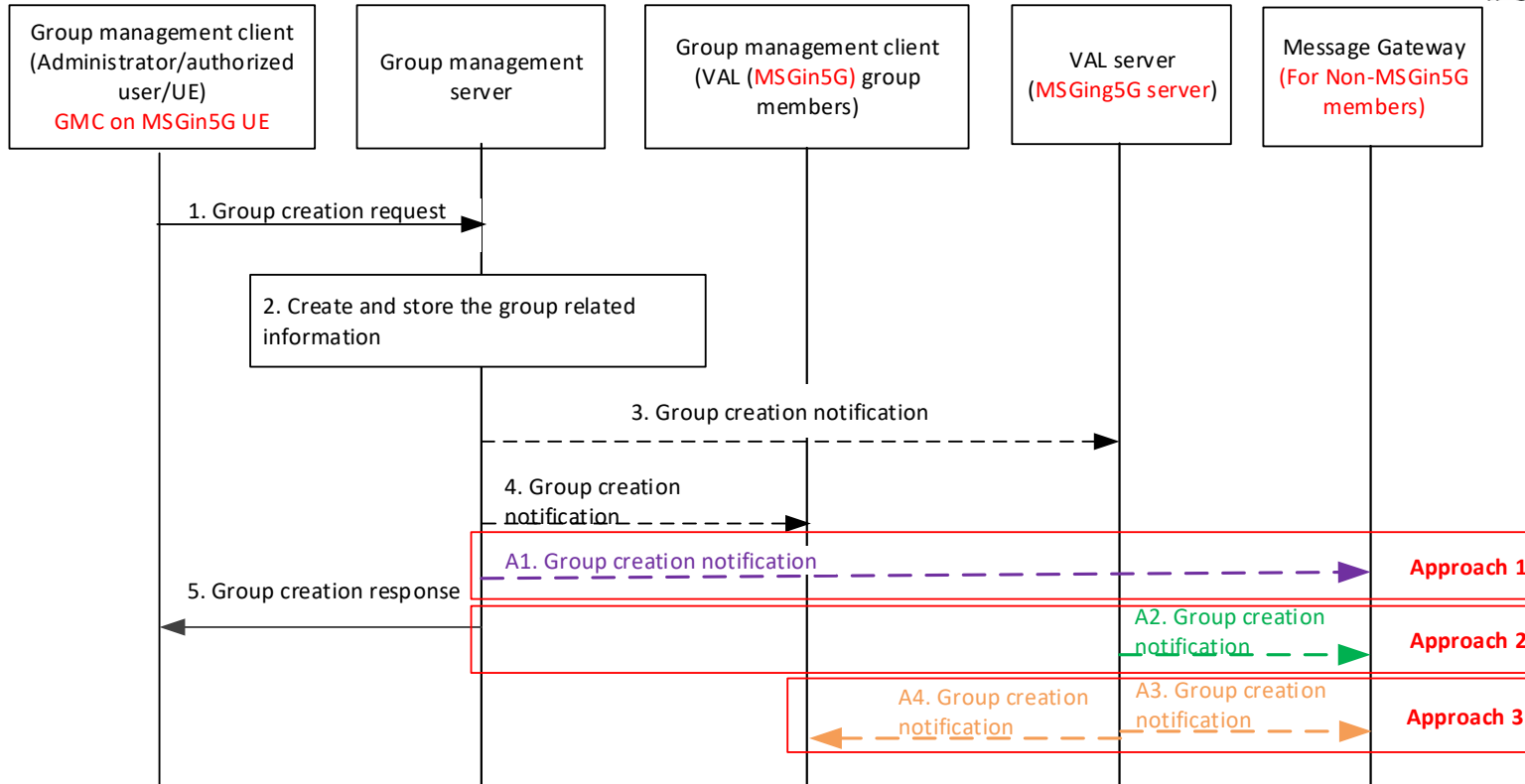**Issue 2a**: How to Notify a non-MSGin5G group member about newly created group on SEAL Group Management Server

Observations:

a)   Group can have non-MSGin5G members

b)   Step.4 -> all members of group are notified of group creation

c)   Non-MSGin5G members do not have interface with GMS

d)   MSGin5G Server is aware of Group creation in Step.3

Potential resolutions for Issue 2a

Approach 1: GMS sends Group creation notification **to Message Gateway**

- Requires to introduce new interface between GMS and Message Gateway, i.e. architectural impacts

Approach 2: MSGin5G Server takes responsibility to send the Group creation notification **to non-MSGin5G members**

- No new interface

Approach 3: MSGin5G Server takes responsibility to send the Group creation notification to **all group members**

- MSGin5G UE receives this notification twice Step.4 and A4

S6-211428 - group notification to Message Gateway

Issue 2b: What information to include in the Notify message to non-MSGin5G group member

- Depends on whether we select Approach 1 or 2 or 3.

THANK YOU!