**3GPP TSG-CT WG1 Meeting #136-eC1-223853**

**E-Meeting, 12th – 20th May 2022**

**Source: ZTE**

**Title: Remove ENs of authentication in message delivery procedures**

**Spec: 3GPP TS 24.538 v1.1.0**

**Agenda item: 17.2.30**

**Document for: Agreement**

**1. Introduction**

Security aspects of the MSGin5G service has been defined in Annex Y of TS 33.501. Thus it is proposed to add description of authentication in registration and de-registration procedures based on the conclusion in SA3.

**2. Reason for Change**

SA3 has defined the authentication and authorization for MSGin5G Client and MSGin5G Server.

The authorization of MSGin5G UE by the MSGin5G server is performed by validating the association between the UE service ID and UE ID (SUPI/GPSI). During the registration procedure, the MSGin5G server verifies the UE service ID based on the association information retrieved Configuration Management server or MSGin5G Configuration Function using the UE ID received from the AAnF. Thus the description of “verifying the security credentials” should be aligned with conclusion of SA3.

**3. Conclusions**

1. Remove the ENs of CoAP request for message deliver procedure.

2. Correct the authorization for MSGin5G Client on MSGin5G Server.

**4. Proposal**

It is proposed to agree the following changes to 3GPP TS 24.538 v1.1.0.

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

##### 6.4.1.1.2 Sending of an MSGin5G message

In order to send an MSGin5G message, the MSGin5G Client shall compares the size of the received message from the application client to the maximum allowed MSGin5G message segmentation size. If the size exceeds, the MSGin5G Client shall segment the MSGin5G message into a set of segmented MSGin5G messages such that each segmented MSGin5G message can fit within the maximum allowed MSGin5G message segmentation size. For each segmented MSGin5G message, the steps listed below shall be processed individually.

The MSGin5G Client shall send the MSGin5G message in an CoAP POST request message according to procedures specified in IETF RFC 7252 [5]. In the CoAP POST request message, The MSGin5G Client:

a) shall set the "T" field in the CoAP header to 0 if delivery status report from the recipient is requested, i.e. indicates this message is the type of Confirmable, to ensure the application layer delivery status report;

b) shall include the MSGin5G Server address in an CoAP Option, e.g. if the MSGin5G Server address is a URI, include a Uri-Path Option with the value of the URI;

c) shall set the CoAP Content-Format to "50", i.e. application/json;

d) shall include the information elements specified in 3GPP TS 23.554 [2] in the CoAP payload encoded in JSON format as specified in clause 7.3.4:

1) shall include an "MSGin5G service identifier" element to indicate that this CoAP POST request message is used for MSGin5G service;

2) shall include an "Message Type" element and set it to "MSG" to indicate that this CoAP POST request message is used for MSGin5G message;

3) shall include an "Originating UE Service ID" element set to the UE which requests the sending of the MSGin5G message;

4) shall include a "Recipient UE Service ID/AS Service ID" element if the recipient(s) is(are) MSGin5G UE/Non-MSGin5G UE or Application Server;

5) shall include a "Group Service ID" element if the recipient is an MSGin5G Group;

6) shall include a "Broadcast Area ID" element if the message needs to be broadcast;

7) shall include a "Messaging Topic" element if this message will be distributed based on message topic. This element shall not present in other message scenarios;

NOTE: In an MSGin5G Message request, only one of these IEs listed in 3) to 6) shall be included.

8) may include one or more "Application ID" element(s) to indicate the application(s) for which the payload is intended;

9) shall include a "Message ID" which is globally unique within the MSGin5G service;

10) may include a "Delivery status required" element if delivery acknowledgement from the recipient is requested;

11) may include a "Priority type" element to indicate the application priority level requested for this message;

12) may include a "Message is segmented" element with a "true" value to indicate that this message is part of a segmented message;

13)if "Message is segmented" element with a "true" value is included, shall include a "Segmentation set identifier" element to indicate that this segmented message is associated within a set of segmented messages , all segmented messages associated with the same MSGin5G message are assigned the same unique identifier;

14) if "Message is segmented" element with a "true" value is included and this message is the first segment of the MSGin5G message, shall include a "Total number of message segments" element to indicate the total number of segments for the MSGin5G message;

15) if "Message is segmented" element with a "true" value is included, shall include a "Message segment number" element to indicate segmented message number of each segmented message within a set of segmented messages;

16) if "Message is segmented" element with a "true" value is included and this message is the last segment of the MSGin5G message, shall include a "Last segment flag" element to indicate that this segmented message is the last segment in the set of segmented messages;

17)shall include a "Store and forward flag" element to indicate whether store and forward services are requested for this message;

18) if store and forward services are requested, may include a "Store and forward parameters" element to carry the parameters used by MSGin5G Server for providing store and forward services. The "Store and forward parameters":

i) may include a "Message expiration time" element to indicate message expiration time used for providing store and forward services if the destination is not available for communications; and

ii) may include a "Application specific store and forward information" element to carry the information used by MSGin5G Server for handling store and forward, e.g. a delivery time/date; and

19) may include a "Payload" element specified in 3GPP TS 23.554 [2] in the CoAP payload and located it after the MSGin5G header to carry the payload of this message; and

e) if needed, i.e. a messgage segment recovery request is received, acts as Message Sender to perform the procedures in clause 6.5.1.1.

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

##### 6.4.1.1.4 Sending of an MSGin5G message delivery status report

In order to send a MSGin5G message delivery status report, the MSGin5G Client shall send an CoAP POST request according to procedures specified in IETF RFC 7252 [5]. In the CoAP POST request, the MSGin5G Client:

a) shall sets the "T" field in the CoAP header to 0, i.e. indicates that this message is the type of Confirmable, to ensure the MSGin5G message delivery status report can be received by the originator of the receiving MSGin5G message;

b) shall include the MSGin5G Server address in an CoAP Option, e.g. if the MSGin5G Server address is a URI, include a Uri-Path Option with the value of the URI;

c) shall set the CoAP Content-Format to "50", i.e. application/json; and

d) shall include the information elements specified in 3GPP TS 23.554 [2] in the CoAP payload encoded in JSON format as specified in clause 7.3.4.2:

1) shall include an "MSGin5G service identifier" element to indicate that this CoAP POST request message is used for MSGin5G service;

2) shall include an "Message Type" element and set it to "IMDN" to indicate that this CoAP POST request message is used for MSGin5G message delivery status report;

3) shall include an "Originating UE Service ID" element set to the UE which requests the sending of the MSGin5G message delivery status report;

4) shall include a "Recipient UE Service ID/AS Service ID" element if the recipient(s) is(are) MSGin5G UE/Non-MSGin5G UE or Application Server, this is the sender of the message that this message delivery status report is for;

5) shall include the "Message ID" element copied from the MSGin5G message that is being acknowledged;

6) shall include a "Delivery Status" element to carry the delivery status description, the delivery status can be success or failure in delivery; and

7) may include a "Failure Cause" element indicates the failure reason if the delivery status is failure.

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

##### 6.4.1.2.2 Reception of an MSGin5G message

Upon receiving an CoAP POST request from the MSGin5G Client on a MSGin5G UE, containing the MSGin5G Service identifier and the "Message Type" with the value "MSG", i.e. the request is for sending a MSGin5G message, if the "Number of individual messages" element and "List of individual messages" element are not be included, the MSGin5G Server shall handle the CoAP POST request according to procedures specified in IETF RFC 7252 [5] with the clarifications listed below:

a) The MSGin5G Server shall authenticate the message and verify that the sending UE is authorized to send the message by checking the registration status of the MSGin5G Client and the "Originating UE Service ID" element in the CoAP payload. If message needs to be rejected, the MSGin5G Server shall send a message response in a new CoAP POST request to the originating entity as specified in step e) and rest steps in this clause are skipped,

b) The MSGin5G Server executes the message segment related procedures as specified in clause 6.5.3 if needed.

c) The MSGin5G Server shall determine the communication model of the message as specified in clause 6.4.1.2.1:

d) If the message is stored for deferred delivery as specified in clause 6.4.1.2.6 or 6.4.1.2.7, the MSGin5G Server shall send a message response in a new CoAP POST request to the originating entity as specified in step e),

e) The MSGin5G Server shall send a message response in a new CoAP POST request to the originating entity as specified in IETF RFC 7252 [5]:

1) may set the "T" field in the CoAP header to 0 or 1;

2) shall include the originating MSGin5G Client's address in an CoAP Option, e.g. if the originating MSGin5G Client address is a URI, include a Uri-Path Option with the value of the URI;

3) shall set the CoAP Content-Format to "50", i.e. application/json; and

4) shall include the information elements specified in 3GPP TS 23.554 [2] in the CoAP payload encoded in JSON format:

Editor's note: the JSON CoAP payload is to be specified in clause 7.

i) shall include an "MSGin5G service identifier" element to indicate that this CoAP POST request is used for MSGin5G service;

ii) shall include an "Originating UE Service ID" element set to the UE which sends the previous MSGin5G message;

iii) shall include the "Message ID" copied from the received MSGin5G message which this Message response is responsed to;

iv) may include a "Delivery Status" element to indicate the delivery status of this MSGin5G message is a failure, or if this MSGin5G message is stored for deferred delivery;

v) may include an "Failure Cause" element to indicate the reason for failure; and

vi) in addition to the information elements specified in 3GPP TS 23.554 [2], shall also include a "Message Type" element set to "MSGRESP" to indicate that this message is a message response.

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

##### 6.4.1.2.6 Sending of an MSGin5G message

In order to deliver the MSGin5G message to an MSGin5G UE, the MSGin5G Server shall send the MSGin5G message in an new CoAP message according to procedures specified in IETF RFC 7252 [5] via MSGin5G-1 reference point. The sending of the CoAP message shall follow the procedures below:

a) The MSGin5G Server shall set the "T" field in the CoAP header to 0 if delivery status report from the recipient is requested, i.e. indicates this message is the type of Confirmable, to ensure the application layer delivery status report.

b) The MSGin5G Server shall set the CoAP Content-Format to "50", i.e. application/json.

c) The MSGin5G Server shall remove any "Priority type" element, "Store and forward flag" and related "Store and forward parameters" elements from the CoAP payload of the received message. If "Message is segmented" and related elements is included in the received message, the MSGin5G Server shall handle the message as specified in clause 6.5.3.

Editor's note: When the message is received from an Application Server or a Message Gateway, the payload of new CoAP POST request is modified based on the the received API message, vice verse. The IEs and message structure in the CoAP message and the API message are needed to be aligned.

d) The MSGin5G Server shall determine the communication model of the message by checking the recipient of the message as specified in clause 6.4.1.2.1 and generate the new CoAP message:

1) if the Service ID of the recipient is pointed to an MSGin5G Client, the MSGin5G Server:

i) shall include the recipient MSGin5G Client address in an CoAP Option, e.g. if the MSGin5G Client address is a URI, include a Uri-Path Option with the value of the URI; and

ii) shall copy other elements in the CoAP payload of the received message to the new CoAP POST request;

2) if the Service ID of the recipient is pointed to an Application Server or a Message Gateway, the MSGin5G Server shall follow the procedure specified in 3GPP TS 29.538 [7];

3) if the MSGin5G message is a Group message, the MSGin5G Server:

i) shall obtain the group members by checking the group profile with the "Group Service ID" element included in the received MSGin5G message;

ii) for each group member which is an MSGin5G UE, include its CoAP address gets from the recipient MSGin5G UE registration specified in clause 6.3.1.2 in an CoAP Option, e.g. if the recipient client's address is a URI, include a Uri-Path Option with the value of the URI. The MSGin5G Server shall add the "Recipient UE Service ID" element and set the value of it to the UE Service ID. The MSGin5G Server shall also copy other elements in the CoAP payload of the received message to the new CoAP POST request; and

Editor's note: The procedure of Broadcast message is FFS.

4) if the MSGin5G message is needed to be distributed based on message topic, the MSGin5G Server:

i) shall obtain the UE Service ID/AS Service ID of the subscribers by checking the subscription with this message topic;

ii) for each subscriber which is an MSGin5G UE, include its CoAP address gets from the recipient MSGin5G UE registration specified in clause 6.3.1.2 in an CoAP Option, e.g. if the recipient client's address is a URI, include a Uri-Path Option with the value of the URI. The MSGin5G Server shall add the "Recipient UE Service ID" element and set the value of it to the UE Service ID. The MSGin5G Server shall also copy other elements in the payload of the received message to the new CoAP 2.05 response.

e) Before sending the new CoAP message generated in step d), the MSGin5G Server shall compare the size of the new CoAP message to the maximum allowed MSGin5G message segmentation size. If the size exceeds, the MSGin5G Server shall segment the MSGin5G message into a set of segmented MSGin5G messages such that each segmented MSGin5G message can fit within the maximum allowed MSGin5G message segmentation size. For each segmented MSGin5G message, the MSGin5G Server:

1) shall include a "Message is segmented" element with a "true" value to indicate that this message is part of a segmented message;

2) shall include a "Segmentation set identifier" element to indicate that this segmented message is associated within a set of segmented messages , all segmented messages associated with the same MSGin5G message are assigned the same unique identifier;

3) shall include a "Total number of message segments" element in the first segment of the MSGin5G message to indicate the total number of segments for the MSGin5G message;

4) shall include a "Message segment number" element to indicate segmented message number of each segmented message within a set of segmented messages; and

5) shall include a "Last segment flag" element in the last segment in the set of segmented messages; and

f) The MSGin5G Server checks the availability of recipient by checking the UE registration status. The MSGin5G Server can also use e.g, UE reachability status monitoring specified in clause 6.7.2 to determine whether the recipient is available. If the recipient is available, the MSGin5G Server send the new CoAP message generated as above to the recipient. If the recipient is unavailable, the MSGin5G Server checks whether a "Store and forward flag" element is included in the received MSGin5G message:

1) if the "Store and forward flag" element is not included, the message is discarded and the MSGin5G Server may send a message response as specified in clause 6.4.1.2.2 which includes delivery status information in the "Delivery Status" element, e.g., that the message was discarded; and

2) if the "Store and forward flag" element is included:

i) the MSGin5G Server stores the message and uses the information obtained from the "Store and forward parameters" element to determine the forwarding. The MSGin5G Server may send a message response as specified in clause 6.4.1.2.2 which includes store and forward status information in the "Delivery Status" element, e.g., that the delivery had been deferred; and

ii) when the recipient UE becomes available, the MSGin5G Server attempts delivery of the new CoAP message to the recipient. If the UE does not become available prior to the time included in the "Message expiration time" element, the MSGin5G Server attempts delivery of the new CoAP message at the message expiration time and the stored message is discarded afterwards. The MSGin5G Server may send a message response as specified in clause 6.4.1.2.2 which includes store and forward status information the "Delivery Status" element, e.g., that the message was discarded.

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