**3GPP TSG-CT WG1 Meeting #122-eC1-200786**

**Electronic meeting, 20-28 February 2020**

|  |
| --- |
| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **24.501** | **CR** | **1975** | **rev** | **1** | **Current version:** | **16.3.0** |  |
|  |
| *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)*.* |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network |  | Core Network | **x** |

|  |
| --- |
|  |
| ***Title:***  | Indication of change in the use of enhanced coverage |
|  |  |
| ***Source to WG:*** | Samsung, InterDigital, Huawei, HiSilicon |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | 5G\_CIoT |  | ***Date:*** | 2020-02-10 |
|  |  |  |  |  |
| ***Category:*** | **C** |  | ***Release:*** | Rel-16 |
|  | *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-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
|  |  |
| ***Reason for change:*** | For the UE supporting CE mode B, the restriction on the use of enhanced coverage determines the range of NAS timers that should be used at the UE and network (AMF and SMF) for both the 5GMM and 5GSM procedures as described in section 5.3.18 of TS 24.501. The restriction on the use of enhanced coverage can change e.g. due to changes in subscription information. When this occurs for a UE, the AMF will apply the corresponding NAS procedure timers, and for every PDU session that is established the AMF informs the SMF about the change so that the SMF also applies the corresponding NAS procedure timers. This is specified in section 5.31.12 of TS 23.501:“If the UE supports CE mode B and use of CE mode B changes from restricted to unrestricted or vice versa in the Enhanced Coverage Restriction information in the UE context in the AMF (e.g. due to a subscription change or due to EPS to 5GS mobility) and the UE has already established PDU sessions, then the AMF shall trigger a PDU session modification to the SMFs serving the UE's PDU sessions and include the extended NAS-SM indication only if use of CE mode B is unrestricted in the Enhanced Coverage Restriction information in the UE context in the AMF.Based on the extended NAS-SM timer indication, the SMF shall use the extended NAS-SM timer setting for the UE as specified in TS 24.501 [47].”Per the above, the AMF and SMF will apply the corresponding NAS procedure timers however the UE is still unaware of this change and therefore will use a different range of timers. To avoid this mismatch, the AMF should inform the UE of any change in the use of enhanced coverage when it occurs. However a UE in:* 5GMM-CONNECTED mode will not necessarily perform a registration procedure and hence cannot be informed about the change in a Registration Accept message,
* 5GMM-IDLE mode may transition to 5GMM-CONNECTED mode with a service request procedure and again the network will not be able to inform the UE about the change as a registration procedure may not be triggered over a long period of time as such transitions will reset the periodic registration update timer.

Therefore, a mechanism is needed to inform the UE that is in 5GMM-CONNECTED mode about this change so that a registration procedure can be triggered. This should be similar to what is already done e.g. for updates related to the use of MICO with the Configuration Update Command message.  |
|  |  |
| ***Summary of change:*** | 1) Clarify some conditions for the use of coverage enhancement in section 4.19 and 4.20. E.g. UE uses coverage enhancement if it is not restricted by the network. Also, AMF checks for the UE’s usage setting not being set to “voice centric” (currenlty only checked by the UE).1) Clarify that when a change regarding the use of coverage enhancement occurs (e.g. due to a change in subscription), the AMF should send the Configuration Update Command message to the UE and include a new Enhanced coverage indication IE to renegotiate the use of enhanced coverage. After a re-negotiation is performed, the AMF informs the SMF about the outcome so that all entities apply the appropriate NAS timer values as the same time.2) Update the generic UE configuration update procedure to include the new Enhanced coverage indication IE.3) Update the Configuration Update Command message definition to add the Enhanced coverage indication IE. |
|  |  |
| ***Consequences if not approved:*** | The NAS entities in the UE and network (AMF and SMF) are not synchronized with respect to the NAS timer value range that should be used after changes in the use of enhanced coverage for the UE. This will also affect NAS retransmissions e.g. UE is using extended timers due to enhanced coverage which then becomes restricted. If the UE is unaware, then it will have to wait e.g. >240s (for NB-N1 mode, see section 4.17), before retransmitting a NAS message whereas the retransmission should have occurred much earlier. |
|  |  |
| ***Clauses affected:*** | 4.19, 4.20, 5.3.18, 5.4.4.1, 5.4.4.2, 5.4.4.3, 8.2.19.1, 8.2.19.x (new), 9.11.3.y (new)  |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS 23.501 CR 2179  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\*\*\*\*\*\* NEXT CHANGE \*\*\*\*\*\*

## 4.19 5GS mobility management in WB-N1 mode for IoT

In WB-N1 mode, a UE operating in category CE can operate in either CE mode A or CE mode B (see 3GPP TS 36.306 [25D]). If a UE that supports CE mode B and operates in WB-N1 mode, the UE's usage setting is not set to "voice centric" (see 3GPP TS 23.501 [8]), and

a) the use of enhanced coverge is not restricted by the network; or

b) CE mode B is not restricted by the network (see 3GPP TS 23.501 [8]);

the UE shall apply the value of the applicable NAS timer indicated in table 10.2.1 for WB-N1/CE mode.

The NAS timer value obtained is used as described in the appropriate procedure subclause of this specification. The NAS timer value shall be calculated at start of a NAS procedure, and shall not be re-calculated until the NAS procedure is completed, restarted or aborted.

The support of CE mode B by a UE is indicated to the AMF by lower layers and shall be stored by the AMF. When an AMF that supports WB-N1 mode performs NAS signaling with a UE, which supports CE mode B and operates in WB-N1 mode, the UE's usage setting is not set to "voice centric" (see 3GPP TS 23.501 [8]) and the AMF determines that

a) the use of enhanced coverge is not restricted for the UE; or

b) CE mode B is not restricted for the UE (see 3GPP TS 23.501 [8])

the AMF shall calculate the value of the applicable NAS timer indicated in table 10.2.2 for WB-N1/CE mode.

The NAS timer value obtained is used as described in the appropriate procedure subclause of this specification. The NAS timer value shall be calculated at start of a NAS procedure and shall not be re-calculated until the NAS procedure is completed, restarted or aborted.

Editor´s note: Final values of the extended NAS timers are FFS.

\*\*\*\*\*\* NEXT CHANGE \*\*\*\*\*\*

## 4.20 5GS session management in WB-N1 mode for IoT

In WB-N1 mode, a UE operating in category CE can operate in either CE mode A or CE mode B (see 3GPP TS 36.306 [25D]). If a UE that supports CE mode B and operates in WB-N1 mode and the UE's usage setting is not set to "voice centric" (see 3GPP TS 23.501 [8]), and

a) the use of enhanced coverge is not restricted by the network; or

b) CE mode B is not restricted by the network (see 3GPP TS 23.501 [8]);

the UE shall apply the value of the applicable NAS timer indicated in table 10.3.1 for WB-N1/CE mode.

The NAS timer value obtained is used as described in the appropriate procedure subclause of this specification. The NAS timer value shall be calculated at start of a NAS procedure, and shall not be re-calculated until the NAS procedure is completed, restarted or aborted.

If the use of extended NAS timer is indicated by the AMF (see 3GPP TS 23.501 [8] and 3GPP TS 23.502 [9]), the SMF shall calculate the value of the applicable NAS timer indicated in table 10.3.2 for WB-N1/CE mode.

The NAS timer value obtained is used as described in the appropriate procedure subclause of this specification. The NAS timer value shall be calculated at start of a NAS procedure and shall not be re-calculated until the NAS procedure is completed, restarted or aborted.

Editor´s note: Final values of the extended NAS timers are FFS.

\*\*\*\*\*\* NEXT CHANGE \*\*\*\*\*\*

### 5.3.18 Restriction on use of enhanced coverage

In order to deal with use of extensive resources from the network, the operator may prevent specific subscribers from using enhanced coverage (see 3GPP TS 23.501 [8]). When in NB-N1 mode, the UE shall indicate support for restriction on use of enhanced coverage. When in WB-N1 mode, the UE supporting either CE mode A or CE mode B shall indicate support for restriction on use of enhanced coverage. The UE supporting restriction on use of enhanced coverage indicates its support for restriction on use of enhanced coverage in the REGISTRATION REQUEST message. If the UE supports restriction on use of enhanced coverage, the AMF indicates whether the use of enhanced coverage is restricted or not in the REGISTRATION ACCEPT message (see subclause 5.5.1.2 and subclause 5.5.1.3). If the use of enhanced coverage is restricted, the UE shall not use enhanced coverage in the registered PLMN and in any PLMN which is in the list of equivalent PLMNs.

If the UE supports CE mode B and the network determines that

a) the use of enhanced coverage is not restricted for the UE; or

b) CE mode B is not restricted for the UE;

the applicable NAS timer values shall be calculated by the network as described in subclause 4.19 and subclause 4.20.

For a UE that supports restriction on use of enhanced coverage or CE mode B, if:

a) the AMF determines to enforce a change in restriction on the use of enhanced coverage or a change in the restriction on the use of CE mode B as described in 3GPP TS 23.501 [8]; and

b) the UE is in 5GMM-CONNECTED mode and there is no ongoing registration procedure;

the AMF shall initiate the generic UE configuration update procedure to indicate the re-negotiation of the restriction on the use of enhanced coverage as described in subclause 5.4.4. After re-negotiation of the restriction on the use of enhanced coverage using the registration procedure for mobility and registration update is complete, for any SMF with which the UE has an established PDU session, the AMF updates the SMF with the indication on the use of extended NAS timer as described in 3GPP TS 23.501 [8] and 3GPP TS 23.502 [9].

\*\*\*\*\*\* NEXT CHANGE \*\*\*\*\*\*

#### 5.4.4.1 General

The purpose of this procedure is to:

a) allow the AMF to update the UE configuration for access and mobility management-related parameters decided and provided by the AMF by providing new parameter information within the command; or

b) request the UE to perform a registration procedure for mobility and periodic registration update towards the network to update access and mobility management-related parameters decided and provided by the AMF (see subclause 5.5.1.3).

This procedure is initiated by the network and can only be used when the UE has an established 5GMM context, and the UE is in 5GMM-CONNECTED mode. When the UE is in 5GMM-IDLE mode, the AMF may use the paging or notification procedure to initiate the generic UE configuration update procedure. The AMF can request a confirmation response in order to ensure that the parameter has been updated by the UE.

This procedure shall be initiated by the network to assign a new 5G-GUTI to the UE after a successful service request procedure invoked as a response to a paging request from the network and before the release of the N1 NAS signalling connection. If the service request procedure was triggered due to 5GSM downlink signalling pending, the procedure for assigning a new 5G-GUTI can be initiated by the network after the transport of the 5GSM downlink signalling.

The following parameters are supported by the generic UE configuration update procedure without the need to request the UE to perform the registration procedure for mobility and periodic registration update:

a) 5G-GUTI;

b) TAI list;

c) Service area list;

d) Network identity and time zone information (Full name for network, short name for network, local time zone, universal time and local time zone, network daylight saving time);

e) LADN information;

f) Rejected NSSAI;

g) void;

h) Operator-defined access category definitions;

i) SMS indication;

j) Service gap time value;

k) "CAG information list";

l) UE radio capability ID; and

m) 5GS registration result.

The following parameters can be sent to the UE with or without a request to perform the registration procedure for mobility and periodic registration update:

a) Allowed NSSAI;

b) Configured NSSAI; or

c) Network slicing subscription change indication.

The following parameter is sent to the UE with a request to perform the registration procedure for mobility and periodic registration update:

a) MICO indication;

b) UE radio capability ID deletion indication; or

c) Enhanced coverage indication.

The following parameters are sent over 3GPP access only:

a) LADN information;

b) MICO indication;

c) TAI list;

d) Service area list;

e) Service gap time value;

f) "CAG information list";

g) UE radio capability ID; and

h) Enhanced coverage indication.

The following parameters are managed and sent per access type i.e., independently over 3GPP access or non 3GPP access:

a) Allowed NSSAI; and

b) Rejected NSSAI (when the NSSAI is rejected for the current registration area).

The following parameters are managed commonly and sent over 3GPP access or non 3GPP access:

a) 5G-GUTI;

b) Network identity and time zone information;

c) Rejected NSSAI (when the NSSAI is rejected for the current PLMN);

d) Configured NSSAI;

e) SMS indication;

f) 5GS registration result.



Figure 5.4.4.1.1: Generic UE configuration update procedure

\*\*\*\*\*\* NEXT CHANGE \*\*\*\*\*\*

#### 5.4.4.2 Generic UE configuration update procedure initiated by the network

The AMF shall initiate the generic UE configuration update procedure by sending the CONFIGURATION UPDATE COMMAND message to the UE.

The AMF shall in the CONFIGURATION UPDATE COMMAND message either:

a) include one or more of the following parameters: 5G-GUTI, TAI list, allowed NSSAI that may include the mapped S-NSSAI(s), LADN information, service area list, MICO indication NITZ information, configured NSSAI that may include the mapped S-NSSAI(s), rejected NSSAI, network slicing subscription change indication, operator-defined access category definitions, SMS indication, service gap time value, "CAG information list", UE radio capability ID, 5GS registration result or UE radio capability ID deletion indication;

b) include the Configuration update indication IE with the Registration requested bit set to "registration requested"; or

c) include a combination of both a) and b).

If an acknowledgement from the UE is requested, the AMF shall indicate "acknowledgement requested" in the Acknowledgement bit of the Configuration update indication IE in the CONFIGURATION UPDATE COMMAND message and shall start timer T3555. Acknowledgement shall be requested for all parameters except when only NITZ is included.

To initiate parameter re-negotiation between the UE and network, the AMF shall indicate "registration requested" in the Registration requested bit of the Configuration update indication IE in the CONFIGURATION UPDATE COMMAND message.

If a new allowed NSSAI information or AMF re-configuration of supported S-NSSAIs requires an AMF relocation, the AMF shall indicate "registration requested" in the Registration requested bit of the Configuration update indication IE and include the Allowed NSSAI IE in the CONFIGURATION UPDATE COMMAND message.

If the AMF includes a new configured NSSAI in the CONFIGURATION UPDATE COMMAND message and the new configured NSSAI requires an AMF relocation as specified in 3GPP TS 23.501 [8], the AMF shall indicate "registration requested" in the Registration requested bit of the Configuration update indication IE in the message.

If the AMF indicates "registration requested" in the Registration requested bit of the Configuration update indication IE, acknowledgement shall be requested.

If the CONFIGURATION UPDATE COMMAND message is initiated only due to changes to the allowed NSSAI and these changes require the UE to initiate a registration procedure, but the AMF is unable to determine an allowed NSSAI for the UE as specified in 3GPP TS 23.501 [8], then the CONFIGURATION UPDATE COMMAND message shall indicate "registration requested" in the Registration requested bit of the Configuration update indication IE, and shall not contain any other parameters.

If a network slice-specific authentication and authorization procedure for an S-NSSAI is completed as a:

success, the AMF shall include this S-NSSAI in the allowed NSSAI; or

failure, the AMF shall include this S-NSSAI in the rejected NSSAI with the reject cause "S-NSSAI is not available due to the failed or revoked network slice-specific authorization and authentication" in the rejected NSSAI.

The allowed NSSAI and the rejected NSSAI shall be included in the CONFIGURATION UPDATE COMMAND message to reflect the result of the procedures subject to network slice-specific authentication and authorization.

NOTE: If there are multiple S-NSSAIs subject to network slice-specific authentication and authorization, it is implementation specific if the AMF informs the UE about the outcome of the procedures in one or more CONFIGURATION UPDATE COMMAND messages.

If the AMF includes the Network slicing indication IE in the CONFIGURATION UPDATE COMMAND with the Network slicing subscription change indication set to "Network slicing subscription changed", and changes to the allowed NSSAI require the UE to initiate a registration procedure, but the AMF is unable to determine an allowed NSSAI for the UE as specified in 3GPP TS 23.501 [8], then the CONFIGURATION UPDATE COMMAND message shall additionally indicate "registration requested" in the Registration requested bit of the Configuration update indication IE and shall not include an allowed NSSAI.

If the AMF needs to update the LADN information, the AMF shall include the LADN information in the LADN information IE of the CONFIGURATION UPDATE COMMAND message.

If the AMF needs to update the CAG information, the AMF shall include the CAG information list IE in the CONFIGURATION UPDATE COMMAND message.

If the AMF needs to update the restriction on the use of enhanced coverage as described in subclause 5.3.18, the AMF shall include the Enhanced coverage indication IE in the CONFIGURATION UPDATE COMMAND message.

During an established 5GMM context, the network may send none, one, or more CONFIGURATION UPDATE COMMAND messages to the UE. If more than one CONFIGURATION UPDATE COMMAND message is sent, the messages need not have the same content.

\*\*\*\*\*\* NEXT CHANGE \*\*\*\*\*\*

#### 5.4.4.3 Generic UE configuration update accepted by the UE

Upon receiving the CONFIGURATION UPDATE COMMAND message, the UE shall stop timer T3346 if running and use the contents to update appropriate information stored within the UE.

If "acknowledgement requested" is indicated in the Acknowledgement bit of the Configuration update indication IE in the CONFIGURATION UPDATE COMMAND message, the UE shall send a CONFIGURATION UPDATE COMPLETE message.

If the UE receives a new 5G-GUTI in the CONFIGURATION UPDATE COMMAND message, the UE shall consider the new 5G-GUTI as valid, the old 5G-GUTI as invalid, stop timer T3519 if running, and delete any stored SUCI; otherwise, the UE shall consider the old 5G-GUTI as valid. The UE shall provide the 5G-GUTI to the lower layer of 3GPP access if the CONFIGURATION UPDATE COMMAND message is sent over the non-3GPP access, and the UE is in 5GMM-REGISTERED in both 3GPP access and non-3GPP access in the same PLMN.

If the UE receives a new TAI list in the CONFIGURATION UPDATE COMMAND message, the UE shall consider the new TAI list as valid and the old TAI list as invalid; otherwise, the UE shall consider the old TAI list as valid.

If the UE receives a new service area list in the CONFIGURATION UPDATE COMMAND message, the UE shall consider the new service area list as valid and the old service area list as invalid; otherwise, the UE shall consider the old service area list, if any, as valid.

If the UE receives new NITZ information in the CONFIGURATION UPDATE COMMAND message, the UE considers the new NITZ information as valid and the old NITZ information as invalid; otherwise, the UE shall consider the old NITZ information as valid.

If the UE receives a LADN information IE in the CONFIGURATION UPDATE COMMAND message, the UE shall consider the old LADN information as invalid and the new LADN information as valid, if any; otherwise, the UE shall consider the old LADN information as valid.

If the UE receives a new allowed NSSAI for the associated access type in the CONFIGURATION UPDATE COMMAND message, the UE shall consider the new allowed NSSAI as valid for the associated access type, store the allowed NSSAI for the associated access type as specified in subclause 4.6.2.2 and consider the old allowed NSSAI for the associated access type as invalid; otherwise, the UE shall consider the old Allowed NSSAI as valid for the associated access type.

If the UE receives a new configured NSSAI in the CONFIGURATION UPDATE COMMAND message, the UE shall consider the new configured NSSAI for the registered PLMN as valid and the old configured NSSAI for the registered PLMN as invalid; otherwise, the UE shall consider the old configured NSSAI for the registered PLMN as valid The UE shall store the new configured NSSAI as specified in subclause 4.6.2.2.

If the UE receives the Network slicing indication IE in the CONFIGURATION UPDATE COMMAND message with the Network slicing subscription change indication set to "Network slicing subscription changed", the UE shall delete the network slicing information for each and every PLMN except for the current PLMN as specified in subclause 4.6.2.2.

If the UE receives Operator-defined access category definitions IE in the CONFIGURATION UPDATE COMMAND message and the Operator-defined access category definitions IE contains one or more operator-defined access category definitions, the UE shall delete any operator-defined access category definitions stored for the RPLMN and shall store the received operator-defined access category definitions for the RPLMN. If the UE receives the Operator-defined access category definitions IE in the CONFIGURATION UPDATE COMMAND message and the Operator-defined access category definitions IE contains no operator-defined access category definitions, the UE shall delete any operator-defined access category definitions stored for the RPLMN. If the CONFIGURATION UPDATE COMMAND message does not contain the Operator-defined access category definitions IE, the UE shall not delete the operator-defined access category definitions stored for the RPLMN.

If the UE receives the SMS indication IE in the CONFIGURATION UPDATE COMMAND message with the SMS availability indication set to:

a) "SMS over NAS not available", the UE shall consider that SMS over NAS transport is not allowed by the network; and

b) "SMS over NAS available", the UE may request the use of SMS over NAS transport by performing a registration procedure for mobility and periodic registration update as specified in subclause 5.5.1.3, after the completion of the generic UE configuration update procedure.

If the UE receives the CAG information list IE in the CONFIGURATION UPDATE COMMAND message, the UE shall delete any stored "CAG information list" and shall store the received "CAG information list" via the CAG information list IE as specified in annex C.

If the received "CAG information list" includes an entry containing the identity of the current PLMN, the UE shall operate as follows.

a) If the UE receives the CONFIGURATION UPDATE COMMAND message via a CAG cell, the "allowed CAG list" for the current PLMN in the received "CAG information list" does not include the CAG-ID of the current CAG cell, and:

i) the entry for the current PLMN in the received "CAG information list" does not include an "indication that the UE is only allowed to access 5GS via CAG cells", then the UE shall enter the state 5GMM-REGISTERED.LIMITED-SERVICE and shall search for a suitable cell according to 3GPP TS 38.304 [28] with the updated "CAG information list"; or

ii) the entry for the current PLMN in the received "CAG information list" includes an "indication that the UE is only allowed to access 5GS via CAG cells" and:

1) if the "allowed CAG list" for the current PLMN in the received "CAG information list" includes one or more CAG-IDs, the UE shall enter the state 5GMM-REGISTERED.LIMITED-SERVICE and shall search for a suitable cell according to 3GPP TS 38.304 [28] with the updated "CAG information list"; or

2) if the "allowed CAG list" for the current PLMN in the received "CAG information list" does not include any CAG-ID, the UE shall enter the state 5GMM-DEREGISTERED.PLMN-SEARCH and shall apply the PLMN selection process defined in 3GPP TS 23.122 [6] with the updated "CAG information list"; or

b) If the UE receives the CONFIGURATION UPDATE COMMAND message via a non-CAG cell and the entry for the current PLMN in the received "CAG information list" includes an "indication that the UE is only allowed to access 5GS via CAG cells" and:

i) if the "allowed CAG list" for the current PLMN in the received "CAG information list" includes one or more CAG-IDs, the UE shall enter the state 5GMM-REGISTERED.LIMITED-SERVICE and shall search for a suitable cell according to 3GPP TS 38.304 [28] with the updated "CAG information list"; or

ii) if the "allowed CAG list" for the current PLMN in the received "CAG information list" does not include any CAG-ID, the UE shall enter the state 5GMM-DEREGISTERED.PLMN-SEARCH and shall apply the PLMN selection process defined in 3GPP TS 23.122 [6] with the updated "CAG information list".

If the CONFIGURATION UPDATE COMMAND message indicates "registration requested" in the Registration requested bit of the Configuration update indication IE and:

a) contains no other parameters or contains at least one of the following parameters: a new allowed NSSAI, a new configured NSSAI or the Network slicing subscription change indication, and:

1) an emergency PDU session exists, the UE shall, after the completion of the generic UE configuration update procedure and the release of the emergency PDU session, release the existing N1 NAS signalling connection, and start a registration procedure for mobility and periodic registration update as specified in subclause 5.5.1.3; or

2) no emergency PDU Session exists, the UE shall, after the completion of the generic UE configuration update procedure and the release of the existing N1 NAS signalling connection, start a registration procedure for mobility and periodic registration update as specified in subclause 5.5.1.3; or

b) an MICO indication is included without a new allowed NSSAI or a new configured NSSAI, the UE shall, after the completion of the generic UE configuration update procedure, start a registration procedure for mobility and registration update as specified in subclause 5.5.1.3 to re-negotiate MICO mode with the network.

The UE receiving the rejected NSSAI in the CONFIGURATION UPDATE COMMAND message takes the following actions based on the rejection cause in the rejected NSSAI:

"S-NSSAI not available in the current PLMN or SNPN"

 The UE shall add the rejected S-NSSAI(s) in the rejected NSSAI for the current PLMN as specified in subclause 4.6.2.2 and not attempt to use this S-NSSAI in the current PLMN until switching off the UE, the UICC containing the USIM is removed, or the entry of the "list of subscriber data" with the SNPN identity of the current SNPN is updated.

"S-NSSAI not available in the current registration area"

 The UE shall add the rejected S-NSSAI(s) in the rejected NSSAI for the current registration area as specified in subclause 4.6.2.2 and not attempt to use this S-NSSAI in the current registration area until switching off the UE, the UE moving out of the current registration area, the UICC containing the USIM is removed, or the entry of the "list of subscriber data" with the SNPN identity of the current SNPN is updated.

If the UE receives a T3447 value IE in the CONFIGURATION UPDATE COMMAND message and has indicated "service gap control supported" in the REGISTRATION REQUEST, then the UE shall replace the stored T3447 value with the received value in the T3447 value IE, and if neither zero nor deactivated use the received T3447 value with the timer T3447 next time it is started. If the received T3447 value is zero or deactivated, then the UE shall stop the timer T3447 if running.

If the UE is not in NB-N1 mode, the UE has set the RACS bit to "RACS supported" in the 5GMM capability IE of the REGISTRATION REQUEST message and the CONFIGURATION UPDATE COMMAND message includes:

a) a UE radio capability ID deletion indication IE set to "Network-assigned UE radio capability IDs requested", the UE shall delete any network-assigned UE radio capability IDs associated with the RPLMN or RSNPN stored at the UE, then the UE shall initiate a registration procedure for mobility and periodic registration update as specified in subclause 5.5.1.3.2. If the UE has an applicable manufacturer-assigned UE radio capability ID for the current UE radio configuration, the UE shall include the manufacturer-assigned UE radio capability ID in the UE radio capability ID IE of the REGISTRATION REQUEST message; and

b) a UE radio capability ID IE, the UE shall store the UE radio capability ID as specified in annex C.

If the UE is not currently registered for emergency services and the 5GS registration result IE in the CONFIGURATION UPDATE COMMAND message is set to "Registered for emergency services", the UE shall consider itself registered for emergency services.

If the CONFIGURATION UPDATE COMMAND message:

a) indicates "registration requested" in the Registration requested bit of the Configuration update indication IE; and

b) includes the Enhanced coverage indication IE;

the UE shall, after the completion of the generic UE configuration update procedure, start a registration procedure for mobility and registration update as specified in subclause 5.5.1.3 to re-negotiate the restriction on the use of enhanced coverage with the network.

\*\*\*\*\*\* NEXT CHANGE \*\*\*\*\*\*

\*\*\*\*\*\* NEXT CHANGE \*\*\*\*\*\*

#### 8.2.19.1 Message definition

The CONFIGURATION UPDATE COMMAND message is sent by the AMF to the UE. See table 8.2.19.1.1.

Message type: CONFIGURATION UPDATE COMMAND

Significance: dual

Direction: network to UE

Table 8.2.19.1.1: CONFIGURATION UPDATE COMMAND message content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IEI | Information Element | Type/Reference | Presence | Format | Length |
|  | Extended protocol discriminator | Extended protocol discriminator9.2 | M | V | 1 |
|  | Security header type | Security header type9.3 | M | V | 1/2 |
|  | Spare half octet | Spare half octet9.5 | M | V | 1/2 |
|  | Configuration update command message identity | Message type9.7 | M | V | 1 |
| D- | Configuration update indication | Configuration update indication9.11.3.18 | O | TV | 1 |
| 77 | 5G-GUTI | 5GS mobile identity9.11.3.4 | O | TLV-E | 14 |
| 54 | TAI list | 5GS tracking area identity list9.11.3.9 | O | TLV | 9-114 |
| 15 | Allowed NSSAI | NSSAI9.11.3.37 | O | TLV | 4-74 |
| 27 | Service area list | Service area list9.11.3.49 | O | TLV | 6-114 |
| 43 | Full name for network | Network name9.11.3.35 | O | TLV | 3-n |
| 45 | Short name for network | Network name9.11.3.35 | O | TLV | 3-n |
| 46 | Local time zone | Time zone9.11.3.52 | O | TV | 2 |
| 47 | Universal time and local time zone | Time zone and time9.11.3.53 | O | TV | 8 |
| 49 | Network daylight saving time | Daylight saving time9.11.3.19 | O | TLV | 3 |
| 79 | LADN information | LADN information9.11.3.30 | O | TLV-E | 3-1715 |
| B- | MICO indication | MICO indication9.11.3.31 | O | TV | 1 |
| 9- | Network slicing indication | Network slicing indication9.11.3.36 | O | TV | 1 |
| 31 | Configured NSSAI | NSSAI9.11.3.37 | O | TLV | 4-146 |
| 11 | Rejected NSSAI | Rejected NSSAI9.11.3.46 | O | TLV | 4-42 |
| 76 | Operator-defined access category definitions | Operator-defined access category definitions9.11.3.38 | O | TLV-E | 3-n |
| F- | SMS indication | SMS indication9.11.3.50A | O | TV | 1 |
| 6C | T3447 value | GPRS timer 39.11.2.5 | O | TLV | 3 |
| 75 | CAG information list | CAG information list9.11.3.18A | O | TLV-E | 3-n |
| 67 | UE radio capability ID | UE radio capability ID9.11.3.68 | O | TLV | 3-n |
| 68 | UE radio capability ID deletion indication | UE radio capability ID deletion indication9.11.3.69 | O | TV | 1 |
| 44 | 5GS registration result | 5GS registration result9.11.3.6 | O | TLV | 3 |
| xx | Enhanced coverage indication | Enhanced coverage indication9.11.3.y | O | TV | 1 |

\*\*\*\*\*\* NEXT CHANGE \*\*\*\*\*\*

#### 8.2.19.x Enhanced coverage indication

This IE may be included to indicate the re-negotiation of the restriction on the use of enhanced coverage.

\*\*\*\*\*\* NEXT CHANGE \*\*\*\*\*\*

#### 9.11.3.y Enhanced coverage indication

The purpose of the enhanced coverage indication information element is to indicate the re-negotiation of the restriction on the use of enhanced coverage.

The enhanced coverage indication information element is coded as shown in figure 9.11.3.y.1.

The enhanced coverage indication is a type 1 information element.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Enhanced coverage indication IEI | 0Spare | 0Spare | 0Spare | 0Spare | octet 1 |

Figure 9.11.3.y.1: Enhanced coverage indication

\*\*\*\*\*\* NEXT CHANGE \*\*\*\*\*\*