|  |  |  |  |
| --- | --- | --- | --- |
|  | | | |
| **Title\*:** | Test purpose examples targeting missing optional information | | |
|  | 06 February 2015 | | |
| from **Source**\*: | L.M.Ericsson | | |
| Contact: | György Réthy | | |
|  |  | | |
| input for **Committee**\***:** | MTS | | |
|  |  | | |
| Contribution **For\*:** | Decision |  |  |
|  | Discussion |  |  |
|  | Information | **X** |  |
|  |  | | |
| Submission date**\***: | 2015-02-06 | | |
|  |  | | |
| Meeting & Allocation: | [**MTS-TDL\_meeting**](http://webapp.etsi.org/MeetingCalendar/MeetingDetails.asp?mid=16052) **on 09th February 2015** | | |
|  | | | |

Please find below a few selected examples from different areas, where already the test purpose specifies omitting certain information form the communication with the SUT.

Please note that even in the cases, when the test purpose doesn’t requires this specifically, due to the interface specification itself it may be needed to explicitly specify that some information shall not be present in the information exchange between the tester and the SUT.

# 3GPP

## 3GPP TS 34.229-1 V12.4.1 (2014-12)

### 15.5.5 Test requirements

1. SS shall check that the UE can authenticate itself correctly with the authentication scheme it supports:

- HTTP Digest authentication (see Annex C.29.1 step 2 NOTE 1).

- GAA based authentication as specified in TS 33.222 [121] and TS 24.109 [119] (see Annex C.29.2).

2. SS shall check that after Annex C.29.1 step 6 the simservs document stored in the SS contains the following pieces of information supplied by the UE:

- <communication-diversion> element with "active" attribute set as "true"

- within <cp:ruleset> one <cp:rule> element for communication forwarding as follows:

- <cp:conditions> element missing or empty as forwarding is supposed to be unconditional and not containing a <rule-deactivated> element

- <cp:actions> element containing <forward-to> element containing <target> element

- value of target address to be px\_XCAP\_TargetUri

3. SS shall check that after step 9 the simservs document stored in the SS contains the following pieces of information supplied by the UE:

- <communication-diversion> element with "active" attribute being set "false"

or

- <communication-diversion> element with "active" attribute set as "true"

- within <cp:ruleset> one <cp:rule> element found at step 2 for communication forwarding as follows:

- <cp:conditions> element containing a <rule-deactivated> element

### 15.7.5 Test requirements

1. SS shall check that the UE can authenticate itself correctly with the authentication scheme that the UE supports:

- HTTP Digest authentication

- GAA based authentication as specified in TS 33.222 [121] and TS 24.109 [119] (see Annex C.29.2).

2. SS shall check that after Annex C.29.1 step 6 the simservs document stored in the SS contains the following pieces of information supplied by the UE:

- <communication-diversion> element with "active" attribute set as "true"

- within <cp:ruleset> one <cp:rule> element for communication forwarding as follows:

- <cp:conditions> element containing a <no-answer> element and not containing a <rule-deactivated> element

- <cp:actions> element containing <forward-to> element containing <target> element. Additionally <NoReplyTimer> element shall be included, if the UE supports no reply timer setting.

- value of target address to be px\_XCAP\_TargetUri

- value of NoReplyTimer (if included) to be 10 seconds

3. SS shall check that after step 9 the simservs document stored in the SS contains the following pieces of information supplied by the UE:

- <communication-diversion> element with "active" attribute being set "false"

or

- <communication-diversion> element with "active" attribute set as "true"

- within <cp:ruleset> one <cp:rule> element found at step 2 for communication forwarding as follows:

- <cp:conditions> element containing a <rule-deactivated> element

### 15.9.5 Test requirements

1. SS shall check that the UE can authenticate itself correctly with the authentication scheme that the UE supports:

- HTTP Digest authentication (see Annex C.29.1 step 2 NOTE 1).

- GAA based authentication as specified in TS 33.222 [121] and TS 24.109 [119] (see Annex C.29.2).

2. SS shall check that after Annex C.29.1 step 6 the simservs document stored in the SS contains the following pieces of information supplied by the UE:

- <communication-diversion> element with "active" attribute set as "true"

- within <cp:ruleset> one <cp:rule> element for communication forwarding as follows:

- <cp:conditions> element containing a <busy> element and not containing a <rule-deactivated>

- <cp:actions> element containing <forward-to> element containing <target> element

- value of target address to be px\_XCAP\_TargetUri

3. SS shall check that after step 9 the simservs document stored in the SS contains the following pieces of information supplied by the UE:

- <communication-diversion> element with "active" attribute being set "false"

or

- <communication-diversion> element with "active" attribute set as "true"

- within <cp:ruleset> one <cp:rule> element found at step 2 for communication forwarding as follows:

- <cp:conditions> element containing a <rule-deactivated> element

### 15.10a.5 Test requirements

1. SS shall check that the UE can authenticate itself correctly with the authentication scheme that the UE supports:

- HTTP Digest authentication (see Annex C.29.1 step 2 NOTE 1).

- GAA based authentication as specified in TS 33.222 [121] and TS 24.109 [119] (see Annex C.29.2).

2. SS shall check that after Annex C.29.1 step 6 the simservs document stored in the SS contains the following pieces of information supplied by the UE:

- <communication-diversion> element with "active" attribute set as "true"

- within <cp:ruleset> one <cp:rule> element for communication forwarding as follows:

- <cp:conditions> element containing a <not-reachable> element and not containing a <rule-deactivated> element

- <cp:actions> element containing <forward-to> element containing <target> element

- value of target address to be px\_XCAP\_TargetUri

3. SS shall check that after step 9 the simservs document stored in the SS contains the following pieces of information supplied by the UE:

- <communication-diversion> element with "active" attribute being set "false".

Or

- <communication-diversion> element with "active" attribute set as "true"

- within <cp:ruleset> one <cp:rule> element found at step 2 and step2a for communication forwarding as follows:

- <cp:conditions> element containing a <rule-deactivated> element

… and so on in several other test purposes.

## Examples from STF 454’s SVN, provided by ETSI

3GPP TS 36.523-1 V10.2.0 (2012-09) 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification; Part 1: Protocol conformance specification (Release 10)

6 Idle mode operations

6.0 Introduction

6.0.1 PLMN and TAC

The PLMN numbers indicated in Table 6.0.1-1 are used in test cases to associate a cell with an MCC and MNC for that cell. If no PLMN is explicitly specified, the default value is PLMN 1.

Table 6.0.1-1: Tracking Area Identity (TAI) in System Information Block Type 1  
broadcast on the BCCH (E-UTRAN)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| PLMN | MCC1 | MCC2 | MCC3 | MNC1 | MNC2 | MNC3 | TAC |
| 1 | 0 | 0 | 1 | 0 | 1 | Not present | See Table 6.0.1-2 |
| 2 | 0 | 0 | 2 | 1 | 1 | Not present |
| 3 | 0 | 0 | 3 | 2 | 1 | Not present |
| 4 | 0 | 0 | 4 | 3 | 1 | Not present |
| 5 | 0 | 0 | 5 | 4 | 1 | Not present |
| 6 | 0 | 0 | 6 | 5 | 1 | Not present |
| 7 | 0 | 0 | 7 | 6 | 1 | Not present |
| 8 | 0 | 0 | 8 | 7 | 1 | Not present |
| 9 | 0 | 0 | 9 | 0 | 2 | Not present |
| 10 | 0 | 1 | 0 | 1 | 2 | Not present |
| 11 | 0 | 1 | 1 | 2 | 2 | Not present |
| 12 | 0 | 1 | 2 | 3 | 2 | Not present |
| 13 | 0 | 0 | 2 | 8 | 1 | Not present |
| 14 | 0 | 0 | 2 | 9 | 1 | Not present |
| 15 | 0 | 0 | 1 | 1 | 1 | Not present |
| 16 | 0 | 0 | 1 | 2 | 1 | Not present |
| 17 | 0 | 0 | 1 | 3 | 1 | Not present |  |
| 18 | 0 | 0 | 1 | 4 | 1 | Not present |  |

NOTE: The Location Area Information (LAI) for UTRA and GSM could be re-used from TS 34.123-1 clause 6.

If no TAC for E-UTRAN cell is explicitly specified in the test case description, the TACs for E-UTRAN cells indicated in Table 6.0.1-2 are used in the test case.

[TS 23.122 clause 4.4.3.1.1]

The MS selects and attempts registration on other PLMN/access technology combinations, if available and allowable, in the following order:

i) either the HPLMN (if the EHPLMN list is not present or is empty) or the highest priority EHPLMN that is available (if the EHPLMN list is present) ;

ii) each PLMN/access technology combination in the "User Controlled PLMN Selector with Access Technology" data file in the SIM (in priority order);

iii) each PLMN/access technology combination in the "Operator Controlled PLMN Selector with Access Technology" data file in the SIM (in priority order);

iv) other PLMN/access technology combinations with received high quality signal in random order;

v) other PLMN/access technology combinations in order of decreasing signal quality.

7.1.2.1.3.3 Specific message contents

Table 7.1.2.1.3.3-1: *RRCConnectionReconfiguration* (step 1, table 7.1.2.1.3.2-1)

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508, Table 4.6.1-8, condition RBC-HO | | | |
| Information Element | Value/Remark | Comment | Condition |
| RRCConnectionReconfiguration ::= SEQUENCE { |  |  |  |
| criticalExtensions CHOICE { |  |  |  |
| c1 CHOICE{ |  |  |  |
| rrcConnectionReconfiguration-r8 SEQUENCE { |  |  |  |
| mobilityControlInfo SEQUENCE { | MobilityControlInfo-HO |  |  |
| targetPhysCellId | PhysicalCellIdentity of Cell 2 (see 36.508 clause 4.4.4.2) |  |  |
| carrierFreq | Not present |  |  |
| rach-ConfigDedicated SEQUENCE { |  |  |  |
| ra-PreambleIndex | 52 (see TS 36.211 Table 5.7.1-2) |  | FDD |
| ra-PreambleIndex | 52 (see TS 36.211 Table 5.7.1-3) |  | TDD |
| ra-PRACH-MaskIndex | 0 | All |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |

**ETSI TS 186 011-2 V3.1.1 (2011-06) IMS Network Testing (INT);**

**IMS NNI Interoperability Test Specifications;**

**Part 2: Test Descriptions for IMS NNI Interoperability**

4.5.2.1 First time registration in a visited IMS network

**Interoperability Test Description**

**Identifier:** TD\_IMS\_REG\_0001\_AKA

**Summary:** First time registration in a visited IMS network

**Configuration:** CF\_ROAM\_REG

**SUT** IMS\_A and IMS\_B

**References Test Purpose Specification Reference**

TP\_IMS\_5011\_01 TS 124 229 [1], clauses 5.2.2.1 ¶16

(2nd numbered list) and 5.2.2.2

TP\_IMS\_5011\_02 TS 124 229 [1], clauses 5.2.2.1 ¶1 ¶16

(2nd numbered list) and 5.2.2.2

TP\_IMS\_5044\_01 TS 124 229 [1], clause 5.2.3 ¶2

(1st numbered list)

TP\_IMS\_5089\_01 TS 124 229 [1], clause 5.4.1.2.1A ¶1

TP\_IMS\_5092\_01 TS 124 229 [1], clause 5.4.1.2.2F ¶1

TP\_IMS\_5096\_01 TS 124 229 [1], clause 5.4.2.1.1 ¶1

**Use Case ref.:** UC\_01\_R

**Pre-test**

**conditions:**

HSS of IMS\_B is configured according to table 1

UE\_B IP bearers established to IMS\_A as per clause 4.2.1

UE\_B not registered in IMS\_B

IMS\_A within the trust domain of IMS\_B

UE\_B is configured to use AKA authentication

**Test Sequence: Step**

1 User B registers in IMS B using any valid user identity

2 Verify that UE\_B shows successful registration

**Conformance**

**Criteria:**

**Check**

**1** TP\_IMS\_5011\_01 in CFW step 4 (REGISTER):

*ensure that {*

*when { UE\_B sends an unprotected REGISTER to IMS\_A*

*containing a Security-Client\_header }*

*then { IMS\_A sends the REGISTER to IMS\_B*

*containing a Path\_header*

*containing P-CSCF\_SIP\_URI of IMS\_A and*

*containing a Require\_header*

*containing a path\_option\_tag and*

*containing a P-Charging-Vector\_header*

*containing an icid-value\_parameter and*

*containing an orig-ioi\_parameter and*

*not containing a term-ioi\_parameter and*

*containing a Authorization\_header*

*containing an integrity-protected\_parameter*

*indicating no*

*not containing a Security-Verify\_header and*

*not containing a Security-Client\_header and*

*containing a P-Visited-Network-ID\_header*

*indicating "the visited network at the home network" }*

3GPP TS 36.523-1 V12.4.0 (2014-12); Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification; Part 1: Protocol conformance specification (Release 12)

This specification alone contains 267 occurences when a given message field is explicitly specified to be omitted!

A few of them are shown below.

6.1.2.2a.3.3 Specific message contents

Table 6.1.2.2a.3.3-1: *SystemInformationBlockType1* for Cell 1 (all steps)

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 clause 4.4.3.2 | | | |
| Information Element | Value/Remark | Comment | Condition |
| SystemInformationBlockType1 ::= SEQUENCE { |  |  |  |
| nonCriticalExtension SEQUENCE { |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| nonCriticalExtension SEQUENCE { |  |  |  |
| ims-EmergencySupport-r9 | Not present |  |  |
| cellSelectionInfo-v920 SEQUENCE { |  |  |  |
| q-QualMin-r9 | -18 dB |  |  |
| q-QualMinOffset-r9 | Not present |  |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |

6.1.2.3.3.3 Specific message contents

Table 6.1.2.3.3.3-1: Void

Table 6.1.2.3.3.3-2: *SystemInformationBlockType1* for cells 1 and 2 (preamble and all steps, Table 6.1.2.3.3.2-2)

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 clause 4.4.3.2 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType1 ::= SEQUENCE { |  |  |  |
| cellSelectionInfo SEQUENCE { |  |  |  |
| q-RxLevMin | -55 (-110 dBm) |  |  |
| } |  |  |  |
| systemInfoValueTag | The value is increased in step 3 |  |  |
| } |  |  |  |

Table 6.1.2.3.3.3-3: *SystemInformationBlockType3* for cells 1 and 2 *(*Preamble and all steps, table 6.1.2.3.3.2-2)

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 clause 4.4.3.3, Table 4.4.3.3-2 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType3 ::= SEQUENCE { |  |  |  |
| cellReselectionInfoCommon SEQUENCE { |  |  |  |
| q-Hyst | dB0 |  |  |
| } |  |  |  |
| intraFreqCellReselectionInfo SEQUENCE { |  |  |  |
| q-RxLevMin | -55 (-110 dBm) |  |  |
| t-ReselectionEUTRA | 7 |  |  |
| } |  |  |  |
| } |  |  |  |

Table 6.1.2.3.3.3-4: *SystemInformationBlockType1* for cell 2 (step 3, Table 6.1.2.3.3.2-2)

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 clause 4.4.3.2 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType1 ::= SEQUENCE { |  |  |  |
| cellAccessRelatedInfo SEQUENCE { |  |  |  |
| cellBarred | barred |  |  |
| intraFreqReselection | allowed |  |  |
| } |  |  |  |
| systemInfoValueTag | 1 | Previous value is 0 |  |
| } |  |  |  |

Table 6.1.2.3.3.3-5: *Paging* (step 3, Table 6.1.2.3.3.2-2)

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation path: 36.508 Table 4.6.1-7 | | | |
| Information Element | Value/Remark | Comment | Condition |
| Paging ::= SEQUENCE { |  |  |  |
| pagingRecordList | Not present |  |  |
| systemInfoModification | True |  |  |
| etws-PrimaryNotificationIndication | Not present |  |  |
| nonCriticalExtension SEQUENCE {} | Not present |  |  |
| } |  |  |  |

6.1.2.3a.3.3 Specific message contents

Table 6.1.2.3a.3.3-0: Conditions for table 6.1.2.3a.3.3-1, 6.1.2.3a.3.3-2

| Condition descriptions |
| --- |
| **Cell 1**  This condition applies to system information transmitted on Cell 1. |
| **Cell 2**  This condition applies to system information transmitted on Cell 2. |

Table 6.1.2.3a.3.3-1: *SystemInformationBlockType1* for Cell 1 and 2 (all steps, Table 6.1.2.3a.3.2-2)

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 clause 4.4.3.2, Table 4.4.3.2-3 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType1 ::= SEQUENCE { |  |  |  |
| cellSelectionInfo SEQUENCE { |  |  |  |
| q-RxLevMin | -53 (-106 dBm) |  | Cell 1 |
| q-RxLevMin | -46 (-92 dBm) |  | Cell 2 |
| } |  |  |  |
| nonCriticalExtension SEQUENCE { |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| nonCriticalExtension SEQUENCE { |  |  |  |
| ims-EmergencySupport-r9 | Not present |  |  |
| cellSelectionInfo-v920 SEQUENCE { |  |  |  |
| q-QualMin-r9 | -5 dB |  | Cell 1 |
| q-QualMin-r9 | -20 dB |  | Cell 2 |
| q-QualMinOffset-r9 | Not present |  |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |

Table 6.1.2.3a.3.3-2: *SystemInformationBlockType3* for Cell 1 and 2 *(*all steps, table 6.1.2.3a.3.2-2)

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 clause 4.4.3.3, Table 4.4.3.3-2 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType3 ::= SEQUENCE { |  |  |  |
| cellReselectionInfoCommon SEQUENCE { |  |  |  |
| q-Hyst | dB0 |  |  |
| } |  |  |  |
| intraFreqCellReselectionInfo SEQUENCE { |  |  |  |
| q-RxLevMin | -53 (-106 dBm) |  | Cell 1 |
| q-RxLevMin | -46 (-92 dBm) |  | Cell 2 |
| t-ReselectionEUTRA | 7 |  |  |
| } |  |  |  |
| lateNonCriticalExtension { |  |  |  |
| s-IntraSearch-v920 SEQUENCE {} | Not present |  |  |
| s-NonIntraSearch-v920 SEQUENCE {} | Not present |  |  |
| q-QualMin-r9 | -5 dB |  | Cell 1 |
| q-QualMin-r9 | -20 dB |  | Cell 2 |
| threshServingLowQ-r9 | Not present |  |  |
| } |  |  |  |
| } |  |  |  |

6.1.2.8.3.3 Specific message contents

Table 6.1.2.8.3.3-0: Conditions for specific message contents  
in Tables 6.1.2.8.3.3-1, 6.1.2.8.3.3-2, 6.1.2.8.3.3-4 and 6.1.2.8.3.3-5

|  |  |
| --- | --- |
| Condition | Explanation |
| Cell 3 | This condition applies to system information transmitted on Cell 3. |
| Cell 6 | This condition applies to system information transmitted on Cell 6. |

Table 6.1.2.8.3.3-1: *SystemInformationBlockType1* for Cell 3 and Cell 6 (pre-test conditions, Table 6.1.2.8.3.2-1)

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 clause 4.4.3.2 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType1 ::= SEQUENCE { |  |  |  |
| cellAccessRelatedInfo SEQUENCE { |  |  |  |
| plmn-IdentityList SEQUENCE (SIZE (1..6)) OF SEQUENCE { | 1 entry |  |  |
| cellReservedForOperatorUse | notReserved |  | Cell 3  Cell 6 |
| } |  |  |  |
| cellBarred | barred |  | Cell 3  Cell 6 |
| } |  |  |  |
| } |  |  |  |

Table 6.1.2.8.3.3-2: *SystemInformationBlockType1* for Cell 3 and Cell 6 (step 1, Table 6.1.2.8.3.2-1)

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 clause 4.4.3.2 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType1 ::= SEQUENCE { |  |  |  |
| cellAccessRelatedInfo SEQUENCE { |  |  |  |
| plmn-IdentityList SEQUENCE (SIZE (1..6)) OF SEQUENCE { | 1 entry |  |  |
| cellReservedForOperatorUse | notReserved |  | Cell 3  Cell 6 |
| } |  |  |  |
| cellBarred | notBarred |  | Cell 3 |
|  | barred |  | Cell 6 |
| } |  |  |  |
| systemInfoValueTag | 1 |  | Cell 3 |
|  | 0 |  | Cell 6 |
| } |  |  |  |

Table 6.1.2.8.3.3-2A: *SystemInformationBlockType1* for Cell 3 and Cell 6 (step 3, Table 6.1.2.8.3.2-1)

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 clause 4.4.3.2 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType1 ::= SEQUENCE { |  |  |  |
| cellAccessRelatedInfo SEQUENCE { |  |  |  |
| plmn-IdentityList SEQUENCE (SIZE (1..6)) OF SEQUENCE { | 1 entry |  |  |
| cellReservedForOperatorUse | notReserved |  | Cell 3  Cell 6 |
| } |  |  |  |
| cellBarred | barred |  | Cell 3  Cell 6 |
| } |  |  |  |
| systemInfoValueTag | 2 |  | Cell 3 |
|  | 0 |  | Cell 6 |
| } |  |  |  |

Table 6.1.2.8.3.3-3: *Paging* (steps 3 & 8, Table 6.1.2.8.3.2-1)

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 4.6.1-7 | | | |
| Information Element | Value/remark | Comment | Condition |
| Paging ::= SEQUENCE { |  |  |  |
| pagingRecordList | Not present |  |  |
| systemInfoModification | true |  |  |
| etws-Indication | Not present |  |  |
| nonCriticalExtension SEQUENCE {} | Not present |  |  |
| } |  |  |  |

…

6.1.2.8a.3.3 Specific message contents

Table 6.1.2.8a.3.3-0: Conditions for specific message contents  
in Tables 6.1.2.8a.3.3-4

|  |  |
| --- | --- |
| Condition | Explanation |
| Cell 2 | This condition applies to system information transmitted on Cell 2. |
| Cell 4 | This condition applies to system information transmitted on Cell 4. |

Table 6.1.2.8a.3.3-1: *SystemInformationBlockType1* for Cell 4 (pre-test conditions, Table 6.1.2.8a.3.2-1)

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 clause 4.4.3.2 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType1 ::= SEQUENCE { |  |  |  |
| cellAccessRelatedInfo SEQUENCE { |  |  |  |
| plmn-IdentityList SEQUENCE (SIZE (1..6)) OF SEQUENCE { | 1 entry |  |  |
| cellReservedForOperatorUse | notReserved |  |  |
| } |  |  |  |
| cellBarred | barred |  |  |
| } |  |  |  |
| } |  |  |  |

Table 6.1.2.8a.3.3-2: Void

Table 6.1.2.8a.3.3-2A: *SystemInformationBlockType1* for Cell 2 (step 3, Table 6.1.2.8a.3.2-1)

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 clause 4.4.3.2 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType1 ::= SEQUENCE { |  |  |  |
| cellAccessRelatedInfo SEQUENCE { |  |  |  |
| plmn-IdentityList SEQUENCE (SIZE (1..6)) OF SEQUENCE { | 1 entry |  |  |
| cellReservedForOperatorUse | notReserved |  |  |
| } |  |  |  |
| cellBarred | barred |  |  |
| } |  |  |  |
| systemInfoValueTag | 1 |  |  |
| } |  |  |  |

Table 6.1.2.8a.3.3-3: *Paging* (steps 3 & 10, Table 6.1.2.8a.3.2-1)

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 4.6.1-7 | | | |
| Information Element | Value/remark | Comment | Condition |
| Paging ::= SEQUENCE { |  |  |  |
| pagingRecordList | Not present |  |  |
| systemInfoModification | true |  |  |
| etws-Indication | Not present |  |  |
| nonCriticalExtension SEQUENCE {} | Not present |  |  |
| } |  |  |  |

# ITS

## ETSI TS 102 859-2 V1.2.1 (2014-04)

|  |  |
| --- | --- |
| **TP Id** | TP/IPv6GEO/MR/GVL/BV/02 |
| **Test objective** | Checks handling of a received GeoBroadcast message containing an IPv6 packet not carrying a Router Advertisement, which has destination area not corresponding to any existing GVL of the IUT |
| **Reference** | EN 302 636-6-1 [1], clause 8.2.2 |
| **PICS Selection** | PICS\_SGVL and PICS\_DGVL |
| **Initial conditions** | |
| with {  the IUT having configured SGVLs (SGVL1 .. SGVLx)  the IUT having configured DGVL (DGVL1) } | |
| **Expected behaviour** | |
| ensure that {  when {  the IUT receives a GeoBroadcast message  **containing** Destination Area parameters not corresponding to any GVLs  **containing** payload  **containing** an IPv6 packet  **not containing** an ICMPv6 RA message  }  then {  the IUT transmits on the virtual interface associated to DGVL1 an Ethernet packet  containing Destination MAC address  indicating the broadcast value  containing Source MAC address  indicating a value derived from Source GN\_ADDR field  containing Ether Type value  indicating IPv6  containing the IPv6 packet  } } | |

The GeoBroadcast message has a complex structure with several information:

EN 302 636-4-1 V1.2.18.2 Packet structure

|  |  |  |  |
| --- | --- | --- | --- |
| MAC Header | LLC Header | GeoNetworking Header | Payload (optional) |

Figure 4: GeoNetworking packet structure (without security)

|  |  |  |
| --- | --- | --- |
| Basic  Header | Common Header | Extended Header  (optional) |

Figure 5: GeoNetworking header structure

|  |  |  |  |
| --- | --- | --- | --- |
| MAC Header | LLC Header | GeoNetworking  Basic  Header | GeoNetworking Secured Packet  with GeoNetworking Common Header, Optional Extended Header and Optional Payload |

Figure 6: GeoNetworking packet structure (with security)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |  | 2 |  |  |  |  |  |  |  | 3 |  |  |  |  |  |  |  |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Version | | | | NH | | | | Reserved | | | | | | | | LT | | | | | | | | RHL | | | | | | | |

Figure 9: *Basic Header* format

Table 4: Fields of the *Basic* *Header*

| Field # | Field name | Octet/bit position | | Type | Unit | Description |
| --- | --- | --- | --- | --- | --- | --- |
| First | Last |
| 1 | *Version* | Octet 0  Bit 0 | Octet 0  Bit 3 | 4 bit unsigned integer | n/a | Identifies the version of the GeoNetworking protocol. |
| 2 | *NH* | Octet 0  Bit 4 | Octet 0  Bit 7 | 4 bit unsigned integer | n/a | Identifies the type of header immediately following the GeoNetworking Basic Header as specified in table 5. |
| 3 | *Reserved* | Octet 1 | Octet 1 | 8-bit unsigned integer | n/a | Reserved. Set to 0. |
| 8 | *LT* | Octet 2 | Octet 2 | 8 bit unsigned integer | n/a | Lifetime field. Indicates the maximum tolerable time a packet can be buffered until it reaches its destination.  Bit 0 to Bit 5: LT sub-field Multiplier.  Bit 6 to Bit 7: LT sub-field Base.  Encoded as specified in clause 8.6.4. |
| 9 | *RHL* | Octet 3 | Octet 3 | 8 bit unsigned integer | [hops] | Decremented by 1 by each GeoAdhoc router that forwards the packet. The packet shall not be forwarded if RHL is decremented to zero. |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |  | 2 |  |  |  |  |  |  |  | 3 |  |  |  |  |  |  |  |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| NH | | | | Reserved | | | | HT | | | | HST | | | | TC | | | | | | | | Flags | | | | | | | |
| PL | | | | | | | | | | | | | | | | MHL | | | | | | | | Reserved | | | | | | | |

Figure 11: *Common Header* format

Table 7: Fields of the *Common* *Header*

| Field # | Field name | Octet/bit position | | Type | Unit | Description |
| --- | --- | --- | --- | --- | --- | --- |
| First | Last |
| 1 | *NH* | Octet 0  Bit 0 | Octet 0  Bit 3 | 4 bit unsigned integer | n/a | Identifies the type of header immediately following the GeoNetworking headers as specified in table 8. |
| 2 | *Reserved* | Octet 0  Bit 4 | Octet 0  Bit 7 | 4 bit unsigned integer | n/a | Reserved. Set to 0. |
| 3 | *HT* | Octet 1  Bit 0 | Octet 1  Bit 3 | 4 bit unsigned integer | n/a | Identifies the type of the GeoNetworking header as specified in table 9. |
| 4 | *HST* | Octet 1  Bit 4 | Octet 1  Bit 7 | 4 bit unsigned integer | n/a | Identifies the sub-type of the GeoNetworking header as specified in table 9. |
| 5 | *TC* | Octet 2 | Octet 2 | 8 bit unsigned integer | n/a | Traffic class that represents Facility-layer requirements on packet transport. Encoding is specified in clause 8.7.5. |
| 6 | *Flags* | Octet 3 | Octet 3 | Bit field | n/a | Bit 0: Indicates whether the ITS-S is mobile or stationary (GN protocol constant itsGnIsMobile).  Bit 1 to Bit 7: Reserved. Set to 0. |
| 7 | *PL* | Octet 4 | Octet 5 | 16 bit unsigned integer | [octets] | Length of the GeoNetworking payload, i.e. the rest of the packet following the whole GeoNetworking header in octets, for example BTP + CAM. |
| 8 | *MHL* | Octet 6 | Octet 6 | 8 bit unsigned integer | [hops] | Maximum hop limit.  (see note) |
| 9 | *Reserved* | Octet 7 | Octet 7 | 8 bit unsigned integer | n/a | Reserved. Set to 0. |
| NOTE: The Maximum hop limit is not decremented by a GeoAdhoc router that forwards the packet. | | | | | | |

Table 8: *Next Header* (*NH*) field in the GeoNetworking *Common Header*

|  |  |  |
| --- | --- | --- |
| Next Header (NH) | Encoding | Description |
| ANY | 0 | Unspecified. |
| BTP-A | 1 | Transport protocol (BTP-A for interactive packet transport) as defined in ETSI EN 302 636-5-1 [5]. |
| BTP-B | 2 | Transport protocol (BTP-B for non-interactive packet transport) as defined in ETSI EN 302 636-5-1 [5]. |
| IPv6 | 3 | IPv6 header as defined in ETSI EN 302 636-6-1 [6]. |

Table 9: GeoNetworking *Header Types* and *Header Sub-Types*

|  |  |  |  |
| --- | --- | --- | --- |
| Header Type (HT) | Header Sub-type (HST) | Encoding | Description |
| ANY |  | 0 | Unspecified |
|  | UNSPECIFIED | 0 | Unspecified |
| BEACON |  | 1 | Beacon |
|  | UNSPECIFIED | 0 | Unspecified |
| GEOUNICAST |  | 2 | GeoUnicast |
|  | UNSPECIFIED | 0 | Unspecified |
| GEOANYCAST |  | 3 | Geographically-Scoped Anycast (GAC) |
|  | GEOANYCAST\_CIRCLE | 0 | Circular area |
|  | GEOANYCAST\_RECT | 1 | Rectangular area |
|  | GEOANYCAST\_ELIP | 2 | Ellipsoidal area |
| GEOBROADCAST |  | 4 | Geographically-Scoped broadcast (GBC) |
|  | GEOBROADCAST\_CIRCLE | 0 | Circular area |
|  | GEOBROADCAST\_RECT | 1 | Rectangular area |
|  | GEOBROADCAST\_ELIP | 2 | Ellipsoidal area |
| TSB |  | 5 | Topologically-scoped broadcast (TSB) |
|  | SINGLE\_HOP | 0 | Single-hop broadcast (SHB) |
|  | MULTI\_HOP | 1 | Multi-hop TSB |
| LS |  | 6 | Location service (LS) |
|  | LS\_REQUEST | 0 | Location service request |
|  | LS\_REPLY | 1 | Location service reply |

|  |  |  |
| --- | --- | --- |
| SCF | Channel Offload | TC ID |

Figure 12: *Traffic Class (TC)* field composition

Table : Fields of TC field

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Field # | Field name | Octet/bit position | | Type | Unit | Description |
| First | Last |
| 1 | *SCF* | Bit 0 | Bit 0 | Bit | n/a | Indicates whether the packet shall be buffered when no suitable neighbour exists  (store-carry-forward, SCF).  Length: 1 bit. |
| 2 | *Channel Offload* | Bit 1 | Bit 1 | Bit | n/a | Indicates whether the packet can be offloaded to another channel than specified in the *TC ID*.  Length: 1 bit. |
| 3 | *TC ID* | Bit 2 | Bit 7 | 6-bit unsigned integer | n/a | TC ID as specified in the media-dependent part of GeoNetworking, e.g. in ETSI TS 102 636-4-2 [i.2] for ITS-G5.  Length: 6 bits. |

**8.8 GeoNetworking packet header types**

**8.8.1 Overview**

The following GeoNetworking packet header types are defined:

1) GUC packet header (clause 8.8.2).

2) TSB packet header (clause 8.8.3).

3) SHB packet header (clause 8.8.4).

4) GBC and GAC packet headers (clause 8.8.5).

5) BEACON packet header (clause 8.8.6).

6) LS Request and LS Reply packet headers (clause 8.8.7 and clause 8.8.8).

**8.8.2 GUC packet header**

**8.8.2.1 Composition of the GUC packet header**

The GUC header shall be comprised of the *Basic Header*, the *Common Header* and the *Extended Header* as shown in figure 13.

NOTE: The *Extended Header* comprises all fields except the *Basic Header* and the *Common Header*.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |  | 2 |  |  |  |  |  |  |  | 3 |  |  |  |  |  |  |  |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Basic Header | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Common Header | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SN | | | | | | | | | | | | | | | | Reserved | | | | | | | | | | | | | | | |
| SO PV | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DE PV | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Figure 13: Packet header format: GUC

**8.8.2.2 Fields of the GUC packet header**

The GUC packet header shall consist of the fields as specified in table 11.

Table 11: Fields of the GUC packet header

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Field # | Field name | Octet/bit position | | Type | Unit | Description |
| First | Last |
| 1 | *Basic Header* | Octet 0 | Octet 3 | Basic Header | n/a | *Basic Header* as specified in clause 8.6.  Length: 4 octets. |
| 2 | *Common Header* | Octet 4 | Octet 11 | Common Header | n/a | *Common Header* as specified in clause 8.7.  Length: 8 octets. |
| 3 | *SN* | Octet 12 | Octet 13 | 16-bit unsigned integer | n/a | Sequence number field. Indicates the index of the sent GUC packet (clause 7.3) and used to detect duplicate GeoNetworking packets (annex A). |
| 4 | *Reserved* | Octet 14 | Octet 15 | 16-bit unsigned integer | n/a | Reserved. Set to 0. |
| 5 | *SO PV* | Octet 16 | Octet 39 | Long position vector | n/a | Long Position Vector containing the reference position of the source as specified in clause 8.5.2 (Long Position Vector).  Length: 24 octets. |
| 6 | *DE PV* | Octet 40 | Octet 59 | Short position vector | n/a | Short Position Vector containing the position of the destination. It shall consist of the fields as specified in clause 8.5.3 (Short Position Vector).  Length: 20 octets. |

AND SO ON FOR THE OTHER GEONETWORKING PACKET HEADER TYPES!

## ETSI TS 102 869-2 V1.2.1 (2013-08)

|  |  |
| --- | --- |
| **TP Id** | **TP/DEN/EVTR/BV-04** |
| **Test objective** | Check that situation container and location container are not present in cancellation DENM |
| **Reference** | EN 302 637-3 [1], clause 7.1 |
| **PICS Selection** |  |
| **Initial conditions** | |
| with {  the IUT being in the "initial state"  and the IUT having generated an event  containing management container  containing actionID  indicating ACTION\_ID1  } | |
| **Expected behaviour** | |
| ensure that {  when {   the IUT receives an *App*DENM*\_termination* request associated to ACTION\_ID1 from the application layer  }  then {  the IUT sends a valid DENM  containing management container  containing actionID  indicating ACTION\_ID1  and containing isCancellation  indicating value TRUE  and not containing situation container  and not containing location container  } } | |

|  |  |
| --- | --- |
| **TP Id** | **TP/DEN/EVTR/BV-05** |
| **Test objective** | Check that situation container and location container are not present in negation DENM |
| **Reference** | EN 302 637-3 [1], clause 7.1 |
| **PICS Selection** |  |
| **Initial conditions** | |
| with {  the IUT being in the "initial state"  and the IUT having received an event  containing management container  containing actionID  indicating ACTION\_ID1  containing originatorStationID  indicating stationID different from its own stationID  } | |
| **Expected behaviour** | |
| ensure that {  when {   the IUT receives an *App*DENM*\_termination* request associated to ACTION\_ID1 from the application layer  }  then {  the IUT sends a valid DENM  containing management container  containing actionID  indicating ACTION\_ID1   and containing isNegation  indicating value TRUE  and not containing situation container  and not containing location container  } } | |

|  |  |
| --- | --- |
| **TP Id** | **TP/DEN/EVRP/BV-06** |
| **Test objective** | Check that DEN Basic Service does not repeat transmission of DENM if repetitionDuration is not provided by application |
| **Reference** | EN 302 637-3 [1], clause 6.1.2.3 |
| **PICS Selection** |  |
| **Initial conditions** | |
| with {  the IUT being in the "initial state"  and the IUT having received an *App*DENM*\_trigger* request from application layer  not containing repetitionDuration  and the IUT having generated an event  containing management container  containing actionID  indicating ACTION\_ID1  and containing validityDuration  indicating DURATION\_1  and containing transmissionInterval  indicating INTERVAL\_1 } | |
| **Expected behaviour** | |
| ensure that {  when {   the IUT has detected that repetitionDuration is not provided for the event associated with ACTION\_ID1  }  then {  the IUT does not repeat the transmission of the valid DENM associated with ACTION\_ID1  } } | |

|  |  |
| --- | --- |
| **TP Id** | **TP/DEN/EVRP/BV-07** |
| **Test objective** | Check that DEN Basic Service does not repeat transmission of DENM if *detectionTime* is not provided by application |
| **Reference** | EN 302 637-3 [1], clause 6.1.2.3 |
| **PICS Selection** |  |
| **Initial conditions** | |
| with {  the IUT being in the "initial state"  and the IUT having received an *App*DENM*\_trigger* request from application layer  not containing *detectionTime*  and the IUT having generated an event  containing management container  containing actionID  indicating ACTION\_ID1  and containing validityDuration  indicating DURATION\_1  and containing transmissionInterval  indicating INTERVAL\_1 } | |
| **Expected behaviour** | |
| ensure that {  when {   the IUT has detected that *detectionTime* is not provided for the event associated with ACTION\_ID1  }  then {  the IUT does not repeat the transmission of the valid DENM associated with ACTION\_ID1  } } | |

Where DENM format is specified in ETSI TS 102 637-3 V1.1.1 (2010-09) as :

Decentralized Environmental Notification Message

Management Container

Situation Container

Location   
Container

Protocol version

Message ID

Generation time

Action ID

Others

Situation

Linked Cause

Event position

Relevance area

Location referencing

Relevance area

Others

Figure 2: General structure of the DENM

Table 3: Content and format of a DENM

| Container | Block # | Name | Byte Position | | Type | Unit | O/M | Description |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | First | Last |  |  |  |  |
| ITS PDU header | 1 | Protocol Version | 1 | 1 | Integer |  | M | Indicates the current version of the protocol being used at the management container level |
| 2 | Message ID | 2 | 2 | Integer |  | M | Message type identifier associated to DENM |
| 3 | Generation Time | 3 | 8 | Integer | UTC millisec | M | Timestamp when the DENM is generated, milliseconds elapsed since midnight January 1st , 1970 UTC |
| Management | 4 Action ID : | Originator ID | 9 | 12 | Integer |  | M | ITS station identifier |
| Sequence Number | 13 | 14 | Integer |  | M | Sequence number provided by the originator when an event is detected for the first time. |
| 5 | Data version | 15 | 15 | Integer |  | M | Data version indicating an update of the event evolution. Set to 255 for cancellation message |
| 6 | Expiry Time | 16 | 21 | Integer | UTC millisec | M | Timestamp of event expiry, milliseconds elapsed since midnight January 1st, 1970 UTC |
| 7 | Frequency | 21 | 21 | Integer |  | O | Transmission frequency of DENM as defined by the originator ITS station. |
| 8 | Reliability | 22 | 22 | Integer |  | M | Probability for the event information to be true. Bit 7 to bit 1 of the byte 22 |
| 9 | IsNegation | 22 | 22 | Boolean |  | M | Bit 0 of byte 22 when "1" negates the existence of the event |
| Situation | 10 | CauseCode | 23 | 23 | Integer |  | M | Identifier of the event direct cause as specified in table 1 |
| 10 | SubCauseCode | 24 | 24 | Integer |  | M | Sub cause as provided in table 1 |
| 11 | Severity | 25 | 25 | Integer |  | M | Severity value of the event |
| Location container | 12 | RefPosition\_Situation Latitude | 26 | 29 |  | 1/10 micro degree | M | Latitude of the event reference position |
| 13 | RefPosition\_Situation Longitude | 30 | 33 | Integer | 1/10 micro degree | M | Longitude of the event reference position |
| 14 | RefPosition\_Situation Altitude | 34 | 35 | Integer | 1/10 meter | M | Altitude of the event reference position |
| 15 | Accuracy | 36 | 39 | String |  | M | Event position accuracy |
| 16 | Other DEs and DFs for the relevance area and the location referencing | 40 | n |  |  | M | This block is defined and specified by the RHW application with variable sizes |