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TECHNICAL SPECIFICATION

Core Network and Interoperability Testing (INT); Network Interoperability Test Description for emergency services over 5G; (3GPP™ Release 16); Part 1: Test Purposes

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Core Network and Interoperability Testing (INT).

The present document is part 1 of a multi-part deliverable covering network interoperability test description for emergency services over 5G, as identified below:

Part 1: "Test Purposes";

Part 2: "Test Descriptions";

Part 3: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) pro forma specification".

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

1 Scope

The present document defines network interoperability test purposes for emergency services over 5G specifically emergency call and NG eCall. The interoperability emergency test purposes cover the test scenarios within single-network configuration, as well as interconnect and roaming test scenarios within multiple-network configurations. Test purposes provide monitoring points and test specifications in prose details with focus on different interworking and interoperability interfaces using SIP, Diameter, NGAP, NAS protocols and checks of ENUM Transactions.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found in the ETSI docbox.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long-term validity.

The following referenced documents are necessary for the application of the present document.

[1] ETSI TS 124 229 (V16.15.0): "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; 5G; IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3 (3GPP TS 24.229 version 16.15.0 Release 16)".

[2] ETSI TS 129 165: "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; 5G; Inter-IMS Network to Network Interface (NNI) (3GPP TS 29.165 Release 16)".

[3] ETSI TS 129 228 (V16.1.0): "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; 5G; IP Multimedia (IM) Subsystem Cx and Dx Interfaces; Signalling flows and message contents (3GPP TS 29.228 version 16.1.0 Release 16)".

[4] ETSI TS 129 229 (V16.3.0): "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; Cx and Dx interfaces based on the Diameter protocol; Protocol details (3GPP TS 29.229 version 16.3.0 Release 16)". .

[5] ETSI TS 129 214: "Universal Mobile Telecommunications System (UMTS); LTE; 5G; Policy and charging control over Rx reference point (3GPP TS 29.214 Release 16)".

[6] ETSI TS 129 514 (V16.21.0): "5G; 5G System; Policy Authorization Service; Stage 3 (3GPP TS 29.514 version 16.21.0 Release 16)".

[7] ETSI TS 124 501 (V16.14.0): "5G; Non-Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3 (3GPP TS 24.501 version 16.14.0 Release 16)".

[8] ETSI ES 203 119-4: "Methods for Testing and Specification (MTS); The Test Description Language (TDL); Part 4: Structured Test Objective Specification (Extension)".

[9] ETSI TS 123 167: "Universal Mobile Telecommunications System (UMTS); LTE; IP Multimedia Subsystem (IMS) emergency sessions (3GPP TS 23.167)".

[10] IETF RFC 5031: "A Uniform Resource Name (URN) for Emergency and Other Well-Known Services".

[11] ETSI TS 123 502: "5G; Procedures for the 5G System (5GS) (3GPP TS 23.502 Release 16)".

[12] ETSI TS 129 274: "Universal Mobile Telecommunications System (UMTS); LTE; 5G; 3GPP Evolved Packet System (EPS); Evolved General Packet Radio Service (GPRS) Tunnelling Protocol for Control plane (GTPv2-C); Stage 3 (3GPP TS 29.274 Release 16)".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long-term validity.

The following referenced documents may be useful in implementing an ETSI deliverable or add to the reader's understanding, but are not required for conformance to the present document.

[i.1] ISO/IEC 9646-1: "Information technology — Open Systems Interconnection — Conformance testing methodology and framework — Part 1: General concepts".

[i.2] ETSI TS 123 228 (V16.7.0): "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; IP Multimedia Subsystem (IMS); Stage 2 (3GPP TS 23.228 version 16.7.0 Release 16)".

[i.3] ETSI TS 103 796-2: "Core Network and Interoperability Testing (INT); Network Interoperability Test Description for emergency services over 5G; (3GPP™ Release 16); Part 2: Test Descriptions".

3 Definition of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in ETSI TS 124 229 [1], ETSI TS 129 165 [2], ETSI TS 129 228 [3], ETSI TS 129 229 [4] and the following apply:

Abstract Test Method (ATM): Refer to ISO/IEC 9646-1 [i.1].

Abstract Test Suite (ATS): Refer to ISO/IEC 9646-1 [i.1].

Implementation Under Test (IUT): Refer to ISO/IEC 9646-1 [i.1].

Test Purposes (TP): Refer to ISO/IEC 9646-1 [i.1].

3.2 Symbols

Void.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in ETSI TS 124 229 [1], ETSI TS 129 165 [2], ETSI TS 129 228 [3], ETSI TS 129 229 [4] and the following apply:

3GPP	3rd Generation Partnership Project
5GC	5G Core
ATS	Abstract Test Suite
CF	(Test) Configuration
CX	Cx interface

ENUM	E.164 NUmber Mapping
EPC	Evolved Packet Core
GM	Gm interface
IC	Ic interface
ICSCF	Interrogating Call Session Control Function
IUT	Implementation Under Test
MW	Mw interface
PCSCF	Proxy Call Session Control Function
PICS	Protocol Implementation Conformance Statement
RX	Rx interface
SCSCF	Serving Call Session Control Function
TAS	Telephony Application Server
TDL-TO	TDL Test Objectives
TP	Test Purposes
TSS	Test Suite Structure

4 Protocol Implementation Conformance Statement (PICS)

The purpose of a PICS pro forma is to allow the static conformance review of an implementation. For an implementation claiming to be conforming to the requirements of a given base protocol specification all, specified functions need to be identified which an IUT shall support, those which are recommended or optional and those which are conditional based on the presence of other functions. The totality of those static requirement is usually listed in PICS pro forma tables in the form of questions which need to be answered by the provider of an implementation. During the static conformance review, the answers to all PICS questions are verified and the conformance of an implementation to a base protocol specification can be determined. However, in the context of an interoperability testing exercise this first role has no relevance.

A second role of the PICS pro forma is the use of PICS items as test selection criteria for test purposes. This is of importance for optional features within a protocol specification. If an implementation does not support an optional feature, it is still conformant to the specification and will not fail the static conformance review. However, testing such an unsupported feature with a test purpose is not applicable to that implementation and the PICS item is used to deselect that test purpose during a test run.

In the case of the present technical specification, as the static conformance of an implementation is not the main objective the test purposes defined and listed in clause 7 of the present document could have still contained references to PICS items. Those would have been used for test selection purposes by identifying which functions an IUT supports when performing interoperability testing. However, during the development of the TPs no PICS items were identified for test selection. This is mainly due to the fact that the interoperability testing concentrates on the main, i.e. mandatory capabilities at the interfaces under testing.

For information, annex B lists references to the PICS pro forma specifications for all interfaces under testing.

5 Test Configurations

5.1 General

Test purposes of the present document address the VoNR functional entities that are accessible via the following standardized interfaces:

- SIP interfaces: Gm, Mw, Ic(Ici), Mx, Ml, Mm, Mi and ISC;
- Diameter interfaces: Cx, Rx;
- NGAP/NAS interfaces: N1, N2;
- Http2 interfaces: N5, N26;

- Voice interfaces: RTP, RTCP.

5.2 Configuration CF_VoNR_INT_ES

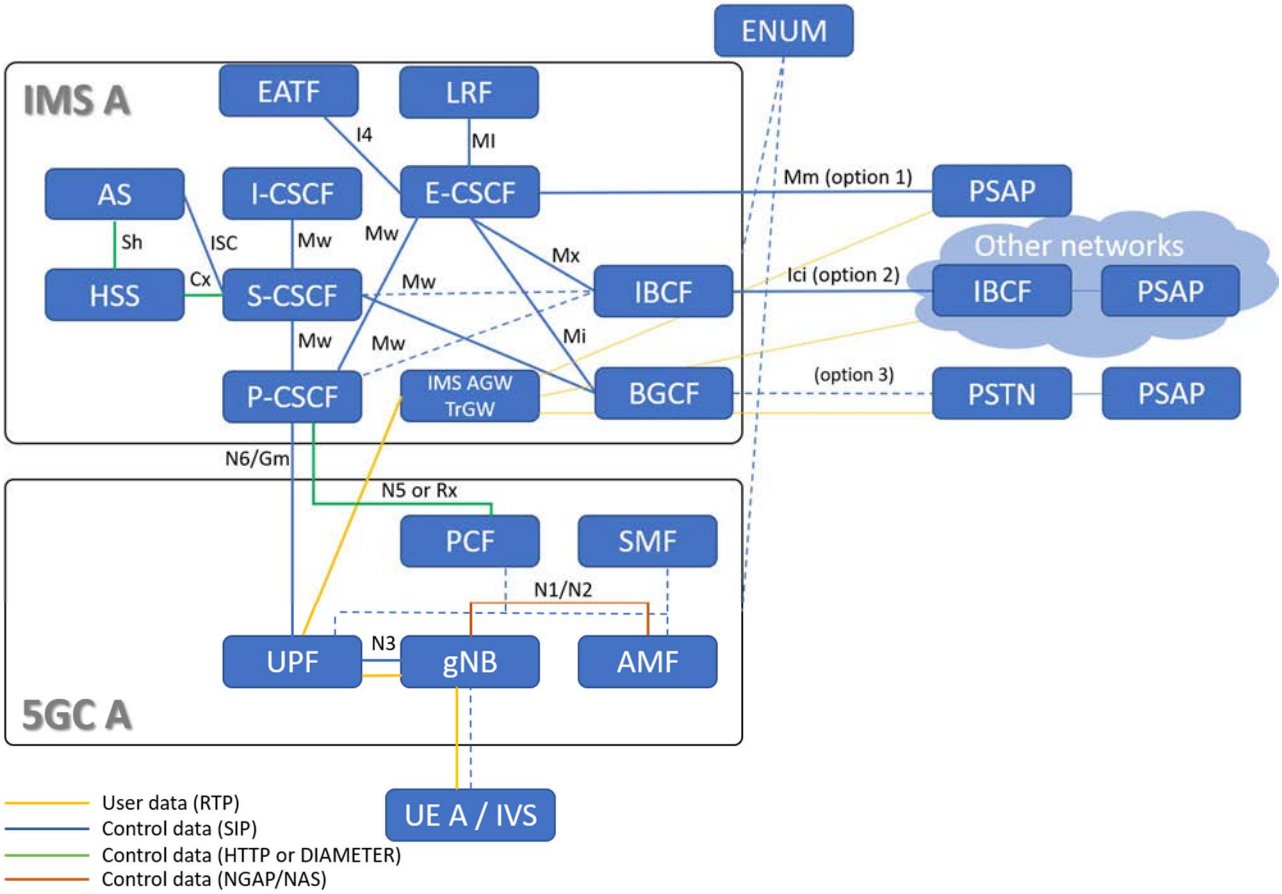

Figure 1: Configuration CF_VoNR_INT_ES

Configuration CF_VoNR_INT_ES is used for one Home Public Line Mobile Network (HPLMN) where users are 5G network registered and IMS registered to their home network. The suffix INT stands for home interoperability scenario and ES postfix stands for Emergency service. UE-A or IVS connects to home network represented by 5GC A and IMS A. E-CSCF may route emergency IMS session directly to PSAP (option 1). Another option is routing of emergency IMS session from E-CSCF towards IBCF to another IP multimedia network towards PSAP (option 2 in Figure 1) and to support legacy networks E-CSCF may route emergency IMS session to the BGCF via PSTN and towards PSAP (option 3 in Figure 1). 5G network registration, IMS registration, IMS deregistration and 5G network deregistration procedures of user are performed locally in their own home network. For Call establishment, call modification and call release procedures signalling are going in HPLMN network and therefore all related TDs are named as home interoperability tests.

NOTE 1: It is assumed that operator emergency requests are forwarded from P-CSCF to E-CSCF as described in ETSI TS 124 229 [1], clause 5.2.10.3 (item 1B).

NOTE 2: The P-CSCF may interact with PCF over the Rx interface or over the N5 interface as described in ETSI TS 123 228 [i.2], clause 4.6.1.

NOTE 3: Dashed interfaces of CF_VoNR_INT_ES will not be checked by the test descriptions in ETSI TS 103 796-2 [i.3].

5.3 Configuration CF_VoNR_RMI_ES

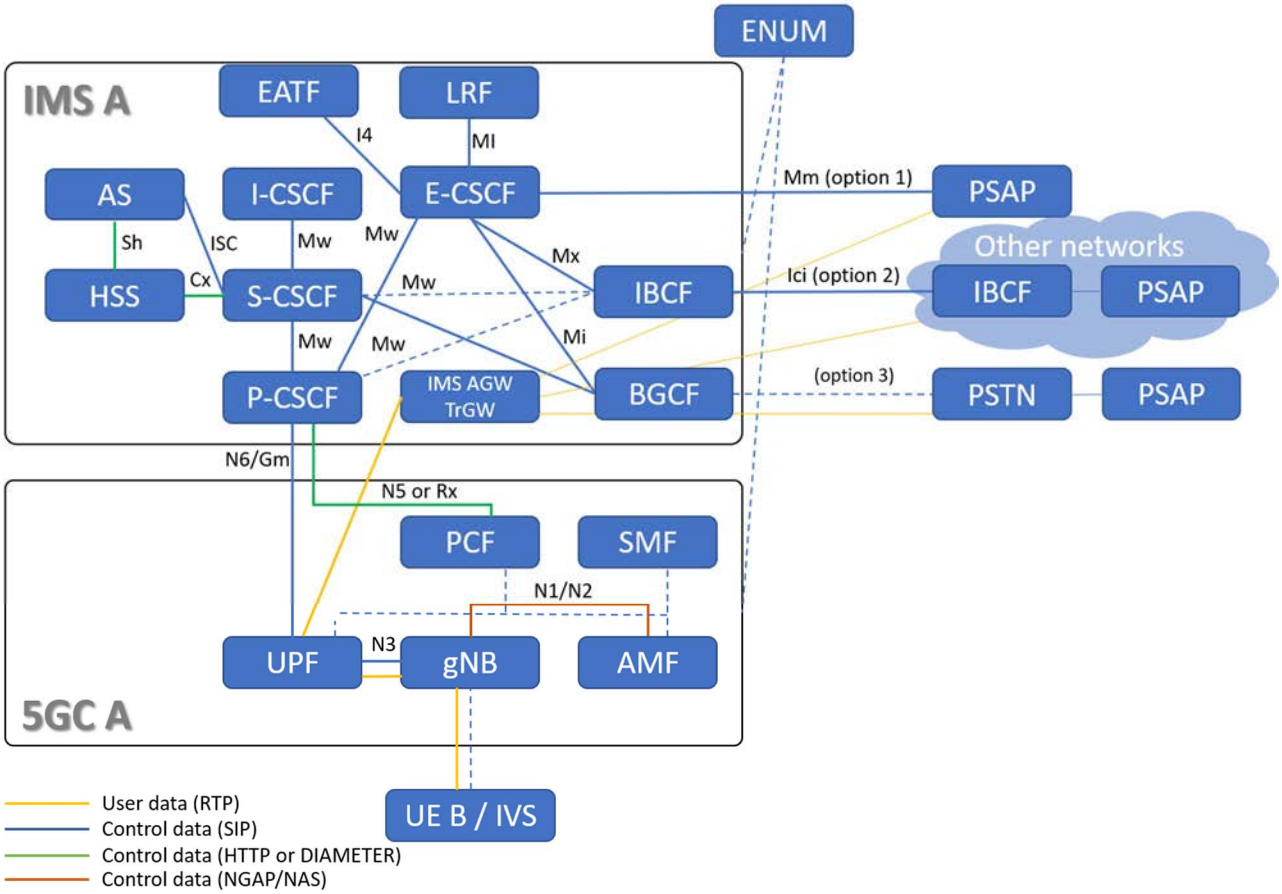

Figure 2: Configuration CF_VoNR_RMI_ES

Configuration CF_VoNR_RMI_ES describes roaming scenario. Within CF_VoNR_RMI_ES, UE-B connects to the visited network A registered to the 5GC A. 5G network registration and deregistration of UE-B is performed at the visited network A and provides the ability to subsequently register the visiting user UE-B or IVS at the home network. For call establishment, call modification and call release procedures signalling are going via VPLMN network and therefore all related TDs are named as roaming interoperability tests. Visited E-CSCF may route emergency IMS session directly to PSAP (option 1). Another option is routing of emergency IMS session from visited E-CSCF towards IBCF to another IP multimedia network towards PSAP (option 2) and to support legacy networks visited E-CSCF may route emergency IMS session to the BGCF via PSTN and towards PSAP (option 3).

NOTE 1: It is assumed that operator emergency requests are forwarded from P-CSCF to E-CSCF as described in ETSI TS 124 229 [1], clause 5.2.10.3 (item 1B).

NOTE 2: The P-CSCF may interact with PCF over the Rx interface or over the N5 interface as described in ETSI TS 123 228 [i.2], clause 4.6.1.

NOTE 3: Dashed interfaces of CF_VoNR_RMI_ES will not be checked by the test descriptions in ETSI TS 103 796-2 [i.3].

5.4 Configuration CF_VoNR_FB_INT_ES

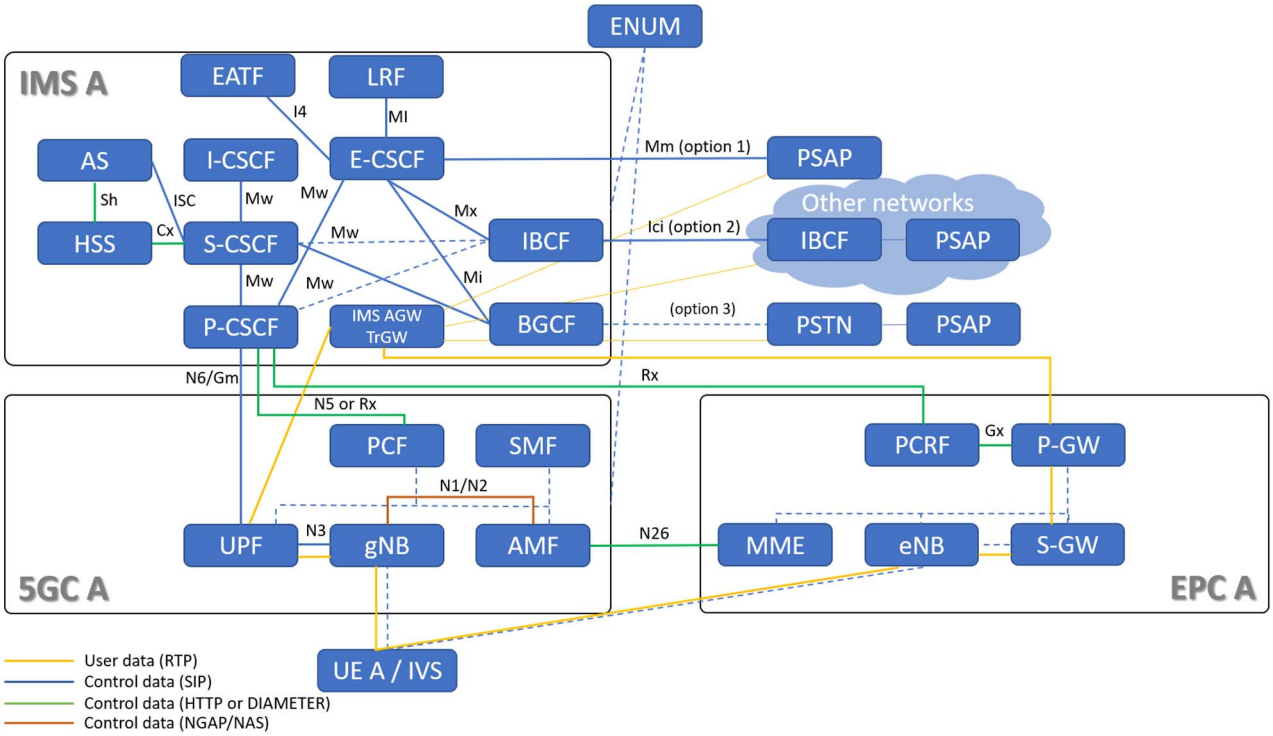

Figure 3: Configuration CF_VoNR_FB_INT_ES

Configuration CF_VoNR_FB_INT_ES is used for one Home Public Line Mobile Network (HPLMN) with 5G and 4G access where users are 5G network registered and IMS registered to their home network and the EPS fallback is possible to 4G. The suffix FB stands for fallback and INT stands for home interoperability scenario and ES postfix stands for Emergency service. UE-A or IVS connects to home network represented by 5GC A and IMS A. E-CSCF may route emergency IMS session directly to PSAP (option 1). Another option is routing of emergency IMS session from E-CSCF towards IBCF to another IP multimedia network towards PSAP (option 2) and to support legacy networks E-CSCF may route emergency IMS session to the BGCF via PSTN and towards PSAP (option 3). The EPS fallback from 5G to 4G can be executed while the emergency call is established. For fallback procedures signalling is going in HPLMN network and therefore all related TDs are named as home fallback interoperability tests.

NOTE 1: It is assumed that operator emergency requests are forwarded from P-CSCF to E-CSCF as described in ETSI TS 124 229 [1], clause 5.2.10.3 (item 1B).

NOTE 2: The P-CSCF may interact with PCF over the Rx interface or over the N5 interface as described in ETSI TS 123 228 [i.2], clause 4.6.1.

NOTE 3: Dashed interfaces of CF_VoNR_FB_INT_ES will not be checked by the test descriptions in ETSI TS 103 796-2 [i.3].

6 Test Suite Structure

6.1 Structure for Emergency VoNR test purposes

Table 1 shows the Test Suite Structure (TSS) including its subgroups defined for conformance testing of VoNR emergency test purposes.

Table 1: TSS for emergency VoNR TPs

Interfaces	Component	Group	Scope	Category
Gm	P-CSCF	EMC NGC ECO	REGISTER INVITE BYE CANCEL INFO 200OK_BYE 200OK_CANCEL 380INVITE 480INVITE 487INVITE	Valid
Mw	P-CSCF I-CSCF			
Ml	E-CSCF			
Mx	E-CSCF			
Mm	E-CSCF			
Mi	E-CSCF			
Ic	IBCF			
ISC	S-CSCF			
Cx	HSS		UAA MAA SAA	Valid
Rx	PCF P-CSCF		AAA AAR STA STR RAA	Valid
N1N2	AMF		5REG (5G Registration) 5DRG (5G UE deRegistration) PDUE (5G PDU session establishment) PDUM (5G PDU session modification) PDUR (5G PDU session release)	Valid
N5	PCF P-CSCF		PCR (PA_Create_req) PCA (PA_Create_res) PUR (PA_Update_req) PDR (PA_Delete_req) PDA (PA_Delete_res) PNA (PA_Notify_res)	Valid
N26	AMF		Forward_Relocation_Request Forward_Relocation_Response Forward_Relocation_Complete_Notification Forward_Relocation_Complete_Acknowledge	Valid
Rtp				Valid

The test suite is structured as a tree with the Interfaces defined as Gm, Mw, Ml, Mx, Mm, Mi, Cx. Rx, N1N2, N5, N26 The tree is of rank 4 with the first rank a Component, the second Group, the third sub-group Scope and the fourth a category.

6.2 Test groups

6.2.1 Interfaces

The Interface identify the entities to be tested.

6.2.2 Component

This level contains the component where test purpose is checked.

6.2.3 Group

This level contains emergency service checked with test purpose.

6.2.4 Scope

This level identifies the scope related to SIP, Diameter Method or NGAP/NAS which will be checked.

6.2.5 Categories

This level contains the standard conformance test categories: behaviour for valid, invalid, inopportune events and timers.

7 Test Purposes (TP)

7.1 General

7.1.1 Test strategy

The test purposes were generated as a result of analysis of the base documents ETSI TS 124 229 [1], ETSI TS 129 165 [2], ETSI TS 129 228 [3], ETSI TS 129 229 [4], ETSI TS 123 167 [9].

NOTE: The test purposes in the present document are new TPs identified from the Test Description specification where new emergency conformance requirements need to be fulfilled.

7.1.2 TP naming convention

TPs are numbered, starting at 01, within each group. Groups are organized according to the TSS.

Table 2: TP identifier naming convention scheme

Identifier: **<TP>_<interface>_<component>_<technology>_<group>_<scope>_<nn>**			
<tp>	=	Test Purpose:	fixed to "TP"
<interface>	=	Interface:	GM, MW, MX, MM, ML, MI, IC, ISC, CX, RX, RTP, N5, N1N2, N26
<component>	=	Component:	UE, AMF, PCF, PCSCF, ECSCF, ICSCF, IBCF, HSS, TAS
<technology>	=	Technology:	5G
<group>	=	emergency:	EMC(emergency call), NGC(NG eCall), ECO (emergency call or NG eCall)
<scope>	=	group/message	INVITE, BYE… (for SIP messages)
			UAR, UAA… (for DIAMETER messages)
			REG… (for NAS messages)
<nn>	=	sequential number	(01 to 99)

7.1.3 TP structure

Each TP has been written in TDL-TO and thus in a structured manner which is consistent with all other TPs. The intention of this is to make the TPs more formal. In addition, a more readable format is provided by generating tables out of the TDL-TO format. The defined structure, that has been used, is illustrated in Table 3. This table should be read in conjunction with any TP, i.e. a TP can be used as an example to facilitate the full comprehension of Table 3. All structures are defined formally in the TDL Specification ETSI ES 203 119-4 [8]. The TDL-TO files are also included as an electronic annex to the present document.

Table 3: Structure of a single TP

TP part	Text	Example
Header	<Identifier> <Test objective> <Reference> <PICS reference>	see Table 2 "The IUT is responding on a correctly set …" ETSI TS 124 229#clause-3 PIC_Server
Initial condition (optional)	Free text description of the condition that the IUT has reached before the test purpose applies.	… the IUT is in the initial state …
Start point	Describes the full logic of the test purpose. Includes trigger and expected behaviour of the IUT.	Expected behaviour ensure that { … }

Trigger	One or more actions that trigger an expected response of the IUT. Mostly a set of different messages the IUT receives.	when {
		the IUT entity receives an INVITE request message
		containing CSeq indicating value 1 …
		}

Expected behaviour	Describes the response that the IUT sends after receiving a certain (set of) messages. This response describes the pass criteria	then {
		the IUT entity sends a 100 Trying response message
		containing CSeq indicating value 1 …
		}

7.2 Gm interface

TP Id	TP_GM_PCSCF_5G_ECO_REGISTER_01
Test Objective	Verify that the P-CSCF successfully processes initial emergency registration (authorization).
Reference	ETSI TS 124 229 [1], clauses 5.1.6.2, 5.2.10.1, 5.1.1.1, 6.1.1 and 6.1.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A is5GEmergencyRegisteredTo the _5GC_A and
the UE_A not isRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives a REGISTER containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Authorization containing
                Authentication_Schema indicating value PX_TO_BE_DEFINED,
                Authentication_URI indicating value PX_TO_BE_DEFINED,
                Username indicating value PX_UE_A_USERNAME,
                Realm indicating value PX_UE_A_REALM,
                Algorithm indicating value PX_UE_A_AUTH_ALG,
                Nonce indicating value "",
                not term_ioi,
            not SecurityClient,
            Contact indicating value "sos"
        from the UE_A entity
    }
    then {
        the IMS_P_CSCF_A sends a 401_Unauthorized containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Path,
            Warning,
            PAccessNetworkInfo,
            WwwAuthenticate containing
                Digest,
                Realm indicating value PX_UE_A_REALM,
                Algorithm indicating value PX_UE_A_AUTH_ALG,
                Nonce indicating value "not empty",
```

```
                qop indicating value "auth"
        to the UE_A entity
    }
}
```

TP Id	TP_GM_PCSCF_5G_ECO_REGISTER_02
Test Objective	Verify that the P-CSCF successfully processes a full emergency registration (Successful).
Reference	ETSI TS 124 229 [1], clauses 5.1.6.2, 5.2.10.1, 5.1.1.1, 6.1.1 and 6.1.3
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GEmergencyRegisteredTo the _5GC_A and
the UE_A not isRegisteredTo the IMS_A and
the UE_A hasAchievedFirstRegistration
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives a REGISTER containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Authorization containing
                Authentication_Schema indicating value PX_TO_BE_DEFINED,
                Authentication_URI indicating value PX_TO_BE_DEFINED,
                Username indicating value PX_UE_A_USERNAME,
                Realm indicating value PX_UE_A_REALM,
                Algorithm indicating value PX_UE_A_AUTH_ALG,
                Nonce indicating value "not empty",
                qop indicating value "auth",
            not SecurityClient,
            Contact indicating value "sos"
        from the UE_A entity
    }
    then {
        the IMS_P_CSCF_A sends an 200_Ok containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            AuthenticationInfo,
            PAccessNetworkInfo,
            PAssociatedURI indicating value PX_UE_A_SIP_URI,
//ListOfImplicitelyRegisteredPublicUserIdentities
            PChargingVector,
               orig_ioi_parameter
                   indicating value "Operator Identifier Of ImsA"
            Path,
            ServiceRoute
        to the UE_A entity
    }
}
```

TP Id	TP_GM_PCSCF_5G_ECO_REGISTER_03
Test Objective	Verify that the emergency registration is rejected with 403 (Forbidden) in case invalid credentials sent from UE. (Unsuccessful emergency registration).
Reference	ETSI TS 124 229 [1], clauses 5.1.6.2 and 5.2.10.5
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GEmergencyRegisteredTo the _5GC_A and
the UE_A not isRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives a REGISTER containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
```

```
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Authorization indicating value "Invalid credentials",
            Contact indicating value "sos"
        from the UE_A entity
    }
    then {
        the IMS_P_CSCF_A sends a 403_Forbiden containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA
        to the UE_A entity
    }
}
```

TP Id	TP_GM_PCSCF_5G_ECO_REGISTER_04
Test Objective	Verify that the emergency registration is rejected with 403 (Forbidden) in case the UE and P-CSCF does not support GPRS-IMS-Bundled authentication. (Unsuccessful emergency registration).
Reference	ETSI TS 124 229 [1], clauses 5.1.6.2 and 5.2.10.5
Configuration	CF_VoNR_RMI_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GEmergencyRegisteredTo the _5GC_B and
the UE_A not isRegisteredTo the IMS_B
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_B receives a REGISTER containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Authorization not indicating value GPRS_IMS_Bundled_authentication,
            Contact indicating value "sos"
        from the UE_A entity
    }
    then {
        the IMS_P_CSCF_B sends a 403_Forbidden containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            MessageBody containing
               XML containing
                   ims_3gpp_element indicating value anonymous_emergencycall
        to the UE_A entity
    }
}
```

TP Id	TP_GM_PCSCF_5G_ECO_REGISTER_05
Test Objective	Verify that the emergency registration is rejected with 420 (Bad Extension) in case the UE does not support GPRS-IMS-Bundled authentication while the P-CSCF supports it. (Unsuccessful emergency registration).
Reference	ETSI TS 124 229 [1], clauses 5.1.6.2 and 5.2.10.5
Configuration	CF_VoNR_RMI_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GEmergencyRegisteredTo the _5GC_B and
the UE_A not isRegisteredTo the IMS_B
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_B receives a REGISTER containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
```

```
            Via indicating value PX_UE_A_VIA,
            Authorization not indicating value GPRS_IMS_Bundled_authentication,
            Contact indicating value "sos"
        from the UE_A entity
    }
    then {
        the IMS_P_CSCF_B sends a 420_BadExtension containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Unsupported indicating value sec_agree,
            MessageBody containing
               XML containing
                   ims_3gpp_element indicating value anonymous_emergencycall
        to the UE_A entity
    }
}
```

TP Id	TP_GM_PCSCF_5G_ECO_INVITE_01
Test Objective	Verify that the P-CSCF successfully receives an initial emergency INVITE from an unregistered UE.
Reference	ETSI TS 124 229 [1], clause 5.1.6.8.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A not isRegisteredTo the IMS_A and
the UE_A not isEmergencyRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the UE_A isRequestedToEstablishEmergencyCall
    }
    then {
        the IMS_P_CSCF_A receives an INVITE containing
            From indicating value "Anonymous",
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE,
            MessageBody
        from the UE_A entity
    }
}
```

TP Id	TP_GM_PCSCF_5G_ECO_INVITE_02
Test Objective	Verify that the P-CSCF successfully receives an initial emergency INVITE from an emergency registered UE.
Reference	ETSI TS 124 229 [1], clause 5.1.6.8.3
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A is5GEmergencyRegisteredTo the _5GC_A and
the UE_A isEmergencyRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the UE_A isRequestedToEstablishEmergencyCall
    }
    then {
        the IMS_P_CSCF_A receives an INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE,
            PPreferredIdentity,
```

```
            MessageBody
        from the UE_A entity
    }
}
```

TP Id	TP_GM_PCSCF_5G_ECO_INVITE_03
Test Objective	Verify that the P-CSCF successfully receives an initial emergency INVITE from a registered but not emergency registered UE.
Reference	ETSI TS 124 229 [1], clause 5.1.6.8.4
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A and
the UE_A not isEmergencyRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the UE_A isRequestedToEstablishEmergencyCall
    }
    then {
        the IMS_P_CSCF_A receives an INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE,
            PPreferredIdentity,
            MessageBody
        from the UE_A entity
    }
}
```

TP Id	TP_GM_PCSCF_5G_NGC_INVITE_01
Test Objective	Verify that the P-CSCF successfully receives an initial eCall type INVITE from an emergency registered UE.
Reference	ETSI TS 124 229 [1], clause 5.1.6.11
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A is5GEmergencyRegisteredTo the _5GC_A and
the UE_A isEmergencyRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the UE_A isRequestedToEstablisheCallTypeEmergencyCall
    }
    then {
        the IMS_P_CSCF_A receives an INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_ECALL_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE,
            Accept indicating value "application/EmergencyCallData.Control+xml",
            RecvInfo indicating value "EmergencyCallData.eCall.MSD",
            PPreferredIdentity,
            ContentDisposition containing
               handling indicating value "optional",
            MessageBody containing
               MIME containing MSD
        from the UE_A entity
    }
}
```

TP Id	TP_GM_PCSCF_5G_NGC_INFO_01
Test Objective	Verify that the P-CSCF successfully receives an INFO from the UE in an established eCall type emergency call that has been requested to transfer an updated MSD.
Reference	ETSI TS 124 229 [1], clause 5.1.6.11.3
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A is5GEmergencyRegisteredTo the _5GC_A and
the UE_A isEmergencyRegisteredTo the IMS_A and
the UE_A previouslyEstablishedEmergencyCallWith the PSAP
        }
```

Expected Behaviour

```
ensure that {
    when {
        the UE_A isRequestedToTransferUpdatedMSD
    }
    then {
        the IMS_P_CSCF_A receives an INFO containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_ECALL_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE,
            InfoPackage indicating value "EmergencyCallData.eCall.MSD",
            ContentDisposition indicating value "Info-Package",
            MessageBody containing
               MIME indicating value "application/EmergencyCallData.eCall.MSD",
               ContentDisposition indicating value "By-Reference"
        from the UE_A entity
    }
}
```

TP Id	TP_GM_PCSCF_5G_ECO_INVITE_05
Test Objective	Verify that the P-CSCF successfully receives an initial emergency INVITE from a registered but not emergency registered UE.
Reference	ETSI TS 124 229 [1], clause 5.1.6.8.4
Configuration	CF_VoNR_RMI_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A is5GRegisteredTo the _5GC_B and
the UE_A isRegisteredTo the IMS_A and
the UE_A not isEmergencyRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the UE_A isRequestedToEstablishEmergencyCall
    }
    then {
        the IMS_P_CSCF_A receives an INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE,
            PPreferredIdentity,
            MessageBody
        from the UE_A entity
    }
}
```

TP Id	TP_GM_PCSCF_5G_ECO_BYE_01
Test Objective	Verify that the P-CSCF successfully processes a BYE for an emergency call.
Reference	ETSI TS 124 229 [1], clause 5.1.6.9
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A is5GEmergencyRegisteredTo the _5GC_A and
the UE_A isEmergencyRegisteredTo the IMS_A and
the UE_A previouslyEstablishedEmergencyCallWith the PSAP
        }
```

Expected Behaviour

```
ensure that {
    when {
        the UE_A isRequestedToSend a BYE
    }
    then {
        the IMS_P_CSCF_A receives a BYE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE
        from the UE_A entity
    }
}
```

TP Id	TP_GM_PCSCF_5G_EMC_CANCEL_01
Test Objective	Verify that the P-CSCF successfully processes a CANCEL during Emergency Call establishment.
Reference	ETSI TS 124 229 [1], clauses 5.1.3 and 6.1
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A is5GEmergencyRegisteredTo the _5GC_A and
the UE_A isEmergencyRegisteredTo the IMS_A and
the UE_A hasAchievedInitialEmergencyINVITE
        }
```

Expected Behaviour

```
ensure that {
    when {
        the UE_A isRequestedToSend a CANCEL
    }
    then {
        the IMS_P_CSCF_A receives a CANCEL containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE
        from the UE_A entity
    }
}
```

TP Id	TP_GM_PCSCF_5G_ECO_200OK_BYE_01
Test Objective	Verify that the P-CSCF successfully processes a 200 (OK) BYE (Originating Leg).
Reference	ETSI TS 124 229 [1], clauses 5.1.5 and 6.1
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A is5GEmergencyRegisteredTo the _5GC_A and
the UE_A isEmergencyRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A sends a 200_Ok containing
            From indicating value PX_PSAP_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_PSAP_CALLID,
```

```
            Via indicating value PX_PSAP_VIA,
            Route indicating value PX_PSAP_SERVICE_ROUTE
        to the IMS_E_CSCF entity
    }
    then {
        the IMS_P_CSCF_A sends a 200_Ok containing
            From indicating value PX_PSAP_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_PSAP_CALLID,
            Via indicating value PX_PSAP_VIA,
            Route indicating value PX_PSAP_SERVICE_ROUTE,
            not PChargingVector,
            not PChargingFunctionAddresses,
            not PPreferredIdentity
        to the UE_A entity
    }
}
```

TP Id	TP_GM_PCSCF_5G_ECO_200OK_BYE_02
Test Objective	Verify that the P-CSCF successfully processes a 200 (OK) BYE (Terminating Leg).
Reference	ETSI TS 124 229 [1], clauses 5.1.5 and 6.1
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A is5GEmergencyRegisteredTo the _5GC_A and
the UE_A isEmergencyRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives a 200_Ok containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_PSAP_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE,
            not PChargingVector,
            not PChargingFunctionAddresses,
            not PPreferredIdentity
        from the UE_A entity
    }
    then {
        the IMS_P_CSCF_A sends a 200_Ok containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_PSAP_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE
        to the IMS_E_CSCF entity
    }
}
```

TP Id	TP_GM_PCSCF_5G_EMC_200OK_CANCEL_01
Test Objective	Verify that the P-CSCF successfully processes a 200 (OK) CANCEL (Originating Leg).
Reference	ETSI TS 124 229 [1], clauses 5.1.3 and 6.1
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the UE_A isRequestedToSend a CANCEL
    }
    then {
        the IMS_P_CSCF_A receives a 200_Ok containing
            not PChargingVector,
            not PChargingFunctionAddresses,
            not PPreferredIdentity
```

```
        from the IMS_E_CSCF entity
    }
}
```

TP Id	TP_GM_PCSCF_5G_EMC_487INVITE_01
Test Objective	Verify that the P-CSCF successfully processes a 487 INVITE (Request Terminated) (Originating Leg).
Reference	ETSI TS 124 229 [1], clauses 5.1.3 and 6.1
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the UE_A isRequestedToSend an CANCEL
    }
    then {
        the IMS_P_CSCF_A sends a 487_INVITE containing
            From indicating value PX_PSAP_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_PSAP_CALLID,
            Via indicating value PX_PSAP_VIA,
            Route indicating value PX_PSAP_SERVICE_ROUTE
        to the UE_A entity
    }
}
```

7.3 Cx interface

TP Id	TP_CX_HSS_5G_ECO_MAA_01
Test Objective	IUT successfully processes all mandatory AVPs in a MA-Request received due to S-CSCF registration notification procedure and sends MA-Answer.
Reference	ETSI TS 129 228 [3], clause 6.3 ETSI TS 129 229 [4], clauses 6.1.7 and 6.1.8
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A isNotRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_S_CSCF_A sends a MAR containing
            Session_ID_AVP
            Vendor_Specific_Application_Id_AVP
            Auth_Session_State_AVP
                indicating value NO_STATE_MAINTAINED
            Origin_Host_AVP
            Origin_Realm_AVP
            Destination_Realm_AVP
            Public_Identity_AVP
            User_Name_AVP
            Server_Name_AVP
            SIP_Number_Auth_Items_AVP
            SIP_Auth_Data_Item_AVP containing
                SIP_Authentication_Scheme_AVP


        to the IMS_HSS_A entity
    }
    then {
        the IMS_HSS_A sends the MAA containing
            Session_ID_AVP,
            Vendor_Specific_Application_Id_AVP,
            Auth_Session_State_AVP,
```

```
            Origin_Host_AVP,
            Origin_Realm_AVP,
            not Experimental_Result_AVP,
            Result_Code_AVP
                indicating value DIAMETER_SUCCESS
            User_Name_AVP
            SIP_Number_Auth_Items_AVP
            SIP_Auth_Data_Item_AVP containing
                SIP_Authentication_Scheme_AVP


        to the IMS_S_CSCF_A entity
    }
}
```

TP Id	TP_CX_HSS_5G_ECO_UAA_01
Test Objective	Verify that the IUT successfully processes all mandatory AVPs in a UA-Request received due to first UE emergency registration and sends UA-Answer.
Reference	ETSI TS 129 228 [3], clause 6.1.1 and Tables 6.1.1.1 and 6.1.1.2 ETSI TS 129 229 [4], clauses 6.1.1 and 6.1.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A not isEmergencyRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_I_CSCF_A sends a UAR containing
            Session_ID_AVP
            Vendor_Specific_Application_Id_AVP
            Auth_Session_State_AVP
                indicating value NO_STATE_MAINTAINED,
            Origin_Host_AVP
            Origin_Realm_AVP
            Public_Identity_AVP
            Visited_Network_Identifier_AVP
            User_Authorization_Type_AVP
                indicating value REGISTRATION,
            User_Name_AVP
            Destination_Host_AVP
            Destination_Realm_AVP
            UAR_Flags_AVP indicating value '1' //IMS emergency registration
        to the IMS_HSS_A entity
    }
    then {
        the IMS_HSS_A sends the UAA containing
            Session_ID_AVP,
            Vendor_Specific_Application_Id_AVP,
            Auth_Session_State_AVP,
            Origin_Host_AVP,
            Origin_Realm_AVP,
            not Result_Code_AVP
            Experimental_Result_AVP containing
                Experimental_Result_Code_AVP
                    indicating value DIAMETER_FIRST_REGISTRATION
        to the IMS_I_CSCF_A entity
    }
}
```

TP Id	TP_CX_HSS_5G_ECO_UAA_02
Test Objective	Verify that the IUT successfully processes all mandatory AVPs in a UA-Request received due to protected UE emergency registration and sends UA-Answer.
Reference	ETSI TS 129 228 [3], clause 6.1.1.1
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A not isEmergencyRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_I_CSCF_A sends a UAR containing
            Public_Identity_AVP
            User_Name_AVP
            UAR_Flags_AVP indicating value '1' //IMS emergency registration
        to the IMS_HSS_A entity
    }
    then {
        the IMS_HSS_A sends the UAA containing
            not Result_Code_AVP,
            Experimental_Result_AVP containing
                Experimental_Result_Code_AVP
                    indicating value DIAMETER_SUBSEQUENT_REGISTRATION,
            Server_Name_AVP,
            not Server_Capabilities_AVP
        to the IMS_I_CSCF_A entity
    }
}
```

TP Id	TP_CX_HSS_5G_ECO_UAA_03
Test Objective	Verify that the IUT checks that the Private User Identity and the Public User Identity exists in the HSS and if not then IUT sets the appropriate experimental result code in the UA-Answer.
Reference	ETSI TS 129 228 [3], clause 6.1.1.1
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A isNotRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_I_CSCF_A sends a UAR containing
        User_Name_AVP
            indicating value "an unknown private user identity"
        Public_Identity_AVP

        to the IMS_HSS_A entity
    }
    then {
        the IMS_HSS_A sends the UAA containing
            not Result_Code_AVP,
            Experimental_Result_AVP containing
                Experimental_Result_Code_AVP
                    indicating value DIAMETER_ERROR_USER_UNKNOWN,
            not Server_Name_AVP

        to the IMS_I_CSCF_A entity
    }
}
```

TP Id	TP_CX_HSS_5G_ECO_SAA_01
Test Objective	IUT successfully processes all mandatory AVPs in a SA-Request received due to S-CSCF registration notification procedure and sends SA-Answer.
Reference	ETSI TS 129 228 [3], clause 6.1.2 ETSI TS 129 229 [4], clauses 6.1.3 and 6.1.4
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

with {
the UE_A isNotRegisteredTo the IMS_A
}	

Expected Behaviour	

ensure that {
when {
the IMS_S_CSCF_A sends a SAR containing
Session_ID_AVP
Vendor_Specific_Application_Id_AVP,
Auth_Session_State_AVP
indicating value NO_STATE_MAINTAINED,
Origin_Host_AVP,
Origin_Realm_AVP,
Public_Identity_AVP,
not User_Name_AVP,
Destination_Realm_AVP,
Server_Name_AVP,
Server_Assignment_Type_AVP
indicating value UNREGISTERED_USER,
User_Data_Already_Available_AVP
 	
to the IMS_HSS_A entity
}
then {
the IMS_HSS_A sends the SAA containing
Session_ID_AVP
Vendor_Specific_Application_Id_AVP
Auth_Session_State_AVP
Origin_Host_AVP
Origin_Realm_AVP
Result_Code_AVP
indicating value DIAMETER_SUCCESS
User_Data AVP
Charging_Information_AVP
 	
to the IMS_S_CSCF_A entity
}
}	

TP Id	TP_CX_HSS_5G_ECO_SAA_03
Test Objective	Verify that the IUT successfully processes all mandatory AVPs in a SA-Request received due to S-CSCF registration notification procedure when credentials not matches and sends SA-Answer.
Reference	ETSI TS 129 228 [3], clause 6.1.2 ETSI TS 129 229 [4], clauses 6.1.3 and 6.1.4
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

with {
the UE_A isNotRegisteredTo the IMS_A
}	

Expected Behaviour	

ensure that {
when {
the IMS_S_CSCF_A sends a SAR containing
Session_ID_AVP,
Vendor_Specific_Application_Id_AVP,
Auth_Session_State_AVP
indicating value NO_STATE_MAINTAINED,
Origin_Host_AVP,
Origin_Realm_AVP,
Public_Identity_AVP,
not User_Name_AVP,
Destination_Realm_AVP,
Server_Name_AVP,
Server_Assignment_Type_AVP	

```
                indicating value AUTHENTICATION_FAILURE //or AUTHENTICATION_TIMEOUT
            User_Data_Already_Available_AVP
        to the IMS_HSS_A entity
    }
    then {
        the IMS_HSS_A sends the SAA containing
            Session_ID_AVP
            Vendor_Specific_Application_Id_AVP
            Auth_Session_State_AVP
            Origin_Host_AVP
            Origin_Realm_AVP
            Result_Code_AVP
                indicating value DIAMETER_SUCCESS
            User_Data AVP
            Charging_Information_AVP
        to the IMS_S_CSCF_A entity
    }
}
```

7.4 Mw, Mi, Mm, Ml, Mx interfaces

7.4.1 Mw interface at P-CSCF

TP Id	TP_MW_PCSCF_5G_ECO_REGISTER_01
Test Objective	Verify that the P-CSCF successfully processes a first emergency registration (Successful).
Reference	ETSI TS 124 229 [1], clauses 5.2.2.1 and 6.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GEmergencyRegisteredTo the _5GC_A and
the UE_A not isRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives a REGISTER containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Contact indicating value "sos"
        from the UE_A entity
    }
    then {
        the IMS_P_CSCF_A sends a REGISTER containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Path indicating value PX_P_CSCF_A_SIP_URI,
            PChargingVector containing
                icid indicating value PX_TO_BE_DEFINED,
            PVisitedNetworkID indicating value PX_TO_BE_DEFINED,
            Require indicating value "path",
            Supported indicating value "path",
            Contact indicating value "sos"
            to the IMS_I_CSCF_A entity
        and the IMS_P_CSCF_A sends an 401_Unauthorized containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Path,
            Warning,
            PAccessNetworkInfo,
            WwwAuthenticate containing
                Digest,
                Realm indicating value PX_UE_A_REALM,
                Algorithm indicating value PX_UE_A_AUTH_ALG,
                Nonce indicating value "not empty",
                qop indicating value "auth"
```

```
        to the UE_A entity
    }
}
```

TP Id	TP_MW_PCSCF_5G_ECO_REGISTER_02
Test Objective	Verify that the P-CSCF successfully processes a full emergency registration (Successful).
Reference	ETSI TS 124 229 [1], clauses 5.2.2.1 and 6.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GEmergencyRegisteredTo the _5GC_A and
the UE_A not isRegisteredTo the IMS_A and
the UE_A hasAchievedFirstREGISTER
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives a REGISTER containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Authorization containing
                Authentication_Scheme indicating value PX_TO_BE_DEFINED,
                Authentication_URI indicating value PX_TO_BE_DEFINED,
                Username indicating value PX_UE_A_USERNAME,
                Realm indicating value PX_UE_A_REALM,
                Algorithm indicating value PX_UE_A_AUTH_ALG,
                Nonce indicating value "not empty",
                qop indicating value "auth",
            Contact indicating value "sos"
        from the UE_A entity
    }
    then {
        the IMS_P_CSCF_A sends a REGISTER containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Authorization containing
                Authentication_Scheme indicating value PX_TO_BE_DEFINED,
                Authentication_URI indicating value PX_TO_BE_DEFINED,
                Username indicating value PX_UE_A_USERNAME,
                Realm indicating value PX_UE_A_REALM,
                Algorithm indicating value PX_UE_A_AUTH_ALG,
                Nonce indicating value "not empty",
                qop indicating value "auth",
            PChargingVector,
            Contact indicating value "sos"
        to the IMS_I_CSCF_A entity
        and the IMS_P_CSCF_A sends an 200_Ok containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            AuthenticationInfo,
            PAccessNetworkInfo,
            PAssociatedURI indicating value PX_UE_A_SIP_URI,
            PChargingVector,
               orig_ioi_parameter
                   indicating value "Operator Identifier Of ImsA" ,
               term_ioi_parameter
                   indicating value "Operator Identifier Of ImsB"
            Path,
            ServiceRoute
        to the UE_A entity
    }
}
```

TP Id	TP_MW_PCSCF_5G_ECO_REGISTER_03
Test Objective	Verify that the P-CSCF rejects invalid credentials within registration (Unsuccessful).
Reference	ETSI TS 124 229 [1], clause 5.2.2.1
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GRegisteredTo the _5GC_B and
the UE_A isNotRegisteredTo the IMS_B and
the UE_B isNotRegisteredTo the IMS_B and
the UE_A hasAchievedFirstREGISTER
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_B receives a REGISTER containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Authorization indicating value "invalid credentials"
        from the UE_A entity
    }
    then {
        the IMS_P_CSCF_B sends a REGISTER containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Authorization indicating value "invalid credentials",
            PChargingVector,
            PVisitedNetwork
        to the IMS_I_CSCF_B entity
        and the IMS_P_CSCF_B sends an 403_Forbidden containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID
        to the UE_A entity
    }
}
```

TP Id	TP_MW_PCSCF_5G_ECO_INVITE_01
Test Objective	Verify that the P-CSCF successfully processes an initial INVITE from an unregistered UE.
Reference	ETSI TS 124 229 [1], clauses 5.2.10.2 and 5.2.6.3.3
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A not isRegisteredTo the IMS_A and
the UE_A not isEmergencyRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives an INVITE containing
            From indicating value "Anonymous",
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE,
            MessageBody
        from the UE_A entity
    }
    then {
        the IMS_P_CSCF_A sends an INVITE containing
            From indicating value "Anonymous",
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_P_CSCF_A_VIA,
            Route indicating value PX_E_CSCF_SERVICE_ROUTE,
            MessageBody
         to the IMS_E_CSCF entity
```

```
    }
}
```

TP Id	TP_MW_PCSCF_5G_ECO_INVITE_02
Test Objective	Verify that the P-CSCF successfully processes an initial INVITE from an emergency registered UE.
Reference	ETSI TS 124 229 [1], clauses 5.2.10.3 and 5.2.6.3.3
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GEmergencyRegisteredTo the _5GC_A and
the UE_A isEmergencyRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives an INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE,
            PPreferredIdentity,
            MessageBody
        from the UE_A entity
    }
    then {
        the IMS_P_CSCF_A sends an INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_P_CSCF_A_VIA,
            Route indicating value PX_E_CSCF_SERVICE_ROUTE,
            PAssertedIdentity,
            MessageBody
         to the IMS_E_CSCF entity
    }
}
```

TP Id	TP_MW_PCSCF_5G_ECO_INVITE_03
Test Objective	Verify that the P-CSCF successfully processes an initial INVITE from a registered but not emergency registered UE.
Reference	ETSI TS 124 229 [1], clauses 5.2.10.4 and 5.2.6.3.3
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A and
the UE_A not isEmergencyRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives an INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE,
            PPreferredIdentity,
            MessageBody
        from the UE_A entity
    }
    then {
        the IMS_P_CSCF_A sends an INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_P_CSCF_A_VIA,
            Route indicating value PX_E_CSCF_SERVICE_ROUTE,
```

```
            PAssertedIdentity,
            MessageBody
         to the IMS_E_CSCF entity
    }
}
```

TP Id	TP_MW_PCSCF_5G_ECO_INVITE_04
Test Objective	Verify that the P-CSCF rejects an initial INVITE from a not emergency registered UE if the IM CN subsystem of the P-CSCF is not capable to handle emergency sessions.
Reference	ETSI TS 124 229 [1], clause 5.2.10.5
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A not isRegisteredTo the IMS_A and
the UE_A not isEmergencyRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives an INVITE containing
            From indicating value "Anonymous",
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE,
            MessageBody
     from the UE_A entity
    }
    then {
        the IMS_P_CSCF_A sends a 380_AlternativeService containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_P_CSCF_A_VIA,
            PAssertedIdentity,
            MessageBody containing
                XML containing
                    Version indicating value "1",
                    Type_child indicating value "emergency",
                    Reason_child,
                    Action_child
         to the UE_A entity
    }
}
```

TP Id	TP_MW_PCSCF_5G_ECO_INVITE_05
Test Objective	Verify that the E-CSCF successfully processes a callback INVITE from PSAP towards P-CSCF.
Reference	ETSI TS 124 229 [1], clauses 5.2.10.3 and 5.2.6.3.3
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GEmergencyRegisteredTo the _5GC_A and
the UE_A isEmergencyRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives an INVITE containing
            From indicating value PX_PSAP_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_PSAP_CALLID,
            Via indicating value PX_PSAP_VIA,
            Route indicating value PX_P_CSCF_SERVICE_ROUTE,
            PAssertedIdentity,
            MessageBody
        from the IMS_E_CSCF entity
    }
    then {
        the IMS_P_CSCF_A sends an INVITE containing
```

```
            From indicating value PX_PSAP_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_PSAP_CALLID,
            Via indicating value PX_P_CSCF_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE,
            PPreferredIdentity,
            MessageBody
         to the UE_A entity
    }
}
```

TP Id	TP_MW_PCSCF_5G_ECO_480INVITE_01
Test Objective	Verify that the P-CSCF rejects an initial INVITE from an emergency registered UE if the E-CSCF informs the P-CSCF that Emergency Services are currently not available.
Reference	ETSI TS 124 229 [1], clause 5.2.10.5
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A and
the UE_A isEmergencyRegisteredTo the IMS_A and
the UE_A hasAchievedInitialEmergencyINVITE
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives a 480_INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_E_CSCF_VIA,
            Route indicating value PX_E_CSCF_SERVICE_ROUTE
        from the IMS_E_CSCF entity
    }
    then {
        the IMS_P_CSCF_A sends a 380_AlternativeService containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_P_CSCF_A_VIA,
            PAssertedIdentity,
            MessageBody containing
                XML containing
                    Version indicating value "1",
                    Type_child indicating value "emergency",
                    Reason_child,
                    Action_child
         to the UE_A entity
    }
}
```

TP Id	TP_MW_PCSCF_5G_ECO_380INVITE_01
Test Objective	Verify that the P-CSCF rejects an initial INVITE from an emergency registered UE if the IMS is not capable or does not handle emergency sessions.
Reference	ETSI TS 124 229 [1], clause 5.2.10.5
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives a INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_E_CSCF_VIA,
            Route indicating value PX_E_CSCF_SERVICE_ROUTE
```

```
        from the UE_A entity
    }
    then {
        the IMS_P_CSCF_A sends a 380_AlternativeService containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_P_CSCF_A_VIA,
            PAssertedIdentity,
            MessageBody containing
                XML containing
                    Version indicating value "1",
                    Type_child indicating value "emergency",
                    Reason_child,
                    Action_child
         to the UE_A entity
    }
}
```

TP Id	TP_MW_PCSCF_5G_ECO_380INVITE_02
Test Objective	Verify that the P-CSCF rejects an initial INVITE from an emergency registered UE if received Request-URI is wrong - not in accordance with IETF RFC 5031 [10].
Reference	ETSI TS 124 229 [1], clauses 5.2.10.4 and 5.2.10.5 IETF RFC 5031 [10]
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives a INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_WRONG_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_E_CSCF_VIA,
            Route indicating value PX_E_CSCF_SERVICE_ROUTE
        from the UE_A entity
    }
    then {
        the IMS_P_CSCF_A sends a 380_AlternativeService containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Content_type,
            Via indicating value PX_P_CSCF_A_VIA,
            PAssertedIdentity,
            MessageBody containing
                XML containing
                    Version indicating value "1",
                    Type_child indicating value "emergency",
                    Reason_child,
                    Action_child
         to the UE_A entity
    }
}
```

TP Id	TP_MW_PCSCF_5G_ECO_BYE_01
Test Objective	Verify that the P-CSCF successfully processes a BYE for an emergency call.
Reference	ETSI TS 124 229 [1], clauses 5.1.6.9, 5.4.5.2 and 6.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A and
the UE_A not isEmergencyRegisteredTo the IMS_A and
the UE_A previouslyEstablishedEmergencyCallWith the PSAP
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives an BYE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE
        from the UE_A entity
    }
    then {
        the IMS_P_CSCF_A sends an BYE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE
        to the IMS_E_CSCF entity
    }
}
```

TP Id	TP_MW_PCSCF_5G_EMC_CANCEL_01
Test Objective	Verify that the P-CSCF successfully processes a CANCEL during Emergency Call establishment.
Reference	ETSI TS 124 229 [1], clauses 5.1.3 and 6.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GEmergencyRegisteredTo the _5GC_A and
the UE_A isEmergencyRegisteredTo the IMS_A and
the UE_A hasAchievedInitialEmergencyINVITE and
the UE_A isRequestedToSend a CANCEL
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives an CANCEL containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE
        from the UE_A entity
    }
    then {
        the IMS_P_CSCF_A sends an CANCEL containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE
        to the IMS_E_CSCF entity
    }
}
```

TP Id	TP_MW_PCSCF_5G_EMC_200OK_CANCEL_01
Test Objective	Verify that the P-CSCF successfully processes a 200 (OK) CANCEL (Originating Leg).
Reference	ETSI TS 124 229 [1], clauses 5.2.7 and 6.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives a 200_Ok containing
            From indicating value PX_PSAP_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_PSAP_CALLID,
            Via indicating value PX_PSAP_VIA,
            Route indicating value PX_PSAP_SERVICE_ROUTE
        from the IMS_E_CSCF entity
    }
    then {
        the IMS_P_CSCF_A sends a 200_Ok containing
            From indicating value PX_PSAP_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_PSAP_CALLID,
            Via indicating value PX_PSAP_VIA,
            Route indicating value PX_PSAP_SERVICE_ROUTE
        to the UE_A entity
    }
}
```

TP Id	TP_MW_PCSCF_5G_EMC_200OK_BYE_01
Test Objective	Verify that the P-CSCF successfully processes a 200 (OK) BYE (Originating Leg).
Reference	ETSI TS 124 229 [1], clauses 5.2.7 and 6.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A is5GEmergencyRegisteredTo the _5GC_A and
the UE_A isEmergencyRegisteredTo the IMS_A and
the UE_B is5GEmergencyRegisteredTo the _5GC_B and
the UE_B isEmergencyRegisteredTo the IMS_B
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives a 200_Ok containing
            From indicating value PX_UE_B_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_B_CALLID,
            Via indicating value PX_UE_B_VIA,
            Route indicating value PX_UE_B_SERVICE_ROUTE
        from the IMS_S_CSCF_A entity
    }
    then {
        the IMS_P_CSCF_A sends a 200_Ok containing
            From indicating value PX_UE_B_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_B_CALLID,
            Via indicating value PX_UE_B_VIA,
            Route indicating value PX_UE_B_SERVICE_ROUTE
        to the UE_A entity
    }
}
```

TP Id	TP_MW_PCSCF_5G_EMC_200OK_BYE_02
Test Objective	Verify that the P-CSCF successfully processes a 200 (OK) BYE (Terminating Leg).
Reference	ETSI TS 124 229 [1], clauses 5.2.7 and 6.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GEmergencyRegisteredTo the _5GC_A and
the UE_A isEmergencyRegisteredTo the IMS_A and
the UE_B is5GEmergencyRegisteredTo the _5GC_B and
the UE_B isEmergencyRegisteredTo the IMS_B
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_B receives a 200_Ok containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_B_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE
        from the IMS_S_CSCF_B entity
    }
    then {
        the IMS_P_CSCF_B sends a 200_Ok containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_B_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE
        to the UE_B entity
    }
}
```

TP Id	TP_MW_PCSCF_5G_EMC_487INVITE_01
Test Objective	Verify that the P-CSCF successfully processes a 487 INVITE (Request Terminated) to reject call (Originating Leg).
Reference	ETSI TS 124 229 [1], clauses 5.2.7 and 6.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A and
the UE_A isRequestedToSend a CANCEL
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives a 487_INVITE containing
            From indicating value PX_PSAP_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_PSAP_CALLID,
            Via indicating value PX_PSAP_VIA,
            Route indicating value PX_PSAP_SERVICE_ROUTE
        from the IMS_E_CSCF entity
    }
    then {
        the IMS_P_CSCF_A sends a 487_INVITE containing
            From indicating value PX_PSAP_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_PSAP_CALLID,
            Via indicating value PX_PSAP_VIA,
            Route indicating value PX_PSAP_SERVICE_ROUTE
        to the UE_A entity
    }
}
```

TP Id	TP_MW_PCSCF_5G_NGC_INFO_01
Test Objective	Verify that the P-CSCF sends an INFO request demanding a transfer of updated MSD.
Reference	ETSI TS 124 229 [1], clause 5.1.6.11.3
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A and
the UE_A isEmergencyRegisteredTo the IMS_A and
the UE_A previouslyEstablishedEmergencyCallWith the PSAP
}	

Expected Behaviour	

ensure that {
when {
the IMS_P_CSCF_A receives a INFO containing "Request transfer of updated MSD"
from the IMS_E_CSCF entity
}
then {
the IMS_P_CSCF_A sends a INFO containing
From indicating value PX_PSAP_SIP_URI,
To indicating value PX_UE_A_SIP_URI,
CallId indicating value PX_PSAP_CALLID,
Via indicating value PX_PSAP_VIA,
Route indicating value PX_PSAP_SERVICE_ROUTE,
InfoPackage indicating value "EmergencyCallData.eCall.MSD",
ContentDisposition indicating value "Info-Package",
MessageBody containing
MIME indicating value "application/EmergencyCallData.Control+xml",
request containing
action indicating value "send-data",
datatype indicating value "eCall.MSD",
ContentDisposition indicating value "By-Reference"
to the UE_A entity
}
}	

7.4.2 Mw interface at I-CSCF

TP Id	TP_MW_ICSCF_5G_ECO_REGISTER_01
Test Objective	Verify that the I-CSCF successfully processes a first registration (Successful).
Reference	ETSI TS 124 229 [1], clauses 5.4.1.1 and 6.3
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

with {
the UE_A is5GEmergencyRegisteredTo the _5GC_A and
the UE_A not isRegisteredTo the IMS_A
}	

Expected Behaviour	

ensure that {
when {
the IMS_I_CSCF_A receives a REGISTER containing
From indicating value PX_UE_A_SIP_URI,
To indicating value PX_UE_A_SIP_URI,
CallId indicating value PX_UE_A_CALLID,
Via indicating value PX_UE_A_VIA,
Contact indicating value "sos"
from the IMS_P_CSCF_A entity
}
then {
the IMS_I_CSCF_A sends an 401_Unauthorized containing
From indicating value PX_UE_A_SIP_URI,
To indicating value PX_UE_A_SIP_URI,
CallId indicating value PX_UE_A_CALLID,
Via indicating value PX_UE_A_VIA,
Path,
Warning,
PAccessNetworkInfo,
WwwAuthenticate containing
Digest,
Realm indicating value PX_UE_A_REALM,
Algorithm indicating value PX_UE_A_AUTH_ALG,	

```
                Nonce indicating value "not empty",
                qop indicating value "auth"
        to the IMS_S_CSCF_A entity
    }
}
```

TP Id	TP_MW_ICSCF_5G_ECO_REGISTER_02
Test Objective	Verify that the I-CSCF successfully processes a full registration (Successful).
Reference	ETSI TS 124 229 [1], clauses 5.4.1.1 and 6.3
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GEmergencyRegisteredTo the _5GC_A and
the UE_A not isRegisteredTo the IMS_A and
the UE_A hasAchievedFirstREGISTER
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_I_CSCF_A receives a REGISTER containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Authorization containing
                Authentication_Scheme indicating value PX_TO_BE_DEFINED,
                Authentication_URI indicating value PX_TO_BE_DEFINED,
                Username indicating value PX_UE_A_USERNAME,
                Realm indicating value PX_UE_A_REALM,
                Algorithm indicating value PX_UE_A_AUTH_ALG,
                Nonce indicating value "not empty",
                qop indicating value "auth",
            Contact indicating value "sos"
        from the IMS_P_CSCF_A entity
    }
    then {
        the IMS_I_CSCF_A sends an 200_Ok containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            AuthenticationInfo,
            PAccessNetworkInfo,
            PAssociatedURI indicating value PX_UE_A_SIP_URI,
            PChargingVector,
               orig_ioi_parameter
                   indicating value "Operator Identifier Of ImsA" ,
               term_ioi_parameter
                   indicating value "Operator Identifier Of ImsB"
            Path,
            ServiceRoute
        to the IMS_S_CSCF_A entity
    }
}
```

TP Id	TP_MW_ICSCF_5G_ECO_REGISTER_03
Test Objective	Verify that the I-CSCF successfully processes a registration with invalid credentials (Unsuccessful).
Reference	ETSI TS 124 229 [1], clauses 5.2.2.1 and 6.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GEmergencyRegisteredTo the _5GC_A and
the UE_A not isRegisteredTo the IMS_A and
the UE_A hasAchievedFirstREGISTER
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_I_CSCF_A receives a REGISTER containing
```

```
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Authorization indicating value "invalid credentials"
        from the IMS_P_CSCF_A entity
    }
    then {
        the IMS_I_CSCF_A sends an 403_Forbiden containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID
        to the IMS_P_CSCF_A entity
    }
}
```

TP Id	TP_MW_ICSCF_5G_ECO_REGISTER_04
Test Objective	Verify that the I-CSCF processes an invalid first registration in visited network and sends 403 response (Unsuccessful).
Reference	ETSI TS 124 229 [1], clauses 5.1.6.2 and 5.2.10.5
Configuration	CF_VoNR_RMI_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GRegisteredTo the _5GC_B and
the UE_A isNotRegisteredTo the IMS_B
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_I_CSCF_B receives a REGISTER containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Authorization indicating value "invalid credentials"
        from the IMS_P_CSCF_B entity
    }
    then {
        the IMS_I_CSCF_B sends an 403_Forbiden containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID
        to the IMS_P_CSCF_B entity
    }
}
```

TP Id	TP_MW_ICSCF_ECO_REGISTER_05
Test Objective	Verify that the I-CSCF processes an invalid first registration without SecurityClient header in visited network (GIBA supported) and sends 420 response (Unsuccessful).
Reference	ETSI TS 124 229 [1], clauses 5.1.6.2 and 5.2.10.5
Configuration	CF_VoNR_RMI_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GRegisteredTo the _5GC_B and
the UE_A isNotRegisteredTo the IMS_B
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_I_CSCF_B receives a REGISTER containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            not SecurityClient
        from the IMS_P_CSCF_B entity
    }
    then {
        the IMS_I_CSCF_B sends an 420_BadExtension containing
            From indicating value PX_UE_A_SIP_URI,
```

```
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_UE_A_CALLID
        to the IMS_P_CSCF_B entity
    }
}
```

7.4.3 Mm, Ml, Mi, Mx interface at E-CSCF

TP Id	TP_I4_ECSCF_5G_ECO_INVITE_01
Test Objective	Verify that the E-CSCF successfully processes an initial INVITE from the P-CSCF and routes the request to the EATF.
Reference	ETSI TS 124 229 [1], clause 5.11.2, item 1
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

with {
the IMS_E_CSCF supportsRoutingTo the IMS_EATF
}	

Expected Behaviour	

ensure that {
when {
the IMS_E_CSCF receives an INVITE containing
From indicating value PX_UE_A_SIP_URI,
To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
CallId indicating value PX_UE_A_CALLID,
Via indicating value PX_P_CSCF_A_VIA,
Route indicating value PX_E_CSCF_SERVICE_ROUTE,
PAssertedIdentity,
Contact containing
instanceid_feature_tag
indicating value IMEIURN,
MessageBody
from the IMS_P_CSCF_A entity
}
then {
the IMS_E_CSCF sends an INVITE containing
From indicating value PX_UE_A_SIP_URI,
To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
CallId indicating value PX_UE_A_CALLID,
Via indicating value PX_E_CSCF_VIA,
Route indicating value PX_EATF_SERVICE_ROUTE,
Route indicating value PX_E_CSCF_SERVICE_ROUTE_EATF,
PChargingVector containing
not term_ioi_parameter,
orig_ioi_parameter
indicating value "Operator Identifier Of ImsA",
MessageBody
to the IMS_EATF entity
}
}	

TP Id	TP_ML_ECSCF_5G_ECO_INVITE_01
Test Objective	Verify that the E-CSCF successfully processes an initial INVITE from the P-CSCF and routes the request to the LRF.
Reference	ETSI TS 124 229 [1], clause 5.11.3
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

with {
the IMS_E_CSCF supportsRoutingTo the IMS_LRF
}	

Expected Behaviour	

ensure that {
when {
the IMS_E_CSCF receives an INVITE containing
From indicating value PX_UE_A_SIP_URI,
To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
CallId indicating value PX_UE_A_CALLID,
Via indicating value PX_P_CSCF_A_VIA,
Route indicating value PX_E_CSCF_SERVICE_ROUTE,
PAssertedIdentity,	

```
            MessageBody
        from the IMS_P_CSCF_A entity
    }
    then {
        the IMS_E_CSCF sends an INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_E_CSCF_VIA,
            Route indicating value PX_LRF_SERVICE_ROUTE,
            PChargingVector containing
               not term_ioi_parameter,
               orig_ioi_parameter
                   indicating value "Operator Identifier Of ImsA",
            MessageBody
         to the IMS_LRF entity
    }
}
```

TP Id	TP_MM_ECSCF_5G_ECO_INVITE_01
Test Objective	Verify that the E-CSCF successfully processes an initial INVITE from the P-CSCF and routes the request to the PSAP in the IM CN subsystem of own network.
Reference	ETSI TS 124 229 [1], clause 5.11.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

with {
the IMS_E_CSCF supportsRoutingTo the IM_CN
}	

Expected Behaviour	

ensure that {
when {
the IMS_E_CSCF receives an INVITE containing
From indicating value PX_UE_A_SIP_URI,
To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
CallId indicating value PX_UE_A_CALLID,
Via indicating value PX_P_CSCF_A_VIA,
Route indicating value PX_E_CSCF_SERVICE_ROUTE,
PAssertedIdentity,
MessageBody
from the IMS_P_CSCF_A entity
}
then {
the IMS_E_CSCF sends an INVITE containing
From indicating value PX_UE_A_SIP_URI,
To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
CallId indicating value PX_UE_A_CALLID,
Via indicating value PX_E_CSCF_VIA,
Route indicating value PX_PSAP_SERVICE_ROUTE_IM_CN,
RecordRoute PX_E_CSCF_SERVICE_ROUTE,
PChargingVector,
not PChargingFunctionAddresses,
MessageBody
to the IM_CN entity
}
}	

TP Id	TP_MM_ECSCF_5G_ECO_INVITE_02
Test Objective	Verify that the E-CSCF successfully processes an initial INVITE from the P-CSCF and routes the request to the PSAP in the IM CN subsystem of own network and includes the LRF provided URI in the Route header.
Reference	ETSI TS 124 229 [1], clauses 5.11.2 and 5.11.3
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the IMS_E_CSCF supportsRoutingTo the IMS_LRF and
the IMS_E_CSCF hasSentINVITETo the IMS_LRF and
the IMS_E_CSCF supportsRoutingTo the IM_CN
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_E_CSCF receives an r_3xx_Any containing
            Contact indicating value LRF_provided_SIP_URI
        from the IMS_LRF entity
    }
    then {
        the IMS_E_CSCF sends an INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_E_CSCF_VIA,
            Route indicating value LRF_provided_SIP_URI,
            RecordRoute PX_E_CSCF_SERVICE_ROUTE,
            not PChargingFunctionAddresses,
            PChargingVector,
            MessageBody
         to the IM_CN entity
    }
}
```

TP Id	TP_MM_ECSCF_5G_ECO_INVITE_03
Test Objective	Verify that the E-CSCF successfully processes a callback INVITE from PSAP over the IM CN subsystem of own network and routes the request to the P-CSCF.
Reference	ETSI TS 123 167 [9], clause 4.1 item 12
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the IMS_E_CSCF supportsRoutingTo the IM_CN
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_E_CSCF receives an INVITE containing
            From indicating value PX_PSAP_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_PSAP_CALLID,
            Via indicating value PX_P_CSCF_A_VIA,
            Route indicating value PX_E_CSCF_SERVICE_ROUTE,
            PAssertedIdentity,
            MessageBody
        from the IM_CN entity
    }
    then {
        the IMS_E_CSCF sends an INVITE containing
            From indicating value PX_PSAP_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_PSAP_CALLID,
            Via indicating value PX_E_CSCF_VIA,
            Route indicating value PX_PSAP_SERVICE_ROUTE_IM_CN,
            RecordRoute PX_E_CSCF_SERVICE_ROUTE,
            PChargingVector,
            not PChargingFunctionAddresses,
            MessageBody
         to the IMS_P_CSCF_A entity
    }
}
```

TP Id	TP_MX_ECSCF_5G_ECO_INVITE_01
Test Objective	Verify that the E-CSCF successfully processes an initial INVITE from the P-CSCF and routes the request to the IBCF for a PSAP in another network.
Reference	ETSI TS 124 229 [1], clause 5.11.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the IMS_E_CSCF supportsRoutingTo the IMS_IBCF_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_E_CSCF receives an INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_P_CSCF_A_VIA,
            Route indicating value PX_E_CSCF_SERVICE_ROUTE,
            PAssertedIdentity,
            MessageBody
        from the IMS_P_CSCF_A entity
    }
    then {
        the IMS_E_CSCF sends an INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_E_CSCF_VIA,
            Route indicating value PX_IBCF_A_SERVICE_ROUTE,
            Route indicating value PX_PSAP_SERVICE_ROUTE_IBCF,
            RecordRoute PX_E_CSCF_SERVICE_ROUTE,
            PChargingVector containing
               not term_ioi_parameter,
               orig_ioi_parameter
                   indicating value "Operator Identifier Of ImsA",
            MessageBody
         to the IMS_IBCF_A entity
    }
}
```

TP Id	TP_MX_ECSCF_5G_ECO_INVITE_02
Test Objective	Verify that the E-CSCF successfully processes an initial INVITE from the P-CSCF and routes the request to the IBCF for a PSAP in another network and includes the LRF provided URI in the Route header.
Reference	ETSI TS 124 229 [1], clause 5.11.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the IMS_E_CSCF supportsRoutingTo the IMS_LRF and
the IMS_E_CSCF hasSentINVITETo the IMS_LRF and
the IMS_E_CSCF supportsRoutingTo the IMS_IBCF_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_E_CSCF receives an r_3xx_Any containing
            Contact indicating value LRF_provided_SIP_URI
        from the IMS_LRF entity
    }
    then {
        the IMS_E_CSCF sends an INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_E_CSCF_VIA,
            Route indicating value PX_IBCF_A_SERVICE_ROUTE,
            Route indicating value LRF_provided_SIP_URI,
            RecordRoute PX_E_CSCF_SERVICE_ROUTE,
            PChargingVector containing
               not term_ioi_parameter,
               orig_ioi_parameter
                   indicating value "Operator Identifier Of ImsA",
```

```
            MessageBody
         to the IMS_IBCF_A entity
    }
}
```

TP Id	TP_MX_ECSCF_5G_ECO_INVITE_03
Test Objective	Verify that the E-CSCF successfully processes a callback INVITE from the PSAP in another network over the IBCF and routes the request to the P-CSCF.
Reference	ETSI TS 123 167 [9], clause 4.1 item 12
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the IMS_E_CSCF supportsRoutingTo the IMS_IBCF_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_E_CSCF receives an INVITE containing
            From indicating value PX_PSAP_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_PSAP_CALLID,
            Via indicating value PX_P_CSCF_A_VIA,
            Route indicating value PX_E_CSCF_SERVICE_ROUTE,
            PAssertedIdentity,
            MessageBody
        from the IMS_IBCF_A entity
    }
    then {
        the IMS_E_CSCF sends an INVITE containing
            From indicating value PX_PSAP_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_PSAP_CALLID,
            Via indicating value PX_E_CSCF_VIA,
            Route indicating value PX_P_SCSF_SERVICE_ROUTE_IBCF,
            RecordRoute PX_E_CSCF_SERVICE_ROUTE,
            PChargingVector containing
               not term_ioi_parameter,
               orig_ioi_parameter
                   indicating value "Operator Identifier Of ImsA",
            MessageBody
         to the IMS_P_CSCF_A entity
    }
}
```

TP Id	TP_MI_ECSCF_5G_ECO_INVITE_01
Test Objective	Verify that the E-CSCF successfully processes an initial INVITE from the P-CSCF and routes the request to the BGCF for a PSAP in the PSTN.
Reference	ETSI TS 124 229 [1], clause 5.11.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the IMS_E_CSCF supportsRoutingTo the BGCF
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_E_CSCF receives an INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_P_CSCF_A_VIA,
            Route indicating value PX_E_CSCF_SERVICE_ROUTE,
            PAssertedIdentity,
            MessageBody
        from the IMS_P_CSCF_A entity
    }
    then {
        the IMS_E_CSCF sends an INVITE containing
            RequestLine indicating value PX_PSAP_TEL_URI,
            From indicating value PX_UE_A_SIP_URI,
```

```
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_E_CSCF_VIA,
            Route indicating value PX_BGCF_SERVICE_ROUTE,
            RecordRoute PX_E_CSCF_SERVICE_ROUTE,
            PChargingVector containing
               not term_ioi_parameter,
               orig_ioi_parameter
                   indicating value "Operator Identifier Of ImsA",
            MessageBody
         to the IMS_BGCF_A entity
    }
}
```

TP Id	TP_MI_ECSCF_5G_ECO_INVITE_02
Test Objective	Verify that the E-CSCF successfully processes an initial INVITE from the P-CSCF and routes the request to the BGCF for a PSAP in the PSTN and includes the LRF provided URI in the Request-URI.
Reference	ETSI TS 124 229 [1], clause 5.11.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the IMS_E_CSCF supportsRoutingTo the IMS_LRF and
the IMS_E_CSCF hasSentINVITETo the IMS_LRF and
the IMS_E_CSCF supportsRoutingTo the BGCF
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_E_CSCF receives an r_3xx_Any containing
            Contact indicating value LRF_provided_SIP_URI
        from the IMS_LRF entity
    }
    then {
        the IMS_E_CSCF sends an INVITE containing
            RequestLine indicating value LRF_provided_SIP_URI,
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_E_CSCF_VIA,
            Route indicating value PX_BGCF_SERVICE_ROUTE,
            RecordRoute PX_E_CSCF_SERVICE_ROUTE,
            PChargingVector containing
               not term_ioi_parameter,
               orig_ioi_parameter
                   indicating value "Operator Identifier Of ImsA",
            MessageBody
         to the IMS_BGCF_A entity
    }
}
```

TP Id	TP_MI_ECSCF_5G_ECO_INVITE_03
Test Objective	Verify that the E-CSCF successfully processes a callback INVITE from PSAP in the PSTN over BGCF and routes the request to the P-CSCF.
Reference	ETSI TS 123 167 [9], clause 4.1 item 12
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the IMS_E_CSCF supportsRoutingTo the BGCF
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_E_CSCF receives an INVITE containing
            From indicating value PX_PSAP_TEL_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_PSAP_CALLID,
            Via indicating value PX_BGCF_VIA,
            Route indicating value PX_E_CSCF_SERVICE_ROUTE,
            PAssertedIdentity,
```

```
            MessageBody
        from the IMS_BGCF_A entity
    }
    then {
        the IMS_E_CSCF sends an INVITE containing
            RequestLine indicating value PX_UE_A_SIP_URI,
            From indicating value PX_PSAP_TEL_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_PSAP_CALLID,
            Via indicating value PX_E_CSCF_VIA,
            Route indicating value PX_P_CSCD_SERVICE_ROUTE,
            RecordRoute PX_E_CSCF_SERVICE_ROUTE,
            PChargingVector containing
               not term_ioi_parameter,
               orig_ioi_parameter
                   indicating value "Operator Identifier Of ImsA",
            MessageBody
         to the IMS_P_CSCF_A entity
    }
}
```

TP Id	TP_MM_ECSCF_5G_ECO_BYE_01
Test Objective	Verify that the E-CSCF successfully processes a BYE from the P-CSCF for an Emergency Call and routes the request to the PSAP in the IM CN subsystem of own network.
Reference	ETSI TS 124 229 [1], clause 5.11.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the IMS_E_CSCF supportsRoutingTo the IM_CN and
the UE_A previouslyEstablishedEmergencyCallWith the PSAP
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_E_CSCF receives a BYE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE
        from the IMS_P_CSCF_A entity
    }
    then {
        the IMS_E_CSCF sends a BYE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE
         to the IM_CN entity
    }
}
```

TP Id	TP_MM_ECSCF_5G_ECO_BYE_02
Test Objective	Verify that the E-CSCF successfully processes a BYE from the PSAP in the IM CN subsystem for an Emergency Call and routes the request to the P-CSCF of home network.
Reference	ETSI TS 124 229 [1], clause 5.11.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the IMS_E_CSCF supportsRoutingTo the IM_CN and
the UE_A previouslyEstablishedEmergencyCallWith the PSAP
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_E_CSCF receives a BYE containing
            From indicating value PX_PSAP_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_PSAP_CALLID,
```

```
            Via indicating value PX_PSAP_VIA
        from the IM_CN entity
    }
    then {
        the IMS_E_CSCF sends a BYE containing
            From indicating value PX_PSAP_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_PSAP_CALLID,
            Via indicating value PX_PSAP_VIA
         to the IMS_P_CSCF_A entity
    }
}
```

TP Id	TP_MX_ECSCF_5G_ECO_BYE_01
Test Objective	Verify that the E-CSCF successfully processes a BYE from the P-CSCF for an Emergency Call and routes the request to the IBCF for a PSAP in another network.
Reference	ETSI TS 124 229 [1], clause 5.11.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the IMS_E_CSCF supportsRoutingTo the IMS_IBCF_A and
the UE_A previouslyEstablishedEmergencyCallWith the PSAP via IMS_IBCF_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_E_CSCF receives a BYE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE
        from the IMS_P_CSCF_A entity
    }
    then {
        the IMS_E_CSCF sends a BYE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE
         to the IMS_IBCF_A entity
    }
}
```

TP Id	TP_MX_ECSCF_5G_ECO_BYE_02
Test Objective	Verify that the E-CSCF successfully processes a BYE from the IBCF for a PSAP in another network for an Emergency Call and routes the request to the P-CSCF.
Reference	ETSI TS 124 229 [1], clause 5.11.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the IMS_E_CSCF supportsRoutingTo the IMS_IBCF_A and
the UE_A previouslyEstablishedEmergencyCallWith the PSAP via IMS_IBCF_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_E_CSCF receives a BYE containing
            From indicating value PX_PSAP_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_PSAP_CALLID,
            Via indicating value PX_PSAP_VIA
        from the IMS_IBCF_A entity
    }
    then {
        the IMS_E_CSCF sends a BYE containing
            From indicating value PX_PSAP_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_PSAP_CALLID,
```

```
            Via indicating value PX_PSAP_VIA
         to the IMS_P_CSCF_A entity
    }
}
```

TP Id	TP_MI_ECSCF_5G_ECO_BYE_01
Test Objective	Verify that the E-CSCF successfully processes a BYE from the P-CSCF for an Emergency Call and routes the request to the BGCF for a PSAP in the PSTN.
Reference	ETSI TS 124 229 [1], clause 5.11.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the IMS_E_CSCF supportsRoutingTo the BGCF and
the UE_A previouslyEstablishedEmergencyCallWith the PSAP via IMS_BGCF_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_E_CSCF receives a BYE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE
        from the IMS_P_CSCF_A entity
    }
    then {
        the IMS_E_CSCF sends a BYE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE
         to the IMS_BGCF_A entity
    }
}
```

TP Id	TP_MI_ECSCF_5G_ECO_BYE_02
Test Objective	Verify that the E-CSCF successfully processes a BYE from the BGCF for a PSAP in the PSTN for an Emergency Call and routes the request to the P-CSCF.
Reference	ETSI TS 124 229 [1], clause 5.11.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the IMS_E_CSCF supportsRoutingTo the BGCF and
the UE_A previouslyEstablishedEmergencyCallWith the PSAP via IMS_BGCF_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_E_CSCF receives a BYE containing
            From indicating value PX_PSAP_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_PSAP_CALLID,
            Via indicating value PX_PSAP_VIA
        from the IMS_BGCF_A entity
    }
    then {
        the IMS_E_CSCF sends a BYE containing
            From indicating value PX_PSAP_SIP_URI,
            To indicating value PX_UE_A_SIP_URI,
            CallId indicating value PX_PSAP_CALLID,
            Via indicating value PX_PSAP_VIA
         to the IMS_P_CSCF_A entity
    }
}
```

TP Id	TP_MM_ECSCF_5G_EMC_CANCEL_01
Test Objective	Verify that the E-CSCF successfully processes a CANCEL from the P-CSCF for an Emergency Call under establishment and routes the request to the PSAP in the IM CN subsystem of own network.
Reference	ETSI TS 124 229 [1], clause 5.11.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

with {
the IMS_E_CSCF supportsRoutingTo the IM_CN and
the UE_A hasAchievedInitialEmergencyINVITE
}	

Expected Behaviour	

ensure that {
when {
the IMS_E_CSCF receives a CANCEL containing
From indicating value PX_UE_A_SIP_URI,
To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
CallId indicating value PX_UE_A_CALLID,
Via indicating value PX_UE_A_VIA,
Route indicating value PX_UE_A_SERVICE_ROUTE
from the IMS_P_CSCF_A entity
}
then {
the IMS_E_CSCF sends a CANCEL containing
From indicating value PX_UE_A_SIP_URI,
To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
CallId indicating value PX_UE_A_CALLID,
Via indicating value PX_UE_A_VIA,
Route indicating value PX_UE_A_SERVICE_ROUTE
to the IM_CN entity
}
}	

TP Id	TP_MX_ECSCF_5G_EMC_CANCEL_01
Test Objective	Verify that the E-CSCF successfully processes a CANCEL from the P-CSCF for an Emergency Call under establishment and routes the request to the IBCF for a PSAP in another network.
Reference	ETSI TS 124 229 [1], clause 5.11.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

with {
the IMS_E_CSCF supportsRoutingTo the IMS_IBCF_A and
the UE_A hasAchievedInitialEmergencyINVITE via the IMS_IBCF_A
}	

Expected Behaviour	

ensure that {
when {
the IMS_E_CSCF receives a CANCEL containing
From indicating value PX_UE_A_SIP_URI,
To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
CallId indicating value PX_UE_A_CALLID,
Via indicating value PX_UE_A_VIA,
Route indicating value PX_UE_A_SERVICE_ROUTE
from the IMS_P_CSCF_A entity
}
then {
the IMS_E_CSCF sends a CANCEL containing
From indicating value PX_UE_A_SIP_URI,
To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
CallId indicating value PX_UE_A_CALLID,
Via indicating value PX_UE_A_VIA,
Route indicating value PX_UE_A_SERVICE_ROUTE
to the IMS_IBCF_A entity
}
}	

TP Id	TP_MI_ECSCF_5G_EMC_CANCEL_01
Test Objective	Verify that the E-CSCF successfully processes a CANCEL from the P-CSCF for an Emergency Call under establishment and routes the request to the BGCF for a PSAP in the PSTN.
Reference	ETSI TS 124 229 [1], clause 5.11.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

with {
the IMS_E_CSCF supportsRoutingTo the BGCF and
the UE_A hasAchievedInitialEmergencyINVITE the PSAP via IMS_BGCF_A
}	

Expected Behaviour	

ensure that {
when {
the IMS_E_CSCF receives a CANCEL containing
From indicating value PX_UE_A_SIP_URI,
To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
CallId indicating value PX_UE_A_CALLID,
Via indicating value PX_UE_A_VIA,
Route indicating value PX_UE_A_SERVICE_ROUTE
from the IMS_P_CSCF_A entity
}
then {
the IMS_E_CSCF sends a CANCEL containing
From indicating value PX_UE_A_SIP_URI,
To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
CallId indicating value PX_UE_A_CALLID,
Via indicating value PX_UE_A_VIA,
Route indicating value PX_UE_A_SERVICE_ROUTE
to the IMS_BGCF_A entity
}
}	

TP Id	TP_MM_ECSCF_5G_ECO_480INVITE_01
Test Objective	Verify that the E-CSCF successfully processes a 480 response from the PSAP in the IM CN subsystem for an Emergency Call and routes the response to the P-CSCF of home network.
Reference	ETSI TS 124 229 [1], clause 5.11.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

with {
the IMS_E_CSCF supportsRoutingTo the IM_CN and
the UE_A previouslyEstablishedEmergencyCallWith the PSAP
}	

Expected Behaviour	

ensure that {
when {
the IMS_E_CSCF receives a 480INVITE containing
From indicating value PX_UE_A_SIP_URI,
To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
CallId indicating value PX_UE_A_CALLID,
Via indicating value PX_UE_A_VIA,
Route indicating value PX_UE_A_SERVICE_ROUTE
from the IM_CN entity
}
then {
the IMS_E_CSCF sends a 480INVITE containing
From indicating value PX_UE_A_SIP_URI,
To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
CallId indicating value PX_UE_A_CALLID,
Via indicating value PX_UE_A_VIA,
Route indicating value PX_UE_A_SERVICE_ROUTE
to the IMS_P_CSCF_A entity
}
}	

TP Id	TP_MX_ECSCF_5G_ECO_480INVITE_01
Test Objective	Verify that the E-CSCF successfully processes a 480 response from the IBCF for a PSAP in another network for an Emergency Call and routes the response to the P-CSCF.
Reference	ETSI TS 124 229 [1], clause 5.11.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the IMS_E_CSCF supportsRoutingTo the IMS_IBCF_A and
the UE_A previouslyEstablishedEmergencyCallWith the PSAP via IMS_IBCF_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_E_CSCF receives a 480INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE
        from the IMS_IBCF_A entity
    }
    then {
        the IMS_E_CSCF sends a 480INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE
         to the IMS_P_CSCF_A entity
    }
}
```

TP Id	TP_MI_ECSCF_5G_ECO_480INVITE_01
Test Objective	Verify that the E-CSCF successfully processes a 480 response from the BGCF for a PSAP in the PSTN for an Emergency Call and routes the response to the P-CSCF.
Reference	ETSI TS 124 229 [1], clause 5.11.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the IMS_E_CSCF supportsRoutingTo the BGCF and
the UE_A previouslyEstablishedEmergencyCallWith the PSAP via IMS_BGCF_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_E_CSCF receives a 480INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE
        from the IMS_BGCF_A entity
    }
    then {
        the IMS_E_CSCF sends a 480INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE
         to the IMS_P_CSCF_A entity
    }
}
```

TP Id	TP_MM_ECSCF_5G_EMC_487INVITE_01
Test Objective	Verify that the E-CSCF successfully processes a 487 response from the PSAP in the IM CN subsystem for an Emergency Call and routes the response to the P-CSCF of home network.
Reference	ETSI TS 124 229 [1], clause 5.11.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the IMS_E_CSCF supportsRoutingTo the IM_CN and
the UE_A previouslyEstablishedEmergencyCallWith the PSAP
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_E_CSCF receives a 487INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE
        from the IM_CN entity
    }
    then {
        the IMS_E_CSCF sends a 487INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE
         to the IMS_P_CSCF_A entity
    }
}
```

TP Id	TP_MX_ECSCF_5G_EMC_487INVITE_01
Test Objective	Verify that the E-CSCF successfully processes a 487 response from the IBCF for a PSAP in another network for an Emergency Call and routes the response to the P-CSCF.
Reference	ETSI TS 124 229 [1], clause 5.11.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the IMS_E_CSCF supportsRoutingTo the IMS_IBCF_A and
the UE_A previouslyEstablishedEmergencyCallWith the PSAP via IMS_IBCF_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_E_CSCF receives a 487INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE
        from the IMS_IBCF_A entity
    }
    then {
        the IMS_E_CSCF sends a 487INVITE containing
            From indicating value PX_UE_A_SIP_URI,
            To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
            CallId indicating value PX_UE_A_CALLID,
            Via indicating value PX_UE_A_VIA,
            Route indicating value PX_UE_A_SERVICE_ROUTE
         to the IMS_P_CSCF_A entity
    }
}
```

TP Id	TP_MI_ECSCF_5G_EMC_487INVITE_01
Test Objective	Verify that the E-CSCF successfully processes a 487 response from the BGCF for a PSAP in the PSTN for an Emergency Call and routes the response to the P-CSCF.
Reference	ETSI TS 124 229 [1], clause 5.11.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

with {
the IMS_E_CSCF supportsRoutingTo the BGCF and
the UE_A previouslyEstablishedEmergencyCallWith the PSAP via IMS_BGCF_A
}	

Expected Behaviour	

ensure that {
when {
the IMS_E_CSCF receives a 487INVITE containing
From indicating value PX_UE_A_SIP_URI,
To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
CallId indicating value PX_UE_A_CALLID,
Via indicating value PX_UE_A_VIA,
Route indicating value PX_UE_A_SERVICE_ROUTE
from the IMS_BGCF_A entity
}
then {
the IMS_E_CSCF sends a 487INVITE containing
From indicating value PX_UE_A_SIP_URI,
To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
CallId indicating value PX_UE_A_CALLID,
Via indicating value PX_UE_A_VIA,
Route indicating value PX_UE_A_SERVICE_ROUTE
to the IMS_P_CSCF_A entity
}
}	

7.5 ISC interface

TP Id	TP_ISC_SCSCF_5G_EMC_INVITE_01
Test Objective	Verify that the AS successfully identify the request for emergency call and forwards it towards S-CSCF.
Reference	ETSI TS 124 229 [1], clauses 4.7.3 and 5.7.1.14
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A and
the UE_A not isEmergencyRegisteredTo the IMS_A
}	

Expected Behaviour	

ensure that {
when {
the IMS_AS_A receives an INVITE
from the UE_A entity
}
then {
the IMS_AS_A sends an INVITE containing
From indicating value PX_UE_A_SIP_URI,
To indicating value PX_SIP_EMERGENCY_SERVICE_URN,
Request_Uri indicating value PX_SIP_EMERGENCY_SERVICE_URN,
Route indicating value PX_E_CSCF_SERVICE_ROUTE,
PChargingVector,
MessageBody
to the IMS_S_CSCF_A entity
}
}	

7.6 Rx interface

TP Id	TP_RX_PCRF_5G_ECO_AAA_01
Test Objective	Verify that IUT after AA-Request is received due to provisioning of AF Signalling flow for emergency registration sends AA-Answer.
Reference	ETSI TS 129 214 [5], clauses A.5 and E.1
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

with {
the UE_A not is5GRegisteredTo the _5GC_A and
the UE_A not isEmergencyRegisteredTo the IMS_A
}	

Expected Behaviour	

ensure that {
when {
the IMS_P_CSCF_A sends an AAR
to the _5GC_PCF_A entity
}
then {
the _5GC_PCF_A sends the AAA containing
Result_Code_AVP
indicating value DIAMETER_SUCCESS
Subscription_Id_AVP containing
Subscription_Id_Type_AVP
indicating value END_USER_IMSI, //or END_USERE_164
"and/or"
User_Equipment_Info_AVP containing
User_Equipment_Info_Type
indicating value IMEISV,
User_Equipment_Info_Value
to the IMS_P_CSCF_A entity
}
}	

TP Id	TP_RX_PCRF_5G_ECO_AAA_02
Test Objective	Verify that IUT after AA-Request is received due to AF session for emergency session establishment sends AA-Answer.
Reference	ETSI TS 129 214 [5], clauses A.5 and E.1
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

with {
the UE_A is5GRegisteredTo the _5GC_A
}	

Expected Behaviour	

ensure that {
when {
the IMS_P_CSCF_A sends an AAR
to the _5GC_PCF_A entity
}
then {
the _5GC_PCF_A sends the AAA containing
Result_Code_AVP
indicating value DIAMETER_SUCCESS
Subscription_Id_AVP containing
Subscription_Id_Type_AVP
indicating value END_USER_IMSI, //or END_USERE_164
"and/or"
User_Equipment_Info_AVP containing
User_Equipment_Info_Type
indicating value IMEISV,
User_Equipment_Info_Value
to the IMS_P_CSCF_A entity
}
}	

TP Id	TP_RX_PCSCF_5G_ECO_AAR_01
Test Objective	Verify that IUT after Emergency REGISTER sends an AA-Request due to provisioning of AF Signalling flow.
Reference	ETSI TS 129 214 [5], clauses A.5 and E.1
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
            the UE_A not is5GRegisteredTo the _5GC_A and
            the UE_A not isEmergencyRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the UE_A sends a REGISTER
        to the IMS_P_CSCF_A entity
    }
    then {
        the IMS_P_CSCF_A sends an AAR containing
            Framed_IPv4_Address_AVP
                indicating value "IPv4_Address of UE_A",
            "or" Framed_IPv6_Address_AVP
                indicating value "IPv6_Address of UE_A",
            AF_Requested_Data_AVP
                indicating value "EPC-level identities required",
            Service_URN_AVP
                indicating value "sos*"
        to the _5GC_PCF_A entity
    }
}
```

TP Id	TP_RX_PCSCF_5G_ECO_AAR_02
Test Objective	Verify that IUT send AA-Request in case of emergency session establishment for originating side after INVITE is received.
Reference	ETSI TS 129 214 [5], clauses A.5 and E.1
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isEmergencyRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives an INVITE_Request_with_SDP_offer
        from the UE_A entity
    }
    then {
        the IMS_P_CSCF_A sends the AAR containing
            Framed_IPv4_Address_AVP
                indicating value "IPv4_Address of UE_A",
            "or" Framed_IPv6_Address_AVP
                indicating value "IPv6_Address of UE_A",
            Service_URN_AVP
                indicating value "sos*"
        to the _5GC_PCF_A entity
    }
}
```

TP Id	TP_RX_PCSCF_5G_ECO_AAR_04
Test Objective	Verify that IUT send AA-Request in case of session establishment for originating side after 183 response with SDP is received.
Reference	ETSI TS 129 214 [5], clauses 4.4.1, A.1, A.2 and Annex B
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives a 183_Response_INVITE_with_SDP_offer
        from the IMS_S_CSCF_A entity
    }
    then {
        the IMS_P_CSCF_A sends the AAR containing
            Framed_IPv4_Address_AVP
                indicating value "IPv4_Address of UE_A",
            "or" Framed_IPv6_Address_AVP
                indicating value "IPv6_Address of UE_A",
            "one or more" Media_Component_Description_AVP
            Rx_Request_Type_AVP
                indicating value UPDATE_REQUEST '1',
            Service_Info_Status_AVP
                indicating value FINAL_SERVICE_INFORMATION '1'

        to the _5GC_PCF_A entity
    }
}
```

TP Id	TP_RX_PCSCF_5G_ECO_RAA_01
Test Objective	Verify that IUT sends RA-Answer after RAR is received from PCRF.
Reference	ETSI TS 129 214 [5], clauses 4.4.6.2, 5.3.13 and A.5
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the _5GC_PCF_A sends a RAR containing
            Specific_Action_AVP
                indicating value INDICATION_OF_SUCCESSFUL_RESOURCES_ALLOCATION '8'
        to the IMS_P_CSCF_A entity
    }
    then {
        the IMS_P_CSCF_A sends the RAA containing
            Result_Code_AVP
                indicating value DIAMETER_SUCCESS "2001"
        to the _5GC_PCF_A entity
    }
}
```

TP Id	TP_RX_PCRF_5G_ECO_STA_02
Test Objective	Verify that IUT after reception of ST-Request sends ST-Answer.
Reference	ETSI TS 129 214 [5], clauses 4.4.4, 4.4.5, A.8 and A.5
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
            the UE_A is5GRegisteredTo the _5GC_A and
            the UE_A isRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A sends an STR
        to the _5GC_PCF_A entity
    }
    then {
        the _5GC_PCF_A sends the STA containing
            Result_Code_AVP
                indicating value DIAMETER_SUCCESS
        to the IMS_P_CSCF_A entity
    }
}
```

TP Id	TP_RX_PCSCF_5G_ECO_STR_01
Test Objective	Verify that IUT after reception of BYE sends an ST-Request at originating leg.
Reference	ETSI TS 129 214 [5], clauses 4.4.4 and A.5
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A and
the UE_A previouslyEstablishedCallWith the PSAP
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives a BYE
        from the UE_A entity
    }
    then {
        the IMS_P_CSCF_A sends the STR containing
            Session_Id_AVP
        to the _5GC_PCF_A entity
    }
}
```

TP Id	TP_RX_PCSCF_5G_ECO_STR_03
Test Objective	Verify that IUT after reception of CANCEL sends an ST-Request at originating leg.
Reference	ETSI TS 129 214 [5], clauses 4.4.4 and A.5
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives a CANCEL
        from the UE_A entity
    }
    then {
        the IMS_P_CSCF_A sends the STR containing
            Session_Id_AVP
        to the _5GC_PCF_A entity
    }
}
```

TP Id	TP_RX_PCSCF_5G_ECO_STR_05
Test Objective	Verify that IUT after reception of 486 response sends an ST-Request at originating leg.
Reference	ETSI TS 129 214 [5], clauses 4.4.4 and A.5
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A
}	

Expected Behaviour	

ensure that {
when {
the IMS_P_CSCF_A receives a 486_Response_INVITE
from the IMS_S_CSCF_A entity
}
then {
the IMS_P_CSCF_A sends the STR containing
Session_Id_AVP
to the _5GC_PCF_A entity
}
}	

7.7 Rtp interface

TP Id	TP_RTP_ECO_01
Test Objective	Verify that media between UE_A/IVS and PSAP is not delivered in any direction before call establishment.
Reference	ETSI TS 124 229 [1], clause 6
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A
}	

Expected Behaviour	

ensure that {
when {
the UE_A sends packets to the PSAP and
the PSAP sends packets to the UE_A entity
}
then {
the PSAP not receive media from the UE_A and
the UE_A not receive media from the PSAP entity
}
}	

TP Id	TP_RTP_ECO_03
Test Objective	Verify that media between UE_A and UE_B is successfully routed.
Reference	ETSI TS 124 229 [1], clause 6
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A
}	

Expected Behaviour	

ensure that {
when {
the UE_A sends packets to the PSAP and
the PSAP sends packets to the UE_A entity
}
then {
the PSAP receives media from the UE_A and
the UE_A receives media from the PSAP entity
}
}	

7.8 N1N2 interface

7.8.1 Introduction

The test purposes introduced in this clause are focused on NAS. The NGAP transport layer is out of scope.

7.8.2 Test Purposes

TP Id	TP_N1N2_AMF_ECO_REG_01
Test Objective	Verify that the IUT sends a REGISTRATION ACCEPT message when emergency registration is accepted by the network - With USIM.
Reference	ETSI TS 124 501 [7], clauses 5.5.1.2.2, 5.5.1.2.4, 8.2.6 and 8.2.7
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE isNotRegisteredTo the AMF
                }
```

Expected Behaviour

```
ensure that {
    when {
        the IUT receives an INITIAL_UE_MESSAGE containing
            NAS_PDU containing
                extended_protocol_discriminator set to 5G_MOBILITY_MANAGEMENT_MESSAGES,
                security_header_type set to NOT_SECURITY_PROTECTED,
                Registration_request_message_identity set to REGISTRATION_REQUEST,
                5GS_registration_type containing
                    5GS_registration_type_value set to EMERGENCY_REGISTRATION,
                    FOR indicating value 1, //Follow-on request pending
                5GS_mobile_identity containing
                    SUPI_format indicating value IMSI,
                    Type_of_idenity indicating value SUCI,
                    MCC indicating value PX_MCC,
                    MNC indicating value PX_MNC,
                    Routing_indicator indicating value PX_ROUTING_INDICATOR,
                    Protection_scheme_id indicating value PX_PROTECTION_SCHEME_ID,
                    Home_network_public_key_identifier indicating value
PX_HOME_NETWORK_PUBLIC_KEY_IDENTIFIER,
                    MSIN indicating value PX_MSIN
        from the GNB entity
    }
    then {
        the IUT sends a INITIAL_CONTEXT_SETUP_REQUEST containing
            NAS_PDU containing
                extended_protocol_discriminator set to 5G_MOBILITY_MANAGEMENT_MESSAGES,
                security_header_type set to INTEGRITY_PROTECTED_AND_CIPHERED,
                Registration_reject_message_identity set to REGISTRATION_ACCEPT,
                5GS_registration_result containing
                    5GS_registration_result_value set to 3GPP_ACCESS,
                    Emergency_registered set to 1, //Registered for emergency services
                5G_GUTI containing
                    Type_of_identity set to 5G_GUTI,
                    MCC indicating value PX_MCC,
                    MNC indicating value PX_MNC,
                    AMF_Region_ID indicating value PX_AMF_REGION_ID,
                    AMF_Set_ID indicating value PX_AMF_SET_ID,
                    AMF_Pointer indicating value PX_AMF_POINTER,
                    5G_TMSI indicating value RV_5G_TMSI,
                TAI_list containing
                    Partial_tracking_area_list_1 containing
                        Type_of_list,
                        Number_of_elements,
                        MCC indicating value PX_MCC,
                        MNC indicating value PX_MNC,
                        TAC indicating value PX_TAC,
                5GS_network_feature_support containing
                    Emergency_service_support_indicator set to 1,
                T3512_value containing
                    Timer_value indicating value nonZeroValue
        to the GNB entity
    }
}
```

TP Id	TP_N1N2_AMF_ECO_REG_02
Test Objective	Verify that the IUT sends a REGISTRATION ACCEPT message when emergency registration is accepted by the network - Without USIM.
Reference	ETSI TS 124 501 [7], clauses 5.5.1.2.2, 5.5.1.2.4, 8.2.6 and 8.2.7
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE isNotRegisteredTo the AMF
               }
```

Expected Behaviour

```
ensure that {
    when {
        the IUT receives an INITIAL_UE_MESSAGE containing
            NAS_PDU containing
                extended_protocol_discriminator set to 5G_MOBILITY_MANAGEMENT_MESSAGES,
                security_header_type set to NOT_SECURITY_PROTECTED,
                Registration_request_message_identity set to REGISTRATION_REQUEST,
                5GS_registration_type containing
                    5GS_registration_type_value set to EMERGENCY_REGISTRATION,
                    FOR indicating value 1, //Follow-on request pending
                5GS_mobile_identity containing
                    Type_of_idenity indicating value IMEISV
        from the GNB entity
    }
    then {
        the IUT sends a INITIAL_CONTEXT_SETUP_REQUEST containing
            NAS_PDU containing
                extended_protocol_discriminator set to 5G_MOBILITY_MANAGEMENT_MESSAGES,
                security_header_type set to INTEGRITY_PROTECTED_AND_CIPHERED,
                Registration_reject_message_identity set to REGISTRATION_ACCEPT,
                5GS_registration_result containing
                    5GS_registration_result_value set to 3GPP_ACCESS,
                    Emergency_registered set to 1, //Registered for emergency services
                5G_GUTI containing
                    Type_of_identity set to IMEISV,
                    MCC indicating value PX_MCC,
                    MNC indicating value PX_MNC,
                    AMF_Region_ID indicating value PX_AMF_REGION_ID,
                    AMF_Set_ID indicating value PX_AMF_SET_ID,
                    AMF_Pointer indicating value PX_AMF_POINTER,
                    5G_TMSI indicating value RV_5G_TMSI,
                TAI_list containing
                    Partial_tracking_area_list_1 containing
                        Type_of_list,
                        Number_of_elements,
                        MCC indicating value PX_MCC,
                        MNC indicating value PX_MNC,
                        TAC indicating value PX_TAC,
                5GS_network_feature_support containing
                    Emergency_service_support_indicator set to 1,
                T3512_value containing
                    Timer_value indicating value nonZeroValue
        to the GNB entity
    }
}
```

TP Id	TP_N1N2_AMF_ECO_DRG_01
Test Objective	Verify that the IUT, upon receiving a DEREGISTRATION REQUEST message containing the de-registration type IE with 'Normal de-registration' from the UE, sends a DEREGISTRATION ACCEPT message.
Reference	ETSI TS 124 501 [7], clauses 5.5.2.2.3, 8.2.12 and 8.2.13
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE isRegisteredTo the AMF
               }
```

Expected Behaviour

```
ensure that {
    when {
    the IUT receives a UPLINK_NAS_TRANSPORT containing
        NAS_PDU containing
            extended_protocol_discriminator set to 5G_MOBILITY_MANAGEMENT_MESSAGES,
            security_header_type set to NOT_SECURITY_PROTECTED,
            Deregistration_request_message_identity set to DEREGISTRATION_REQUEST,
            Deregistration_type containing
                Switch_off_value set to NORMAL_DEREGISTRATION,
                Reregistration_required_value set to REREGISTRATION_NOT_REQUIRED,
                Access_type set to 3GPP_ACCESS,
            5GS_mobile_identity containing
                Type_of_identity set to 5G_GUTI,
                MCC indicating value PX_MCC,
                MNC indicating value PX_MNC,
                AMF_Region_ID indicating value PX_AMF_REGION_ID,
                AMF_Set_ID indicating value PX_AMF_SET_ID,
                AMF_Pointer indicating value PX_AMF_POINTER,
                5G_TMSI indicating value RV_5G_TMSI
    from the GNB entity
    }
    then {
        the IUT sends a DOWNLINK_NAS_TRANSPORT containing
            NAS_PDU containing
                extended_protocol_discriminator set to 5G_MOBILITY_MANAGEMENT_MESSAGES,
                security_header_type set to INTEGRITY_PROTECTED_AND_CIPHERED,
                Deregistration_accept_message_identity set to DEREGISTRATION_ACCEPT
        to the GNB entity
    }
}
```

TP Id	TP_N1N2_AMF_ECO_DRG_02
Test Objective	Verify that the IUT initiates network de-registration by sending a DEREGISTRATION REQUEST message.
Reference	ETSI TS 124 501 [7], clauses 5.5.2.2.3 and 8.2.12
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE isRegisteredTo the AMF
               }
```

Expected Behaviour

```
ensure that {
    when {
    the IUT indicates a UE deactivation
    }
    then {
        the IUT sends a UPLINK_NAS_TRANSPORT containing
            NAS_PDU containing
                extended_protocol_discriminator set to 5G_MOBILITY_MANAGEMENT_MESSAGES,
                security_header_type set to NOT_SECURITY_PROTECTED,
                Deregistration_request_message_identity set to DEREGISTRATION_REQUEST,
                Deregistration_type containing
                    Switch_off_value set to SWITCH_OFF,
                    Reregistration_required_value set to REREGISTRATION_NOT_REQUIRED,
                    Access_type set to 3GPP_ACCESS
        to the GNB entity
    }
}
```

TP Id	TP_N1N2_AMF_ECO_PDUE_01
Test Objective	Verify that the IUT responds with a DL NAS transport message containing a PDU SESSION ESTABLISHMENT ACCEPT - Default Internet (IMS).
Reference	ETSI TS 124 501 [7], clauses 5.4.5.2.3, 6.4.1.2, 8.2.10, 8.2.11, 8.3.1 and 8.3.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

with {
the UE isRegisteredTo the AMF
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a UPLINK_NAS_TRANSPORT containing
NAS_PDU containing
extended_protocol_discriminator set to 5G_MOBILITY_MANAGEMENT_MESSAGES,
security_header_type set to NOT_SECURITY_PROTECTED,
uL_NAS_TRANSPORT_message_identity,
payload_container containing
payload_container_type set to "N1 SM information",
number_of_optional_IEs set to 1,
optional_IE_1 set to "PDU SESSION ESTABLISHMENT REQUEST",
pdu_session_type indicating value IPv4,
SSC_mode set to "SSC mode 1",
Request_type set to "initial emergency request",
not DNN,
not S_NSSAI
from the GNB entity
}
then {
the IUT sends an PDU_SESSION_RESOURCE_SETUP_REQUEST containing
NAS_PDU containing
extended_protocol_discriminator set to 5G_MOBILITY_MANAGEMENT_MESSAGES,
security_header_type set to NOT_SECURITY_PROTECTED,
dL_NAS_TRANSPORT_message_identity,
payload_container containing
payload_container_type set to "N1 SM information",
number_of_optional_IEs set to 1,
optional_IE_1 set to "PDU SESSION ESTABLISHMENT ACCEPT",
pdu_session_type indicating value IPv4,
SSC_mode set to "SSC mode 1",
5GQoS indicating value 5,
pDU_address,
pDU_session_ID,
DNN indicating value emergency
to the GNB entity
}
}	

TP Id	TP_N1N2_AMF_ECO_PDUE_02
Test Objective	Verify that the IUT responds with a DL NAS transport message containing a PDU SESSION ESTABLISHMENT ACCEPT - 5GVoNR emergency call.
Reference	ETSI TS 124 501 [7], clauses 5.4.5.2.3, 6.4.1.2, 8.2.10, 8.2.11, 8.3.1 and 8.3.2
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

with {
the UE isRegisteredTo the AMF
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a UPLINK_NAS_TRANSPORT containing
NAS_PDU containing
extended_protocol_discriminator set to 5G_MOBILITY_MANAGEMENT_MESSAGES,
security_header_type set to NOT_SECURITY_PROTECTED,
uL_NAS_TRANSPORT_message_identity,
payload_container containing
payload_container_type set to "N1 SM information",
number_of_optional_IEs set to 1,
optional_IE_1 set to "PDU SESSION ESTABLISHMENT REQUEST",
pdu_session_type indicating value IPv4,
SSC_mode set to "SSC mode 1",
Request_type set to "initial emergency request",	

```
                not DNN,
                not S_NSSAI
        from the GNB entity
    }
    then {
        the IUT sends an PDU_SESSION_RESOURCE_SETUP_REQUEST containing
            NAS_PDU containing
                extended_protocol_discriminator set to 5G_MOBILITY_MANAGEMENT_MESSAGES,
                   security_header_type set to NOT_SECURITY_PROTECTED,
                dL_NAS_TRANSPORT_message_identity,
                payload_container containing
                    payload_container_type set to "N1 SM information",
                    number_of_optional_IEs set to 1,
                    optional_IE_1 set to "PDU SESSION ESTABLISHMENT ACCEPT",
                    pdu_session_type indicating value IPv4,
                    SSC_mode set to "SSC mode 1",
                5GQoS indicating value 1,
                pDU_address,
                pDU_session_ID,
                DNN indicating value emergency
        to the GNB entity
    }
}
```

TP Id	TP_N1N2_AMF_ECO_PDUM_03
Test Objective	Verify that the IUT sends a DL NAS transport message containing a PDU SESSION MODIFICATION COMMAND when triggered by the network.
Reference	ETSI TS 124 501 [7], clauses 5.4.5.2.3, 6.3.2.3, 8.2.10, 8.2.11, 8.3.9 and 8.3.10
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE isRegisteredTo the AMF and
the UE hasEstablishedPDUsession
                }
```

Expected Behaviour

```
ensure that {
    when {
        the IUT sends a DOWNLINK_NAS_TRANSPORT containing
            NAS_PDU containing
                extended_protocol_discriminator set to 5G_MOBILITY_MANAGEMENT_MESSAGES,
                   security_header_type set to NOT_SECURITY_PROTECTED,
                dL_NAS_TRANSPORT_message_identity,
                payload_container containing
                    payload_container_type set to "N1 SM information",
                    number_of_optional_IEs set to 1,
                    optional_IE_1 set to "PDU SESSION MODIFICATION COMMAND",
                pDU_session_ID
        to the GNB entity
    }
    then {
        the IUT receives an UPLINK_NAS_TRANSPORT containing
            NAS_PDU containing
                extended_protocol_discriminator set to 5G_MOBILITY_MANAGEMENT_MESSAGES,
                   security_header_type set to NOT_SECURITY_PROTECTED,
                uL_NAS_TRANSPORT_message_identity,
                payload_container containing
                    payload_container_type set to "N1 SM information",
                    number_of_optional_IEs set to 1,
                    optional_IE_1 set to "PDU SESSION MODIFICATION COMPLETE"
        from the GNB entity
    }
}
```

TP Id	TP_N1N2_AMF_ECO_PDUM_04
Test Objective	Verify that the IUT sends a DL NAS transport message containing a PDU SESSION MODIFICATION COMMAND when receiving a UL NAS transport message containing a PDU SESSION MODIFICATION REQUEST - Triggered by the UE.
Reference	ETSI TS 124 501 [7], clauses 5.4.5.2.3, 8.2.10, 8.2.11 and 8.3
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE isRegisteredTo the AMF and
the UE hasEstablishedPDUsession
                }
```

Expected Behaviour

```
ensure that {
    when {
        the IUT sends a UPLINK_NAS_TRANSPORT containing
            NAS_PDU containing
                extended_protocol_discriminator set to 5G_MOBILITY_MANAGEMENT_MESSAGES,
                   security_header_type set to NOT_SECURITY_PROTECTED,
                uL_NAS_TRANSPORT_message_identity,
                payload_container containing
                    payload_container_type set to "N1 SM information",
                    number_of_optional_IEs set to 1,
                    optional_IE_1 set to "PDU SESSION MODIFICATION REQUEST",
                pDU_session_ID
        to the GNB entity
    }
    then {
        the IUT receives an DOWNLINK_NAS_TRANSPORT containing
            NAS_PDU containing
                extended_protocol_discriminator set to 5G_MOBILITY_MANAGEMENT_MESSAGES,
                   security_header_type set to NOT_SECURITY_PROTECTED,
                dL_NAS_TRANSPORT_message_identity,
                payload_container containing
                    payload_container_type set to "N1 SM information",
                    number_of_optional_IEs set to 1,
                    optional_IE_1 set to "PDU SESSION MODIFICATION COMMAND"
        from the GNB entity
    }
}
```

TP Id	TP_N1N2_AMF_ECO_PDUR_05
Test Objective	Verify that the IUT sends a DL NAS transport message containing a PDU SESSION RELEASE COMMAND when triggered by the network.
Reference	ETSI TS 124 501 [7], clauses 5.4.5.2.3, 8.2.10, 8.2.11 and 8.3
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE isRegisteredTo the AMF and
the UE hasEstablishedPDUsession
                }
```

Expected Behaviour

```
ensure that {
    when {
        the IUT sends a DOWNLINK_NAS_TRANSPORT containing
            NAS_PDU containing
                extended_protocol_discriminator set to 5G_MOBILITY_MANAGEMENT_MESSAGES,
                   security_header_type set to NOT_SECURITY_PROTECTED,
                dL_NAS_TRANSPORT_message_identity,
                payload_container containing
                    payload_container_type set to "N1 SM information",
                    number_of_optional_IEs set to 1,
                    optional_IE_1 set to "PDU SESSION RELEASE COMMAND",
                pDU_session_ID
        to the GNB entity
    }
    then {
        the IUT receives an UPLINK_NAS_TRANSPORT containing
            NAS_PDU containing
                extended_protocol_discriminator set to 5G_MOBILITY_MANAGEMENT_MESSAGES,
                   security_header_type set to NOT_SECURITY_PROTECTED,
                uL_NAS_TRANSPORT_message_identity,
                payload_container containing
```

```
                    payload_container_type set to "N1 SM information",
                    number_of_optional_IEs set to 1,
                    optional_IE_1 set to "PDU SESSION RELEASE COMPLETE"
        from the GNB entity
    }
}
```

TP Id	TP_N1N2_AMF_ECO_PDUR_06
Test Objective	Verify that the IUT responds with a DL NAS transport message containing a PDU SESSION RELEASE REQUEST - Triggered by UE.
Reference	ETSI TS 124 501 [7], clauses 5.4.5.2.3, 8.2.10, 8.2.11 and 8.3
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE isRegisteredTo the AMF and
the UE hasEstablishedPDUsession
                }
```

Expected Behaviour

```
ensure that {
    when {
        the IUT receives a UPLINK_NAS_TRANSPORT containing
            NAS_PDU containing
                extended_protocol_discriminator set to 5G_MOBILITY_MANAGEMENT_MESSAGES,
                   security_header_type set to NOT_SECURITY_PROTECTED,
                uL_NAS_TRANSPORT_message_identity,
                payload_container containing
                    payload_container_type set to "N1 SM information",
                    number_of_optional_IEs set to 1,
                    optional_IE_1 set to "PDU SESSION RELEASE REQUEST",
                pDU_session_ID
        from the GNB entity
    }
    then {
        the IUT sends an DOWNLINK_NAS_TRANSPORT containing
            NAS_PDU containing
                extended_protocol_discriminator set to 5G_MOBILITY_MANAGEMENT_MESSAGES,
                   security_header_type set to NOT_SECURITY_PROTECTED,
                dL_NAS_TRANSPORT_message_identity,
                payload_container containing
                    payload_container_type set to "N1 SM information",
                    number_of_optional_IEs set to 1,
                    optional_IE_1 set to "PDU SESSION RELEASE COMPLETE"
        to the GNB entity
    }
}
```

7.9 N5 interface

TP Id	TP_N5_PCF_5G_ECO_PCA_01
Test Objective	Verify that IUT after Npcf_PolicyAuthorization_Create request is received due to provisioning of AF Signalling flow for emergency registration sends Npcf_PolicyAuthorization_Create response.
Reference	ETSI TS 129 514 [6], clause 5.3.2.3.1 ETSI TS 129 514 [6], clause 5.6.2.3 ETSI TS 129 514 [6], clause 5.6.2.4 ETSI TS 129 514 [6], clauses A.2 and B.5
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
            the UE_A not is5GRegisteredTo the _5GC_A and
            the UE_A not isEmergencyRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A sends a vPOST containing
            uri indicating value "/npcf-policyauthorization/v1/app_sessions"
            body containing
                AppSessionContext containing
```

```
                    AppSessionContextReqData containing
                        suppFeat indicating value "IMS_SBI",
                        ueIpv4 indicating value "IPv4_Address of UE_A",
                        "or" ueIpv6 indicating value "IPv6_Address of UE_A",
                        afReqData indicating value "UE_IDENTITY",
                        servUrn indicating value "sos*"
        to the _5GC_PCF_A entity
    }
    then {
        the _5GC_PCF_A sends a HTTP_RESPONSE containing
            status set to "201 Created",
            headers containing
                Location set to "/npcf-policyauthorization/v1/app_sessions/{appSessionId}",
            body containing
                AppSessionContext containing
                    AppSessionContextResData containing
                        ueIds indicating value "GPSI or PEI or SUPI"
        to the IMS_P_CSCF_A entity
    }
}
```

TP Id	TP_N5_PCF_5G_ECO_PCA_02
Test Objective	Verify that IUT after Npcf_PolicyAuthorization_Create request is received due to AF session for emergency session establishment sends Npcf_PolicyAuthorization_Create response.
Reference	ETSI TS 129 514 [6], clause 5.3.2.3.1 ETSI TS 129 514 [6], clause 5.6.2.3 ETSI TS 129 514 [6], clause 5.6.2.4 ETSI TS 129 514 [6], clauses A.2 and B.5
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
        the UE_A is5GRegisteredTo the _5GC_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A sends a vPOST containing
            uri indicating value "/npcf-policyauthorization/v1/app_sessions"
            body containing
                AppSessionContext containing
                    AppSessionContextReqData containing
                        suppFeat indicating value "IMS_SBI",
                        ueIpv4 indicating value "IPv4_Address of UE_A",
                        "or" ueIpv6 indicating value "IPv6_Address of UE_A",
                        afReqData indicating value "UE_IDENTITY",
                        servUrn indicating value "sos*"
        to the _5GC_PCF_A entity
    }
    then {
        the IMS_P_CSCF_A receives a HTTP_RESPONSE containing
            status set to "201 Created",
            headers containing
                Location set to "/npcf-policyauthorization/v1/app_sessions/{appSessionId}",
            body containing
                AppSessionContext containing
                    AppSessionContextResData containing
                        ueIds indicating value "GPSI or PEI or SUPI"
        from the _5GC_PCF_A entity
    }
}
```

TP Id	TP_N5_PCSCF_5G_ECO_PCR_01
Test Objective	Verify that IUT, after Emergency REGISTER, sends a Npcf_PolicyAuthorization_Create request due to provisioning of AF Signalling flow.
Reference	ETSI TS 129 514 [6], clause 5.3.2.3.1 ETSI TS 129 514 [6], clause 5.6.2.3 ETSI TS 129 514 [6], clause 5.6.2.4 ETSI TS 129 514 [6], clauses A.2 and B.5
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
            the UE_A not is5GRegisteredTo the _5GC_A and
            the UE_A not isEmergencyRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the UE_A sends a REGISTER
        to the IMS_P_CSCF_A entity
    }
    then {
        the IMS_P_CSCF_A sends a vPOST containing
            uri indicating value "/npcf-policyauthorization/v1/app_sessions",
            body containing
                AppSessionContext containing
                    AppSessionContextReqData containing
                        suppFeat indicating value "IMS_SBI",
                        ueIpv4 indicating value "IPv4_Address of UE_A",
                        "or" ueIpv6 indicating value "IPv6_Address of UE_A",
                        afReqData indicating value "UE_IDENTITY",
                        servUrn indicating value "sos*"
        to the _5GC_PCF_A entity
        and the IMS_P_CSCF_A receives a HTTP_RESPONSE containing
            status set to "201 Created",
            headers containing
                Location set to "/npcf-policyauthorization/v1/app_sessions/{appSessionId}",
            body containing
                AppSessionContext containing
                    AppSessionContextResData containing
                        ueIds indicating value "GPSI or PEI or SUPI"
        from the _5GC_PCF_A entity
    }
}
```

TP Id	TP_N5_PCSCF_5G_ECO_PCR_02
Test Objective	Verify that IUT sends a Npcf_PolicyAuthorization_Create request in case of emergency session establishment for originating side after INVITE is received.
Reference	ETSI TS 129 514 [6], clause 5.3.2.3.1 ETSI TS 129 514 [6], clause 5.6.2.3 ETSI TS 129 514 [6], clause 5.6.2.4 ETSI TS 129 514 [6], clauses A.2 and B.5
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE

Initial Conditions

```
with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isEmergencyRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives an INVITE_Request_with_SDP_offer
        from the UE_A entity
    }
    then {
        the IMS_P_CSCF_A sends the vPOST containing
            uri indicating value "/npcf-policyauthorization/v1/app_sessions",
            body containing
                AppSessionContext containing
                    AppSessionContextReqData containing
                        suppFeat indicating value "IMS_SBI",
                        ueIpv4 indicating value "IPv4_Address of UE_A",
                        "or" ueIpv6 indicating value "IPv6_Address of UE_A",
```

```
                        afReqData indicating value "UE_IDENTITY",
                        servUrn indicating value "sos*"
        to the _5GC_PCF_A entity
        and the IMS_P_CSCF_A receives a HTTP_RESPONSE containing
            status set to "201 Created",
            headers containing
                Location set to "/npcf-policyauthorization/v1/app_sessions/{appSessionId}",
            body containing
                AppSessionContext containing
                    AppSessionContextResData containing
                        ueIds indicating value "GPSI or PEI or SUPI"
        from the _5GC_PCF_A entity
    }
}
```

TP Id	TP_N5_PCSCF_5G_ECO_PUR_04
Test Objective	Verify that IUT sends an Npcf_PolicyAuthorization_Update request in case of session establishment for originating side after 183 response with SDP answer is received.
Reference	ETSI TS 129 514 [6], clause 5.3.2.3.1 ETSI TS 129 514 [6], clause 4.2.3 ETSI TS 129 514 [6], clause 5.6.2.3 ETSI TS 129 514 [6], clause 5.6.2.4 ETSI TS 129 514 [6], clauses B.1, B.2 and B.5
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives a 183_Response_INVITE_with_SDP_offer
        from the IMS_S_CSCF_A entity
    }
    then {
        the IMS_P_CSCF_A sends the vPATCH containing
            uri indicating value "/npcf-policyauthorization/v1/app-sessions/{appSessionId}",
            body containing
                ascReqData containing
                    suppFeat indicating value "IMS_SBI",
                    ueIpv4 indicating value "IPv4_Address of UE_A",
                    "or" ueIpv6 indicating value "IPv6_Address of UE_A",
                    servInfStatus indicating value "FINAL"
        to the _5GC_PCF_A entity
    }
}
```

TP Id	TP_N5_PCF_5G_ECO_PUA_01
Test Objective	Verify that IUT after Npcf_PolicyAuthorization_Update request is received due to AF session for emergency session establishment sends Npcf_PolicyAuthorization_Update response.
Reference	ETSI TS 129 514 [6], clause 5.3.2.3.1 ETSI TS 129 514 [6], clause 4.2.3 ETSI TS 129 514 [6], clause 5.6.2.3 ETSI TS 129 514 [6], clause 5.6.2.4 ETSI TS 129 514 [6], clauses B.1, B.2 and B.5
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
            the UE_A is5GRegisteredTo the _5GC_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A sends the vPATCH containing
            uri indicating value "/npcf-policyauthorization/v1/app-sessions/{appSessionId}",
            body containing
                ascReqData containing
                    suppFeat indicating value "IMS_SBI",
```

```
                    ueIpv4 indicating value "IPv4_Address of UE_A",
                    "or" ueIpv6 indicating value "IPv6_Address of UE_A",
                    servInfStatus indicating value "FINAL"
        to the _5GC_PCF_A entity
    }
    then {
        the IMS_P_CSCF_A receives a HTTP_RESPONSE containing
            status set to "200 OK",
            headers containing
                Location set to "/npcf-policyauthorization/v1/app_sessions/{appSessionId}",
            body containing
                AppSessionContext containing
                    AppSessionContextResData containing
                        ueIds indicating value "GPSI or PEI or SUPI"
        from the _5GC_PCF_A entity
    }
}
```

TP Id	TP_N5_PCSCF_5G_ECO_PNA_01
Test Objective	Verify that IUT sends 204 No Content after Npcf_PolicyAuthorization_Notify request is received from PCF.
Reference	ETSI TS 129 514 [6], clause 4.2.5 ETSI TS 129 514 [6], clause 5.3.2.3.1 ETSI TS 129 514 [6], clause 5.5.2 ETSI TS 129 514 [6], clause 5.6.2.3 ETSI TS 129 514 [6], clause 5.6.2.4 ETSI TS 129 514 [6], clause B.5
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the _5GC_PCF_A sends a vPOST containing
            uri indicating value "{notifUri}/notify",
            body containing
                  evsNotif containing
                    event_ indicating value "SUCCESSFUL_RESOURCES_ALLOCATION",
                    succResourcAllocReports indicating value "any_value"
        to the IMS_P_CSCF_A entity
    }
    then {
        the IMS_P_CSCF_A sends the HTTP_RESPONSE containing
            status set to "204 No Content"
        to the _5GC_PCF_A entity
    }
}
```

TP Id	TP_N5_PCF_5G_ECO_PDA_02
Test Objective	Verify that IUT after reception of Npcf_PolicyAuthorization_Delete request sends Npcf_PolicyAuthorization_Delete response.
Reference	ETSI TS 129 514 [6], clause 4.2.4.2 ETSI TS 129 514 [6], clause 5.3.4.3.2 ETSI TS 129 514 [6], clause B.5
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
            the UE_A is5GRegisteredTo the _5GC_A and
            the UE_A isRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A sends an vDELETE containing
            uri indicating value "/npcf-policyauthorization/v1/app-sessions/{appSessionId}/delete"
        to the _5GC_PCF_A entity
```

```
    }
    then {
        the _5GC_PCF_A sends the HTTP_RESPONSE containing
            status set to "204 No Content"
        to the IMS_P_CSCF_A entity
    }
}
```

TP Id	TP_N5_PCSCF_5G_ECO_PDR_01
Test Objective	Verify that IUT after reception of BYE sends an Npcf_PolicyAuthorization_Delete request at originating leg.
Reference	ETSI TS 129 514 [6], clause 4.2.4.2 ETSI TS 129 514 [6], clause 5.3.4.3.2 ETSI TS 129 514 [6], clause B.5
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A and
the UE_A previouslyEstablishedCallWith the PSAP
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives a BYE
        from the UE_A entity
    }
    then {
        the IMS_P_CSCF_A sends the vDELETE containing
            uri indicating value "/npcf-policyauthorization/v1/app-sessions/{appSessionId}/delete"
        to the _5GC_PCF_A entity
    }
}
```

TP Id	TP_N5_PCSCF_5G_ECO_PDR_03
Test Objective	Verify that IUT after reception of CANCEL sends an Npcf_PolicyAuthorization_Delete request at originating leg.
Reference	ETSI TS 129 514 [6], clause 4.2.4.2 ETSI TS 129 514 [6], clause 5.3.4.3.2 ETSI TS 129 514 [6], clause B.5
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

```
with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A
        }
```

Expected Behaviour

```
ensure that {
    when {
        the IMS_P_CSCF_A receives a CANCEL
        from the UE_A entity
    }
    then {
        the IMS_P_CSCF_A sends the vDELETE containing
            uri indicating value "/npcf-policyauthorization/v1/app-sessions/{appSessionId}/delete"
        to the _5GC_PCF_A entity
    }
}
```

TP Id	TP_N5_PCSCF_5G_ECO_PDR_05
Test Objective	Verify that IUT after reception of 486 response sends an Npcf_PolicyAuthorization_Delete request at originating leg.
Reference	ETSI TS 129 514 [6], clause 4.2.4.2 ETSI TS 129 514 [6], clause 5.3.4.3.2 ETSI TS 129 514 [6], clause B.5
Configuration	CF_VoNR_INT_ES
PICS Selection	NONE
Initial Conditions	

with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A
}	

Expected Behaviour	

ensure that {
when {
the IMS_P_CSCF_A receives a 486_Response_INVITE
from the IMS_S_CSCF_A entity
}
then {
the IMS_P_CSCF_A sends the vDELETE containing
uri indicating value "/npcf-policyauthorization/v1/app-sessions/{appSessionId}/delete"
to the _5GC_PCF_A entity
}
}	

7.10 N26 interface

TP Id	TP_N26_AMF_01
Test Objective	Verify that IUT after reception of NGAP HANDOVER REQUIRED from the gNB sends GTP_v2-C Forward Relocation Request to the MME via the N26 interface.
Reference	ETSI TS 123 502 [11], clauses 4.11.1 and 4.13.4, ETSI TS 129 274 [12], clause 7.3.1
Configuration	CF_VoNR_FB_INT_ES
PICS Selection	NONE
Initial Conditions	

with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A and
the UE_A previouslyEstablishedEmergencyCallWith the PSAP and
N26_supported
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a HANDOVER_REQUIRED
from the GNB entity
}
then {
the IUT sends the Forward_Relocation_Request
to the EPC_MME_A entity
}
}	

TP Id	TP_N26_AMF_02
Test Objective	Verify that IUT after reception of GTP_v2-C Forward Relocation Response from the MME via the N26 interface sends NGAP HANDOVER_COMMAND to the gNB.
Reference	ETSI TS 123 502 [11], clauses 4.11.1 and 4.13.4, ETSI TS 129 274 [12], clause 7.3.2
Configuration	CF_VoNR_FB_INT_ES
PICS Selection	NONE
Initial Conditions	

with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A and
the UE_A previouslyEstablishedEmergencyCallWith the PSAP and
N26_supported and IUT hasInitiatedFallbackViaN26
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a Forward_Relocation_Response
from the EPC_MME_A entity
}
then {
the IUT sends the HANDOVER_COMMAND
to the GNB entity
}
}	

TP Id	TP_N26_AMF_03
Test Objective	Verify that IUT after reception of GTP_v2-C Forward Relocation Complete Notification from the MME via the N26 interface responds GTP_v2-C Forward Relocation Complete Acknowledge to the MME.
Reference	ETSI TS 123 502 [11], clauses 4.11.1 and 4.13.4, ETSI TS 129 274 [12], clauses 7.3.3 and 7.3.4
Configuration	CF_VoNR_FB_INT_ES
PICS Selection	NONE
Initial Conditions	

with {
the UE_A is5GRegisteredTo the _5GC_A and
the UE_A isRegisteredTo the IMS_A and
the UE_A previouslyEstablishedEmergencyCallWith the PSAP and
N26_supported and IUT hasInitiatedFallbackViaN26
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a Forward_Relocation_Complete_Notification
from the EPC_MME_A entity
}
then {
the IUT sends the Forward_Relocation_Complete_Acknowledge
to the EPC_MME_A entity
}
}	

Annex A (normative): TDL-TO source files

Each TP in clause 7 above has been written in TDL-TO and thus in a structured manner which is consistent with all other TPs. The TDL-TO text files for all test purposes are released in the ETSI forge repository:

https://forge.etsi.org/rep/int/vx5g/emergency-5g-iop/-/tree/main/test_purposes

Annex B (informative): Bibliography

PICS pro forma relevant to the Gm, Mw, ISC and Ic interfaces:

- ETSI TS 102 790-1: "Core Network and Interoperability Testing (INT); IMS specific use of Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Conformance Testing; (3GPP Release 10); Part 1: Protocol Implementation Conformance Statement (PICS)".

PICS pro forma relevant to the Cx interface:

- ETSI TS 103 289-1: "Core Network and Interoperability Testing (INT); Diameter Conformance testing for Cx and Dx interfaces; (3GPP™ Release 10); Part 1: Protocol Implementation Conformance Statement (PICS)".

Annex C (informative): Change history

Date	Version	Information about changes
January 2025	V0.0.1	Skeleton draft
February 2025	V0.0.2	First draft - clean version
June 2025	V0.0.3	Draft prepared for INT#61
October 2025	V0.0.4	New TPs/review; Draft prepared for INT#62
March 2026	V0.0.6	Final draft for INT#63

History

Version	Date	Status
V1.1.1	May 2026	Publication