**3GPP TSG-SA5 Meeting #141-e *S5-221205rev1***

**e-meeting, 17 -26 January 2022**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **28.541** | **CR** | **0661** | **rev** | **1** | **Current version:** | **17.5.0** |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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|  |
| ***Title:***  | Add containment name of IMS SBA nodes |
|  |  |
| ***Source to WG:*** | Huawei |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** | adNRM |  | ***Date:*** | 2022-01-19 |
|  |  |  |  |  |
| ***Category:*** | B |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | S5-216407 comments should have stage 3 for 3 IOCs CSCFFunction, HSSFunction, PCSCFFunction as the containment hierarchy needed in 28.541.This document is to have stage 2 for those IOCs in 28.541.As an alternative, the stage 2 may be also included in 28.706. This alternative would be investigated in other tdoc. |
|  |  |
| ***Summary of change:*** | This tdoc is to add stage 2 for 3 IOCs of IMS SBA nodes. |
|  |  |
| ***Consequences if not approved:*** | The YAML and YANG for IOCs of CSCFFunction, HSSFunction, PCSCFFunction are not covered. |
|  |  |
| ***Clauses affected:*** | 5A.2.1, 5A.3.4(new) |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

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| **Start of changes** |

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 23.501: "System Architecture for the 5G System".

[3] 3GPP TS 38.300: "NR; Overall description; Stage-2".

[4] 3GPP TS 38.401: "NG-RAN; Architecture description".

[5] 3GPP TS 38.413: "NG-RAN; NG Application Protocol (NGAP)".

[6] 3GPP TS 38.420: "NG-RAN; Xn general aspects and principles".

[7] 3GPP TS 38.470: "NG-RAN; F1 general aspects and principles".

[8] 3GPP TS 38.473: "NG-RAN; F1 application protocol (F1AP)".

[9] 3GPP TS 37.340: "NR; Multi-connectivity; Overall description; Stage 2".

[10] 3GPP TS 28.540: "Management and orchestration; 5G Network Resource Model (NRM);Stage 1".

[11] 3GPP TS 28.662: "Telecommunication management; Generic Radio Access Network (RAN) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS) ".

[12] 3GPP TS 38.104: "NR; Base Station (BS) radio transmission and reception".

[13] 3GPP TS 23.003: "Numbering, Addressing and Identification".

[14] 3GPP TS 36.410: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 general aspects and principles".

[15] 3GPP TS 36.423: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 application protocol".

[16] 3GPP TS 36.425: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 interface user plane protocol".

[17] 3GPP TS 28.625: "State Management Data Definition Integration Reference Point (IRP); Information Service (IS)".

[18] ITU-T Recommendation X.731: "Information technology - Open Systems Interconnection - Systems Management: State management function".

[19] 3GPP TS 28.658: "Telecommunications management; Evolved Universal Terrestrial Radio Access Network (E-UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)".

[20] 3GPP TS 28.702: "Core Network (CN) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".

[21] 3GPP TS 28.708: "Telecommunication management; Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)".

[22] 3GPP TS 23.040: "Technical realization of the Short Message Service (SMS)".

[23] 3GPP TS 29.510: "5G system; Network Function Repository Services; Stage 3".

[24] 3GPP TS 29.531: "5G System; Network Slice Selection Services Stage 3".

[25] Void.

[26] 3GPP TS 28.531: "Management and orchestration; Provisioning".

[27] 3GPP TS 28.554: "Management and orchestration; 5G End to end Key Performance Indicators (KPI)".

[28] 3GPP TS 22.261: "Service requirements for next generation new services and markets".

[29] ETSI GS NFV-IFA 013 V2.4.1 (2018-02) "Network Function Virtualisation (NFV); Management and Orchestration; Os-Ma-nfvo Reference Point - Interface and Information Model Specification".

[30] 3GPP TS 28.622: "Telecommunication management; Generic Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".

[31] Void.

[32] 3GPP TS 38.211: "NR; Physical channels and modulation".

[33] 3GPP TS 32.616: "Telecommunication management; Configuration Management (CM); Bulk CM Integration Reference Point (IRP); Solution Set (SS) definitions".

[34] 3GPP TS 28.623: "Telecommunication management; Generic Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions".

[35] 3GPP TS 28.532: "Management and orchestration; Management services".

[36] Void.

[37] IETF RFC 791: "Internet Protocol".

[38] IETF RFC 2373: "IP Version 6 Addressing Architecture".

[39] IEEE 802.1Q: "Media Access Control Bridges and Virtual Bridged Local Area Networks".

[40] ETSI GR NFV-IFA 015 (V2.4.1): "Network Function Virtualisation (NFV) Release 2; Management and Orchestration; Report on NFV Information Model".

[41] 3GPP TS 38.213: "NR; Physical layer procedures for control".

[42] 3GPP TS 38.101-1: "NR; User Equipment (UE) radio transmission and reception; Part 1: Range 1 Standalone".

[43] 3GPP TS 32.156: "Telecommunication management; Fixed Mobile Convergence (FMC) model repertoire".

[44] IETF RFC 4122: "A Universally Unique IDentifier (UUID) URN Namespace".

[45] IETF RFC 8528: "YANG Schema Mount".

[46] Void

[47] 3GPP TS 32.160: "Management and orchestration; Management Service Template".

[48] 3GPP TS 38.463: "NG-RAN; E1 application protocol (E1AP)".

[49] 3GPP TS 38.304: "NR; User Equipment (UE) procedures in Idle mode and RRC Inactive state".

[50] GSMA NG.116 - Generic Network Slice Template Version 3.0 (2020-05-22).

[51] 3GPP TS 22.104: "Service requirements for cyber-physical control applications in vertical domains; Stage 1".

[52] 3GPP TS 33.501: "Security architecture and procedures for the 5G System".

[53] 3GPP TS 38.901: "Study on channel model for frequencies from 0.5 to 100 GHz ".

[54] 3GPP TS 38.331: "NR; Radio Resource Control (RRC) protocol specification".

[55] 3GPP TS 38.215: "NR; Physical layer measurements".

[56] 3GPP TS 29.244: "Technical Specification Group Core Network and Terminals; Interface between the Control Plane and the User Plane Nodes; Stage 3".

[57] 3GPP TS 28.313: "Self-Organizing Networks (SON) for 5G networks".

[58] 3GPP TS 38.423: "NR; Xn application protocol (XnAP)".

[59] 3GPP TS 23.503: "Policy and Charging Control Framework for the 5G System; Stage 2".

[60] 3GPP TS 29.512: "5G System; Session Management Policy Control Service; Stage 3".

[61] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".

[62] 3GPP TS 29.214: "Policy and Charging Control over Rx reference point".

[63] IETF RFC 7042: "IANA Considerations and IETF Protocol and Documentation Usage for IEEE 802 Parameters".

[64] IEEE 802.3-2015: "IEEE Standard for Ethernet".

[65] IEEE 802.1Q-2014: "Bridges and Bridged Networks".

[66] IETF RFC 4301: "Security Architecture for the Internet Protocol".

[67] 3GPP TS 29.514: "5G System; Policy Authorization Service; Stage 3".

[68] 3GPP TS 32.422: "Telecommunication management; Subscriber and equipment trace; Trace control and configuration management".

[69] 3GPP TS 28.552: "Management and orchestration; 5G performance measurements".

[70] 3GPP TS 28.530: "Management and orchestration; Concepts, use cases and requirements".

[71] 3GPP TS 28.310: "Management and orchestration; Energy efficiency of 5G".

[72] 3GPP TS 28.705: "Telecommunication management; IP Multimedia Subsystem (IMS) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".

[73] 3GPP TS 23.304: " Proximity based Services (ProSe) in the 5G System".

[74] IETF RFC 8436: " Update to IANA Registration Procedures for Pool 3 Values in the Differentiated Services Field Codepoints (DSCP) Registry".

[75] ECMA-262: "ECMAScript® Language Specification", <https://www.ecma-international.org/ecma-262/5.1/>.

[76] 3GPP TS 29.500: "5G System; Technical Realization of Service Based Architecture; Stage 3".

[77] IANA: "SMI Network Management Private Enterprise Codes", <http://www.iana.org/assignments/enterprise-numbers>.

[78] 3GPP TS 23.548:" 5G System Enhancements for Edge Computing; Stage 2".

[79] 3GPP TS 28.538: "Edge Computing Management".

[80] 3GPP TS 29.518: "5G System; Access and Mobility Management Services; Stage 3".

[81] 3GPP TS 23.002: "Network architecture".

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| **Next change** |

# 5A Information model definitions for SBA support of IMS

## 5A.1 Imported information entities and local labels

|  |  |
| --- | --- |
| Label reference | Local label  |
| TS 28.622 [30], IOC, SubNetwork | SubNetwork |
| TS 28.622 [30], IOC, ManagedElement | ManagedElement |
| TS 28.622 [30], IOC, ManagedFunction | ManagedFunction |
| TS 28.622 [30], IOC, EP\_RP | EP\_RP |
| TS 28.705 [72], IOC, CSCFFunction | CSCFFunction |
| TS 28.705 [72], IOC, HSSFunctionHSS | HSSFunction |
| TS 28.705 [72], IOC, PCSCFFunction | PCSCFFunction |

## 5A.2 Class diagram

### 5A.2.1 Class diagram of IMS SBA nodes

#### 5A.2.1.1 Relationships

This clause depicts the set of classes (e.g. IOCs) that encapsulates the information relevant for NRM of IMS SBA nodes definition. This clause provides the overview of the relationships of relevant classes in UML..

Figure 5A.2.1.1-1 shows the IMS SBA nodes (SCSCFFunction, PCSCFFunction) NRM containment/naming relationship.



Figure 5A.2.1.1-1: the IMS SBA nodes NRM containment/naming relationship.

The set of classes IOC EP\_RP for SBA support of SCSCFFunction, HSSFunction, PCSCFFunction and PCFFunction are described in this clause.

The Figure 5A.2.1.1-2 shows the transport view of SCSCFFunction NRM for SBA interfaces.



Figure 5A.2.1.1-2: Transport view of SCSCFFunction for SBA interfaces

The Figure 5A.2.1.1-3 shows the transport view of HSSFunction NRM for SBA interfaces.



Figure 5A.2.1.1-3: Transport view of HSSFunction for SBA interfaces

The Figure 5A.2.1.1-4 shows the transport view of PCFFunction NRM for SBA interfaces.



Figure 5A.2.1.1-4: Transport view of PCFFunction for SBA interfaces

The Figure 5A.2.1.1-5 shows the transport view of PCSCFFunction NRM for SBA interfaces.



Figure 5A.2.1.1-5: Transport view of PCSCFFunction for SBA interfaces

#### 5A.2.1.2 Inheritance

Figure 5A.2.1.2-1 shows the inheritance hierarchy from IOC ManagedFunction related to the IMS SBA nodes.



Figure 5A.2.1.2-2: Inheritance hierarchy from IOC ManagedFunction related to the IMS SBA nodes.

Figure 5A.2.1.2-2 shows the inheritance hierarchy from IOC EP\_RP related to SBA interfaces of IMS nodes.



Figure 5A.2.1.2-2: Inheritance hierarchy from IOC EP\_RP related to SBA interfaces of IMS

## 5A.3 Class definitions

### 5A.3.1 EP\_N5

#### 5A.3.1.1 Definition

This IOC represents the N5 interface between P-CSCF and PCF, which is defined in 3GPP TS 23.501 [2].

#### 5A.3.1.2 Attributes

The EP\_N5 IOC includes attributes inherited from EP\_RP IOC (defined in TS 28.622[30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

### 5A.3.2 EP\_N70

#### 5A.3.2.1 Definition

This IOC represents the N70 interface between S/I-CSCF and HSS, which is defined in 3GPP TS 23.501 [2].

#### 5A.3.2.2 Attributes

The EP\_N70 IOC includes attributes inherited from EP\_RP IOC (defined in TS 28.622[30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

### 5A.3.3 EP\_N71

#### 5A.3.3.1 Definition

This IOC represents the N71 interface between AF and HSS, which is defined in 3GPP TS 23.501 [2].

#### 5A.3.3.2 Attributes

The EP\_N71 IOC includes attributes inherited from EP\_RP IOC (defined in TS 28.622[30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

### 5A.3.4 SCSCFFunction

#### 5A.3.4.1 Definition

This IOC represents the SCSCF function. For more information about the SCSCF, see 3GPP TS 23.002 [81].

#### 5A.3.4.2 Attributes

The SCSCFFunction IOC includes attributes inherited from ManagedFunction IOC (defined in TS 28.622[30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| pLMNIdList | M | T | T | F | T |
| commModelList | M | T | T | F | T |

#### 5A.3.4.3 Attribute constraints

None.

#### 5A.3.4.4 Notifications

The common notifications defined in subclause 5.5 are valid for this IOC, without exceptions or additions.

### 5A.3.5 PCSCFFunction

#### 5A.3.5.1 Definition

This IOC represents the PCSCF function. For more information about the PCSCF, see 3GPP TS 23.002 [81].

#### 5A.3.5.2 Attributes

The PCSCFFunction IOC includes attributes inherited from ManagedFunction IOC (defined in TS 28.622[30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| pLMNIdList | M | T | T | F | T |
| commModelList | M | T | T | F | T |

#### 5A.3.5.3 Attribute constraints

None.

#### 5A.3.5.4 Notifications

The common notifications defined in subclause 5.5 are valid for this IOC, without exceptions or additions.

### 5A.3.6 HSSFunction

#### 5A.3.6.1 Definition

This IOC represents the HSS function. For more information about the HSS, see 3GPP TS 23.002 [81].

#### 5A.3.6.2 Attributes

The HSSFunction IOC includes attributes inherited from ManagedFunction IOC (defined in TS 28.622[30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| pLMNIdList | M | T | T | F | T |
| commModelList | M | T | T | F | T |

#### 5A.3.6.3 Attribute constraints

None.

#### 5A.3.6.4 Notifications

The common notifications defined in subclause 5.5 are valid for this IOC, without exceptions or additions.

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| **End of changes** |