**3GPP TSG-SA5 Meeting #138-e *S5-214110rev1***

**e-meeting, 23 - 31 August 2021**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **28.541** | **CR** | **0526** | **rev** | **1** | **Current version:** | **17.3.0** |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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|  |
| ***Title:***  | Add NRM IOC definitions for N5, N70 and N71 reference points |
|  |  |
| ***Source to WG:*** | Huawei, Orange |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** | adNRM |  | ***Date:*** | 2021-08-13 |
|  |  |  |  |  |
| ***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:*** | NRM definitions for the N5 (service based interface between P-CSCF and PCF), N70 (service based interface between I/S-CSCF and HSS) and N71 (service based interface between IMS AS and HSS) reference points in TS 28.541.The corresponding SBA interfaces are specified in TS 22.228. The discussion paper [S5‑213292](https://www.3gpp.org/ftp/tsg_sa/WG5_TM/TSGS5_137e/docs/S5-213292.zip) provides the option 1 (add NRM IOC in 28.541) and option 2 (update definition of IRP and add SBA interface NRM IOC in 28.705.) |
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| ***Summary of change:*** | This CR is to add following changes in TS 28.541:* Add relationship diagrams for the N5, N70 and N71 interfaces
* Add IOC definitions for EP\_N5, EP\_N70 and EP\_N71
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|  |  |
| ***Consequences if not approved:*** | The modeling of N5, N70 and N71 interfaces corresponding to the IMS SBA interfaces would not be covered by TS 28.541. |
|  |  |
| ***Clauses affected:*** | 2, 5A(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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| **First modification** |

# 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".

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

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| **First modification** |

# 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 [xx], IOC, CSCFFunction | CSCFFunction |
| TS 28.705 [xx], IOC, HSSFunction | HSSFunction |
| TS 28.705 [xx], IOC, PCSCFFunction | PCSCFFunction |

## 5A.2 Class diagram

### 5A.2.1 Class diagram for SBA support of IMS

#### 5A.2.1.1 Relationships

The set of classes (e.g. IOCs) that encapsulate the information relevant for IMS network resource information for telecommunication network management purposes are described in TS 28.705 [xx].

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

The Figure 5A.2.1.1-1 shows the transport view of SCSCFFunction NRM for SBA interfaces.



Figure 5A.2.1.1-1: Transport view of SCSCFFunction for SBA interfaces

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



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

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



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

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



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

#### 5A.2.1.2 Inheritance

Figure 5A.2.1.2-1 shows the inheritance hierarchy from IOC EP\_RP related to SBA interfaces of IMS nodes.



Figure 5A.2.1.2-1: 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 | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| localAddress | O | T | T | F | T |
| remoteAddress | O | T | T | F | T |

### 5A.3.1 EP\_N70

#### 5A.3.1.1 Definition

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

#### 5A.3.1.2 Attributes

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

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

### 5A.3.1 EP\_N71

#### 5A.3.1.1 Definition

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

#### 5A.3.1.2 Attributes

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

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

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| **End of modification** |