**3GPP TSG-SA5 Meeting #162 *S5-253962***

Stor-Göteborg, Sweden, 25th August 2025 - 29th August 2025

|  |
| --- |
| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **28.560** | **CR** | **0011** | **rev** | **1** | **Current version:** | **19.2.0** |  |
|  |
| *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** |

|  |
| --- |
|  |
| ***Title:***  | Rel-19 CR TS 28.560 Small Corrections on STM  |
|  |  |
| ***Source to WG:*** | Ericsson |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** | Monstra-OAM |  | ***Date:*** | 2025-08-15 |
|  |  |  |  |  |
| ***Category:*** | F |  | ***Release:*** | Rel-19 |
|  | *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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | There are a few small errors in TS 28.560.  |
|  |  |
| ***Summary of change:*** | * Correction on IETF reference in section 2
* Change ‘3GPP management system’ to ‘3GPP system’ in section 4
* Mismatched NRM name in 6.1.2 figures
* Change CM to M of reportingNFList in section 6.2.1.2
* Remove incorrect underline in section 6.2.2.2
* Adding dataType imports for OperationalState and BasicAdministrativeState instead of defining it again.
* Update operationalState and administrativeState datatype in 6.1.1, 6.3.1.
* Change incorrect reference from 6.2 to 6 in section 7.2.
* Editorial corrections in YANG
 |
|  |  |
| ***Consequences if not approved:*** | Incorrect specification |
|  |  |
| ***Clauses affected:*** | 2, 4, 6.1.1, 6.1.2, 6.2.1.2, 6.2.2.2, 6.3.1, 7.2, B.3, B.4, Forge |
|  |  |
|  | **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:*** | Forge MR link: <https://forge.3gpp.org/rep/sa5/MnS/-/merge_requests/1804> at commit 8338c4b902b080dde9b1dd0cceddaa24416d6971 |
|  |  |
| ***This CR's revision history:*** |  |

\*\*\* START OF NEXT CHANGE \*\*\*

# 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 28.532: "Generic management services".

[3] 3GPP TS 28.533: "Management and orchestration; Architecture framework".

[4] 3GPP TS 33.501: " Security architecture and procedures for 5G System ".

[5] 3GPP TS 28.622: "Generic Network Resource Model (NRM); Integration Reference Point (IRP); Information Service (IS)".

[6] void.

[7] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".

[8] IETF RFC8086: GRE-in-UDP Encapsulation.

[9] IETF draft-ietf-opsawg-pcapng-03: PCAP Next Generation (pcapng) Capture File Format.

[10] 3GPP TS 32.160: "Management and orchestration; Management Service Template".

[11] 3GPP TS 28.623: "Telecommunication management; Generic Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions".

[12] 3GPP TS 29.500: "5G System; Technical Realization of Service Based Architecture; Stage 3".

[13] 3GPP TS 29.244: "Interface between the Control Plane and the User Plane Nodes; Stage 3".

[14] 3GPP TS 28.541: “Management and orchestration; 5G Network Resource Model (NRM); Stage 2 and stage 3”

[15] 3GPP TS 23.273: “5G System (5GS) Location Services (LCS); Stage 2”

[16] 3GPP TS 23.502: "Procedures for the 5G System (5GS); Stage 2"

\*\*\* START OF NEXT CHANGE \*\*\*

# 4 Signalling traffic monitoring management capabilities (stage 1)

The 3GPP management system shall have the capabilities as listed in the following table.

Table 4-1 Signalling Trace Monitoring Management Requirements

| Requirement label | Description | Related use case(s) |
| --- | --- | --- |
| **REQ-SM-FUN-1** | The 3GPP system shall have the capability to send copies of the 5G Core control plane signalling messages, of selected interface(s) of selected NF(s), to an external entity that collects these signalling messages. | Signalling Traffic Monitoring Streaming |
| **REQ-SM-FUN-2** | Authorised consumers shall have the capability to control (to configure, to enable, and to disable) sending copies of the 5G Core control plane signalling messages to the external collecting entity. | Signalling Monitoring ActivationSignalling Monitoring Termination |
| **REQ-SM-FUN-3** | The 3GPP system shall have the capability to send the copies of the 5G Core control plane signalling messages in a reliable or unreliable transport manner. | Signalling Traffic Monitoring Streaming |
| **REQ-SM-FUN-4** | Authorised consumers shall have the capability to indicate the network interface type, and optionally the network interface instance and service operations within the specified network interface type, of which the signalling messages are to be monitored. | Signalling Traffic Monitoring Activation |

\*\*\* START OF NEXT CHANGE \*\*\*

### 6.1.1 Imported information entities and local labels

|  |  |
| --- | --- |
| Label reference | Local label  |
| 3GPP TS 28.622 [5], IOC, SubNetwork | SubNetwork |
| 3GPP TS 28.622 [5], IOC, ManagedElement | ManagedElement |
| 3GPP TS 28.622 [5], IOC, ManagedFunction | ManagedFunction |
| 3GPP TS 28.622 [5], dataType, OperationalState | OperationalState |
| 3GPP TS 28.622 [5], dataType, BasicAdministrativeState | BasicAdministrativeState |

\*\*\* START OF NEXT CHANGE \*\*\*

### 6.1.2 Class diagram

#### 6.1.2.1 Relationships

This clause provides the overview of the relationships of relevant classes in UML. Subsequent clauses provide more detailed specification of various aspects of these classes. The following figure shows the containment/naming hierarchy and the associations of the classes defined in the present document.



Figure 6.1.2.1-1: STM control NRM fragment

#### 6.1.2.2 Inheritance

This clause depicts the inheritance relationships.



Figure 6.1.2.2-1: STM control NRM inheritance relationships

\*\*\* START OF NEXT CHANGE \*\*\*

#### 6.2.1.2 Attributes

The StmCtrl IOC includes attributes inherited from Top IOC (defined in 3GPP TS 28.622 [5] subclause 4.3.29) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| reportingNFList | M | T | T | F | T |
| targetInterfaceInfoList | M | T | T | F | T |
| stmTargetUri | M | T | T | T | T |
| administrativeState | M | T | T | F | T |
| operationalState | M | T | F | F | T |

\*\*\* START OF NEXT CHANGE \*\*\*

#### 6.2.2.2 Attributes

The NetworkInterface data type contains the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| networkInterfaceType | M | T | T | F | T |
| networkInterfaceInstanceList | O | T | T | F | T |
| serviceOperationList | O | T | T | F | T |

\*\*\* START OF NEXT CHANGE \*\*\*

### 6.3.1 Attribute properties

The following table defines the properties of attributes specified in the present document.

| Attribute Name | Documentation and Allowed Values | Properties |
| --- | --- | --- |
| reportingNFList | List of Network Function Distinguished Name.allowedValues: N/A | Type: DNmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| targetInterfaceInfoList | List of network interfaces to be monitored. | Type: NetworkInterfacemultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| networkInterfaceType | The network interface type to be monitored. The applicable network interface type names are specified based on subclause 4.2.3 of 3GPP TS 23.501 [7] and clause 4.2.1 of 3GPP TS 23.273 [15]. The value "ALL" is specified for the case if all the applicable interface type of the network function shall be monitored.allowedValues: ALL, N2, N4, N5, N7, N8, N10, N11, N12, N13, N14, N15, N16, N17, N18, N20, N21, N22, N23, N26, N28, N29, N30, N33, N34, N35, N36, N37, N40, N41, N42, N51, N52, N58, N59, N60, N61, N62, N63, N80, N81, N82, N83, N84, N85, N86, N87, N88, N89, N96, NL1, NL2, NL5, NL6, NL8, NL9. | Type: ENUMmultiplicity: 1isOrdered: N/AisUnique: FalsedefaultValue: ALLisNullable: False |
| networkInterfaceInstanceList | The list of applicable network interface instances, for which the monitoring is to be performed, of the network interface type specified by networkInterfaceType.allowedValues: DN of MOIs of the following endpoints IOCs as specified in subclause 5.2.1 of 3GPP TS 28.541 [14]:EP\_N2, EP\_N4, EP\_N5, EP\_N7, EP\_N8, EP\_N10, EP\_N11, EP\_N12, EP\_N13, EP\_N14, EP\_N15, EP\_N16, EP\_N17, EP\_N18, EP\_N20, EP\_N21, EP\_N22, EP\_N23, EP\_N26, EP\_N28, EP\_N29, EP\_N30, EP\_N33, EP\_N34, EP\_N35, EP\_N36, EP\_N37, EP\_N40, EP\_N41, EP\_N42, EP\_N51, EP\_N52, EP\_N58, EP\_N59, EP\_N60, EP\_N61, EP\_N62, EP\_N63, EP\_N80, EP\_N81, EP\_N82, EP\_N83, EP\_N84, EP\_N85, EP\_N86, EP\_N87, EP\_N88, EP\_N89, EP\_N96, EP\_NL1, EP\_NL2, EP\_NL5, EP\_NL6, EP\_NL8, EP\_NL9.  | Type: DNmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| serviceOperationList | The list of applicable service operations, exchanged over the network interface instances specified by networkInterfaceInstanceList, that needs to be monitoredOr,If networkInterfaceInstanceList is not present, the list of applicable service operations exchanged over the network interface type specified by networkInterfaceType, that needs to be monitoredallowedValues: refer to subclause 5.2 of 3GPP TS 23.502 [16]. | Type: Stringmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| stmTargetUri | It specifies the Uniform Resource Identifier (URI) of the streaming target where the signalling traffic shall be sent. The detailed URI structure is defined in clause 4.4 of 3GPP TS 32.158 [6]. | type: Urimultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| administrativeState | Administrative state of a managed object instance. The administrative state describes the permission to use or prohibition against using the object instance. The administrative state is set by the STM consumer..  | type: BasicAdministrativeStatemultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: LOCKEDisNullable: False |
| operationalState | Operational state of managed object instance. The operational state describes if an object instance is operable ("ENABLED") or inoperable ("DISABLED"). This state is set by the object instance or the STM producer and is hence READ-ONLY. | type: OperationalStatemultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: DISABLEDisNullable: False |

\*\*\* START OF NEXT CHANGE \*\*\*

## 7.2 YANG Definitions

The present clause contains the YANG definitions for the STM NRM.

The Information Service (IS) of the STM NRM is defined in subclause 6.

Mapping rules to produce the YANG definition based on the IS are defined in 3GPP TS 32.160 [10].

YANG definitions are specified in 3GPP Forge, refer to clause 4.4 of TS 28.623 [11] for the Forge location.

Directory: yang-models

Files: \_3gpp-stm-nrm-stmfunction.yang

\*\*\* START OF NEXT CHANGE \*\*\*

# B.3 STM control NRM fragment

The following PlantUML source code is used to describe STM control NRM fragment. As depicted by Figure 6.1.2.1-1:

@startuml

rectangle "<<InformationObjectClass>>\n stmCtrl" as stmCtrl

rectangle "<<ProxyClass>>\nManagedEntity" as ManagedElement

stmCtrl -left-\* ManagedElement : 1   <<name>>    \*

note top of ManagedElement

  Represents the following IOCs:

    SubNetwork, ManagedElement, or ManagedFunction

end note

@enduml

\*\*\* START OF NEXT CHANGE \*\*\*

# B.4 STM control NRM inheritance relationships

The following PlantUML source code is used to describe STM control NRM inheritance relationships. As depicted by Figure 6.1.2.2-1:

@startuml

skinparam defaultTextAlignment center

rectangle "<<InformationObjectClass>>\n//Top//" as top

rectangle "<<InformationObjectClass>>\nstmCtrl" as stm

top <|-- stm

@enduml

\*\*\* START OF NEXT CHANGE \*\*\*

\*\*\* yang-models/\_3gpp-stm-nrm-stmfunction.yang \*\*\*

<CODE BEGINS>

module \_3gpp-stm-nrm-stmfunction {

 yang-version 1.1;

 namespace urn:3gpp:sa5:\_3gpp-stm-nrm-stmfunction;

 prefix stm3gpp;

 import \_3gpp-common-top { prefix top3gpp; }

 import ietf-inet-types { prefix inet; }

 import \_3gpp-common-yang-types { prefix types3gpp; }

 organization "3gpp SA5";

 contact "https://www.3gpp.org/DynaReport/TSG-WG--S5--officials.htm?Itemid=464";

 description "This IOC represents the STM function defined in 3GPP TS 28.560.

 Copyright 2025, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI,

 TTA, TTC). All rights reserved.";

 reference "3GPP TS 28.560

 Signalling traffic monitoring management";

 revision 2025-08-07 { reference "CR-0011"; }

 revision 2025-05-07 { reference "CR-0009"; }

 revision 2025-04-19 { reference "CR-0010"; }

 revision 2024-11-07 { reference "S5-247077"; }

 grouping NetworkInterfaceGrp {

 description "Represents the network interfaces for which signalling

 traffic messages are to be copied and sent to the external entity.

 The attribute networkInterfaceType specifies the network interface type

 to be monitored. The optional attribute networkInterfaceInstanceList

 specifies the network interface instances to be monitored. It is a list

 of applicable network interface instances of the network interface type

 specified by networkInterfaceType. The optional attribute

 serviceOperationList specifies the service operations to be monitored.

 It is a list of applicable service operations exchanged over the network

 interface instances specified by networkInterfaceInstanceList, or, if

 networkInterfaceInstanceList is not present, it is list of applicable

 service operations exchanged over the network interface type specified

 by networkInterfaceType.";

 leaf networkInterfaceType {

 type enumeration {

 enum ALL;

 enum N2;

 enum N4;

 enum N5;

 enum N7;

 enum N8;

 enum N10;

 enum N11;

 enum N12;

 enum N13;

 enum N14;

 enum N15;

 enum N16;

 enum N17;

 enum N18;

 enum N20;

 enum N21;

 enum N22;

 enum N23;

 enum N26;

 enum N28;

 enum N29;

 enum N30;

 enum N33;

 enum N34;

 enum N35;

 enum N36;

 enum N37;

 enum N40;

 enum N41;

 enum N42;

 enum N51;

 enum N52;

 enum N58;

 enum N59;

 enum N60;

 enum N61;

 enum N62;

 enum N63;

 enum N80;

 enum N81;

 enum N82;

 enum N83;

 enum N84;

 enum N85;

 enum N86;

 enum N87;

 enum N88;

 enum N89;

 enum N96;

 enum NL1;

 enum NL2;

 enum NL5;

 enum NL6;

 enum NL8;

 enum NL9;

 }

 description "List of network interface type to be monitored. The

 applicable network interface type names are specified based on

 subclause 4.2.3 of 3GPP TS 23.501 and clause 4.2.1 of 3GPP

 TS 23.273.

 The value ALL is specified for the case if all the applicable

 interface type of the network function shall be monitored.";

 reference "Clause 4.2.3 of 3GPP TS 23.501 and clause 4.2.1 of

 3GPP TS 23.273 for details on the allowed values.";

 }

 leaf-list networkInterfaceInstanceList {

 type types3gpp:DistinguishedName;

 description "The list of applicable network interface instances, for

 which the monitoring is to be performed, of the network interface

 type specified by networkInterfaceType.";

 reference "allowedValues: DN of the following MOIs as specified

 in subclause 5.2.1 of 3GPP TS 28.541";

 }

 leaf-list serviceOperationList {

 type string;

 description "The list of applicable service operations exchanged

 over the network interface instances specified by

 networkInterfaceInstanceList, that needs to be monitored. Or,

 If networkInterfaceInstanceList is not present, the list of

 applicable service operations exchanged over the network

 interface type specified by networkInterfaceType.";

 reference "allowedValues: refer to subclause 5.2 of 3GPP

 TS 23.502";

 }

 }

 grouping StmCtrlGrp {

 description "Represents the StmCtrl IOC.";

 leaf-list reportingNFList {

 type types3gpp:DistinguishedName;

 description "List of Network Function Distinguished Name, which

 specifies the target network interface type to be monitored. If

 this parameter is not present or it is empty, then all applicable

 interface types from the target NF shall be monitored";

 }

 list targetInterfaceInfoList {

 uses NetworkInterfaceGrp;

 key "networkInterfaceType";

 description "List of network interface to be monitored. If this

 parameter is not present or it is empty, then all Network Functions

 within the SubNetwork or ManagedElement shall be monitored. This

 parameter shall be omitted if the STM control object is specified

 under a ManagedFunction. ";

 }

 leaf stmTargetUri {

 type inet:uri;

 mandatory true;

 description "It specifies the Uniform Resource Identifier (URI) of the STM

 consumer that shall receive the monitored signalling message copies ";

 reference "Clause 4.4 of 3GPP TS 32.158";

 }

 leaf administrativeState {

 default LOCKED;

 type types3gpp:BasicAdministrativeState ;

 description "It is used by the STM consumer to lock or unlock the

 StmCtrl instance in order to stop or start the signalling traffic

 monitoring";

 }

 leaf operationalState {

 config false;

 mandatory true;

 type types3gpp:OperationalState ;

 description "It is used by STM consumer to report its working state";

 }

 }

 grouping StmCtrlSubTree {

 description "Contains classes that manage Signalling traffic monitoring

 management";

 list StmCtrl {

 description "This IOC represents the STM Control and Configuration

 parameters of a particular STM controlling. It can be

 name-contained by SubNetwork, ManagedElement, or ManagedFunction.";

 key id;

 uses top3gpp:Top\_Grp ;

 container attributes {

 uses StmCtrlGrp ;

 }

 }

 }

}

<CODE ENDS>

\*\*\* END OF CHANGE \*\*\*