**3GPP TSG-SA5 Meeting #131-e *S5-203076***

**Online, , 25th May 2020 - 3rd Jun 2020**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **28.623** | **CR** | **0081** | **rev** | **-** | **Current version:** | **16.3.2** |  |
|  |
| *For* [***HELP***](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 | **x** | Core Network |  |

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| ***Title:***  | CR TS 28.623 stage3 add the NRM fragment for SON management |
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| ***Source to WG:*** | Huawei, Orange, Intel |
| ***Source to TSG:*** | S5 |
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| ***Work item code:*** | SON\_5G, EE\_5G |  | ***Date:*** | 2020-05-15 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-16 |
|  | *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-12 (Release 12)Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
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| ***Reason for change:*** | According to the agreed CR S5-202330 in SA5, the new IOC and attribute definitions for DANRManagementFunction, DESManagementFunction, CPCIConfigurationFunction, CESManagementFunction, DRACHOptimizationFunction, DMobilityRobustnessOptimizationFunction and DPCIConfigurationFunction IOCs are added. In order to enable the management of distributed SON functions and centralized SON functions, stage 3 Yang solution sets for the SON feature including feature DESManagementFunction, feature DMROFunction, feature DRACHOptimizationFunction, feature DPCIConfigurationFunction, feature CPCIConfigurationFunction and feature CESManagementFunction are added. |
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| ***Summary of change:*** | Add SON feature including feature DESManagementFunction, feature DMROFunction, feature DRACHOptimizationFunction, feature DPCIConfigurationFunction, feature CPCIConfigurationFunction and feature CESManagementFunction into SubNetwork and ManagedElement. |
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| ***Consequences if not approved:*** | The management of SON and EE functions would not be possible. |
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| ***Clauses affected:*** | D.2.2, D.2.5 |
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|  | **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 ...  |
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| ***Other comments:*** | It has been checked locally and it is not included in ETSI Forge.Related to the stage2 CR S5-202330.Related to the stage3 CR S5-203074. |
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| ***This CR's revision history:*** |  |

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| **First change** |

## D.2.2 module \_3gpp-common-managed-element.yang

module \_3gpp-common-managed-element {

 yang-version 1.1;

 namespace urn:3gpp:sa5:\_3gpp-common-managed-element;

 prefix "me3gpp";

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

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

 import \_3gpp-common-measurements { prefix meas3gpp; }

 import \_3gpp-common-fm { prefix fm3gpp; }

 organization "3GPP SA5";

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

 description "Defines ManagedElement which will be augmented

 by other IOCs";

 reference "3GPP TS 28.623

 Generic Network Resource Model (NRM)

 Integration Reference Point (IRP);

 Solution Set (SS) definitions

 3GPP TS 28.622

 Generic Network Resource Model (NRM)

 Integration Reference Point (IRP);

 Information Service (IS)

 3GPP TS 28.620

 Umbrella Information Model (UIM)";

 revision 2020-05-08 {

 reference "S5-202330";

 }

 revision 2020-02-24 {

 reference "S5-201365";

 }

 revision 2019-06-17 {

 description "Initial revision";

 }

 feature MeasurementsUnderManagedElement {

 description "The MeasurementSubtree shall be contained under ManagedElement";

 }

 feature FmUnderManagedElement {

 description "The FmSubtree shall be contained under ManagedElement";

 }

 feature DESManagementFunction {

 description "Classs representing Distributed SON or Domain-Centralized SON Energy Saving feature. The DESManagementFunction shall be contained under ManagedElement.";

 }

 feature DMROFunction {

 description "Classs representing D-SON function of MRO feature. The DMROFunction shall be contained under ManagedElement.";

 }

 feature DRACHOptimizationFunction {

 description "Classs representing D-SON function of RACH optimization feature. The DRACHOptimizationFunction shall be contained under ManagedElement.";

 }

 feature DPCIConfigurationFunction {

 description "Classs representing Distributed SON or Domain-Centralized SON function of PCI configuration feature. The DPCIConfigurationFunction shall be contained under ManagedElement.";

 }

 feature CPCIConfigurationFunction {

 description "Classs representing Cross Domain-Centralized SON function of PCI configuration feature. The CPCIConfigurationFunction shall be contained under ManagedElement.";

 }

 feature CESManagementFunction {

 description "Classs representing Cross Domain-Centralized SON Energy Saving feature. The CESManagementFunction shall be contained under ManagedElement.";

 }

 grouping ManagedElement\_Grp {

 description "Abstract class representing telecommunications resources.

 An ME communicates with a manager (directly or indirectly) for the

 purpose of being monitored and/or controlled. MEs may perform element

 management functionality.

 An ME (and its contained Function\_(s)) may or may not be geographically

 distributed. An ME (and its contained Function\_(s)) is often referred

 to as a Network Element";

 leaf dnPrefix {

 description "Provides naming context that allows the Managed

 Elements to be partitioned into logical domains.

 A Distingushed Name(DN) is defined by 3GPP TS 32.300,

 which splits the DN into a DN Prefix and Local DN";

 type types3gpp:DistinguishedName;

 }

 leaf userLabel {

 description "A user-friendly (and user assignable) name of this object.";

 type string;

 }

 leaf locationName {

 description "The physical location (e.g. an address) of an entity

 represented by a (derivative of) ManagedElement\_. It may contain no

 information to support the case where the derivative of

 ManagedElement\_ needs to represent a distributed multi-location NE.";

 config false;

 type string;

 }

 leaf-list managedBy {

 description "Relates to the role played by ManagementSystem\_ in the

 between ManagedSystem\_ and ManagedElement\_. This attribute contains

 a list of the DN(s) of the related subclasses of

 ManagementSystem\_ instance(s).";

 config false;

 type types3gpp:DistinguishedName;

 }

 leaf-list managedElementTypeList {

 description "The type of functionality provided by the ManagedElement.

 It may represent one ME functionality or a combination of

 more than one functionality.

 1) The allowed values of this attribute are the names of the IOC(s)

 that are (a) derived/subclassed from ManagedFunction and (b) directly

 name-contained by ManagedElement IOC (on the first level below

 ManagedElement), but with the string ’Function’ excluded.

 2) If a ManagedElement contains multiple instances of a ManagedFunction

 this attribute will not contain repeated values.

 3) The capitalisation (usage of upper/lower case) of characters in this

 attribute is insignificant. Thus, the NodeB should be case insensitive

 when reading these values.

 4) Two examples of allowed values are:

 - NodeB;

 - HLR, VLR.";

 config false;

 min-elements 1;

 type string;

 }

 }

 grouping ManagedElementGrp {

 description "Represents telecommunications equipment or

 TMN entities within the telecommunications network providing support

 and/or service to the subscriber.";

 uses ManagedElement\_Grp;

 uses meas3gpp:Measurements {

 if-feature MeasurementsUnderManagedElement ;

 }

 leaf vendorName {

 config false;

 type string;

 }

 leaf userDefinedState {

 type string;

 description "An operator defined state for operator specific usage";

 }

 leaf swVersion {

 config false;

 type string;

 }

 leaf priorityLabel {

 type uint32;

 mandatory true;

 }

 }

 list ManagedElement {

 description "Represents telecommunications equipment or

 TMN entities within the telecommunications network providing support

 and/or service to the subscriber.

 An ME communicates with a manager (directly or indirectly) over one or

 more management interfaces for the purpose of being monitored and/or

 controlled. MEs may or may not additionally perform element management

 functionality.

 An ME contains equipment that may or may not be geographically

 distributed. An ME is often referred to as a Network Element.

 A telecommunication equipment has software and hardware components.

 The IOC described above represents the case when the software component

 is designed to run on dedicated hardware component. In the case when the

 software is designed to run on ETSI NFV defined NFVI [15], the IOC

 description would exclude the NFVI component supporting the above

 mentioned subject software. A ManagedElement may be contained in either

 a SubNetwork or in a MeContext instance. A single ManagedElement may also

 exist stand-alone with no parent at all.

 The ManagedElement IOC may be used to represent combined ME functionalit

 y (as indicated by the managedElementType attribute and the contained

 instances of different functional IOCs).";

 key id; // TODO: should this have a min-element/max-elements?

 uses top3gpp:Top\_Grp;

 container attributes {

 uses ManagedElementGrp;

 }

 uses meas3gpp:MeasurementSubtree {

 if-feature MeasurementsUnderManagedElement ;

 }

 uses fm3gpp:FmSubtree {

 if-feature FmUnderManagedElement ;

 }

 }

}

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| **Next change** |

## D.2.5 module \_3gpp-common-subnetwork.yang

module \_3gpp-common-subnetwork {

 yang-version 1.1;

 namespace "urn:3gpp:sa5:\_3gpp-common-subnetwork";

 prefix "subnet3gpp";

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

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

 import \_3gpp-common-measurements { prefix meas3gpp; }

 import \_3gpp-common-fm { prefix fm3gpp; }

 import ietf-yang-schema-mount { prefix yangmnt; }

 organization "3GPP SA5";

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

 description "Defines basic SubNetwork which will be augmented by other IOCs";

 reference "3GPP TS 28.623

 Generic Network Resource Model (NRM)

 Integration Reference Point (IRP);

 Solution Set (SS) definitions

 3GPP TS 28.622

 Generic Network Resource Model (NRM)

 Integration Reference Point (IRP);

 Information Service (IS)

 3GPP TS 28.620

 Umbrella Information Model (UIM)";

 revision 2020-05-08 {

 reference "S5-202330";

 }

 revision 2020-03-11 {

 description "Added KPIs and corrections";

 reference "S5-201365, S5-201581, SP-200229";

 }

 revision 2020-02-24 {

 reference "S5-201365";

 }

 revision 2019-06-17 {

 description "Initial revision";

 }

 feature ExternalsUnderSubNetwork {

 description "Classes representing external entities like EUtranFrequency,

 ExternalGNBCUCPFunction, ExternalENBFunction

 are contained under a Subnetwork list/class.";

 }

 feature MeasurementsUnderSubNetwork {

 description "The MeasurementSubtree shall be contained under SubNetwork

 indicating the support of Measurements and/or KPIs";

 }

 feature FmUnderSubNetwork {

 description "The FmSubtree shall be contained under SubNetwork";

 }

 feature DESManagementFunction {

 description "Classs representing Distributed SON or Domain-Centralized SON Energy Saving feature. The DESManagementFunction shall be contained under subnetwork.";

 }

 feature DMROFunction {

 description "Classs representing D-SON function of MRO feature. The DMROFunction shall be contained under subnetwork.";

 }

 feature DRACHOptimizationFunction {

 description "Classs representing D-SON function of RACH optimization feature. The DRACHOptimizationFunction shall be contained under subnetwork.";

 }

 feature DPCIConfigurationFunction {

 description "Classs representing Distributed SON or Domain-Centralized SON function of PCI configuration feature. The DPCIConfigurationFunction shall be contained under subnetwork.";

 }

 feature CPCIConfigurationFunction {

 description "Classs representing Cross Domain-Centralized SON function of PCI configuration feature. The CPCIConfigurationFunction shall be contained under subnetwork.";

 }

 feature CESManagementFunction {

 description "Classs representing Cross Domain-Centralized SON Energy Saving feature. The CESManagementFunction shall be contained under subnetwork.";

 }

 grouping Domain\_Grp {

 description "A domain is a partition of instances of managed entities

 such that :

 - the group represents a topological structure which describes the

 potential for connectivity

 - Subject to common administration

 - With common characteristics";

 leaf dnPrefix {

 type types3gpp:DistinguishedName;

 reference "Annex C of 32.300 ";

 }

 leaf userLabel {

 type string;

 description "A user-friendly (and user assignable) name of this object.";

 }

 leaf userDefinedNetworkType {

 type string;

 description "Textual information indicating network type, e.g. 'UTRAN'.";

 }

 }

 grouping SubNetworkGrp {

 uses Domain\_Grp;

 uses meas3gpp:Measurements;

 uses meas3gpp:KPIs;

 leaf-list setOfMcc {

 description "Set of Mobile Country Code (MCC).

 The MCC uniquely identifies the country of domicile

 of the mobile subscriber. MCC is part of the IMSI (3GPP TS 23.003)

 This list contains all the MCC values in subordinate object

 instances to this SubNetwork instance.

 See clause 2.3 of 3GPP TS 23.003 for MCC allocation principles.

 It shall be supported if there is more than one value in setOfMcc

 of the SubNetwork. Otherwise the support is optional.";

 type types3gpp:Mcc;

 }

 leaf priorityLabel {

 mandatory true;

 type uint32;

 }

 }

 list SubNetwork {

 key id;

 description "Represents a set of managed entities";

 uses top3gpp:Top\_Grp;

 container attributes {

 uses SubNetworkGrp;

 leaf-list parents {

 description "Reference to all containg SubNetwork instances

 in strict order from the root subnetwork down to the immediate

 parent subnetwork.

 If subnetworks form a containment hierarchy this is

 modeled using references between the child SubNetwork and the parent

 SubNetworks.

 This reference MUST NOT be present for the top level SubNetwork and

 MUST be present for other SubNetworks.";

 type leafref {

 path "../../../SubNetwork/id";

 }

 }

 leaf-list containedChildren{

 description "Reference to all directly contained SubNetwork instances.

 If subnetworks form a containment hierarchy this is

 modeled using references between the child SubNetwork and the parent

 SubNetwork.";

 type leafref {

 path "../../../SubNetwork/id";

 }

 }

 }

 uses meas3gpp:MeasurementSubtree {

 if-feature MeasurementsUnderSubNetwork ;

 }

 uses fm3gpp:FmSubtree {

 if-feature FmUnderSubNetwork ;

 }

 yangmnt:mount-point children-of-SubNetwork {

 description "Mountpoint for ManagedElement";

 reference "RFC8528 YANG Schema Mount";

 }

 // augment external parts here

 }

}

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| **End of Changes** |