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Contents

Foreword

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Introduction

The present document is part of a TS-family covering the 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Telecommunication management; as identified below:

TS 28.657 Evolved Universal Terrestrial Radio Access Network (E-UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP); Requirements

TS 28.658 Evolved Universal Terrestrial Radio Access Network (E-UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)

TS 28.659 Evolved Universal Terrestrial Radio Access Network (E-UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions

1 Scope

The present document specifies the E-UTRAN network resource information that can be communicated between an IRPAgent and an IRPManager for telecommunication network management purposes, including management of converged networks.

This document specifies the semantics and behaviour of information object class attributes and relations visible across the reference point in a protocol and technology neutral way. It does not define their syntax and encoding.

The E-UTRAN NRM IRP comprises a set of specifications defining Requirements, a protocol neutral Information Service and one or more Solution Set(s).

The present document specifies the protocol neutral E-UTRAN NRM IRP: Information Service (IS). It reuses relevant parts of the Generic NRM IRP: IS in 3GPP TS 28.622 [6], either by direct reuse or sub-classing, and in addition to that defines E-UTRAN specific Information Object Classes.

In order to access the information defined by this NRM, an Interface IRP such as the "Basic CM IRP" is needed (3GPP TS 32.602 [7]). However, which Interface IRP is applicable is outside the scope of the present document.

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 TS 32.101: "Telecommunication management; Principles and high level requirements".

[2] 3GPP TS 32.102: "Telecommunication management; Architecture".

[3] 3GPP TS 23.003: "Numbering, addressing and identification".

[4] 3GPP TS 32.300: "Telecommunication management; Configuration Management (CM); Name convention for Managed Objects".

[5] 3GPP TS 28.628: "Self-Organizing Networks (SON) Policy Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS) ".

[6] 3GPP TS 28.622: "Telecommunication management; Generic Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".

[7] 3GPP TS 32.602: "Telecommunication management; Configuration Management (CM); Basic CM Integration Reference Point (IRP) Information Service (IS)".

[8] 3GPP TS 36.321: "Universal Terrestrial Access Network (UTRAN); Medium Access Control (MAC) protocol specification".

[9] 3GPP TS 23.401: "General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access".

[10] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA) Radio Resource Control (RRC); Protocol specification".

[11] 3GPP TS 36.300: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2".

[12] 3GPP TS 36.211: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical Channels and Modulation"

[13] 3GPP TS 36.101: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception"

[14] 3GPP TS 36.104: "Evolved Universal Terrestrial Radio Access (E_UTRA); Base Station (BS) radio transmission and reception"

[15] 3GPP TS 32.500: "Telecommunication Management; Self-Organizing Networks (SON); Concepts and requirements"

[16] 3GPP TS 32.150: "Telecommunication management; Integration Reference Point (IRP) Concept and definitions"

[17] 3GPP TS 21.905: "Vocabulary for 3GPP Specifications"

[18] 3GPP TS 32.111-2: "Telecommunication management; Fault Management; Part 2: Alarm Integration Reference Point (IRP): Information Service (IS)"

[19] 3GPP TS 23.002: "Network Architecture"

[20] 3GPP TS 32.652: "Telecommunication management; Configuration Management (CM); GERAN network resources Integration Reference Point (IRP); Network Resource Model (NRM)"

[21] 3GPP TS 28.652: "Telecommunication management; Universal Terrestrial Radio Access Network (UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)"

[22] 3GPP2 S.S0028-D "OAM&P for cdma2000 (Overview, 3GPP R7 Delta Specification, 3GPP2 Network Resource Model IRP)"

[23] 3GPP TS 28.708: "Telecommunication management; Evolved Packet Core (EPC) Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)"

[24] 3GPP TS 36.423: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 application protocol (X2AP)".

[25] 3GPP TS 36.213: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures".

[26] 3GPP TS 28.625: "Telecommunication management; State Management Data Definition Integration Reference Point (IRP); Information Service (IS)".

[27] 3GPP TS 36.413: "Evolved Universal Terrestrial Access Network (E-UTRAN); S1 Application Protocol (S1AP)".

[28] 3GPP TS 36.443: "Evolved Universal Terrestrial Access Network (E-UTRAN); M2 Application Protocol (M2AP)".

[29] 3GPP TS 22.011: "Service accessibility".

[30] 3GPP TS 32.422: "Telecommunication management; Subscriber and equipment trace; Trace control and configuration management".

[31] 3GPP TS 28.662: "Telecommunication management; Generic Radio Access Network (RAN) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".

[32] 3GPP TS 32.662: "Telecommunication management; Configuration Management (CM); Kernel CM; Information service (IS)".

[33] 3GPP TS 23.203: "Policy and charging control architecture".

[34] 3GPP TS 23.207: "End-to-end Quality of Service (QoS) concept and architecture".

[35] RFC 2474: "Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers".

[36] 3GPP TS 45.008: "Technical Specification Group GSM/EDGE Radio Access Network; Radio subsystem link control".

[37] 3GPP TS 32.302: "Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP): Information Service (IS)".

[38] 3GPP TS 36.133: "Universal Terrestrial Access Network (UTRAN); Requirements for support of radio resource management".

[39] 3GPP TS 28.657: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP); Requirements".[40] 3GPP TS 28.541: "Management and orchestration of networks and network slicing; NR and NG-RAN Network Resource Model (NRM); Stage 2 and stage 3".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TS 32.150 [16], TS 32.101 [1], TS 32.102 [2] and TS 21.905 [17] and the following apply.

Association: See definition in TS 28.622 [6].

Network Resource Model (NRM): See definition in TS 28.622 [6].

eNodeB: A logical node responsible for radio transmission/reception in one or more cells to/from the User Equipment. It terminates the S1 interface towards the EPC.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TS 32.150 [16], TS 32.101 [1], TS 32.102 [2] and TS 21.905 [17] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TS 28.657 [39], TS 32.150 [16], TS 32.101 [1], TS 32.102 [2] and TS 21.905 [17], in that order.

DeNB	Donor eNodeB
DN	Distinguished Name (see 3GPP TS 32.300 [4])
E-UTRA	Evolved Universal Terrestrial Radio Access
E-UTRAN	Evolved Universal Terrestrial Radio Access Network
MBSFN	Multimedia Broadcast multicast service Single Frequency Network
NR	Neighbour cell Relation
PM	Performance Management
RDN	Relative Distinguished Name (see 3GPP TS 32.300 [4])
RN	Relay Node

4 Model

4.1 Imported information entities and local labels

Label reference	Local label
3GPP TS 28.625 [26], attribute, `administrativeState`	`administrativeState`
3GPP TS 28.625 [26], attribute, `availabilityStatus`	`availabilityStatus`
3GPP TS 28.625 [26], attribute, `operationalState`	`operationalState`
3GPP TS 28.622 [6], IOC, `Top`	`Top`
3GPP TS 28.622 [6], IOC, `ManagedElement`	`ManagedElement`

3GPP TS 28.622 [6], IOC, SubNetwork	SubNetwork
3GPP TS 28.622 [6], IOC, ManagedFunction	ManagedFunction
3GPP TS 28.622 [6], IOC, Link	Link
3GPP TS 28.708 [23], IOC, MMEFunction	MMEFunction
3GPP TS 28.708 [23], IOC, ExternalMMEFunction	ExternalMMEFunction
3GPP TS 28.652 [21], IOC, UtranRelation	UtranRelation
3GPP TS 28.662 [31], IOC, AntennaFunction	AntennaFunction
3GPP TS 28.662 [31], IOC, TmaFunction	TmaFunction
3GPP TS 32.652 [20], IOC, GsmRelation	GsmRelation
3GPP2 TS S.S0028 [22], IOC, ExternalSector	ExternalSector
3GPP TS 28.708 [23], IOC, EP_RP_EPS	EP_RP_EPS
3GPP TS 28.708 [23], IOC, QCISet	QCISet
3GPP TS 28.662 [31], IOC, SectorEquipmentFunction	SectorEquipmentFunction
3GPP TS 28.628 [5], IOC, EnergySavingProperties	EnergySavingProperties
3GPP TS 28.541 [40], IOC, EP_X2C	EP_X2C
3GPP TS 28.541 [40], IOC, EP_X2U	EP_X2U
3GPP TS 28.541 [40], IOC, GNBFunction	GNBFunction
3GPP TS 28.541 [40], IOC, GNBCUCPFunction	GNBCUCPFunction
3GPP TS 28.541 [40], IOC, GNBCUUPFunction	GNBCUUPFunction

4.2 Class diagram

4.2.1 Relationships

This clause depicts the set of classes (e.g. IOCs) that encapsulates the information relevant for this IRP. 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.

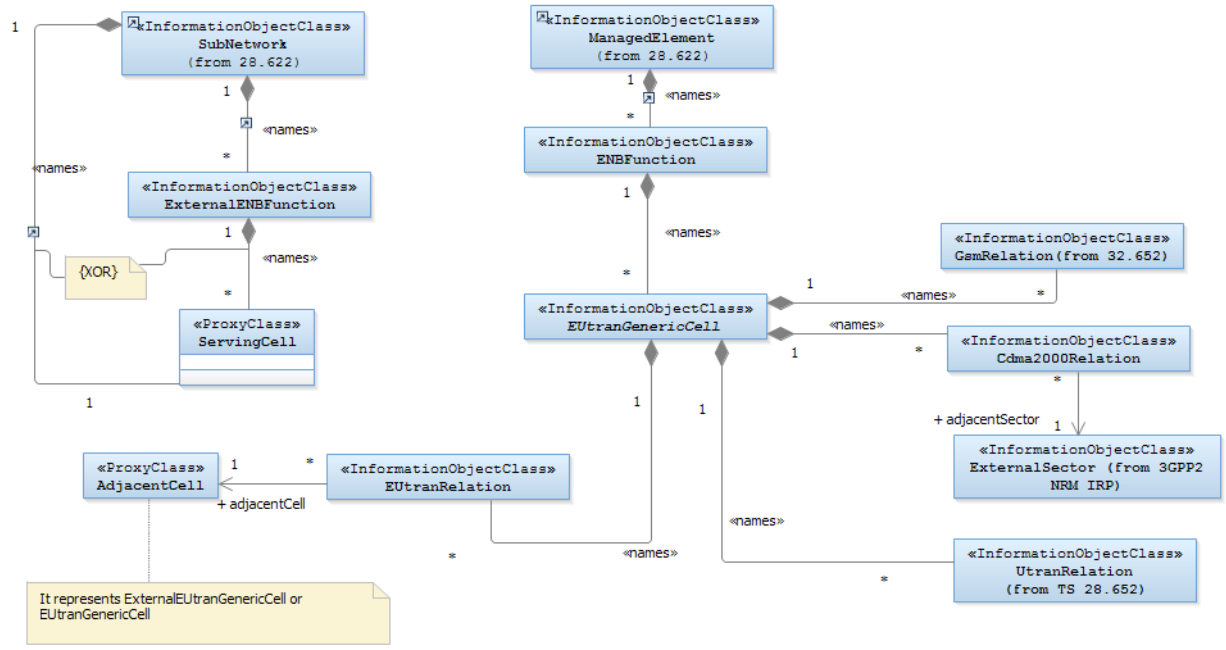
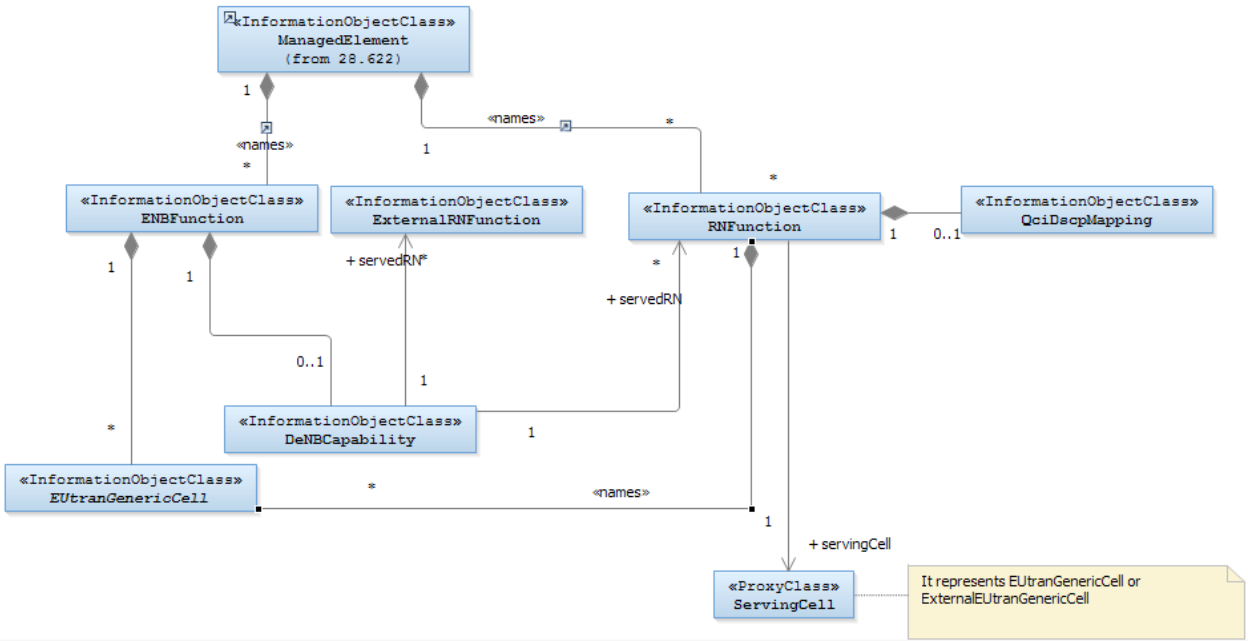


Figure 4.2.1-1: Cell view of E-UTRAN NRM



NOTE 1: If an instance of the *ServesRN* association is present, then a corresponding instance of *ServedByEGC* must be present. In this case, the `ENBFunction` and `RNFunction` instances are under the management scope of the same IRPAgent.
If an instance of the *ServesExtRN* association is present, then a corresponding instance of *ServedByExtEGC* must be present. In this case, the `ENBFunction` and `RNFunction` instances are under the management scope of two different IRPAgents.

NOTE 2: The modelling of the DeNB capability as a separate IOC or as attributes of `ENBFunction` is FFS

Figure 4.2.1-2: E-UTRAN relaying view of E-UTRAN NRM

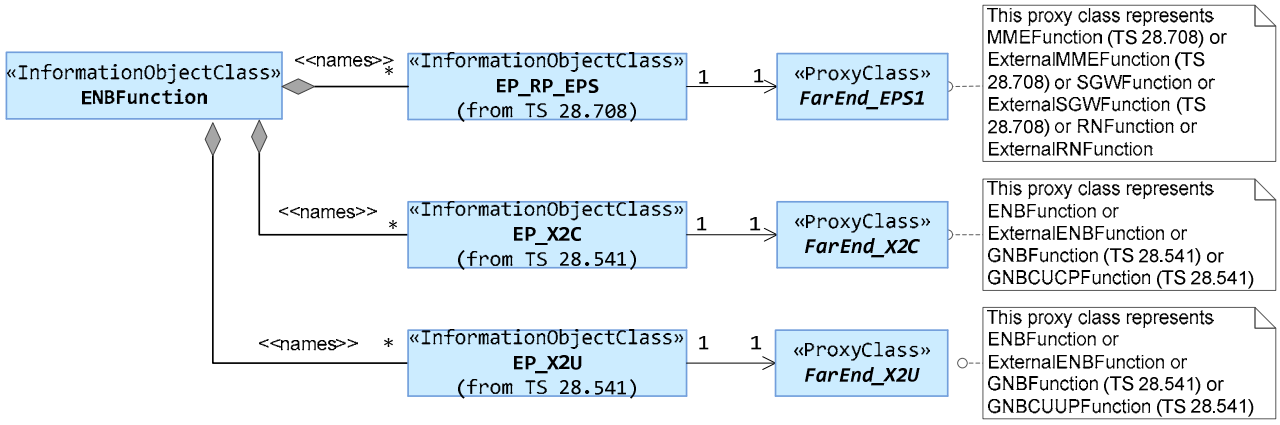


Figure 4.2.1-3: Transport view of E-UTRAN NRM

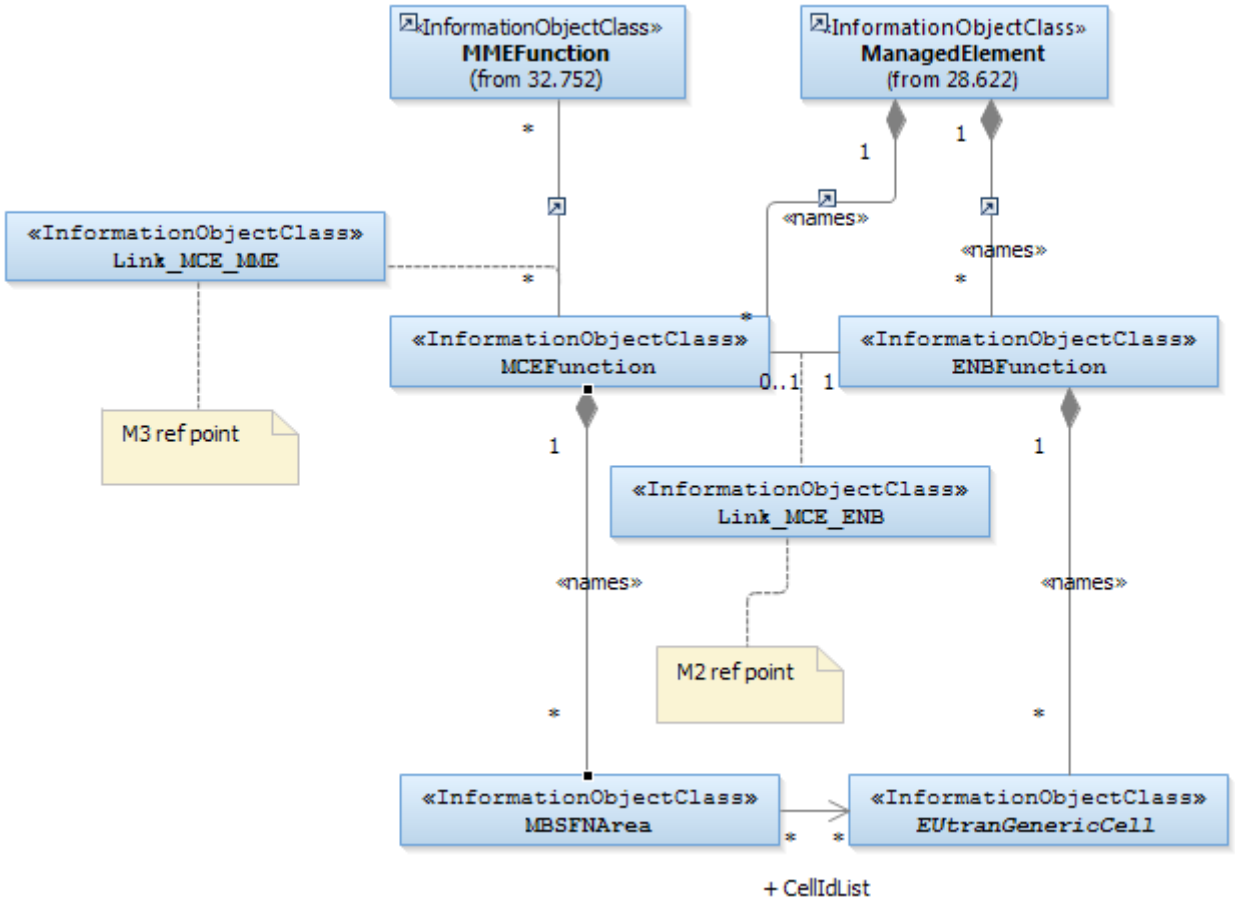


Figure 4.2.1-4: MBMS view of E-UTRAN NRM 1

NOTE 1: This is E-UTRAN NRM containment/relationship Figure form view of MBMS when MCE and ENB belong to one Network Element.

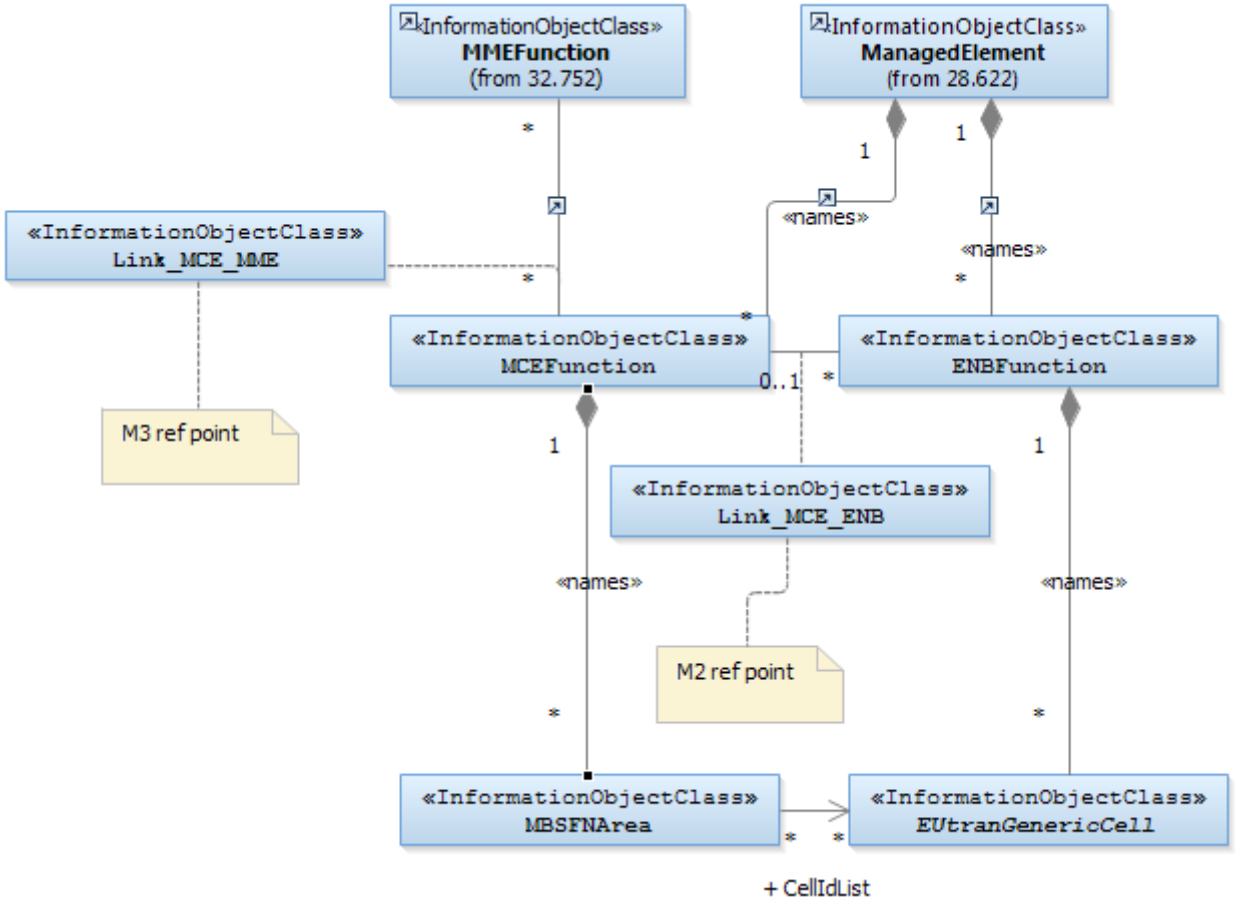


Figure 4.2.1-5: MBMS view of E-UTRAN NRM 2

NOTE 2: This is E-UTRAN NRM containment/relationship Figure form view of MBMS when MCE and ENB belong to different Network Elements.

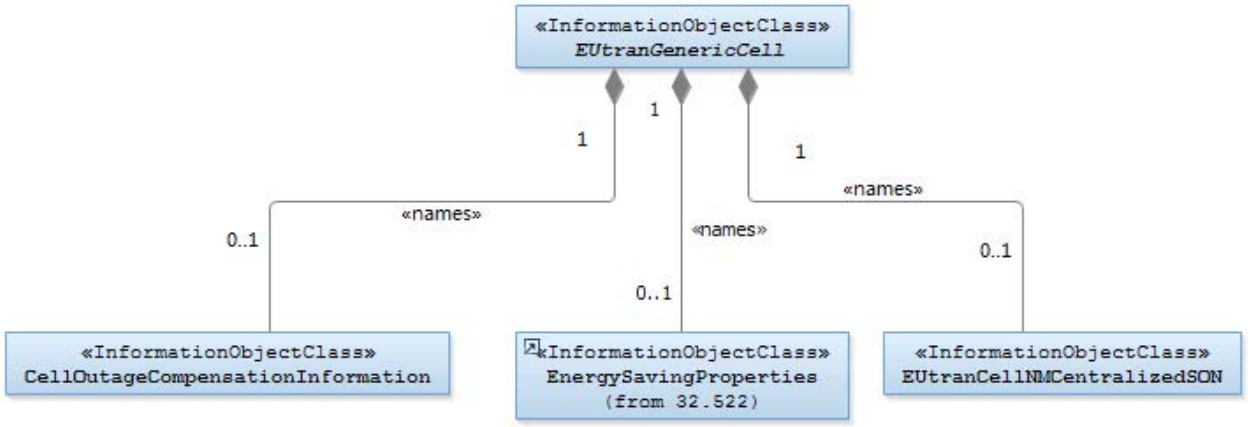


Figure 4.2.1-6: SON related Attributes NRM IOCs (Containment Relationship)

4.2.2 Inheritance

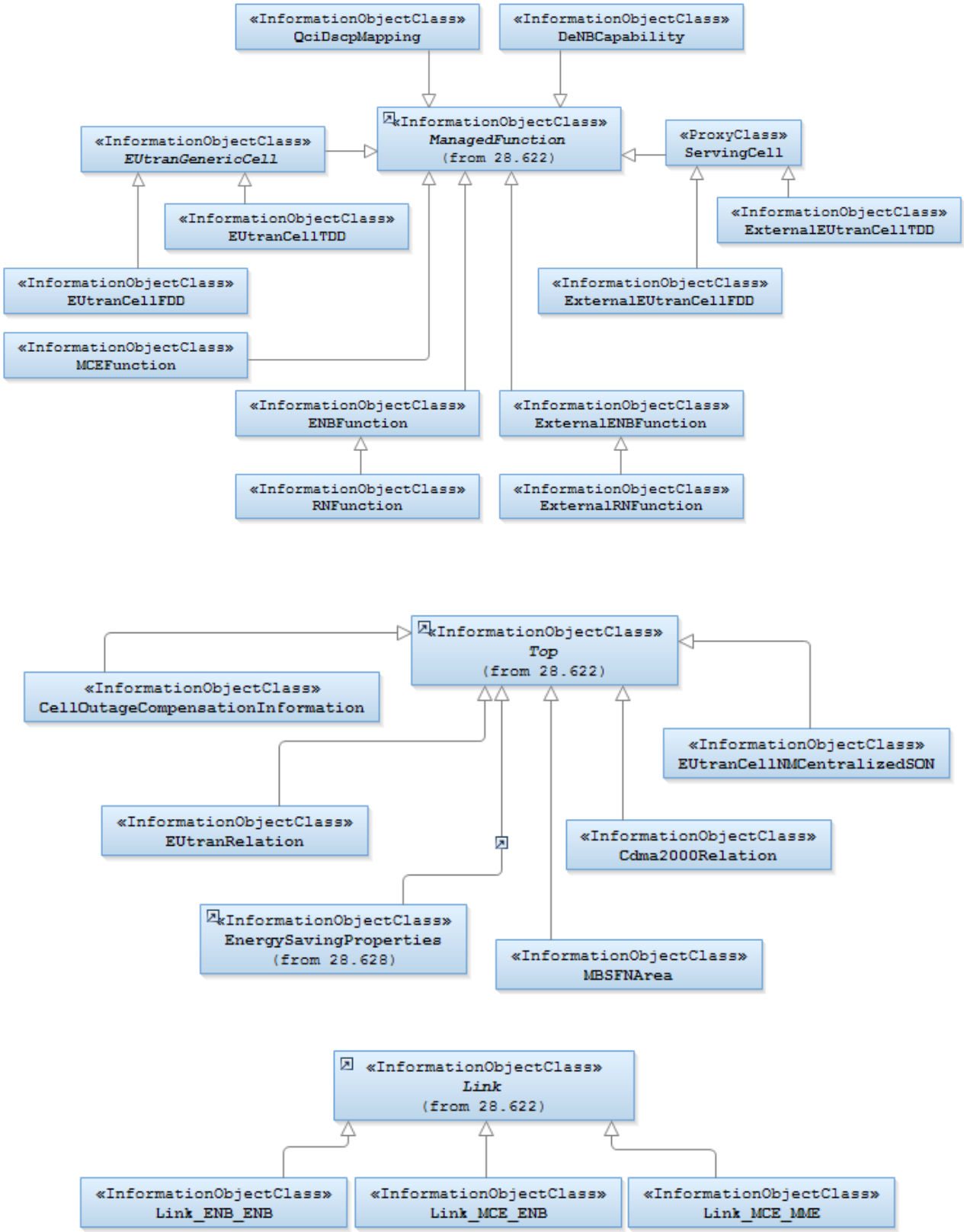


Figure 4.2.2-1: E-UTRAN NRM Inheritance Hierarchy

4.3 Class definitions

4.3.1 ENBFunction

4.3.1.1 Definition

This IOC represents eNB functionality. For more information about the eNB, see 3GPP TS 23.002 [19].

4.3.1.2 Attributes

Attribute name	Support Qualifier	isReadable	isWritable	isInvariant	isNotifyable
intraANRSwitch	CM	M	M	-	M
iRATANRSwitch	CM	M	M	-	M
eNBId	M	M	-	-	M
x2BlackList	CM	M	M	-	M
x2WhiteList	CM	M	M	-	M
x2HOBlackList	CM	M	M	-	M
x2IpAddressList	O	M	-	-	M
tceIDMappingInfoList	CM	M	M	-	M
sharNetTceMappingInfoList	CM	M	M	-	M
netListeningRSForRIBS	CM	M	M	-	M

4.3.1.3 Attribute constraints

Name	Definition
intraANRSwitch Support Qualifier	The condition is “ANR function is supported”.
iRATANRSwitch Support Qualifier	The condition is “ANR function is supported”.
x2BlackList Support Qualifier	The condition is "ANR function is supported".
x2WhiteList Support Qualifier	The condition is "ANR function is supported".
x2HOBlackList Support Qualifier	The condition is "ANR function is supported".
tceIDMappingInfoList Support Qualifier	The condition is “MDT function is supported” and only one PLMN is supported
sharNetTceMappingInfoList Support Qualifier	The condition is “MDT function and several PLMNs are supported”.
netListeningRSForRIBS Support Qualifier	The condition is “Radio Interface Based Synchronization function is supported”.

4.3.1.4 Notifications

The common notifications defined in subclause 4.5 are valid for this IOC, without exceptions or additions.

4.3.2 ExternalENBFunction

4.3.2.1 Definition

This IOC represents an external eNB functionality. For more information about the eNB, see 3GPP TS 23.002 [19].

4.3.2.2 Attributes

Attribute name	Support Qualifier	isReadable	isWritable	isInvariant	isNotifyable
eNBId	M	M	M	-	M

4.3.2.3 Attribute constraints

None.

4.3.2.4 Notifications

The common notifications defined in subclause 4.5 are valid for this IOC, without exceptions or additions.

4.3.3 EUtranGenericCell

4.3.3.1 Definition

This abstract IOC represents the common properties of an E-UTRAN generic cell. For more information about cells, see 3GPP TS 23.401 [9].

4.3.3.2 Attributes

Attribute name	Support Qualifier	isReadable	isWritable	isInvariant	isNotifyable
cellLocalId	M	M	M	-	M
cellLocalIdList	CM	M	M	-	M
cellSize	M	M	M	-	M
plmnIdList	M	M	M	-	M
cellAccessInfoList	O	M	M	-	M
tac	M	M	M	-	M
pci	M	M	CM	-	M
pciList	CM	M	M	-	M
maximumTransmissionPower	M	M	CM	-	M
nbIoTcellFlag (see Note 3)	CM	M	-	-	M
referenceSignalPower	M	M	M	-	M
pb	M	M	M	-	M
partOfSectorPower	CM	M	M	-	M
relatedTmaList	CO	M	-	-	M
relatedAntennaList	CO	M	-	-	M
relatedSector	CM	M	-	-	M
cellResvInfo	CM	M	M	-	M
allowedAccessClasses	M	M	M	-	M
isChangeForEnergySavingAllowed	CM	M	M	-	M
operationalState (see Note 1)	CM	M	-	-	M (see Note 2)
administrativeState (see Note 1)	CM	M	-	-	M (see Note 2)
availabilityStatus (see Note 1)	CM	M	-	-	M (see Note 2)

Note 1: No state propagation is implied.

Note 2: The attribute value change is conveyed by the notifyStateChange notification.

Note 3: For NB-IoT, as indicated in the relevant subclauses in TS 36.300 [12], a number of E-UTRA protocol functions supported by all UEs are not used for NB-IoT and need not be supported by eNBs and UEs only using NB-IoT. The attributes cellLocalId, tac, pci, maximumTransmissionPower are Mandatory for NB-IoT cell, Whether other attributes are needed for NB-IoT cell are out of scope of this document.

4.3.3.3 Attribute constraints

Name	Definition
cellLocalIdList CM Support Qualifier	Active Antenna System management function is supported
pci CM Write Qualifier	NM-Centralized PCI assignment (see TS 32.500, ref [15] subclause 6.1.6) is supported.
pciList CM Support Qualifier	Either EM-Centralized or Distributed PCI assignment (see TS 32.500, ref [15] subclause 6.1.6) is supported.
partOfSectorPower CM support qualifier	The IOC SectorEquipmentFunction is used.
maximumTransmissionPower CM Write Qualifier	The IOC SectorEquipmentFunction is not used.
relatedTmaList CO Support Qualifier	The IOC SectorEquipmentFunction is not used.
relatedAntennaList CO Support Qualifier	The IOC SectorEquipmentFunction is not used.
relatedSector CM Support Qualifier	The IOC SectorEquipmentFunction is used.
cellResvInfo CM Support Qualifier	The MBSFN Transmission (see TS 36.300, ref[11] subclause 15.3.3) is supported.
isChangeForEnergySavingAllowed CM Support Qualifier	The energy saving functionality is supported and uses distributed architecture.
nbIoTcellFlag CM Support Qualifier	The NB-IoT (see TS 36.300 ref [11]) is supported.

4.3.3.4 Notifications

The common notifications defined in subclause 4.5 are valid for this IOC. In addition, the following set of notification, defined in 3GPP TS 32.662 [32], is also valid.

Name	Qualifier	Notes
notifyStateChange	O	

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4.3.4 ExternalEUtranGenericCell

4.3.4.1 Definition

This abstract IOC represents the properties of an E-UTRAN generic cell controlled by another IRPAgent. This IOC contains necessary attributes for inter-system and intra-system handover. It also contains a subset of the attributes of related IOCs controlled by another IRPAgent. The way to maintain consistency between the attribute values of these IOCs is outside the scope of the present document.

4.3.4.2 Attributes

Attribute name	Support Qualifier	isReadable	isWritable	isInvariant	isNotifyable
Ppci	M	M	M	-	M
plmnIdList	M	M	M	-	M
cellLocalId	M	M	M	-	M
eNBId	CM	M	M	-	M

4.3.4.3 Attribute constraints

Name	Definition
eNBId CM Support Qualifier	This instance of ExternalEUtranGenericCell IOC is directly contained by SubNetwork.

4.3.4.4 Notifications

The common notifications defined in subclause 4.5 are valid for this IOC, without exceptions or additions.

4.3.5 EUtranCellFDD

4.3.5.1 Definition

This IOC represents the properties of E-UTRAN FDD cell.

4.3.5.2 Attributes

Attribute name	Support Qualifier	isReadable	isWritable	isInvariant	isNotifyable
earfcnDl	M	M	M	-	M
earfcnUl	M	M	M	-	M

4.3.5.3 Attribute constraints

None.

4.3.5.4 Notifications

The common notifications defined in subclause 4.5 are valid for this IOC, without exceptions or additions.

4.3.6 ExternalEUtranCellFDD

4.3.6.1 Definition

This IOC represents the common properties of external E-UTRAN FDD cell.

4.3.6.2 Attributes

Attribute name	Support Qualifier	isReadable	isWritable	isInvariant	isNotifyable
earfcnDl	M	M	M	-	M
earfcnUl	M	M	M	-	M

4.3.6.3 Attribute constraints

None.

4.3.6.4 Notifications

The common notifications defined in subclause 4.5 are valid for this IOC, without exceptions or additions.

4.3.7 EUtranCellTDD

4.3.7.1 Definition

This IOC represents the properties of E-UTRAN cell TDD.

4.3.7.2 Attributes

Attribute name	Support Qualifier	isReadable	isWritable	isInvariant	isNotifyable
earfcn	M	M	M	-	M
sfAssignment	M	M	M	-	M
specialSfPatterns	M	M	M	-	M

Editor's Note: Whether sfAssignment and specialSfPatterns are needed for NB-IoT cell are FFS.

4.3.7.3 Attribute constraints

None.

4.3.7.4 Notifications

The common notifications defined in subclause 4.5 are valid for this IOC, without exceptions or additions.

4.3.8 ExternalEUtranCellTDD

4.3.8.1 Definition

This IOC represents the common properties of external E-UTRAN cell TDD.

4.3.8.2 AttributesAttribute name	Support Qualifier	isReadable	isWritable	isInvariant	isNotifyable
earfcn	M	M	M	-	M

4.3.8.3 Attribute constraints

None.

4.3.8.4 Notifications

The common notifications defined in subclause 4.5 are valid for this IOC, without exceptions or additions.

4.3.9 EUtranRelation

4.3.9.1 Definition

This IOC represents a NR from a source cell to a target cell, where the target cell is a `EUtranGenericCell` or `ExternalEUtranGenericCell` instance.

The source cell can be an `EUtranGenericCell` instance. This is the case for an Intra-E-UTRAN NR.

The source cell can be a UtranGenericCell instance. This is the case for Inter-RAT NR from UTRAN to E-UTRAN. See 3GPP TS 28.652 [21].

The source cell can be a GsmCell instance. This is the case for Inter-RAT NR from GERAN to E-UTRAN. See 3GPP TS 32.652 [20].

NRs are unidirectional.

4.3.9.2 Attributes

Attribute name	Support Qualifier	isReadable	isWritable	isInvariant	isNotifyable
id	M	M	-	M	-
tCI	O	M	M	-	M
isRemoveAllowed	CM	M	M	-	M
isHOAllowed	CM	M	M	-	M
isICICInformationSendAllowed	CM	M	M	-	M
isLBAllowed	CM	M	M	-	M
isESCoveredBy	CM	M	M	-	M
qOffset	CM	M	M	-	M
cellIndividualOffset	CM	M	-	-	M
Attribute related to role					
adjacentCell	M	M	M	-	M

4.3.9.3 Attribute constraints

Name	Definition
`isRemoveAllowed` Support Qualifier	The condition is "ANR function is supported in the source cell, and the source cell is an `EUtranGenericCell` or a `UtranGenericCell`".
`isHOAllowed` Support Qualifier	The condition is "ANR function is supported in the source cell, and the source cell is an `EUtranGenericCell` or a `UtranGenericCell`".
`isICICInformationSendAllowed` Support Qualifier	The condition is "ICIC function is supported".
`isLBAllowed` Support Qualifier	The condition is "LB function is supported".
`isESCoveredBy` Support Qualifier	The condition is "Energy Saving function is supported".
`qOffset` Support Qualifier	The condition is "Neither an EM-centralized nor a distributed SON function support the SON use cases for which this attribute is relevant (see §6.5.1)".
`cellIndividualOffset` Support Qualifier	The condition is "HOO function is supported" or "Load Balancing Optimization function is supported".

4.3.9.4 Notifications

The common notifications defined in subclause 4.5 are valid for this IOC, without exceptions or additions.

4.3.10 `Link_ENB_ENB`

4.3.10.1 Definition

This IOC represents the link between two `ENBFunction`.

4.3.10.2 Attributes

None.

4.3.10.3 Attribute constraints

None.

4.3.10.4 Notifications

The common notifications defined in subclause 4.5 are valid for this IOC, without exceptions or additions.

4.3.11 `Cdma2000Relation`

4.3.11.1 Definition

This IOC represents a NR from one `EUtranGenericCell` to a CDMA2000 sector. NRs are directional.

See 3GPP2 TS S.S0028 [22]

4.3.11.2 Attributes

Attribute name	Support Qualifier	isReadable	isWritable	isInvariant	isNotifyable
`id`	M	M	-	M	-
Attribute related to role					
`adjacentSector`	M	M	-	-	M

4.3.11.3 Attribute constraints

None.

4.3.11.4 Notifications

The common notifications defined in subclause 4.5 are valid for this IOC, without exceptions or additions.

4.3.12 MCEFunction

4.3.12.1 Definition

This IOC represents MCE functionality. For more information about the MCE, see 3GPP TS 36.300 [11].

4.3.12.2 Attributes

None.

4.3.12.3 Attribute constraints

None.

4.3.12.4 Notifications

The common notifications defined in subclause 4.5 are valid for this IOC, without exceptions or additions.

4.3.13 MBSFNArea

4.3.13.1 Definition

This IOC represents MBSFN Area. For more information about MBSFN Area, see 3GPP TS 36.300 [11].

4.3.13.2 Attributes

Attribute name	Support Qualifier	isReadable	isWritable	isInvariant	isNotifyable
id	M	M	-	M	-
mbsfnAreaId	M	M	M	-	M
Attribute related to role					
cellIdList	M	M	M	-	M

4.3.13.3 Attribute constraints

None.

4.3.13.4 Notifications

Name	Qualifier	Notes
notifyAttributeValueChange	See Kernel CM IRP (3GPP TS 32.662 [32])	
notifyObjectCreation	See Kernel CM IRP (3GPP TS 32.662 [32])	
notifyObjectDeletion	See Kernel CM IRP (3GPP TS 32.662 [32])	

4.3.14 Link_MCE_ENB

4.3.14.1 Definition

This IOC models the M2 reference point as defined in TS 36.300 [11].

4.3.14.2 Attributes

None.

4.3.14.3 Attribute constraints

None.

4.3.14.4 Notifications

The common notifications defined in subclause 4.5 are valid for this IOC, without exceptions or additions.

4.3.15 Link_MCE_MME

4.3.15.1 Definition

This IOC models the M3 reference point as defined in TS 36.300 [11].

4.3.15.2 Attributes

None.

4.3.15.3 Attribute constraints

None.

4.3.15.4 Notifications

The common notifications defined in subclause 4.5 are valid for this IOC, without exceptions or additions.

4.3.16 RNFunction

4.3.16.1 Definition

This IOC represents Relay Node (RN) functionality. For more information about RN, see 3GPP TS 36.300 [11].

4.3.16.2 Attributes

Attribute name	Support Qualifier	isReadable	isWritable	isInvariant	isNotifyable
candidateDeNBCells	M	M	M	-	M
Attribute related to role					
servingCell	M	M	M	-	M

Editor's note: the need of attribute candidateDeNBCells is for FFS.

4.3.16.3 Attribute constraints

None.

4.3.16.4 Notifications

The common notifications defined in subclause 4.5 are valid for this IOC, without exceptions or additions.

4.3.17 ExternalRNFunction

4.3.17.1 Definition

This IOC represents the properties of a Relay Node (RN) controlled by another IRPAgent. For more information about RN, see 3GPP TS 36.300 [11].

4.3.17.2 Attributes

None.

4.3.17.3 Attribute constraints

None.

4.3.17.4 Notifications

The common notifications defined in subclause 4.5 are valid for this IOC, without exceptions or additions.

4.3.18 DeNBCapability

4.3.18.1 Definition

This IOC represents the capability for an eNodeB to act as a Donor eNodeB (DeNB) functionality. For more information about the DeNB, see 3GPP TS 36.300 [11].

4.3.18.2 Attributes

Attribute name	Support Qualifier	isReadable	isWritable	isInvariant	isNotifyable
maxNbrRNAllowed	M	M	M	-	M
Attribute related to role					
servedRN	M	M	M	-	M

4.3.18.3 Attribute constraints

None.

4.3.18.4 Notifications

The common notifications defined in subclause 4.5 are valid for this IOC, without exceptions or additions.

4.3.19 CellOutageCompensationInformation

4.3.19.1 Definition

This IOC represents information relevant in case of a Cell Outage Compensation taking place.

4.3.19.2 Attributes

Attribute name	Support Qualifier	isReadable	isWritable	isInvariant	isNotifyable
id	M	M	-	M	-
cOCStatus	M	M	-	-	M
isCOCAllowed	M	M	M	-	M

4.3.19.3 Attribute constraints

None.

4.3.19.4 Notifications

The common notifications defined in subclause 4.5 are valid for this IOC, with the addition that `notifyAttributeValueChange` shall be supported (Support Qualifier M).

4.3.20 QciDscpMapping

4.3.20.1 Definition

This IOC represents a set of mapping between QCI and DSCP.

4.3.20.2 Attributes

Attribute Name	Support Qualifier	isReadable	isWritable	isInvariant	isNotifyable
qciDscpMappingList	M	M	M	-	M

4.3.20.3 Attribute constraints

N one.

4.3.20.4 Notifications

Name	Qualifier	Notes
notifyAttributeValueChange	See Kernel CM IRP (3GPP TS 32.662 [32])	
notifyObjectCreation	See Kernel CM IRP (3GPP TS 32.662 [32])	
notifyObjectDeletion	See Kernel CM IRP (3GPP TS 32.662 [32])	

4.3.21 EUtranCellNMCentralizedSON

4.3.21.1 Definition

This abstract IOC represents the properties of an E-UTRAN generic cell which relate to SON functions. Its purpose is to enable configuration and tuning of the cell behaviour by the operator for SON functions which are not (yet) implemented in the eNodeB. NMS level SON should consider when configuring and tuning the cell the correlation of different attributes to optimise the eNodeB and network performance. For more information about cells, see 3GPP TS 23.401 [9].

4.3.21.2 Attributes

Attribute name	Support Qualifier	isReadable	isWritable	isInvariant	isNotifyable
id	M	M	-	M	-
a1ThresholdRsrp	CM	M	M	-	M
a1ThresholdRsrq	CM	M	M	-	M
a2ThresholdRsrp	CM	M	M	-	M
a2ThresholdRsrq	CM	M	M	-	M
a3Offset	CM	M	M	-	M
a4ThresholdRsrp	CM	M	M	-	M
a4ThresholdRsrq	CM	M	M	-	M
a5Threshold1Rsrp	CM	M	M	-	M
a5Threshold1Rsrq	CM	M	M	-	M
b1ThresholdUtraRscp	CM	M	M	-	M
b1ThresholdUtraEcN0	CM	M	M	-	M
b1ThresholdGeran	CM	M	M	-	M
b1ThresholdCdma2000	CM	M	M	-	M
b2Threshold1Rsrp	CM	M	M	-	M
b2Threshold1Rsrq	CM	M	M	-	M
b2Threshold2UtraRscp	CM	M	M	-	M
b2Threshold2UtraEcN0	CM	M	M	-	M
b2Threshold2Geran	CM	M	M	-	M
b2Threshold2Cdma2000	CM	M	M	-	M
commonChannelPowerOffset	CM	M	M	-	M
configurationIndex	CM	M	M	-	M
contentionResolutionTimer	CM	M	M	-	M
hysteresisEutraA1	CM	M	M	-	M
hysteresisEutraA2	CM	M	M	-	M
hysteresisEutraA3	CM	M	M	-	M
hysteresisEutraA4	CM	M	M	-	M
hysteresisEutraA5	CM	M	M	-	M
hysteresisIratB1	CM	M	M	-	M
hysteresisIratB2	CM	M	M	-	M
numberOfRaPreambles	CM	M	M	-	M
preambleInitialReceivedTargetPower	CM	M	M	-	M
preambleTransMax	CM	M	M	-	M
pMax	CM	M	M	-	M
powerRampingStep	CM	M	M	-	M
qHyst	CM	M	M	-	M
qOffsetUtra	CM	M	M	-	M
qOffsetGeran	CM	M	M	-	M
qOffsetCdma2000	CM	M	M	-	M
qQualMinUtra	CM	M	M	-	M
qRxLevMinEUtraSib1	CM	M	M	-	M
qRxLevMinEUtraSib3	CM	M	M	-	M
qRxLevMinGeran	CM	M	M	-	M
qRxLevMinUtra	CM	M	M	-	M
responseWindowSize	CM	M	M	-	M
rootSequenceIndex	CM	M	M	-	M
sIntraSearch	CM	M	M	-	M
sizeOfRAPreamblesGroupA	CM	M	M	-	M
timeToTriggerEutraA1	CM	M	M	-	M
timeToTriggerEutraA2	CM	M	M	-	M
timeToTriggerEutraA3	CM	M	M	-	M
timeToTriggerEutraA4	CM	M	M	-	M
timeToTriggerEutraA5	CM	M	M	-	M
timeToTriggerIratB1	CM	M	M	-	M
timeToTriggerIratB2	CM	M	M	-	M
tReselectionCdma2000	CM	M	M	-	M
tReselectionEUtra	CM	M	M	-	M
tReselectionGeran	CM	M	M	-	M
tReselectionUtra	CM	M	M	-	M
tStoreUeContext	CM	M	M	-	M

4.3.21.3 Attribute constraints

Name	Definition
All Support Qualifiers	The condition is "Neither an EM-centralized nor a distributed SON function support the SON use cases for which this attribute is relevant (see §6.5.1)".

4.3.21.4 Notifications

The common notifications defined in subclause 4.5 are valid for this IOC, without exceptions or additions.

4.4 Attribute definitions

4.4.1 Attribute properties

Attribute Name	Documentation and Allowed Values	Properties
a1ThresholdRsrp	RSRP Threshold to be used in evaluation of EUTRA measurement report triggering condition for event a1. Actual value is IE value -140 dBm. Corresponds to parameter a1-Threshold.Threshold-RSRP specified in ReportConfigEUTRA IE in [10]. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0 : 97	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
a1ThresholdRsrq	RSRP Threshold to be used in evaluation of EUTRA measurement report triggering condition for event a1. Actual value is (IE value -40)/2 dB. Corresponds to parameter a1-Threshold.Threshold-RSRQ specified in ReportConfigEUTRA IE in [10]. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0 : 34	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
a2ThresholdRsrp	RSRP Threshold to be used in evaluation of EUTRA measurement report triggering condition for event a2. Actual value is IE value -140 dBm. Corresponds to parameter a2-Threshold.Threshold-RSRP specified in ReportConfigEUTRA IE in [10]. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0 : 97	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
a2ThresholdRsrq	RSRP Threshold to be used in evaluation of EUTRA measurement report triggering condition for event a2. Actual value is (IE value -40)/2 dB. Corresponds to parameter a2-Threshold.Threshold-RSRQ specified in ReportConfigEUTRA IE in [10]. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0 : 34	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
a3Offset	Offset to be used in evaluation of EUTRA measurement report triggering condition for event a3. Mapping to values in dB is specified in [38]. Corresponds to parameter a3-Offset specified in ReportConfigEUTRA IE in [10]. This attribute may be used for Mobility Robustness Optimization. allowedValues: -30 : 30	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
a4ThresholdRsrp	RSRP Threshold to be used in evaluation of EUTRA measurement report triggering condition for event a4. Actual value is IE value -140 dBm. Corresponds to parameter a4-Threshold.Threshold-RSRP specified in ReportConfigEUTRA IE in [10]. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0 : 97	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
a4ThresholdRsrq	RSRP Threshold to be used in evaluation of EUTRA measurement report triggering condition for event a4. Actual value is (IE value -40)/2 dB. Corresponds to parameter a4-Threshold.Threshold-RSRQ specified in ReportConfigEUTRA IE in [10]. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0 : 34	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

a5Threshold1Rsrp	RSRP Threshold1 to be used in evaluation of EUTRA measurement report triggering condition for event a5. Actual value is IE value -140 dBm. Corresponds to parameter a5-Threshold1.Threshold-RSRP specified in ReportConfigEUTRA IE in [10]. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0 : 97	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
a5Threshold1Rsrq	RSRP Threshold to be used in evaluation of EUTRA measurement report triggering condition for event a5. Actual value is (IE value -40)/2 dB. Corresponds to parameter a5-Threshold1.Threshold-RSRQ specified in ReportConfigEUTRA IE in [10]. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0 : 34.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
adjacentCell	This attribute contains the DN of a EUtranGenericCell or ExternalEUtranGenericCell. allowedValues: N/A.	type: DN multiplicity: 1 isOrdered: N/A isUnique: True defaultValue: None isNullable: False
adjacentSector	This attribute contains the DN of an ExternalSector. allowedValues: N/A.	type: DN multiplicity: 1 isOrdered: N/A isUnique: True defaultValue: None isNullable: False
allowedAccessClasses	This holds information for access classes (10-15) – [3GPP TS 22.011] that are allowed for the eUTRANCell . The access classes are: Class 10 – emergency call Class 11 - For PLMN Use. Class 12 - Security Services; Class 13 - Public Utilities (e.g. water/gas suppliers); Class 14 - Emergency Services; Class 15 - PLMN Staff; allowedValues: See TS 22.011 [29] and 36.331 [10] for more details on the definition and SIB2 broadcast message definition.	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: True defaultValue: “all access classes are allowed” isNullable: False
b1ThresholdCdma2000	Threshold to be used in CDMA2000 triggering condition for event b1. Mapping to actual dBm values is specified in 3GPP TS 45.008. Corresponds to parameter b1-ThresholdCDMA2000 specified in ReportConfigInterRAT IE in [10]. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0:63.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
b1ThresholdGeran	Threshold to be used in GERAN triggering condition for event b1. Mapping to actual dBm values is specified in 3GPP TS 45.008. Corresponds to parameter b1-ThresholdGERAN specified in ReportConfigInterRAT IE in [10]. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0:63.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

b1ThresholdUtraEcN0	EcN0 threshold to be used in UTRA triggering condition for event b1. Mapping to actual dBm values is specified in 3GPP TS 25.133. Corresponds to parameter b1-ThresholdULTA:utra-EcN0 specified in ReportConfigInterRAT IE in [10]. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0:49.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
b1ThresholdUtraRscp	RSCP threshold to be used in UTRA triggering condition for event b1. Mapping to actual dBm values is specified in 3GPP TS 25.133. Corresponds to parameter b1-ThresholdULTA:utra-RSCP specified in ReportConfigInterRAT IE in [10]. This attribute may be used for Mobility Robustness Optimization. allowedValues: -5:91	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
b2Threshold1Rsrp	RSRP Threshold to be used in evaluation of EUTRA measurement report triggering condition for event b2. Actual value is IE value -140 dBm. Corresponds to parameter b2-Threshold1.Threshold-RSRP specified in ReportConfigInterRAT IE in [10]. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0 : 97	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
b2Threshold1Rsrq	RSRP Threshold to be used in evaluation of EUTRA measurement report triggering condition for event b2. Actual value is (IE value -40)/2 dB. Corresponds to parameter b2-Threshold1.Threshold-RSRQ specified in ReportConfigInterRAT IE in [10]. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0 : 34	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
b2Threshold2Cdma2000	Threshold to be used in CDMA2000 measurement report triggering condition for event b2. Mapping to actual dBm values is specified in [36]. Corresponds to parameter b2-Threshold2CDMA2000 specified in ReportConfigInterRAT IE in [10]. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0 : 63	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
b2Threshold2Geran	Threshold to be used in GERAN measurement report triggering condition for event b2. Mapping to actual dBm values is specified in [36]. Corresponds to parameter b2-Threshold2GERAN specified in ReportConfigInterRAT IE in [10]. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0 : 63	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
b2Threshold2UtraEcN0	EcN0 threshold to be used in UTRA measurement report triggering condition for event b2. Mapping to actual dBm values is specified in 3GPP TS 25.133. Corresponds to parameter b2-Threshold2ULTRA:utra-EcN0 specified in ReportConfigInterRAT IE in [10]. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0 : 49	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

b2Threshold2UtraRscp	RSCP threshold to be used in UTRA measurement report triggering condition for event b2. Mapping to actual dBm values is specified in 3GPP TS 25.133. Corresponds to parameter b2-Threshold2ULTRA:utra-RSCP specified in ReportConfigInterRAT IE in [10]. This attribute may be used for Mobility Robustness Optimization. allowedValues: -5 : 91	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
candidateDeNBCells	A list of ECGIs of the candidates DeNB cells for the subject Relay Node in Attach for RN operation (phase 2), see 36.300[4]. allowedValues: See 3GPP TS 36.413[27], 36.300[4]	type: <<dataType>> multiplicity: 1..* isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
cellIdList	This holds a list of DN ofEUtranGenericCell. These cells all belong to one MBSFN Area. allowedValues: N/A	type: DN multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
cellAccessInfoList	A list of entries where an entry identifies a PLMN sharing the cell resources. The presence of this attribute indicates that the EUTRAN cell is supporting RAN sharing for PLMN(s) using different TAC and Cell-ID for the cell. An entry has four attributes: plmnId, tac, cellId, managementServiceExposed. The plmnId identifies the PLMN sharing the cell resources. The tac and the cellId are used by the PLMN (identified by plmnId) sharing the cell resources. The managementServiceExposed indicates the management services (e.g. FM) exposed to the PLMN (identified by plmnId). The precise semantics of this attribute is not specified. One plmnId (value) can be included at most once in this list. The PLMN identified cannot be the primary PLMN. Its identifier cannot be included in the plmnIdList.	type: <<dataType>> multiplicity: 1..5 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
cellIndividualOffset	Offset applicable to a neighbouring cell. It is used for evaluating the neighbouring cell for handover in connected mode. This attribute corresponds to parameter cellIndividualOffset in MeasObjectEUTRA IE in [10]. This attribute is used by the HandOver parameter Optimization (HOO) function or Load Balancing Optimization (LBO) function. allowedValues: dB-24, dB-22, dB-20, dB-18, dB-16, dB-14, dB-12, dB-10, dB-08, dB-06, dB-05, dB-04, dB-03, dB-02, dB-01, dB+00, dB+01, dB+02, dB+03, dB+04, dB+05, dB+06, dB+08, dB+10, dB+12, dB+14, dB+16, dB+18, dB+20, dB+22, dB+24	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: True defaultValue: None isNullable: False

cellLocalId	Unambiguously identify a cell within an eNodeB. allowedValues: 0 : 255.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: True defaultValue: None isNullable: False
cellLocalIdList	This holds a list of cell local identities that can be assigned to the cellLocalId attribute of the new split or merged cells by the Active Antenna System operations. The assignment algorithm is not specified. allowedValues of each entry: 0 : 255	type: Integer multiplicity: 1..* isOrdered: N/A isUnique: True defaultValue: None isNullable: True
cellResvInfo	This attribute represents whether the cell is MBSFN Area Reserved Cell or not. See TS 36.300[11] for MBSFN Area Reserved Cell. allowedValues: See 3GPP TS 36.443 [28] for Cell Reservation Info.	type:<<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: True defaultValue: None isNullable: False
cellSize	See cell-Size in TS 36.423 [24]. allowedValues: See cell-Size in TS 36.423 [24].	type:<<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: True defaultValue: None isNullable: False

cOCStatus	This attribute holds the information about cell outage compensation (COC) activities for the cell which name contains the CellOutageCompensationInformation IOC instance.
	
	The initial state is cOCDeactive.
	
	When a cell outage is detected and its compensation starts, then the state is cOCActivating.
	
	When COC function decides that all activities to acitvate the compensation are done, the state changes to cOCActive.
	
	When outage of cell is ended and activities to remove the compensation are ongoing, the state changes to cOCDeactivating.
	
	When outage of cell ends and all activities to remove the compensation are done, the state changes back to cOCDeactive.
	
	In case of errors during activation or deactivation, this attribute also contains a list of elements which could not been reconfigured by the COC function.
	
	If there are no errors during activation or deactivation, the list of elements shall be empty.
	
	For an example how notifyAttributeValueChange notifications related to this attribute are used to inform an IRPManager about COC activities see Annex A.
	
	allowedValues: This element contains 2 parts, state and errorList
	state = enumerated
	{
	cOCActivating,
	cOCActive,
	cOCDeactivating,
	cOCDeactive
	}
	errorList = list of DNs
		type: <<dataType>>
		multiplicity: 1
		isOrdered: N/A
		isUnique: N/A
		defaultValue: None
		isNullable: False

commonChannelPowerOffset	Power offset of the Primary Synchronization Channel, Secondary Synchronization Channel and Physical Broadcast Channel with respect to the referenceSignalPower. Value in dB is the actual value divided by 10. For example, value -30 represents -3dB; value 120 represent 12dB etc. This attribute may be used for Coverage and Capacity Optimization and ICIC. allowedValues: -350:150.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
configurationIndex	Provides index into the table defining PRACH resources within the frame. Corresponds to PRACH-Configuration-Index parameter defined in [10] and [12]. This attribute may be used for RACH Optimization. allowedValues: 0:63.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

contentionResolutionTimer	Contention resolution timer. Corresponds to parameter mac-ContentionResolutionTimer specified in [10] and in [8]. Value sfn corresponds to n subframes. This attribute may be used for RACH Optimization. allowedValues:{sf8, sf16, sf24, sf32, sf40, sf48,sf56, sf64}	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
earfcn	It is the frequency number for the central frequency. See 3GPP TS 36.104[14]. allowedValues: See 3GPP TS 36.104[14].	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
earfcnDl	Specifies the channel number for the central DL frequency. The mapping from channel number to physical frequency is described in 3GPP specification TS 36.101 [13] subclause 5.7.3. allowedValues: See EARFCN in TS 36.101 [13] subclause 5.7.3	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
earfcnUl	Specifies the channel number for the central UL frequency. The mapping from channel number to physical frequency is described in 3GPP specification TS 36.101 [13] subclause 5.7.3. allowedValues: See EARFCN in TS 36.101 [13] subclause 5.7.3	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
eNBId	Unambiguously identifies an eNodeB within a PLMN allowedValues: See 3GPP TS 36.413[27], 36.300[4]	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
hysteresisEutraA1	Hysteresis applied to entry and leave condition of a report triggering event A1. Maps to the instance of the *hysteresis* IE specified in *ReportConfigEUTRA* IE in [10] corresponding to event A1. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0:30.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
hysteresisEutraA2	Hysteresis applied to entry and leave condition of a report triggering event A2. Maps to the instance of the *hysteresis* IE specified in *ReportConfigEUTRA* IE in [10] corresponding to event A2. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0:30.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
hysteresisEutraA3	Hysteresis applied to entry and leave condition of a report triggering event A3. Maps to the instance of the *hysteresis* IE specified in *ReportConfigEUTRA* IE in [10] corresponding to event A3. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0:30.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
hysteresisEutraA4	Hysteresis applied to entry and leave condition of a report triggering event A4. Maps to the instance of the *hysteresis* IE specified in *ReportConfigEUTRA* IE in [10] corresponding to event A4. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0:30.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
hysteresisEutraA5	Hysteresis applied to entry and leave condition of a report triggering event A5. Maps to the instance of the *hysteresis* IE specified in *ReportConfigEUTRA* IE in [10] corresponding to event A5. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0:30.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

hysteresisIratB1	Hysteresis applied to entry and leave condition of the IRAT report triggering event B1. Maps to *hysteresis* IE specified in *ReportConfigInterRAT* IE in [10] corresponding to event B1. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0:30.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
hysteresisIratB2	Hysteresis applied to entry and leave condition of the IRAT report triggering event B2. Maps to *hysteresis* IE specified in *ReportConfigInterRAT* IE in [10] corresponding to event B2. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0:30.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
id	An attribute whose "name+value" can be used as an RDN when naming an instance of the object class. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	type: DN multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None allowedValues: N/A isNullable: False
intraANRSwitch	This attribute determines whether the intra E-UTRAN ANR function is activated or deactivated. If “on”, the intra E-UTRAN ANR function may add or remove intra E-UTRAN Neighbour Relations, i.e. add or remove EUtranRelation instances fromEUtranGenericCells of this ENBFunction. If “off”, the intra E-UTRAN ANR Function must not add or remove Neighbour Relations, i.e. add or remove EUtranRelation instances fromEUtranGenericCells of thisENBFunction. allowedValues: on, off	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: True defaultValue: on isNullable: False
iRATANRSwitch	This attribute determines whether the IRAT ANR function is activated or deactivated. If “on”, the IRAT ANR function may add or remove IRAT Neighbour Relations, i.e. add or remove UtranRelation or GsmRelation instances from EUtranGenericCells of this ENBFunction. If “off”, the IRAT ANR Function must not add or remove IRAT Neighbour Relations, i.e. add or remove UtranRelation or GsmRelation instances from EUtranGenericCells of this ENBFunction. allowedValues: on, off	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: True defaultValue: on isNullable: False
isChangeForEnergySavingAllowed	This attribute allows to IRPManager to prohibit or allow configuration changes of the cell for ESM purposes by the IRPAgent. This restriction also applies to instances name contained in such cells. Their attribute values can not be changed by the IRPAgent. allowedValues: yes,no	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
isCOCAllowed	This attribute allows to IRPManager to prohibit or allow configuration changes of the cell for cell outage compensation purposes by the IRPAgent. This restriction also applies to instances name contained in such cells. Their attribute values can not be changed by the IRPAgent. allowedValues: yes,no	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

isESCoveredBy	The value of the attribute is configured by the IRPmanager and is not changed by the IRPAgent. It indicates whether the adjacentCell according to this planning provides no, partial or full coverage for the cell which name-contains the EUtranRelation instance. Adjacent cells with this attribute equal to “yes” are recommended to be considered as candidate cells to take over the coverage when the original cell is about to be transferred to energySaving state. The entirety of adjacent cells with this property equal to “partial” are recommended to be considered as entirety of candidate cells to take over the coverage when the original cell is about to be transferred to energySaving state. allowedValues: no, partial, yes	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
isHOAllowed	This indicates if HO is allowed or prohibited. If ‘yes’, handover is allowed from source cell to target cell. The source cell is identified by the name-containing EUtranGenericCell or UtranGenericCell of the EUtranRelation that has the isHOAllowed. The target cell is referenced by the EUtranRelation that has this isHOAllowed. If ‘no’, handover shall not be allowed. allowedValues: yes,no	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
isICICInformationSendAllowed	This indicates if ICIC (Inter Cell Interference Coordination) load information message (see TS 36.423 [24] Section 9.1.2.1 LOAD INFORMATION) sending is allowed or prohibited. If ‘yes’, ICIC load information message sending is allowed from source cell to target cell. The source cell is identified by the name-containing EUtranGenericCell of the EUtranRelation that has the isICICInformationSendAllowed. The target cell is referenced by the EUtranRelation that has this isICICInformationSendAllowed. If ‘no’, ICIC load information message sending shall not be allowed. allowedValues: yes,no	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
isLBAllowed	This indicates if load balancing is allowed or prohibited from source cell to target cell. If ‘yes’, load balancing is allowed from source cell to target cell. The source cell is identified by the name-containing EUtranGenericCell of the EUtranRelation that has the isLBAllowed. The target cell is referenced by the EUtranRelation that has this isLBAllowed. If ‘no’, load balancing shall be prohibited from source cell to target cell. allowedValues: yes,no	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

isRemoveAllowed	This indicates if the subject EUtranRelation can be removed (deleted) or not. If 'yes', the subject EUtranRelation instance can be removed (deleted). If 'no', the subject EUtranRelation instance shall not be removed (deleted) by any entity but an IRPManager. allowedValues: yes,no	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
maximumTransmissionPower	This is the maximum possible for all downlink channels, used simultaneously in a cell, added together.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
maxNbrRNAllowed	This is an integer indicating the maximum number of RNs allowed to be connected. It is a number which can be configured by the operator to control the node/network load.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
mbsfnAreaId	This is the identifier of MBSFN Area. See TS 36.300[11] for MBSFN Area. allowedValues: See 3GPP TS 36.443 [28] for mbsfnAreaId	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
nbIoTcellFlag	This attribute represents whether the cell is supporting NB-IoT or not. See TS 36.300 [11] for NB-IoT cell. allowedValues: yes, no.	type:<<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
netListeningRSForRIBS	This specifies the configuration of RS (reference signals) for RIBS (radio interface based synchronization) by means of network listening, see Radio Interface based Synchronization in TS 36.300 [11]. It is a list of structures where each structure contains the following elements: - RS_pattern - Number of CRS ports - Periodicity - Offset allowedValues: RS_pattern: CRS only; or CRS and PRS; CRS (Cell-specific Reference Signal) see clause 6.10.1.1 and 6.10.1.2 in TS 36.211 [12]. PRS (Positioning Reference Signal) see clause 6.10.4.1 and 6.10.4.2 in TS 36.211 [12]. Number of CRS ports: 1 or 2; Periodicity: 1280ms, 2560ms, 5120ms, or 10240ms; Offset: range from "0" to (Periodicity-1) wherein the reference signal offset is in number of subframes starting from SFN 0 and subframe 0. More than one network listening reference signal configuration may be configured with a maximum of 4 configurations per eNB.	type: <<dataType>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

numberOfRaPreambles	Number of non-dedicated random access preambles. Corresponds to parameter numberOfRA-Preambles specified in [10] and in [8]. Value n4 corresponds to 4, n8 corresponds to 8 and so on. This attribute may be used for RACH Optimization. allowedValues: n4,n8,n12,n16,n20,n24,n28,n32,n36,n40,n44,n48,n52,n56,n60,n64	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
partOfSectorPower	This is the requested part (i.e. %) of the total radio power available to the SectorEquipmentFunction. The requested % power should be allocated to the cell. allowedValues: 1 : 100	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
pb	P_B , which is described in Section 5.2 of TS 36.213 [25] allowedValues: See 3GPP TS 36.213[25]	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
pci	This holds the Physical Cell Identity (PCI) of the cell (for NM-Centralized, EM-Centralized and Distributed PCI assignment cases). In the case of NM-Centralized PCI assignment, see TS 36.300, [11] subclause 22.3.5, IRPManager signals a specific value by writing this attribute. allowedValues: See TS 36.211 [12] subclause 6.11 for legal values of pci.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
pciList	This holds a list of physical cell identities that can be assigned to the pci attribute by eNB. The assignment algorithm is not specified. This attribute shall be supported if and only if the EM-Centralized or Distributed PCI Assignment is supported. See TS 32.500, ref [15] subclause 6.1.6. allowedValues: See TS 36.211 [12] subclause 6.11 for legal values of pci. The number of pci in the list is 1 to 504.	type: Integer multiplicity: 1..* isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
plmnIdList	List of unique identities for PLMN. Note: A cell can broadcast up to 6 PLMN-id's. This is to support the case that one cell can be used by up to 6 operators' core networks. The PLMN(s) included in this list will use the same single tracking area code (tac) and the same Cell Identity (cellLocalId) for sharing the radio access network resources. See TS 36.300 [11] subclause 10.1.7. One member of plmnIdList is the primary PLMN Id. See TS 36.331 [10] subclause 6.2.2: SystemInformationBlockType1/cellAccessRelatedInformation/plmn-IdentityList is a SEQUENCE (SIZE (1..6)). A PLMN Id included in this list cannot be included in the cellAccessInfoList. allowedValues: A list of at most six entries of PLMN Identifiers, but at least one (the primary PLMN Id). The PLMN Identifier is composed of a Mobile Country Code (MCC) and a Mobile Network Code (MNC).See TS 23.003 [3] subclause 2.2 and 12.1.	type: Integer multiplicity: 1..* isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

pMax	This parameter is used to limit the allowed UE uplink transmission power on the serving EUTRA frequency. Value in dBm. Corresponds to parameter p-Max specified in SIB1 and SIB3 in [10]. This attribute may be used for RACH Optimization. allowedValues: -30 : 33	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
powerRampingStep	Power increase factor between subsequent random access preamble transmissions. Value in dB. Value dB2 corresponds to 2 dB and so on. Corresponds to parameter powerRampingStep specified in [10] and in [8]. This attribute may be used for RACH Optimization. allowedValues: dB0, dB2,dB4, dB6	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
preambleInitialReceivedTargetPower	This parameter denotes the baseline for computation of the transmit power for random access power transmission. Corresponds to parameter preambleInitialReceivedTargetPower specified in [10] and in [8]. Value dBm-120 corresponds to -120 dBm and so on. This attribute may be used for RACH Optimization. allowedValues: dBm-120, dBm-118, dBm-116, dBm-114, dBm-112,dBm-110,dBm-108,dBm-106,dBm-104,dBm-102,dBm-100,dBm-98,dBm-96,dBm-94, dBm-92,dBm-90	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
preambleTransMax	Maximum number of random access preamble transmissions. Corresponds to parameter preambleTransMax specified in [10] and in [8]. This attribute may be used for RACH Optimization. allowedValues: n3, n4, n5, n6, n7, n8, n10, n20, n50, n100, n200	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
qciDscpMappingList	It is a list of mapping between QCI and DSCP, each mapping is a structure including the element QCI and DSCP; Wherein - QCI represents the number of the QCI (Ref. 3GPP TS 23.203[33]); - DSCP represents the DiffServ codepoint (Ref. 3GPP TS 23.207[34] and RFC 2474[35]). allowedValues: For QCI, Ref. 3GPP TS 23.203[33]; For DSCP, Ref. RFC 2474[35]	type: <<dataType>> multiplicity: 1..* isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
qHyst	Hysteresis value applied to serving cell for evaluating cell ranking criteria. Value in dB. Corresponds to parameter q-Hyst specified in SIB3 in [10] and in [34]. This attribute may be used for Mobility Robustness Optimization. allowedValues: dB0, dB1, dB2, dB3, dB4, dB5, dB6, dB8, dB10, dB12, dB14, dB16, dB18, dB20, dB22, dB24	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
qOffset	Offset applicable to a specific neighbouring cell used for evaluating the cell as a candidate for cell re-selection. Corresponds to parameter q-OffsetCell broadcast in SIB4 for intra-frequency cells and in SIB5 for inter-frequency cells, specified in [10]. This attribute may be used for Mobility Robustness Optimization. allowedValues: dB-24, dB-22, dB-20, dB-18, dB-16, dB-14, dB-12, dB-10, dB-8, dB-6, dB-5, dB-4, dB-3, dB-2, dB-1, dB0, dB1, dB2, dB3, dB4, dB5, dB6, dB8, dB10, dB12, dB14, dB16, dB18, dB20, dB22, dB24	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

qOffsetCdma2000	Indicates a CDMA2000-specific offset to be applied when evaluating triggering conditions for measurement reporting in connected mode. Corresponds to parameter offsetFreq included in the IE MeasObjectCDMA2000 specified in 3GPP TS 36.331. This value will apply to all CDMA2000 frequencies. This attribute may be used for Mobility Robustness Optimization. allowedValues: -15..15	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
qOffsetGeran	Indicates a GERAN-specific offset to be applied when evaluating triggering conditions for measurement reporting in connected mode. Corresponds to parameter offsetFreq included in the IE MeasObjectGERAN specified in 3GPP TS 36.331. . This value will apply to all GERAN frequencies. This attribute may be used for Mobility Robustness Optimization. allowedValues: -15..15	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
qOffsetUtra	Indicates a UTRA-specific offset to be applied when evaluating triggering conditions for measurement reporting in connected mode. Corresponds to parameter offsetFreq included in the IE MeasObjectUTRA specified in 3GPP TS 36.331. This value will apply to all UTRA frequencies. This attribute may be used for Mobility Robustness Optimization. allowedValues: -15..15	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
qQualMinUtra	Minimum required received EcIo level on this UTRA FDD carrier. Value in dB. Corresponds to parameter q-QualMin in SIB6 in [10] and in [30]. This attribute applies to all UTRA frequencies. This attribute may be used for Coverage and Capacity Optimization and ICIC. allowedValues: -24 :0	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
qRxLevMinEUtraSib1	Minimum required received RSRP level of a E-UTRA cell for cell selection. Actual value in dBm is obtained by multiplying by 2. Corresponds to parameter q-rxLevMin in SIB1 in [10] and in [34]. This attribute may be used for Coverage and Capacity Optimization and ICIC. allowedValues: -70 :-22	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
qRxLevMinEUtraSib3	Minimum required received RSRP level for intra-frequency E-UTRA cell re-selection. Actual value in dBm is obtained by multiplying by 2. Corresponds to parameter q-rxLevMin in SIB3 in [10] and in [34]. This attribute may be used for Coverage and Capacity Optimization and ICIC. allowedValues: -70 :-22	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: True
qRxLevMinGeran	Minimum required received RSSI level on a GERAN frequency carrier for re-selection to a GERAN carrier. Actual value in dBm is value * 2 - 115. Corresponds to parameter q-rxLevMin in SIB7 in [10] and to RXLEV_ACCESS_MIN in [31]. This attribute applies to all GERAN frequencies. This attribute may be used for Coverage and Capacity Optimization and ICIC. allowedValues: 0 : 63	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

qRxLevMinUtra	Minimum required received RSCP level on a UTRA frequency carrier. Actual value in dBm is obtained by multiplying by 2 plus 1. Corresponds to parameter q-rxLevMin in SIB6 in [10] and in [30]. This attribute applies to all UTRA frequencies. This attribute may be used for Coverage and Capacity Optimization and ICIC. allowedValues: -60 :-13	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
referenceSignalPower	This defines the cell specific downlink reference signal transmit power, which is described in 3GPP TS 36.213[25] allowedValues: See 3GPP TS 36.331[10]	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
relatedAntennaList	This is an attribute to list the DNs of AntennaFunction(s)(see TS 28.662[31]) that support the EUtranGenericCell. allowedValues: See 'relatedAntennaList' in Ref. 3GPP TS 28.662 [31]	type: DN multiplicity: 1..* isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
relatedSector	This is an attribute to the DN of SectorEquipmentFunction (see TS 28.662[31]) that support the EUtranGenericCell. allowedValues: See 'SectorEquipmentFunction' in Ref. 3GPP TS 28.662 [31].	type: DN multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
relatedTmaList	This is an attribute to list the DNs of TmaFunction(s) (see TS 28.662[31]) that support the EUtranGenericCell. allowedValues: See 'relatedTmaList' in Ref. 3GPP TS 28.662 [31].	type: DN multiplicity: 1..* isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
responseWindowSize	Denotes the duration of the random access response window. Corresponds to parameter ra-ResponseWindowSize specified in 3GPP TS 36.331 section 6.3.2 and in 3GPP TS 36.321 section 5.1.4. Value sfn corresponds to n subframes. This attribute may be used for RACH Optimization. allowedValues: sf2, sf3, sf4, sf5, sf6, sf7, sf8,sf10	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
rootSequenceIndex	Logical root sequence index used to determine 64 physical RACH preamble sequences available in the cell. Corresponds to RACH_ROOT_SEQUENCE parameter defined in [10] and [12]. This attribute may be used for RACH Optimization. allowedValues: 0 : 837	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
servedRN	This attribute contains the DNs of one or more associated instances of RNFunction and ExternalRNFunction.	type: DN multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
servingCell	This attribute contains the DN of one associated instance of EutranGenericCell or ExternalEutranGenericCell.	type: DN multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

sfAssignment	This is the uplink-downlink subframe configuration number of a TDD E-UTRAN cell. allowedValues: See 3GPP TS 36.211[12].	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
sharNetTceMappingInfoList	This attribute includes a list of elements. Each element is a tuple of shared PLMN Id (called "PLMN Target"), TCE ID and the corresponding TCE IP address. In case when several PLMNs and Logged MDT are supported, this attribute is used to translate from the TCE IP Address to TCE ID when a Logged MDT is ordered to the UE and to translate the TCE ID to TCE IP address when the UE has sent the log to the network. allowedValues: See "Trace Collection Entity Address" and "Trace Collection Entity Id" in 3GPP TS 32.422 [25]. The "PLMN Target" shall be one of the PLMNs listed in plmnIdList.	type: <<dataType>> multiplicity: 1..* isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
sIntraSearch	Threshold for intra-frequency measurements. Actual value in dB is obtained by multiplying by 2. Corresponds to parameter s-IntraSearch specified in SIB3 in [10] and in [34]. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0: 31	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
sizeOfRAPreamblesGroupA	Size of the random access preamble group A. Corresponds to parameter sizeOfRA-PreamblesGroup specified in [10] and [8]. This attribute may be used for RACH Optimization. allowedValues: n4, n8, n12, n16 ,n20, n24, n28, n32, n36, n40, n44, n48, n52, n56, n60	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
specialSfPatterns	This is the special subframe configuration number of a TDD E-UTRAN cell. allowedValues: See 3GPP TS 36.211[12].	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
tac	Common Tracking Area Code for the PLMNs. The identity used to identify tracking areas. allowedValues: a) It is the Tracking Area Code (TAC). b) A cell can only broadcast one TAC. See TS 36.300 [11], section 10.1.7 (PLMNID and TAC relation). c) TAC is defined in TS 23.003 [3], section 19.4.2.3.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
tceIDMappingInfoList	This attribute includes a list of TCE ID and the corresponding TCE IP address. It is used in Logged MDT case to provide the information to the eNodeB to get the corresponding TCE IP address when there is an MDT log received from the UE. This attribute is used if only one PLMN is supported. allowedValues: See “Trace Collection Entity Address” and “Trace Collection Entity Id” in 3GPP TS 32.422 [30].	type: <<dataType>> multiplicity: 1..* isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

tCI	This is the Target Cell Identifier. It consists of E-UTRAN Cell Global Identifier (ECGI) and Physical Cell Identifier (PCI) of the target cell. The EUtranRelation.tCI identifies the target cell from the perspective of the EUtranGenericCell, the name-containing instance of the subject EUtranRelation instance. allowedValues: The Target Cell Identifier is defined in TS 36.300 [11]. See TS 36.211 [12] subclause 6.11 for legal values of the PCI.	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
timeToTriggerEutraA1	Time during which measurement report triggering condition needs to be met in order to trigger a measurement report for event A1. Maps to the *timeToTrigger* IE specified in *ReportConfigEUTRA* IE in [10] corresponding to event A1. Value ms0 corresponds to 0 miliseconds etc. This attribute may be used for Mobility Robustness Optimization. allowedValues: ms0, ms40, ms64, ms80, ms100, ms128, ms160, ms256, ms320, ms480, ms512, ms640, ms1024, ms1280, ms2560, ms5120	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
timeToTriggerEutraA2	Time during which measurement report triggering condition needs to be met in order to trigger a measurement report for event A2. Maps to the *timeToTrigger* IE specified in *ReportConfigEUTRA* IE in [10] corresponding to event A2. Value ms0 corresponds to 0 miliseconds etc. This attribute may be used for Mobility Robustness Optimization. allowedValues: ms0, ms40, ms64, ms80, ms100, ms128, ms160, ms256, ms320, ms480, ms512, ms640, ms1024, ms1280, ms2560, ms5120	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
timeToTriggerEutraA3	Time during which measurement report triggering condition needs to be met in order to trigger a measurement report for event A3. Maps to the *timeToTrigger* IE specified in *ReportConfigEUTRA* IE in [10] corresponding to event A3. Value ms0 corresponds to 0 miliseconds etc. This attribute may be used for Mobility Robustness Optimization. allowedValues: ms0, ms40, ms64, ms80, ms100, ms128, ms160, ms256, ms320, ms480, ms512, ms640, ms1024, ms1280, ms2560, ms5120	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
timeToTriggerEutraA4	Time during which measurement report triggering condition needs to be met in order to trigger a measurement report for event A4. Maps to the *timeToTrigger* IE specified in *ReportConfigEUTRA* IE in [10] corresponding to event A4. Value ms0 corresponds to 0 miliseconds etc. This attribute may be used for Mobility Robustness Optimization. allowedValues: ms0, ms40, ms64, ms80, ms100, ms128, ms160, ms256, ms320, ms480, ms512, ms640, ms1024, ms1280, ms2560, ms5120	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

timeToTriggerEutraA5	Time during which measurement report triggering condition needs to be met in order to trigger a measurement report for event A5. Maps to the *timeToTrigger* IE specified in *ReportConfigEUTRA* IE in [10] corresponding to event A5. Value ms0 corresponds to 0 miliseconds etc. This attribute may be used for Mobility Robustness Optimization. allowedValues: ms0, ms40, ms64, ms80, ms100, ms128, ms160, ms256, ms320, ms480, ms512, ms640, ms1024, ms1280, ms2560, ms5120	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
timeToTriggerIratB1	Time during which IRAT measurement report triggering condition needs to be met in order to trigger IRAT measurement report for event B1. Maps to *timeToTrigger* IE specified in *ReportConfigInterRAT* IE in [10] corresponding to event B1. Value ms0 corresponds to 0 milliseconds etc. This attribute may be used for Mobility Robustness Optimization. allowedValues: ms0, ms40, ms64, ms80, ms100, ms128, ms160, ms256, ms320, ms480, ms512, ms640, ms1024, ms1280, ms2560, ms5120	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
timeToTriggerIratB2	Time during which IRAT measurement report triggering condition needs to be met in order to trigger IRAT measurement report for event B2. Maps to *timeToTrigger* IE specified in *ReportConfigInterRAT* IE in [10] corresponding to event B2. Value ms0 corresponds to 0 milliseconds etc. This attribute may be used for Mobility Robustness Optimization. allowedValues: ms0, ms40, ms64, ms80, ms100, ms128, ms160, ms256, ms320, ms480, ms512, ms640, ms1024, ms1280, ms2560, ms5120	type: <<enumeration>> multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
tReselectionCdma2000	Cell reselection timer for reselection to a CDMA2000 band. Value in seconds. Corresponds to parameter t-ReselectionCDMA2000 specified in SIB8 in [10] and to TreselectionCDMA_HRPD or TreselectionCDMA_1xRTT in [34] This attribute may be used for Mobility Robustness Optimization. allowedValues: 0 :7	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
tReselectionEUtra	Cell reselection timer for intra frequency E-UTRA cell reselection. Value in seconds. Corresponds to parameter t-ReselectionEUTRA specified in SIB3 in [10] and in [34]. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0 :7	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
tReselectionGeran	Cell reselection timer for reselection to a GERAN frequency carrier. Value in seconds. Corresponds to parameter t-ReselectionGERAN specified in SIB7 in [10] and to TreselectionGERA in [34]. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0 :7	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

tReselectionUtra	Cell reselection timer for reselection to a UTRA frequency carrier. Value in seconds. Corresponds to parameter t-ReselectionUTRA specified in SIB6 in [10] and in [34]. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0 :7	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
tStoreUeContext	The timer used for detection of too early HO. Corresponds to Tstore_UE_cntxt timer described in [11]. Value in 100 milliseconds. This attribute may be used for Mobility Robustness Optimization. allowedValues: 0 :1023	type: Integer multiplicity: 1 isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
x2BlackList	This is a list of DNs of ENBFunction and ExternalENBFunction. If the target node DN is a member of the source node's ENBFunction.x2BlackList, the source node is: 1) Prohibited from sending X2 connection request to target node; 2) Forced to tear down established X2 connection to target node 3) Not allowed to accept incoming X2 connection request from target node. The same DN may appear here and in ENBFunction.x2WhiteList. In such case, the DN in x2WhiteList shall be treated as if it is absent.	type: DN multiplicity: 1..* isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
x2HOBlackList	This is a list of DNs of ENBFunction and ExternalENBFunction. The ENBFunction.x2HOBlackList identifies a list of neighbour ENBFunction and ExternalENBFunction with whom the subject ENBFunction is prohibited to use X2 interface for HOs even if the X2 interface exists between them.	type: DN multiplicity: 1..* isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
x2IpAddressList	Represents one or more IP addresses used by ENBFunction for this ENBFunction's X2 Interface allowedValues: One or more IPv4 or IPv6 addresses	type: String multiplicity: 1..* isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False
x2WhiteList	This is a list of DNs of ENBFunction and ExternalENBFunction. If the target node DN is a member of the source node's ENBFunction.x2WhiteList, the source node : - Is allowed to request the establishment of X2 connection with the target node; - Is not allowed to initiate the tear down of established X2 connection to target node The same DN may appear here and in ENBFunction.x2BlackList. In such case, the DN here shall be treated as if it is absent.	type: String multiplicity: 1..* isOrdered: N/A isUnique: N/A defaultValue: None isNullable: False

4.4.2 Constraints

None.

4.5 Common notifications

4.5.1 Alarm notifications

This subclause presents a list of notifications, defined in [18], that IRPManager can receive. The notification header attribute `objectClass/objectInstance`, defined in [37], would capture the DN of an instance of an IOC defined in this IRP specification.

Name	Qualifier	Notes
`notifyAckStateChanged`	See Alarm IRP (3GPP TS 32.111-2 [18])	
`notifyChangedAlarm`	See Alarm IRP (3GPP TS 32.111-2 [18])	
`notifyClearedAlarm`	See Alarm IRP (3GPP TS 32.111-2 [18])	
`notifyNewAlarm`	See Alarm IRP (3GPP TS 32.111-2 [18])	
`notifyComments`	See Alarm IRP (3GPP TS 32.111-2 [18])	
`notifyAlarmListRebuilt`	See Alarm IRP (3GPP TS 32.111-2 [18])	
`notifyPotentialFaultyAlarmList`	See Alarm IRP (3GPP TS 32.111-2 [18])	

4.5.2 Configuration notifications

This subclause presents a list of notifications, defined in [32], that IRPManager can receive. The notification header attribute `objectClass/objectInstance`, defined in [37], would capture the DN of an instance of an IOC defined in this IRP specification.

Name	Qualifier	Notes
`notifyAttributeValueChange`	O	
`notifyObjectCreation`	O	
`notifyObjectDeletion`	O	

Annex A (informative): Notifications during a Cell Outage Compensation

The following sequence diagrams and table show an example how notifications of IOC `CellOutageCompensationInformation` and other notifications are used to inform an IRPManager about the COC activities.

The sequence diagrams show the basic event flow, the table gives more details on selected, most relevant, content of the notifications.

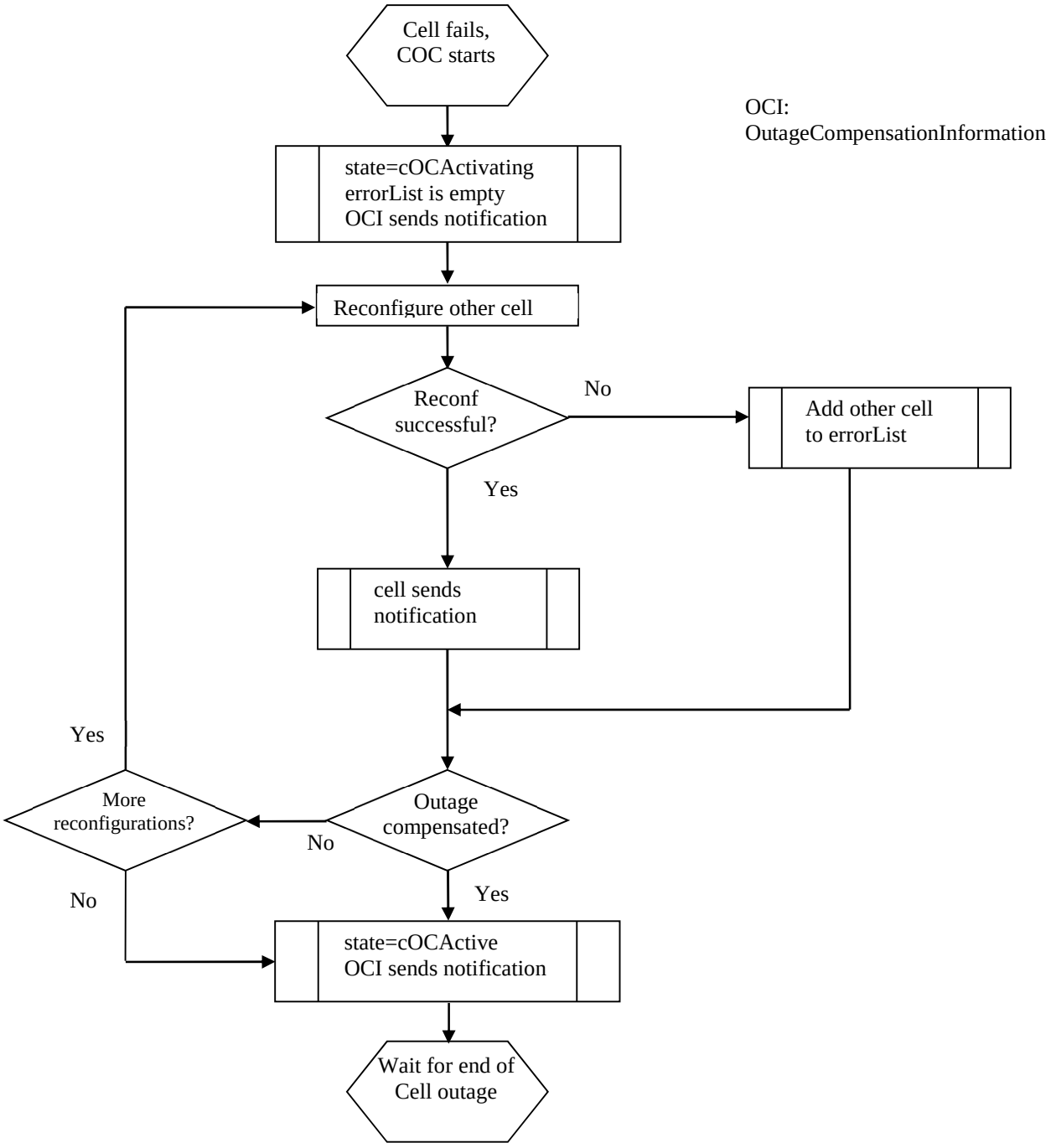

Figure A-1: Sequence diagram of COC, part 1

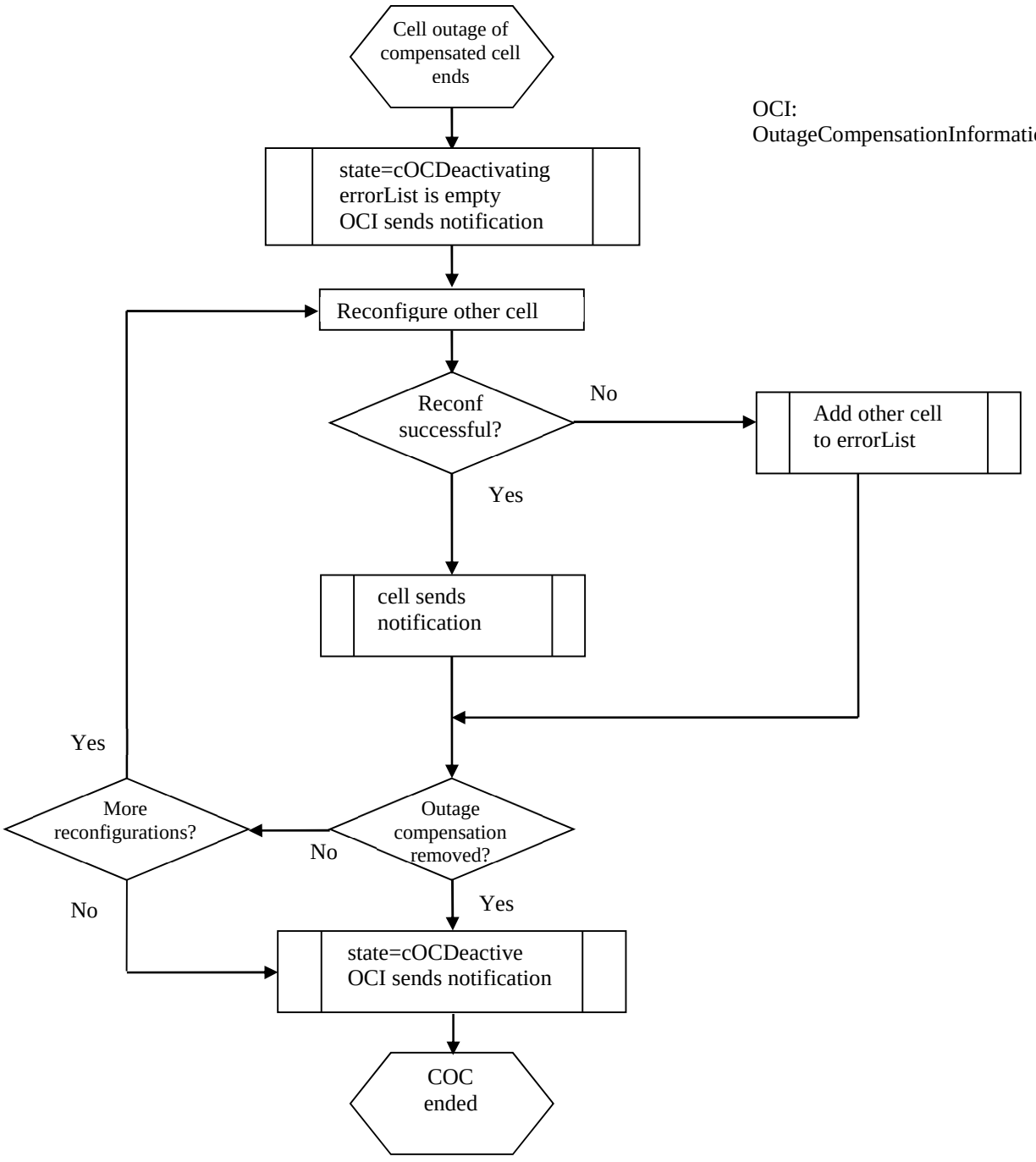

Figure A-2: Sequence diagram of COC, part 2

Legend for the table:
Notifications in *italic font* are not directly triggered by COC activities, but help to give a full picture.:
Notification content in **bold font** indicates a changed attribute value.

Time	Event	Notification	Selected notification content *)
T1	Outage of cell 1. COC is done for this cell.	*notifyNewAlarm, originated by* `EUtranGenericCell` *instance representing cell 1* `notifyAttributeValueChange` of `CellOutageCompensationIn`	notificationId=notiAlCell1 correlatedNotifications={ } notificationId=COC1 correlatedNotifications={ notiAlCell1}; cOCStatus.state = **cOCActivating**

Time	Event	Notification	Selected notification content *)
		`formation` instance name contained in `EUtranGenericCell` instance representing cell 1.	cOCStatus.errorList={}
T2	COC reconfigures cell 2	`notifyAttributeValueChange` of `EUtranGenericCell` instance representing cell 2	notificationId=avcCell2comp correlatedNotifications={COC1}
T3	COC reconfigures cell 3	`notifyAttributeValueChange` of `EUtranGenericCell` instance representing cell 3	notificationId= avcCell3comp correlatedNotifications={ COC1}
T4	COC tries to reconfigure cell 4 without success	`notifyAttributeValueChange` of `CellOutageCompensationInformation` instance name contained in `EUtranGenericCell` instance representing cell 1	notificationId=COC2 correlatedNotifications={COC1} cOCStatus.state = **cOCActivating** cOCStatus.errorList={cell4}
Case: COC successful			
T5a	COC function decides, that no further actions are necessary.	`notifyAttributeValueChange` of `CellOutageCompensationInformation` instance contained in `EUtranGenericCell` instance representing cell 1	notificationId=COC5a correlatedNotifications={COC1} cOCStatus.state = **cOCActive** cOCStatus.errorList={cell4}
T6a	Outage of cell 1 ends	*notifyClearedAlarm, originated by `EUtranGenericCell` instance representing cell 1* `notifyAttributeValueChange` of `CellOutageCompensationInformation` instance name contained in `EUtranGenericCell` instance representing cell 1	*notification Id= clearAlCell1 correlatedNotifications={ notiAlCell1, COC1}* Notification Id=COC6a correlatedNotifications={COC1, COC5a, clearAlCell1} cOCStatus.state = **cOCDeactivating** cOCStatus.errorList={}
T7a	COC tries to reconfigure cell 2 without success	In case of unsuccessful reconfiguration: `notifyAttributeValueChange` of `CellOutageCompensationInformation` instance name contained in `EUtranGenericCell` instance representing cell 1	Notification Id=COC7a correlatedNotifications={COC1, COC5a, COC6a, clearAlCell1} cOCStatus.state= **cOCDeactivating;** cOCStatus.errorList **={cell2}**
T8a	COC reconfigures cell 3	`notifyAttributeValueChange` of `EUtranGenericCell` instance representing cell 3 `notifyAttributeValueChange` of `CellOutageCompensationInformation` instance name	notification Id= avcCell3decomp correlatedNotifications={ COC1, COC5a, avcCell3comp } Notification Id=COC8a correlatedNotifications={COC1, clearAlCell1} cOCStatus.state= **cOCDeactive**

Time	Event	Notification	Selected notification content *)
		contained in `EUtranGenericCell` instance representing cell 1.	cOCStatus.errorList={cell2}
Case: COC not successful			
T5b	COC function decides, that compensation was not successful	`notifyAttributeValueChange` of `CellOutageCompensationInformation` instance name contained in `EUtranGenericCell` instance representing cell 1	Notification Id=COC5b correlatedNotifications={COC1} cOCStatus.state= **cOCActive** cOCStatus.errorList={cell4}
T6b	Outage of cell 1 ends	*notifyClearedAlarm, originated by `EUtranGenericCell` instance representing cell 1* `notifyAttributeValueChange` of `CellOutageCompensationInformation` instance name contained in `EUtranGenericCell` instance representing cell 1	*notification Id= clearAlCell1* *correlatedNotifications={ notiAlCell1, COC1}* Notification Id=COC6b correlatedNotifications={COC1, clearAlCell1} cOCStatus.state= **cOCDeactivating** cOCStatus.errorList={}
T7b	COC reconfigures cell 2	`notifyAttributeValueChange` of `EUtranGenericCell` instance representing cell 2	notification Id= avcCell2decomp correlatedNotifications={COC1, COC5b, avcCell2comp }
T8b	COC reconfigures cell 3	`notifyAttributeValueChange` of `EUtranGenericCell` instance representing cell 3 `notifyAttributeValueChange` of `CellOutageCompensationInformation` instance name contained in `EUtranGenericCell` instance representing cell 1.	notification Id= avcCell3decomp correlatedNotifications={ COC1, COC5b, avcCell3comp } Notification Id=COC8b correlatedNotifications={COC1, clearAlCell1} cOCStatus.state= **cOCDeactive** cOCStatus.errorList={}

*) Remarks:
There may be some content of the correlatedNotifications and/or additionalInformation field, which is not related to COC. This additional content is not shown for better readability and must be kept unchanged by COC.
NotificationId's are only examples.

Annex B (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
2012-11					First draft		0.1.0
2012-12	SA#58				Presented for information and approval	0.1.0	1.0.0
2012-12					New version after approval	1.0.0	11.0.0
2013-03	SA#59	SP-130048	001	1	Rel 11 CR 28658 - Correction of attribute name relatedSector	11.0.0	11.1.0
		SP-130057	002	1	CR R11 28.658 Addition of missing Network Sharing support for MDT		
2013-06	SA#60	SP-130304	003	1	Energy saving synchronization with 32.762	11.1.0	11.2.0
			004	2	Align the link inheritance with 28.622		
2013-12	SA#62	SP-130614	006	1	Add blacklist member	11.2.0	11.3.0
2014-06	SA#64	SP-140359	008	-	remove the feature support statements	11.3.0	11.4.0
2014-09	SA#65	SP-140558	009	-	Align operationalState and other state attribute definitions	11.4.0	11.5.0
2014-10					Automatic upgrade (MCC)	11.5.0	12.0.0
2014-12	SA#66	SP-140798	011	1	Add missing OAM support for radio interface based synchronization - Align with TS 36.300	12.0.0	12.1.0
2015-12	SA#70	SP-150691	013	1	Align id attribute definitions	12.1.0	12.2.0
2016-01	SA#70				Upgrade to Rel-13(MCC)	12.2.0	13.0.0

Change history							
Date	**Meeting**	**TDoc**	**CR**	**Rev**	**Cat**	**Subject/Comment**	**New version**
2016-06	SA#72	SP-160419	0016	1	B	Adding NB-IoT cell type attribute in EUtranGenericCell IOC	13.1.0
2017-03	SA#75	-	-	-		Promotion to Release 14 without technical change	14.0.0
2017-09	SA#77	SP-170653	0019	2	B	Support E-UTRAN new sharing arrangement	14.1.0
2018-01	SA#78	SP-170968	0020	1	B	Add attribute of E-UTRAN cell IOC to support SON for AAS management	15.0.0
2018-06	SA#80	SP-180421	0021	1	B	Update E-UTRAN IS defintions to support EN-DC management	15.1.0

History

Document history		
V15.1.0	June 2018	Publication