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TECHNICAL SPECIFICATION

**Universal Mobile Telecommunications System (UMTS);  
LTE;  
Telecommunication management;  
Evolved Universal Terrestrial  
Radio Access Network (E-UTRAN)  
Network Resource Model (NRM)  
Integration Reference Point (IRP);  
Requirements  
(3GPP TS 28.657 version 19.0.0 Release 19)**



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# Foreword

This Technical Specification has been produced by the 3<sup>rd</sup> Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

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- x the first digit:
  - 1 presented to TSG for information;
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  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

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# Introduction

The present document is part of a TS family covering the 3<sup>rd</sup> 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

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# 1 Scope

The present document defines, in addition to the requirements defined in [1], [2] and [3], the Requirements for the E-UTRAN and ng-eNB Network Resource Model (NRM).

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# 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 32.600: "Telecommunication management; Configuration Management (CM); Concept and high-level requirements".
- [4] 3GPP TS 32.150: "Telecommunication management; Integration Reference Point (IRP) Concept and definitions".
- [5] 3GPP TS 21.905: "Vocabulary for 3GPP Specifications".
- [6] 3GPP TS 32.511: "Telecommunication management; Automatic Neighbour Relation (ANR) management; Concepts and requirements".
- [7] 3GPP TS 32.107: "Telecommunication management; Fixed Mobile Convergence (FMC) Federated Network Information Model (FNIM)".
- [8] 3GPP TS 28.620: "Telecommunication management; Fixed Mobile Convergence (FMC) Federated Network Information Model (FNIM) Umbrella Information Model (UIM)".
- [9] 3GPP TS 32.130: "Telecommunication management; Network sharing; Concepts and requirements".
- [10] 3GPP TS 37.340: "NR; Multi-connectivity; Overall description; Stage 2".
- [11] 3GPP TS 38.300: "NR; Overall description; Stage-2".
- [12] 3GPP TS 28.540: " Management and orchestration of 5G networks; Network Resource Model (NRM); Stage 1".
- [13] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification".

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## 3 Definitions and abbreviations

### 3.1 Definitions

For the purposes of the present document, the terms and definitions given in TS 32.150 [4], TS 32.101 [1], TS 32.102 [2] and TS 21.905 [5] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TS 32.150 [4], TS 32.101 [1], TS 32.102 [2] and TS 21.905 [5], in this order.

**ng-eNB:** Defined in 3GPP TS 38.300 [11].

### 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TS 32.150 [4], TS 32.101 [1], TS 32.102 [2] and TS 21.905 [5] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TS 32.150 [4], TS 32.101 [1], TS 32.102 [2] and TS 21.905 [5], in this order.

CM	Configuration Management
EN-DC	E-UTRA-NR Dual Connectivity
NE-DC	NR-E-UTRA Dual Connectivity
NGEN-DC	NG-RAN E-UTRA-NR Dual Connectivity
E-UTRAN	Evolved Universal Terrestrial Radio Access Network
IRP	Integration Reference Point
NB-IoT	NarrowBand Internet of Things
NR	New Radio
NRM	Network Resource Model
NTN	Non-Terrestrial Networks
IoT-NTN	Internet of Things Non-Terrestrial Networks

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## 4 Requirements

### 4.1 General requirements

The following general and high-level requirement applies for the present IRP:

- IRP-related requirements in 3GPP TS 32.101 [1];
- IRP-related requirements in 3GPP TS 32.102 [2];
- IRP-related requirements in 3GPP TS 32.600 [3];
- ANR management related requirements in 3GPP TS 32.511 [6];
- E-UTRAN sharing related requirements in 3GPP TS 32.130 [9].

The NRM defined by this IRP:

- Shall support communications for telecommunication network management purposes, including management of converged networks.
- Is a member of the Federated Network Information Model (FNIM) [7] and its information is derived from FNIM Umbrella Information Model (UIM) [8]

### 4.2 Requirements for management of E-UTRAN

In addition to sub-clause 4.1, the following more specific requirements apply to E-UTRAN NRM:

**REQ-EUTRAN\_NRM-CON-001:** The NRM defined by this IRP shall contain E-UTRAN specific IOCs and related definitions, supporting E-UTRAN network entities.

**REQ-EUTRAN\_NRM-CON-002:** The NRM defined by this IRP shall support management of inter-system handover between EPS and UMTS, between EPS and GSM, and between EPS and CDMA2000.

**REQ-EUTRAN\_NRM-CON-003:** The NRM defined by this IRP shall support management of Inter-Radio Access Technology Automatic Neighbour Relation (IRAT ANR) from E-UTRAN to UTRAN, from E-UTRAN to GERAN, and from E-UTRAN to CDMA2000.

**REQ-EUTRAN\_NRM-CON-004:** The NRM defined by this IRP shall support management of Intra-E-UTRAN handover.

**REQ-EUTRAN\_NRM-CON-005:** The NRM defined by this IRP shall support management of Intra-E-UTRAN Automatic Neighbour Relation (ANR).

**REQ-EUTRAN\_NRM-CON-006:** The NRM defined by this IRP shall support management of E-UTRAN relaying by having a Relay Node (RN) wirelessly connect to a Donor eNB (DeNB).

**REQ-EUTRAN\_NRM-CON-007:** The NRM defined by this IRP shall support the management of designation of individual cells as reserved for special use, i.e. such that only UEs with an operator-specified subset of Access Classes 10 to 15 can use those cells.

**REQ-EUTRAN\_NRM-CON-008:** The NRM defined by this IRP shall support the management of shared E-UTRAN.

**REQ-EUTRAN\_NRM-CON-009:** The NRM defined by this IRP shall support the management of NB-IoT.

**REQ-EUTRAN\_NRM-CON-010:** The NRM defined by this IRP shall support the management of Master eNB in EN-DC (see 3GPP TS 37.340 [10]).

**REQ-EUTRAN\_NRM-CON-011:** The NRM defined by this IRP shall support the management of IoT-NTN.

**REQ-EUTRAN\_NRM-CON-012:** The NRM defined by this IRP shall support the management of Store and Forward Satellite operation.

## 4.3 Requirements for management of ng-eNB

As ng-eNB is one RAN node type of NG-RAN [x], so the NG-RAN NRM requirements defined in TS 28.540 [12] apply to ng-eNB NRM. In addition, the ng-eNB related MD-DC management requirements defined in TS 28.540 [12] apply to ng-eNB NRM also, including management of ng-eNB in NGEN-DC or NE-DC operation.

## Annex A (informative): Change history

Change history								
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Cat	Old	New
2014-06	SA#64	SP-140359	002	-	remove the feature support statements	F	11.0.0	11.1.0
2014-10	-	-	-	-	Update to Rel-12 version (MCC)		11.1.0	12.0.0
2014-12	SA#66	SP-140800	003	-	Add requirement for the management of shared E-UTRAN	B	12.0.0	12.1.0
2016-01	-	-	-	-	Update to Rel-13 version (MCC)		12.1.0	13.0.0

Change history							
Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
2016-06	SA#72	SP-160419	0005	2	B	Adding NB-IoT management requirement	13.1.0
2017-03	SA#75	-	-	-		Promotion to Release 14 without technical change	14.0.0
2018-06	SA#80	SP-180421	0006	-	B	Add requirement to support EN-DC management	15.0.0
2018-09	SA#81	SP-180828	0008	-	B	Add requirement to support ng-eNB management	15.1.0
2020-07	-	-	-	-	-	Update to Rel-16 version (MCC)	<b>16.0.0</b>
2022-03	-	-	-	-	-	Update to Rel-17 version (MCC)	<b>17.0.0</b>
2023-12	SA#102	SP-231483	0009	1	B	Add requirement for IOT-NTN management	<b>18.0.0</b>
2025-06	SA#108	SP-250546	0010	1	B	Add requirements for SnF support	<b>19.0.0</b>

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# History

<b>Document history</b>		
V19.0.0	January 2026	Publication