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TECHNICAL SPECIFICATION

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5G end to end Key Performance Indicators (KPI)
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Contents

Foreword

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

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2 presented to TSG for approval;

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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.

1 Scope

The present document specifies end-to-end Key Performance Indicators (KPIs) for the 5G network and network slicing.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] Void.

[3] ITU-T Recommendation E.800: "Definitions of terms related to quality of service".

[4] 3GPP TS 24.501: " Non-Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3".

[5] 3GPP TS 38.331: "NR; Radio Resource Control (RRC); Protocol specification".

[6] 3GPP TS 28.552: "Management and orchestration; 5G performance measurements".

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

[8] ETSI ES 203 228 V1.2.1 (2017-04): "Environmental Engineering (EE); Assessment of mobile network energy efficiency".

[9] 3GPP TS 28.310: "Management and orchestration; Energy efficiency of 5G".

[10] 3GPP TS 37.340: "Evolved Universal Terrestrial Radio Access (E-UTRA) and NR; Multi-connectivity; Overall Description; Stage 2".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TR 21.905 [1].

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1].

EE	Energy Efficiency
kbit	kilobit (1000 bits)
RTT	Round Trip Time
EN-DC	E-UTRA-NR Dual Connectivity

4 End to end KPI concept and overview

The following KPI categories are included in the present document:

- Accessibility (see the definition in ITU-T Recommendation E.800 [3]).
- Integrity (see the definition in ITU-T Recommendation E.800 [3]).
- Utilization.
- Retainability (see the definition in ITU-T Recommendation E.800 [3]).
- Mobility.
- Energy Efficiency.

5 KPI definitions template

a) Name (Mandatory): This field shall contain the name of the KPI.

b) Description (Mandatory): This field shall contain the description of the KPI.
Within this field it should describe if the KPI is focusing on network or user view. This filed should also describe the logical KPI formula to derive the KPI. For example, a success rate KPI's logical formula is the number of successful events divided by all events. This field should also show the KPI unit (e.g., kbit/s, millisecond) and the KPI type (e.g., mean, ratio).

The KPI type can be one of the following:

- MEAN: This KPI is produced to reflect a mean measurement value based on a number of sample results.
- RATIO: This KPI is produced to reflect the percentage of a specific case occurrence to all the cases.
- CUM: This KPI is produced to reflect a cumulative measurement which is always increasing.

The KPI unit can be one of the following:

- percentage;
- time interval (second or millisecond or microsecond);
- Integer;
- kbit/s.

c) Formula definition (Optional):

This field should contain the KPI formula using the 3GPP defined measurement names.

This field can be used only when the measurement(s) needed for the KPI formula are defined in TS for performance measurements (TS 28.552 [6]). This field shall clarify how the aggregation shall be done, for the KPI object level(s) defined in d).

d) KPI Object (Mandatory):

This field shall contain the DN of the object instance where the KPI is applicable, including the object where the measurement is made. The DN identifies one object instance of the following IOC:

- NetworkSliceSubnet.
- SubNetwork.
- NetworkSlice.
- NRCellDU.