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Foreword

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- z the third digit is incremented when editorial only changes have been incorporated in the document.

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:

- 32.401 Performance Management (PM); Concept and requirements
- 32.402 Performance Management (PM); Performance measurements - GSM
- 32.404 Performance Management (PM); Performance measurements - Definitions and template
- 32.405 Performance Management (PM); Performance measurements Universal Terrestrial Radio Access Network (UTRAN)
- 32.406 Performance Management (PM); Performance measurements Core Network (CN) Packet Switched (PS) domain
- 32.407 Performance Management (PM); Performance measurements Core Network (CN) Circuit Switched (CS) domain
- 32.408 Performance Management (PM); Performance measurements Teleservice
- 32.409 Performance Management (PM); Performance measurements IP Multimedia Subsystem (IMS)
- 32.425 Performance Management (PM); Performance measurements Evolved Universal Terrestrial Radio Access Network (E-UTRAN)
- 32.426 Performance Management (PM); Performance measurements Evolved Packet Core network (EPC)**

The present document is part of a set of specifications, which describe the requirements and information model necessary for the standardised Operation, Administration and Maintenance (OA&M) of a multi-vendor LTE SAE-system.

During the lifetime of a LTE SAE network, its logical and physical configuration will undergo changes of varying degrees and frequencies in order to optimise the utilisation of the network resources. These changes will be executed through network configuration management activities and/or network engineering, see TS 32.600 [2].

Many of the activities involved in the daily operation and future network planning of a LTE SAE network require data on which to base decisions. This data refers to the load carried by the network and the grade of service offered. In order

to produce this data performance measurements are executed in the NEs, which comprise the network. The data can then be transferred to an external system, e.g. an Operations System (OS) in TMN terminology, for further evaluation. The purpose of the present document is to describe the mechanisms involved in the collection of the data and the definition of the data itself.

Annex B of TS 32.404 helps in the definition of new performance measurements that can be submitted to 3GPP for potential adoption and inclusion in the present document. Annex B of TS 32.404 discusses a top-down performance measurement definition methodology that focuses on how the end-user of performance measurements can use the measurements.

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1 Scope

The present document describes the measurements for EPC and combined EPC/UMTS/GSM.

TS 32.401 [1] describes Performance Management concepts and requirements.

The present document is valid for all measurement types provided by an implementation of an EPC network and combined EPC/UMTS/GSM network. Only measurement types that are specific to EPC or combined EPC/UMTS/GSM networks are defined within the present documents.

Vendor specific measurement types used in EPC and combined EPC/UMTS/GSM networks are not covered. Instead, these could be applied according to manufacturer's documentation.

Measurements related to "external" technologies (such as IP) as described by "external" standards bodies (e.g. IETF) shall only be referenced within this specification, wherever there is a need identified for the existence of such a reference.

The definition of the standard measurements is intended to result in comparability of measurement data produced in a multi-vendor network, for those measurement types that can be standardised across all vendors' implementations.

The structure of the present document is as follows:

- Header 1: Network Element (e.g. MME related measurements);
- Header 2: Measurement function;
- Header 3: Measurements.

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 and/or edition number or version number) 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 32.401: "Telecommunication management; Performance Management (PM); Concept and requirements".
- [2] 3GPP TS 32.600: "Telecommunication management; Configuration Management (CM); Concept and high-level requirements".
- [3] 3GPP TS 24.301: " Technical Specification Group Core Network and Terminals; Non-Access-Stratum (NAS) protocol for Evolved Packet System (EPS); Stage 3".
- [4] 3GPP TS 29.274: "Evolved General Packet Radio Service (GPRS); Tunnelling Protocol for Control plane (GTPv2-C); Stage 3".
- [5] 3GPP TS 23.401: "General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access (Release 8)".
- [6] 3GPP TS 29.274: " Tunnelling Protocol for Control plane (GTPv2-C)".
- [7] 3GPP TS 29.281: "GPRS Tunnelling Protocol User Plane (GTPv1-U)".
- [8] 3GPP TS 36.414: "Evolved Universal Terrestrial Access Network (E-UTRAN); S1 data transport".
- [9] 3GPP TS 29.272: "Mobility Management Entity (MME) and Serving GPRS Support Node (SGSN) related interfaces based on Diameter protocol".

- [10] 3GPP TS 23.203: "Policy and charging control architecture".
- [11] 3GPP TS 36.413: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 Application Protocol (S1AP)".
- [12] 3GPP TS 36.412: "Evolved Universal Terrestrial Access Network (E-UTRAN); S1 signaling transport".
- [13] 3GPP TS 23.402: "Architecture enhancements for non-3GPP accesses".
- [14] IETF RFC 5136: "Defining Network Capacity".
- [15] 3GPP TS 23.246: "Multimedia Broadcast Multicast Service (MBMS); Architecture and functional description".
- [16] 3GPP TS 36.445: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); M1 data transport".
- [17] 3GPP TS 23.272: Circuit Switched (CS) fallback in Evolved Packet System (EPS); Stage 2.
- [18] 3GPP TS 29.212: "Policy and charging control over Gx reference point".
- [19] 3GPP TS 29.213: "Policy and charging control signalling flows and Quality of Service (QoS) parameter mapping".
- [20] IETF RFC 3588: "Diameter Base Protocol".
- [21] 3GPP TS 28.500: "Management concept, architecture and requirements for mobile networks that include virtualized network functions".
- [22] ETSI GS NFV-IFA027 v0.2.0: "Network Functions Virtualisation (NFV); Management and Orchestration; Performance Measurements Specification".
- [23] ETSI GS NFV IFA008 v2.1.1: "Network Functions Virtualisation (NFV); Management and Orchestration; Ve-Vnfm Reference Point - Interface and Information Model Specification".

3 Measurement family and abbreviations

3.1 Measurement family

The measurement names defined in the present document are all beginning with a prefix containing the measurement family name. This family name identifies all measurements which relate to a given functionality and it may be used for measurement administration (see TS 32.401 [1]).

The list of families currently used in the present document is as follows:

- EQPT (measurements related to Equipment)
- MM (measurements related to Mobility Management)
- GTP (measurements related to GTP Management)
- IP (measurements related to IP Management)
- IRATHO (measurements related to Inter-Radio Access Technology Handover)
- QOS (measurements related to Quality Of Service)
- SEC (measurements related to Security)
- SM (measurements related to Session Management)