### 5.1.2 Detailed specification of the radio interface

The standards contained in this section are derived from the global core specifications for IMT 2000 contained at http://ties.itu.int/u/itu-r/ede/rsg5/IMT-2000/GCS/GCSrev11/.

The following notes apply to the sections below, where indicated:

1) The relevant SDOs should make their reference material available from their Web site.

2) This information was supplied by the recognized external organizations and relates to their own deliverables of the transposed global core specification.

#### 5.1.2.1 25.200 series

##### 5.1.2.1.1 TS 25.201

Physical layer - general description

This specification gives a general description of the physical layer of the UTRA radio interface.

##### 5.1.2.1.2 TS 25.211

Physical channels and mapping of transport channels onto physical channels (FDD)

This specification describes the characteristics of the Layer 1 transport channels and physical channels in the FDD mode of UTRA. The main objectives of the specification are to be a part of the full description of the UTRA Layer 1, and to serve as a basis for the drafting of the actual technical specification.

##### 5.1.2.1.3 TS 25.212

Multiplexing and channel coding (FDD)

This specification describes the characteristics of the Layer 1 multiplexing and channel coding in the FDD mode of UTRA.

##### 5.1.2.1.4 TS 25.213

Spreading and modulation (FDD)

This specification describes spreading and modulation for UTRA physical layer FDD mode.

##### 5.1.2.1.5 TS 25.214

Physical layer procedures (FDD)

This specification describes and establishes the characteristics of the physical layer procedures in the FDD mode of UTRA.

##### 5.1.2.1.6 TS 25.215

Physical layer; Measurements (FDD)

This specification describes the measurements done at the UE and network in order to support operation in idle mode and connected mode for FDD mode.

#### 5.1.2.2 25.300 series

##### 5.1.2.2.1 TS 25.301

Radio interface protocol architecture

This specification describes an overview and overall description of the UE-UTRAN radio interface protocol architecture. Details of the radio protocols will be specified in companion documents.

##### 5.1.2.2.2 TS 25.302

Services provided by the physical layer

This specification describes a technical specification of the services provided by the physical layer of UTRA to upper layers.

##### 5.1.2.2.3 TS 25.303

Interlayer procedures in Connected Mode

This specification describes informative interlayer procedures to perform the required tasks. This specification attempts to provide a comprehensive overview of the different states and transitions within the connected mode of universal mobile telecommunications system (UMTS) terminal.

##### 5.1.2.2.4 TS 25.304

User Equipment (UE) procedures in idle mode and procedures for cell reselection in connected mode

This specification describes the overall idle mode process for the UE and the functional division between the non-access stratum and access stratum in the UE. The UE is in idle mode when the connection of the UE is closed on all layers, e.g., there is neither an MM connection nor an RRC connection. This specification presents also examples of inter-layer procedures related to the idle mode processes and describes idle mode functionality of a dual mode UMTS/GSM UE.

##### 5.1.2.2.5 TS 25.305

Stage 2 functional specification of User Equipment (UE) positioning in UTRAN

This document specifies the Stage 2 of the UE Positioning function of UTRAN, which provides the mechanisms to support the calculation of the geographical position of a UE.

##### 5.1.2.2.6 TS 25.306

UE Radio Access capabilities

This document identifies the parameters of the access stratum part of the UE radio access capabilities. Furthermore, some reference configurations of these values are defined. The intention is that these configurations will be used for test specifications.

##### 5.1.2.2.7 TS 25.307

Requirements on User Equipments (UEs) supporting a release-independent frequency band

This document specifies requirements on UEs supporting a frequency band that is independent of release.

##### 5.1.2.2.8 TS 25.308

High Speed Downlink Packet Access (HSDPA); Overall description; Stage 2

This document is a technical specification of the overall support of High Speed Downlink Packet Access in UTRA.

##### 5.1.2.2.9 TS 25.317

High Speed Packet Access (HSPA); Requirements on User Equipments (UEs) supporting a release-independent frequency band combination

This document specifies requirements on UEs supporting a frequency band combination that is independent of release.

##### 5.1.2.2.10 TS 25.319

Enhanced uplink; Overall description; Stage 2

This document is a technical specification of the overall support of FDD and TDD Enhanced Uplink in UTRA.

##### 5.1.2.2.11 TS 25.321

Medium Access Control (MAC) protocol specification

This specification describes the MAC protocol.

##### 5.1.2.2.12 TS 25.322

Radio Link Control (RLC) protocol specification

This specification describes the RLC protocol.

##### 5.1.2.2.13 TS 25.323

Packet Data Convergence Protocol (PDCP) specification

This document provides the description of the Packet Data Convergence Protocol (PDCP). PDCP provides its services to the NAS at the UE or the relay at the Radio Network Controller (RNC). PDCP uses the services provided by the Radio Link Control (RLC) sublayer.

##### 5.1.2.2.14 TS 25.324

Broadcast/Multicast Control (BMC)

This document provides the description of the Broadcast/Multicast Control Protocol (BMC). This protocol adapts broadcast and multicast services on the radio interface.

##### 5.1.2.2.15 TS 25.331

Radio Resource Control (RRC); Protocol specification

This specification describes the RRC protocol for the radio system. The scope of this specification contains also the information to be transported in a transparent container between source RNC and target RNC in connection to SRNC relocation.

##### 5.1.2.2.16 TS 25.346

Introduction of the Multimedia Broadcast/Multicast Service (MBMS) in the Radio Access Network (RAN); Stage 2

This document is a technical specification of the overall support of Multimedia Broadcast and Multicast Services in UTRA.

##### 5.1.2.2.17 TS 25.367

Mobility procedures for Home Node B (HNB); Overall description; Stage 2

This document provides a high level description of the mobility procedures applicable to Home NodeB support.

#### 5.1.2.3 25.400 series

##### 5.1.2.3.1 TS 25.401

UTRAN overall description

This specification describes the overall architecture of the UTRAN, including internal interfaces and assumptions on the radio and Iu interfaces.

##### 5.1.2.3.2 TS 25.402

Synchronisation in UTRAN Stage 2

This document constitutes the Stage 2 specification of different synchronisation mechanisms in UTRAN and on Uu.

##### 5.1.2.3.3 TS 25.410

UTRAN Iu interface: General aspects and principles

This specification describes an introduction to the 25.41x series of technical specifications that define the Iu interface for the interconnection of RNC component of the UTRAN to the CN.

##### 5.1.2.3.4 TS 25.411

UTRAN Iu interface layer 1

This specification describes the standards allowed to implement Layer 1 on the Iu interface. The specification of transmission delay requirements and O&M requirements are not in the scope of this specification.

##### 5.1.2.3.5 TS 25.412

UTRAN Iu interface signalling transport

This specification describes the standards for Signalling Transport to be used across Iu Interface.

##### 5.1.2.3.6 TS 25.413

UTRAN Iu interface Radio Access Network Application Part (RANAP) signalling

This specification describes the signalling between the CN and the UTRAN over the Iu interface.

##### 5.1.2.3.7 TS 25.414

UTRAN Iu interface data transport and transport signalling

This specification describes the standards for user data transport protocols and related signalling protocols to establish user plane transport bearers over the Iu interface.

##### 5.1.2.3.8 TS 25.415

UTRAN Iu interface user plane protocols

This specification describes the protocols being used to transport and control over the Iu interface, the Iu user data streams.

##### 5.1.2.3.9 TS 25.419

UTRAN Iu-BC interface: Service Area Broadcast Protocol (SABP)

This document specifies the Service Area Broadcast Protocol (SABP) between the Cell Broadcast Centre (CBC) and the Radio Network Controller (RNC).

##### 5.1.2.3.10 TS 25.420

UTRAN Iur interface general aspects and principles

This specification describes an introduction to the TSG RAN TS 25.42x series of technical specifications that define the Iur interface. It is a logical interface for the interconnection of two RNC components of the UTRAN.

##### 5.1.2.3.11 TS 25.421

UTRAN Iur interface layer 1

This specification describes the standards allowed to implement Layer 1 on the Iur interface. The specification of transmission delay requirements and O&M requirements are not in the scope of this specification.

##### 5.1.2.3.12 TS 25.422

UTRAN Iur interface signalling transport

This specification describes the standards for Signalling Transport to be used across Iur Interface.

##### 5.1.2.3.13 TS 25.423

UTRAN Iur interface Radio Network Subsystem Application Part (RNSAP) signalling

This specification describes the radio network layer signalling procedures between RNCs in UTRAN.

##### 5.1.2.3.14 TS 25.424

UTRAN Iur interface data transport & transport signalling for Common Transport Channel data streams

This specification describes the UTRAN RNS-RNS (Iur) interface data transport and transport signalling for common transport channel data streams.

##### 5.1.2.3.15 TS 25.425

UTRAN Iur interface user plane protocols for Common Transport Channel data streams

This specification describes the UTRAN RNS-RNS (Iur) interface user plane protocols for common transport channel data streams.

##### 5.1.2.3.16 TS 25.426

UTRAN Iur and Iub interface data transport & transport signalling for DCH data streams

This specification describes the transport bearers for the DCH data streams on UTRAN Iur and Iub interfaces. The corresponding transport network control plane is also specified. The physical layer for the transport bearers is outside the scope of this TS.

##### 5.1.2.3.17 TS 25.427

UTRAN Iub/Iur interface user plane protocol for DCH data streams

This specification describes the UTRAN Iur and Iub interfaces user plane protocols for dedicated transport channel data streams.

##### 5.1.2.3.18 TS 25.430

UTRAN Iub Interface: general aspects and principles

This specification describes the TSG RAN TS 25.43x series of UMTS technical specifications that define the Iub interface. The Iub interface is a logical interface for the interconnection of Node B and RNC components of the UTRAN.

##### 5.1.2.3.19 TS 25.431

UTRAN Iub interface Layer 1

This specification describes the standards allowed to implement Layer 1 on the Iub interface. The specification of transmission delay requirements and O&M requirements is not in the scope of this specification.

##### 5.1.2.3.20 TS 25.432

UTRAN Iub interface: signalling transport

This specification describes the signalling transport related to the Node B application part (NBAP) signalling to be used across the Iub interface. The Iub interface is a logical interface for the interconnection of Node B and RNC components of the UTRAN. The RNC signalling between these nodes is based on NBAP.

##### 5.1.2.3.21 TS 25.433

UTRAN Iub interface Node B Application Part (NBAP) signalling

This specification describes the standards for NBAP specification to be used over Iub interface.

##### 5.1.2.3.22 TS 25.434

UTRAN Iub interface data transport and transport signalling for Common Transport Channel data streams

This specification describes the UTRAN RNC-Node B (Iub) interface data transport and transport signalling for CCH data streams.

##### 5.1.2.3.23 TS 25.435

UTRAN Iub interface user plane protocols for Common Transport Channel data streams

This specification describes the UTRAN RNC-Node B (Iub) interface user plane protocols for common transport channel data streams.

##### 5.1.2.3.24 TS 25.442

UTRAN implementation-specific O&M transport

This specification describes the transport of implementation specific O&M signalling between Node B and the management platform in case that the transport is routed via the RNC.

##### 5.1.2.3.25 TS 25.446

MBMS synchronisation protocol (SYNC)

This specification describes the MBMS Synchronisation Protocol. For the release of this specification it is used on Iu towards UTRAN.

##### 5.1.2.3.26 TS 25.450

UTRAN Iupc interface general aspects and principles

This document is an introduction to the TSG RAN TS 25.45z series of UMTS Technical Specifications that define the Iupc Interface. The Iupc interface is a logical interface for the interconnection of Standalone SMLC (SAS) and Radio Network Controller (RNC) components of the Universal Terrestrial Radio Access Network (UTRAN) for the UMTS system.

##### 5.1.2.3.27 TS 25.451

UTRAN Iupc interface layer 1

This document specifies the standards allowed to implement Layer 1 on the Iupc interface.

##### 5.1.2.3.28 TS 25.452

UTRAN Iupc interface: signalling transport

This document specifies the signalling transport related to PCAP signalling to be used across the Iupc interface.

##### 5.1.2.3.29 TS 25.453

UTRAN Iupc interface Positioning Calculation Application Part (PCAP) signalling

This document specifies the Positioning Calculation Application Part (PCAP) between the Radio Network Controller (RNC) and the Stand-alone SMLC (SAS).

##### 5.1.2.3.30 TS 25.460

UTRAN Iuant interface: General aspects and principles

This document is an introduction to the TSG RAN TS 25.46x series of UMTS Technical Specifications that define the Iuant Interface. The logical Iuant interface is a Node B internal interface between the implementation specific O&M function and the Remote Electrical Tilting (RET) Antenna Control unit function of the Node B.

##### 5.1.2.3.31 TS 25.461

UTRAN Iuant interface: Layer 1

This document specifies the standards allowed to implement Layer 1 on the Iuant interface. The specification of transmission delay requirements and O&M requirements are not in the scope of this document.

##### 5.1.2.3.32 TS 25.462

UTRAN Iuant interface: Signalling transport

This document specifies the signalling transport related to RETAP signalling to be used across the Iuant interface.

##### 5.1.2.3.33 TS 25.466

UTRAN Iuant interface: Application part

This document specifies the Remote Electrical Tilting Application Part (RETAP) between the implementation specific O&M transport function and the RET Antenna Control unit function of the Node B. The document also specifies the Tower Mounted Amplifier Application Part (TMAAP) between the implementation specific O&M transport function and the TMA control function of the Node B. It defines the Iuant interface and its associated signaling procedures.

##### 5.1.2.3.34 TS 25.467

UTRAN architecture for 3G Home Node B (HNB); Stage 2

This document specifies the UTRAN architecture for 3G Home NodeB (3G HNB).

##### 5.1.2.3.35 TS 25.468

UTRAN Iuh Interface RANAP User Adaption (RUA) signalling

This document specifies the RANAP User Adaption (RUA) between the Home Node B (HNB) and the Home Node B Gateway (HNB-GW).

##### 5.1.2.3.36 TS 25.469

UTRAN Iuh interface Home Node B (HNB) Application Part (HNBAP) signalling

This document specifies the Home Node B Application Part (HNBAP) between the Home Node B (HNB) and the Home Node B Gateway (HNB-GW).

##### 5.1.2.3.37 TS 25.484

Automatic Neighbour Relation (ANR) for UTRAN; Stage 2

This document specifies the Automatic Neighbour Relation (ANR) function for UTRAN.

#### 5.1.2.4 25.100 series

##### 5.1.2.4.1 TS 25.101

User Equipment (UE) radio transmission and reception (FDD)

This document establishes the minimum RF characteristics of the UTRA User Equipment (UE) operating in the FDD mode. The values in the TS make no allowance for measurement uncertainty in conformance testing. Test limits to be used for conformance testing are specified separately in the UE conformance test specifications TS 34.121.

##### 5.1.2.4.2 TS 25.106

UTRA repeater radio transmission and reception

This document establishes the minimum radio frequency performance of UTRA repeaters.

##### 5.1.2.4.3 TS 25.133

Requirements for support of radio resource management (FDD)

This specification describes the requirements for support of radio resource management for FDD including requirements on measurements in UTRAN and the UE as well as on node dynamic behaviour and interaction, in terms of delay and response characteristics.

##### 5.1.2.4.4 TS 25.104

Base Station (BS) radio transmission and reception (FDD)

This specification describes the base station minimum RF characteristics of the FDD mode of UTRA. The values in the TS make no allowance for measurements uncertainties in conformance testing. Test limit to be used for conformance testing are specified separately in the BS conformance test Specification TS 25.141.

##### 5.1.2.4.5 TS 25.141

Base Station (BS) conformance testing (FDD)

This specification describes the RF test methods and conformance requirements for UTRA base transceiver stations (BTS) operating in the FDD mode. These have been derived from, and are consistent with, the core UTRA specifications specified in the requirements reference subclause of each test. The maximum acceptable measurement uncertainty is specified in the TS for each test, where appropriate.

##### 5.1.2.4.6 TS 25.113

Base station (BS) and repeater electromagnetic compatibility (EMC)

This specification describes the assessment of base stations and associated ancillary equipment in respect of EMC. This specification does not include the antenna port immunity and emissions.

##### 5.1.2.4.7 TS 25.143

UTRA repeater conformance testing

This document specifies the Radio Frequency (RF) test methods and Minimum Requirements for UTRA Repeaters. These have been derived from, and are consistent with the UTRA Repeater specifications defined in TS 25.106.

##### 5.1.2.4.8 TS 25.171

Requirements for support of Assisted Global Positioning System (A-GPS); Frequency Division Duplex (FDD)

This document establishes the minimum performance requirements for A-GPS for FDD mode of UTRA for the User Equipment (UE).

##### 5.1.2.4.9 TS 25.144

User Equipment (UE) and Mobile Station (MS) over the air performance requirements

This document establishes Over the Air antenna minimum requirements for User Equipment (UE) and Mobile Station (MS).

##### 5.1.2.4.10 TS 25.111

Location Measurement Unit (LMU) performance specification; User Equipment (UE) positioning in UTRAN

This document establishes the Location Measurement Unit (LMU) minimum RF characteristics of the FDD mode of UTRA.

#### 5.1.2.5 34.100 series

##### 5.1.2.5.1 TS 34.108

Common test environments for User Equipment (UE); Conformance testing

This document contains definitions of reference conditions and test signals, default parameters, reference Radio Bearer configurations, common requirements for test equipment and generic set-up procedures for use in UE conformance tests.

##### 5.1.2.5.2 TS 34.109

Terminal logical test interface; Special conformance testing functions

This document specifies for User Equipment (UE), in UMTS system, for FDD and TDD modes, those UE functions that are required for conformance testing purposes.

##### 5.1.2.5.3 TS 34.121

Terminal conformance specification, Radio transmission and reception (FDD)

This document specifies the Radio Frequency (RF) test methods and conformance requirements for UTRA User Equipment (UE) operating in the FDD mode. These have been derived from, and are consistent with, the core UTRA specifications. The maximum acceptable measurement uncertainty is specified in the TS for each test, where appropriate.

##### 5.1.2.5.4 TS 34.123-1

User Equipment (UE) conformance specification; Part 1: Protocol conformance specification

This document specifies the protocol conformance testing for the 3rd Generation User Equipment (UE). This is the first part of a multi-part test specification.

##### 5.1.2.5.5 TS 34.123-2

User Equipment (UE) conformance specification; Part 2: Implementation conformance statement (ICS) proforma specification

This document provides the Implementation Conformance Statement (ICS) proforma for 3rd Generation User Equipment (UE), in compliance with the relevant requirements, and in accordance with the relevant guidance given in ISO/IEC 9646-7 and ETS 300 406. This document also specifies a recommended applicability statement for the test cases included in TS 34.123-1. These applicability statements are based on the features implemented in the UE.

##### 5.1.2.5.6 TS 34.124

Electromagnetic compatibility (EMC) requirements for mobile terminals and ancillary equipment

This document establishes the essential EMC requirements for “3rd generation” digital cellular mobile terminal equipment and ancillary accessories in combination with a 3GPP user equipment (UE).

#### 5.1.2.6 36.200 series

##### 5.1.2.6.1 TS 36.201

Evolved Universal Terrestrial Radio Access (E-UTRA); LTE physical layer; General description

This specification describes an overview of the physical layer of the EUTRA radio interface.

##### 5.1.2.6.2 TS 36.211

Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation

This specification describes the physical channels for evolved UTRA.

##### 5.1.2.6.3 TS 36.212

Evolved Universal Terrestrial Radio Access (E-UTRA); Multiplexing and channel coding

This specification describes the coding, multiplexing and mapping to physical channels for E-UTRA.

##### 5.1.2.6.4 TS 36.213

Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures

This specification describes the characteristics of the physical layer procedures of E-UTRA.

##### 5.1.2.6.5 TS 36.214

Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer; Measurements

This specification describes the measurements done at the UE and network in order to support operation in idle mode and connected mode.

##### 5.1.2.6.6 TS 36.216

Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer for relaying operation

This document describes the characteristics of eNodeB – relay node transmissions.

#### 5.1.2.7 36.300 series

##### 5.1.2.7.1 TS 36.300

Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2

This specification describes an overview and overall description of the E-UTRA radio interface and E-UTRAN architecture and radio interface protocol architecture.

##### 5.1.2.7.2 TS 36.302

Evolved Universal Terrestrial Radio Access (E-UTRA); Services provided by the physical layer

This specification describes the services provided by the physical layer of E-UTRA to upper layers.

##### 5.1.2.7.3 TS 36.304

Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) procedures in idle mode

This specification describes the Access Stratum (AS) part of the Idle Mode procedures applicable to a UE and the model for the functional division between the NAS and AS in a UE.

##### 5.1.2.7.4 TS 36.306

Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio access capabilities

This specification defines the E-UTRA UE Radio Access Capability Parameters.

##### 5.1.2.7.5 TS 36.307

Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements on User Equipments (UEs) supporting a release-independent frequency band

This document specifies requirements on UEs supporting a frequency band that is independent of release.

##### 5.1.2.7.6 TS 36.314

Evolved Universal Terrestrial Radio Access (E-UTRA); Layer 2 - Measurements

This document contains the description and definition of the measurements performed by E-UTRAN that are transferred over the standardised interfaces in order to support E-UTRA radio link operations, radio resource management (RRM), network operations and maintenance (OAM), and self-organising networks (SON).

##### 5.1.2.7.7 TS 36.321

Evolved Universal Terrestrial Radio Access (E-UTRA); Medium Access Control (MAC) protocol specification

This specification describes the E-UTRA MAC protocol.

##### 5.1.2.7.8 TS 36.322

Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Link Control (RLC) protocol specification

This specification describes the E-UTRA Radio Link Control (RLC) protocol.

##### 5.1.2.7.9 TS 36.323

Evolved Universal Terrestrial Radio Access (E-UTRA); Packet Data Convergence Protocol (PDCP) specification

This specification describes the Packet Data Convergence Protocol (PDCP).

##### 5.1.2.7.10 TS 36.331

Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification

This specification describes the Radio Resource Control protocol for the UE-eUTRAN radio interface.

##### 5.1.2.7.11 TS 36.305

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Stage 2 functional specification of User Equipment (UE) positioning in E-UTRAN

This document specifies the stage 2 of the UE positioning function of E-UTRAN, which provides the mechanisms to support or assist the calculation of the geographical position of a UE. The purpose of this stage 2 specification is to define the E-UTRAN UE Positioning architecture, functional entities and operations to support positioning methods. This description is confined to the E-UTRAN Access Stratum. This stage 2 specification covers the E-UTRAN positioning methods, state descriptions, and message flows to support UE positioning.

##### 5.1.2.7.12 TS 36.355

Evolved Universal Terrestrial Radio Access (E-UTRA); LTE Positioning Protocol (LPP)

This document contains the definition of the LTE Positioning Protocol (LPP).

#### 5.1.2.8 36.400 series

##### 5.1.2.8.1 TS 36.401

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Architecture description

This specification describes the overall architecture of the EUTRAN, including internal interfaces and assumptions on the radio, S1 and X2 interfaces.

##### 5.1.2.8.2 TS 36.410

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 general aspects and principles

This specification provides an introduction to the 3GPP TS 36.41x series of technical specifications that define the S1 interface.

##### 5.1.2.8.3 TS 36.411

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 layer 1

This specification describes the standards allowed to implement Layer 1 on the S1 interface.

##### 5.1.2.8.4 TS 36.412

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 signalling transport

This specification describes the Signalling Transport to be used across S1 interface.

##### 5.1.2.8.5 TS 36.413

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 Application Protocol (S1AP)

This specification describes the E-UTRAN radio network layer signalling protocol for the S1 interface.

##### 5.1.2.8.6 TS 36.414

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 data transport

This specification describes the standards for user data transport protocols and related signalling protocols to establish user plane transport bearers over the S1 interface.

##### 5.1.2.8.7 TS 36.420

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 general aspects and principles

This specification provides an introduction to the TSG RAN TS 36.42x series of UMTS Technical Specifications that define the X2 interface.

##### 5.1.2.8.8 TS 36.421

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 layer 1

This specification describes the standards allowed to implement Layer 1 on the X2 interface.

##### 5.1.2.8.9 TS 36.422

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 signalling transport

This specification describes the Signalling Transport to be used across X2 interface.

##### 5.1.2.8.10 TS 36.423

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 Application Protocol (X2AP)

This specification describes the E-UTRAN radio network layer signalling protocol for the X2 interface.

##### 5.1.2.8.11 TS 36.424

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 data transport

This specification describes the standards for user data transport protocols and related signalling protocols to establish user plane transport bearers over the X2 interface.

##### 5.1.2.8.12 TS 36.440

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); General aspects and principles for interfaces supporting Multimedia Broadcast Multicast Service (MBMS) within E-UTRAN

This document describes the overall architecture of the interface for the provision of MBMS in the E-UTRAN. This includes also a description of the general aspects, assumptions and principles guiding the architecture and interface. The MBMS functions to be provided within that architecture are summarized. It provides an introduction to the TSG RAN TS 36.44x series of UMTS technical specifications that define the different interfaces introduced for MBMS provision in E-UTRAN.

##### 5.1.2.8.13 TS 36.441

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Layer 1 for interfaces supporting Multimedia Broadcast Multicast Service (MBMS) within E-UTRAN

This document specifies the standards allowed to implement layer 1 on the interfaces supporting Multimedia Broadcast Multicast Service (MBMS) within E-UTRAN. In the following, “layer 1” and “physical layer” are assumed to be synonymous.

##### 5.1.2.8.14 TS 36.442

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Signalling Transport for interfaces supporting Multimedia Broadcast Multicast Service (MBMS) within E-UTRAN

This document specifies the standards for signalling transport to be used across M2 and M3 interfaces. M2 interface is a logical interface between the eNodeB and the MCE. M3 interface is a logical interface between the MCE and the MME. This document describes how the M2-AP signalling messages are transported over M2, and how the M3-AP signalling messages are transported over M3.

##### 5.1.2.8.15 TS 36.443

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); M2 Application Protocol (M2AP)

This document specifies the E-UTRAN radio network layer signalling protocol for the M2 interface. The M2 Application Protocol (M2AP) supports the functions of M2 interface by signalling procedures defined in this document.

##### 5.1.2.8.16 TS 36.444

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); M3 Application Protocol (M3AP)

This document specifies the E-UTRAN radio network layer signalling protocol for the M3 interface. The M3 Application Protocol (M3AP) supports the functions of M3 interface by signalling procedures defined in this document.

##### 5.1.2.8.17 TS 36.445

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); M1 data transport

This document specifies the standards for user data transport protocols over the E-UTRAN M1 interface.

##### 5.1.2.8.18 TS 36.455

Evolved Universal Terrestrial Radio Access (E-UTRA); LTE Positioning Protocol A (LPPa)

This document specifies the control plane radio network layer signalling procedures between eNodeB and E-SMLC. LPPa supports the concerned functions by signalling procedures defined in this document.

#### 5.1.2.9 36.100 series

##### 5.1.2.9.1 TS 36.101

Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception

This specification describes the User Equipment (UE) minimum RF characteristics of E-UTRA for both FDD and TDD modes.

##### 5.1.2.9.2 TS 36.104

Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) radio transmission and reception

This specification describes the Base Station minimum RF characteristics of E-UTRA in paired and unpaired bands.

##### 5.1.2.9.3 TS 36.106

Evolved Universal Terrestrial Radio Access (E-UTRA); FDD repeater radio transmission and reception

This document establishes the minimum RF characteristics of E-UTRA FDD Repeater.

##### 5.1.2.9.4 TS 36.113

Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) and repeater ElectroMagnetic Compatibility (EMC)

This document covers the assessment of E-UTRA base stations, repeaters and associated ancillary equipment in respect of Electromagnetic Compatibility (EMC).

##### 5.1.2.9.5 TS 36.124

Evolved Universal Terrestrial Radio Access (E-UTRA); Electromagnetic compatibility (EMC) requirements for mobile terminals and ancillary equipment

This document establishes the essential EMC requirements for “3rd generation” digital cellular mobile terminal equipment and ancillary accessories in combination with a 3GPP E-UTRA user equipment (UE).

##### 5.1.2.9.6 TS 36.141

Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) conformance testing

This document specifies the Radio Frequency (RF) test methods and conformance requirements for E-UTRA Base Stations (BS).

##### 5.1.2.9.7 TS 36.143

Evolved Universal Terrestrial Radio Access (E-UTRA); FDD repeater conformance testing

This document specifies the Radio Frequency (RF) test methods and Minimum Requirements for UTRA FDD Repeaters.

##### 5.1.2.9.8 TS 36.133

Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for support of radio resource management

This specification specifies requirements for support of Radio Resource Management for the FDD and TDD modes of Evolved UTRA. These requirements include requirements on measurements in UTRAN and the UE as well as requirements on node dynamical behaviour and interaction, in terms of delay and response characteristics.

##### 5.1.2.9.9 TS 36.171

Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for Support of Assisted Global Navigation Satellite System (A-GNSS)

This document establishes the minimum performance requirements for A-GNSS (including A-GPS) for FDD or TDD mode of E-UTRA for the User Equipment (UE).

#### 5.1.2.10 36.500 series

##### 5.1.2.10.1 TS 36.508

Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); Common test environments for User Equipment (UE) conformance testing

This document contains definitions of reference conditions and test signals, default parameters, reference radio bearer configurations used in radio bearer interoperability testing, common radio bearer configurations for other test purposes, common requirements for test equipment and generic set-up procedures for use in conformance tests for the 3rd Generation E-UTRAN User Equipment (UE).

##### 5.1.2.10.2 TS 36.509

Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); Special conformance testing functions for User Equipment (UE)

This document defines for User Equipment (UE) those special functions and their activation methods that are required in User Equipment (UE) for conformance testing purposes.

##### 5.1.2.10.3 TS 36.521-1

Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) conformance specification; Radio transmission and reception; Part 1: Conformance testing

This document specifies the measurement procedures for the conformance test of the user equipment (UE) that contain transmitting characteristics, receiving characteristics and performance requirements.

##### 5.1.2.10.4 TS 36.521-2

Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) conformance specification; Radio transmission and reception; Part 2: Implementation Conformance Statement (ICS)

This document provides the Implementation Conformance Statement (ICS) proforma for 3G Evolved Universal Terrestrial Radio Access (E-UTRA) User Equipment (UE), in compliance with the relevant requirements, and in accordance with the relevant guidance given in ISO/IEC 9646-1 and ISO/IEC 9646-7.

##### 5.1.2.10.5 TS 36.523-1

Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification; Part 1: Protocol conformance specification

This document specifies the protocol conformance testing for the 3rd Generation E-UTRAN User Equipment (UE).

##### 5.1.2.10.6 TS 36.523-2

Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification; Part 2: Implementation Conformance Statement (ICS) proforma specification

This document provides the Implementation Conformance Statement (ICS) proforma for 3rd Generation User Equipment (UE), in compliance with the relevant EPS (E-UTRA/EPC) requirements, and in accordance with the relevant guidance given in ISO/IEC 9646-1 and ISO/IEC 9646-7.

#### 5.1.2.11 Multiple radio access technology aspects specifications

##### 5.1.2.11.1 TS 37.104

E-UTRA, UTRA and GSM/EDGE; Multi-Standard Radio (MSR) Base Station (BS) radio transmission and reception

This specification establishes the minimum RF characteristics of E-UTRA, UTRA and GSM/EDGE Multi-Standard Radio (MSR) Base Station (BS). Requirements for multi-RAT and single-RAT operation of MSR BS are covered in this document. The requirements in this document for E-UTRA and UTRA single-RAT operation of MSR BS are also applicable to E-UTRA and UTRA multi-carrier capable single-RAT BS. Requirements for GSM BS that are only single-RAT capable are not covered.

##### 5.1.2.11.2 TS 37.113

E-UTRA, UTRA and GSM/EDGE; Multi-Standard Radio (MSR) Base Station (BS) Electromagnetic Compatibility (EMC)

This document covers the assessment of E-UTRA, UTRA and GSM/EDGE Multi-Standard Radio (MSR) Base Stations and associated ancillary equipment in respect of Electromagnetic Compatibility (EMC). This document specifies the applicable test conditions, performance assessment and performance criteria for E-UTRA, UTRA and GSM/EDGE Base Stations and associated ancillary equipment in one of the following categories: (i) Multi-Standard Radio (MSR) Base Stations for E-UTRA, UTRA and GSM/EDGE meeting the requirements of TS 37.104, with conformance demonstrated by compliance to TS 37.141; (ii) Base Stations for E-UTRA meeting the requirements of TS 36.104, with conformance demonstrated by compliance to TS 36.141; (iii) Base Stations for UTRA FDD meeting the requirements of TS 25.104, with conformance demonstrated by compliance to TS 25.141; (iv) Base Stations for UTRA TDD meeting the requirements of TS 25.105, with conformance demonstrated by compliance to TS 25.142; (v) Base Stations for GSM/EDGE meeting the requirements of TS 45.005, with conformance demonstrated by compliance to TS 51.021. The environment classification used in this document refers to the environment classification used in IEC 61000-6-1 and IEC 61000-6-3. The EMC requirements have been selected to ensure an adequate level of compatibility for apparatus at residential, commercial and light industrial environments. The levels, however, do not cover extreme cases which may occur in any location but with low probability of occurrence.

##### 5.1.2.11.3 TS 37.141

E-UTRA, UTRA and GSM/EDGE; Multi-Standard Radio (MSR) Base Station (BS) conformance testing

This document specifies the Radio Frequency (RF) test methods and conformance requirements for E-UTRA, UTRA and GSM/EDGE Multi-Standard Radio (MSR) Base Station (BS).

##### 5.1.2.11.4 TS 37.320

Universal Terrestrial Radio Access (UTRA) and Evolved Universal Terrestrial Radio Access (E-UTRA); Radio measurement collection for Minimization of Drive Tests (MDT); Overall description; Stage 2

This document provides an overview and overall description of the minimization of drive tests functionality. The document describes functions and procedures to support collection of UE-specific measurements for MDT using Control Plane architecture, for both UTRAN and E-UTRAN.

#### 5.1.2.12 Core network and Terminal aspects

##### 5.1.2.12.1 TS 21.111

USIM and IC card requirements

This document defines the requirements of the USIM (Universal Subscriber Identity Module) and the IC card for 3G (UICC). These are derived from the service and security requirements defined in TS 22.100 and TS 22.101. The USIM is a 3G application on an IC card. It inter-operates with a 3G terminal and provides access to 3G services. This document is intended to serve as a basis for the detailed specification of the USIM and the UICC, and the interface to the 3G terminal.

##### 5.1.2.12.2 TS 23.003

Numbering, addressing and identification

This document defines the principal purpose and use of International Mobile station Equipment Identities (IMEI) within the digital cellular telecommunications system and the 3GPP system.

##### 5.1.2.12.3 TS 23.007

Restoration procedures

The data stored in location registers are automatically updated in normal operation; the main information stored in a location register defines the location of each mobile station and the subscriber data required to handle traffic for each mobile subscriber. The loss or corruption of these data will seriously degrade the service offered to mobile subscribers; it is therefore necessary to define procedures to limit the effects of failure of a location register, and to restore the location register data automatically. This document defines the necessary procedures.

##### 5.1.2.12.4 TS 23.008

Organization of subscriber data

This document provides details concerning information to be stored in home subscriber servers, visitor location registers, GPRS Support Nodes and Call Session Control Function (CSCF) concerning mobile subscriber.

##### 5.1.2.12.5 TS 23.009

Handover procedures

This document contains a detailed description of the handover procedures to be used in PLMNs. The purpose of the handover procedures are to ensure that the connection to the Mobile Station (MS) or User Equipment (UE) is maintained as it moves from one cell or radio network to another. The document defines the circuit switched handover functionality based on the service requirements in 3GPP TS 22.129. For the circuit switched handover functionality related to SRVCC, it is based on the service requirements in 3GPP TS 23.216.

##### 5.1.2.12.6 TS 23.018

Basic call handling; Technical realization

This document specifies the technical realization of the handling of calls originated by a UMTS or GSM mobile subscriber and calls directed to a UMTS or GSM mobile subscriber, up to the point where the call is established. Normal release of the call after establishment is also specified. Trunk Originated call is also modelled.

##### 5.1.2.12.7 TS 23.034

High Speed Circuit Switched Data (HSCSD); Stage 2

This document contains the stage 2 service description for a High Speed Circuit Switched Data (HSCSD) on GSM/GERAN in A/Gb mode and Iu mode. HSCSD utilizes the multislot mechanism, i.e. using multiple traffic channels (/bearers) for the communication. Additionally, this document specifies some HSCSD related requirements for multi system mobile stations operating in UTRAN Iu mode. In UTRAN Iu mode one bearer can provide all needed data rates, and the multislot mechanism is therefore not needed. However, for inter-system handover to GERAN, certain information has to be provided by the mobile station during the service negotiation.

##### 5.1.2.12.8 TS 23.038

Alphabets and language-specific information

This document defines the character sets, languages and message handling requirements for SMS, CBS and USSD and may additionally be used for Man Machine Interface (MMI) (3GPP TS 22.030).

##### 5.1.2.12.9 TS 23.040

Technical realization of the Short Message Service (SMS)

This document describes the Short Message Service (SMS) for GSM/UMTS networks. It defines:

– the services and service elements;

– the network architecture;

– the Service Centre functionality;

– the SMS Router functionality;

– the MSC functionality (with regard to the SMS);

– the SGSN functionality (with regard to the SMS);

– the routing requirements;

– the protocols and protocol layering;

for the Mobile Originated and Mobile Terminated Short Message Service Teleservices, as specified in 3GPP TS 22.003 and 3GPP TS 22.105.

The use of radio resources for the transfer of short messages between the MS and the MSC or the SGSN is described in 3GPP TS 24.011.

##### 5.1.2.12.10 TS 23.041

Technical realization of Cell Broadcast Service (CBS)

This document describes the Cell Broadcast short message service (CBS) for GSM and UMTS.

For GSM it defines the primitives over the Cell Broadcast Centre - Base Station System (CBC-BSS) interface and the message formats over the Base Station System - Mobile Station (BSS-MS) interface for Teleservice 23 as specified in 3GPP TS 22.003. For UMTS it defines the interface requirements for the Cell Broadcast Center – UMTS Radio Network System (RNS) interface and the radio interface requirements for UMTS Radio Acces Networks to support CBS as specified in 3GPP TS 22.003. The document also describes the Public Warning System (PWS) for GSM, UMTS and E-UTRAN, see 3GPP TS 22.268.

##### 5.1.2.12.11 TS 23.042

Compression algorithm for text messaging services

This document introduces the concepts and mechanisms involved in the compression and decompression of a stream of data.

##### 5.1.2.12.12 TS 23.057

Mobile Execution Environment (MExE); Functional description; Stage 2

This document defines stage 2 and stage 3 of the Mobile Execution Environment (MExE). Stage 2 identifies the functional capabilities and information flows needed to support the service described in stage 1. MExE uses a number of technologies to realise the requirements of the stage 1 description (3GPP TS 22.057). The document describes how the service requirements are realised with the selected technologies. The specification covers areas of MExE common to all technologies.

##### 5.1.2.12.13 TS 23.060

General Packet Radio Service (GPRS); Service description; Stage 2

This specification describes a general overview over the GPRS architecture as well as a more detailled overview of the MS – CN protocol architecture. Details of the protocols will be specified in companion documents.

##### 5.1.2.12.14 TS 23.066

Support of Mobile Number Portability (MNP); Technical realization; Stage 2

This document describes several alternatives for the realisation of Mobile Number Portability. It is left to operator and implementation decisions which option, or combination of options, is used, taking into account the regulatory and architectural constraints that may prevail.

##### 5.1.2.12.15 TS 23.078

Customised Applications for Mobile network Enhanced Logic (CAMEL) Phase 4; Stage 2

This document specifies the stage 2 description for the fourth phase (see 3GPP TS 22.078) of the Customized Applications for Mobile network Enhanced Logic (CAMEL) feature which provides the mechanisms to support services of operators which are not covered by standardized services even when roaming outside the HPLMN.

##### 5.1.2.12.16 TS 23.090

Unstructured Supplementary Service Data (USSD); Stage 2

This document gives the stage 2 description of Unstructured Supplementary Service Data (USSD). The unstructured supplementary service data (USSD) mechanism allows the Mobile Station (MS) user and a PLMN operator defined application to communicate in a way which is transparent to the MS and to intermediate network entities. The mechanism allows development of PLMN specific supplementary services. This document defines the requirements for handling USSD at the MS and network entities.

##### 5.1.2.12.17 TS 23.108

Mobile radio interface layer 3 specification, core network protocols; Stage 2

This specification describes the procedures used at the radio interface for Call Control (CC), Mobility Management (MM) and Session Management (SM). It contains examples of the structured procedures.

##### 5.1.2.12.18 TS 23.110

Universal Mobile Telecommunications System (UMTS) access stratum; Services and functions

This specification describes the detailed specifications of the protocols which rule the information flows, both control and user data, between the access stratum and the parts of UMTS outside the access stratum, and of the detailed specifications of the UTRAN. These detailed specifications are to be found in other technical specifications.

##### 5.1.2.12.19 TS 23.122

Non-Access-Stratum (NAS) functions related to Mobile Station (MS) in idle mode

This specification provides an overview of the tasks undertaken by a Mobile Station (MS) when in idle mode, that is, switched on but not having a dedicated channel allocated, e.g., not making or receiving a call, or when in group receive mode, that is, receiving a group call or broadcast call but having a dedicated connection. It also describes the corresponding network functions.

##### 5.1.2.12.20 TS 23.142

Value-added Services for SMS (VAS4SMS); Interface and signalling flow

The specification describes the Stage 2 of the VAS4SMS (Value Added Service for SMS). It includes: – The logic architecture;– The logic elements functionality;– The signaling flows;– The interaction with other features.

##### 5.1.2.12.21 TS 23.153

Out of band transcoder control; Stage 2

This document specifies the stage 2 description of the Out-of-Band Transcoder Control for speech services. It describes the principles and procedures to support Transcoder Free Operation, Tandem Free Operation and the interworking between TrFO and TFO. Transcoder at the edge is also part of this document.

##### 5.1.2.12.22 TS 23.205

Bearer-independent circuit-switched core network; Stage 2

This document defines the stage 2 description for the bearer independent CS core network. The stage 2 covers the information flow between the GMSC server, MSC server and media gateways. The document shows the CS core network termination of the Iu interface in order to cover the information flow stimulus to the core network and describe the interaction with the supplementary and value added services and capabilities.

The protocol used over the Nc interface is an enhanced call control protocol supporting call bearer separation such as BICC. The protocol used over the Mc interface is H.248. SIP-I based CS core network is further specified in 3GPP TS 23.231.

Local Call Local Switch (LCLS) functionality is further specified in 3GPP TS 23.284.

This document is applicable only for ATM or IP transport in the CS core network.

##### 5.1.2.12.23 TS 23.218

IP Multimedia (IM) session handling; IM call model; Stage 2

This document specifies the IP Multimedia (IM) Call Model for handling of an IP multimedia session origination and termination for an IP Multimedia subscriber. The document includes interactions between an Application Server and IP multimedia sessions.

##### 5.1.2.12.24 TS 23.227

Application and user interaction in the UE; Principles and specific requirements

This document defines the principles for scheduling UE resources and controlling UE interactions and resolving conflicts between independently running applications in different application execution environment (e.g. MExE, USAT etc.) and internal and external peripherals (e.g. infra-red, Bluetooth, USIM, radio interface, MMI, memory etc.).

##### 5.1.2.12.25 TS 23.231

SIP-I based circuit-switched core network; Stage 2

This document defines the stage 2 description for the SIP-I based CS core network. The logical architecture for the SIP-I based CS core network is defined in 3GPP TS 23.205.

Stage 2 covers the information flows between the GMSC server, MSC server and media gateways that are required to support a SIP-I based Nc interface. The document shows the CS core network termination of the Iu and A interfaces in order to cover the information flow stimulus to the core network and describe the interaction with the supplementary and value added services and capabilities.

The Nc interface profile is based on ITU-T Q.1912.5 SIP-I profile C and is specified in 3GPP TS 29.231. The Mc interface profile is based on ITU-T H.248.1 and is specified in 3GPP TS 29.232. Local Call Local Switch (LCLS) functionality is further specified in 3GPP TS 23.284.

This document is applicable only for IP transport in the CS core network.

##### 5.1.2.12.26 TS 23.259

Personal Network Management (PNM); Procedures and information flows; Stage 2

This document provides the procedure details and the information flows for support of Personal Network Management including the PN UE redirection and PN access control applications enabled by Personal Network Management (PNM).

##### 5.1.2.12.27 TS 23.278

Customized Applications for Mobile network Enhanced Logic (CAMEL) Phase 4; Stage 2; IM CN Interworking

This document specifies the stage 2 description for the Customized Applications for Mobile network Enhanced Logic (CAMEL) feature which provides the mechanisms to support services for the IP Multimedia Core Network (IM CN) Subsystem.

##### 5.1.2.12.28 TS 23.333

Multimedia Resource Function Controller (MRFC) - Multimedia Resource Function Processor (MRFP) Mp interface: Procedures descriptions

This specification describes the functional requirements and information flows that generate procedures between the Multimedia Resource Function Controller (MRFC) and the Multimedia Resource Function Processor (MRFP), the Mp Interface. This specification is limited to information flows relevant to the Mp Interface; in order to define these procedures and make the functional requirements clear some triggers from an external interface may be described; these may be specified within the Mr interface for example or within an AS in which the MRFC function resides. However for the overall stage 2 procedures of IMS. The protocol on the Mp interface is defined to comply with ITU-T H.248.1 Gateway Control Protocol.

##### 5.1.2.12.29 TS 23.334

IP Multimedia Subsystem (IMS) Application Level Gateway (IMS-ALG) – IMS Access Gateway (IMS-AGW) interface: Procedures descriptions

Annex G of 3GPP TS 23.228 gives out an IMS Application Level Gateway (IMS-ALG) and IMS Access Media Gateway (IMS-AGW) based reference model to support NAPT-PT, gate control and traffic policing between IP-CAN and IMS domain. The Iq reference point is between the P-CSCF (IMS-ALG) and the IMS-AGW. It conveys the necessary information that is needed to allocate, modify and release (IP) transport addresses. This document defines the stage 2 description for the Iq reference point. Stage 2 covers the information flow between the P-CSCF (IMS-ALG) and IMS-AGW. The protocol used over the Iq interface is the gateway control protocol according ITU-T Recommendation H.248 (which is specified for Iq by an H.248 profile according 3GPP TS 29.334).

##### 5.1.2.12.30 TS 23.335

User Data Convergence (UDC); Technical realization and information flows; Stage 2

This document describes the procedures and signalling flows associated to the technical realization of the 3GPP User Data Convergence (UDC). It furthermore indicates some requirements for the Stage 3 specifications. Special consideration is put in the following areas: – reference architecture for the UDC concept – general description of procedures for the user data manipulation (e.g., create, delete, update, etc.) – identification of the requirements on the UDC for the applicability of the mechanisms described in this document. User data convergence is an optional concept to ensure data consistency and simplify creation of new services by providing easy access to the user data, as well as to ensure the consistency of storage and data models and to have minimum impact on traffic mechanisms, reference points and protocols of network elements.

##### 5.1.2.12.31 TS 23.380

IMS Restoration Procedures

This document specifies the IMS procedures required to handle a S-CSCF service interruption scenario with minimum impact to the service to the end user.

##### 5.1.2.12.32 TS 24.002

GSM - UMTS Public Land Mobile Network (PLMN) Access Reference Configuration

This document describes the reference configuration for access to a PLMN. A user accesses a PLMN via a number of interfaces, including the MS-BS (in A/Gb mode and GERAN Iu mode), UE-UTRAN (in UTRAN Iu mode) and UE-E-UTRAN interface. The purpose of this document is to indicate the possible access arrangements that may be used in conjunction with the MS-BS (in A/Gb mode and GERAN Iu mode), UE-UTRAN (in UTRAN Iu mode) and UE-E - UTRAN interface.

##### 5.1.2.12.33 TS 24.007

Mobile radio interface signalling layer 3; General Aspects

This specification describes the principal architecture of Layer 3 and its sub-layers on the GSM Um interface, i.e., the interface between mobile station (MS) and network; for the CM sub-layer, the description is restricted to paradigmatic examples, CC, supplementary services, and short message services for non-general packet radio service (GPRS) services. It also defines the basic message format and error handling applied by the Layer 3 protocols.

##### 5.1.2.12.34 TS 24.008

Mobile radio interface Layer 3 specification; Core network protocols; Stage 3

This specification describes the procedures used at the radio interface for Call Control, Mobility Management and Session Management. The procedures currently described are for the CC of circuit-switched connections, SM for GPRS services, MM and radio resource management for circuit-switched and GPRS services. MBMS is also added.

##### 5.1.2.12.35 TS 24.010

Mobile radio interface layer 3; Supplementary services specification; General aspects

This specification describes the general aspects of the specification of supplementary services at the Layer 3 radio interface. Details will be specified in other TS.

##### 5.1.2.12.36 TS 24.011

Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface

This specification describes the procedures used across the mobile radio interface by the signalling Layer 3 function short message control (SMC) and short message relay (SM-RL) function for both circuit-switched GSM and GPRS.

##### 5.1.2.12.37 TS 24.022

Radio Link Protocol (RLP) for circuit switched bearer and teleservices

This specification describes the RLP for data transmission over the UMTS public land mobile network (PLMN). RLP covers the Layer 2 functionality of the ISO OSI reference model (IS 7498). It is based on ideas contained in IS 3309, IS 4335 and IS 7809 (HDLC of ISO) as well as ITU-T Recommendations X.25, Q.921 and Q.922 (LAP-B and LAP-D, respectively). RLP has been tailored to the special needs of digital radio transmission. RLP provides to its users the OSI data link service (IS 8886).

##### 5.1.2.12.38 TS 24.080

Mobile radio interface layer 3 supplementary services specification; Formats and coding

This specification describes the coding of information necessary for support of supplementary service operation on the mobile radio interface L3. Details are specified in other TS.

##### 5.1.2.12.39 TS 24.081

Line Identification supplementary services; Stage 3

This document specifies the procedures used at the radio interface for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of line identification supplementary services. Provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and cause no signalling on the radio interface.

In 3GPP TS 24.010 the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

3GPP TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in 3GPP TS 22.004 and 3GPP TS 22.08x and 3GPP TS 22.09x series. 3GPP TS 22.081 is related specially to line identification supplementary services:

– Calling line identification presentation (CLIP)

– Calling line identification restriction (CLIR)

– Connected line identification presentation (COLP)

– Connected line identification restriction (COLR).

##### 5.1.2.12.40 TS 24.082

Call Forwarding (CF) supplementary services; Stage 3

This document specifies the procedures used at the radio interface (reference point Um as defined in 3GPP TS 24.002) for normal operation, registration, erasure, activation, deactivation, interrogation and network invocation of call offering supplementary services.

In 3GPP TS 24.010, the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

3GPP TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in 3GPP TS 22.004 and 3GPP TS 22.08x and 3GPP TS 22.09x series. 3GPP TS 22.082 is related specially to call offering supplementary services.

Technical realization of supplementary services is described in 3GPP TS 23.011 and 3GPP TS 23.08x and 3GPP TS 23.09x series. 3GPP TS 23.082 is related specially to call offering supplementary services.

The procedures for Call Control, Mobility Management and Radio Resource management at the layer 3 radio interface are defined in 3GPP TS 24.007 and 3GPP TS 24.008.

The following supplementary services belong to the call offering supplementary services and are described in this document:

– Call forwarding unconditional (CFU)

– Call forwarding on mobile subscriber busy (CFB)

– Call forwarding on no reply (CFNRy)

– Call forwarding on mobile subscriber not reachable (CFNRc).

##### 5.1.2.12.41 TS 24.083

Call Waiting (CW) and Call Hold (HOLD) supplementary services; Stage 3

This document specifies the procedures used at the radio interface (reference point Um as defined in 3GPP TS 24.002) for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of call completion supplementary services.

In 3GPP TS 24.010 the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

3GPP TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in 3GPP TS 22.004 and 3GPP TS 22.08x and 3GPP TS 22.09x series. 3GPP TS 22.083 is related specially to call completion supplementary services.

Technical realization of supplementary services is described in 3GPP TS 23.011 and GSM 03.8x and GSM 03.9x series.

3GPP TS 23.083 is related specially to call completion supplementary services.

The procedures for Call Control, Mobility Management and Radio Resource management at the layer 3 radio interface are defined in 3GPP TS 24.007 and 3GPP TS 24.008.

The following supplementary services belong to the call completion supplementary services and are described in this document:

– Call waiting (CW)

– Call hold (HOLD).

##### 5.1.2.12.42 TS 24.084

Multi Party (MPTY) supplementary service; Stage 3

This document specifies the procedures used at the radio interface (reference point Um as defined in 3GPP TS 24.002) for normal operation and invocation of MultiParty supplementary services.

In 3GPP TS 24.010 the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

3GPP TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in 3GPP TS 22.004 and the 3GPP TS 22.08x and 3GPP TS 22.09x series.

3GPP TS 22.084 is related specially to MultiParty supplementary services.

Technical realization of supplementary services is described in 3GPP TS 23.011 and the 3GPP TS 23.08x and 3GPP TS 23.09x series.

3GPP TS 23.084 is related specially to MultiParty supplementary services.

The procedures for Call Control, Mobility Management and Radio Resource management at the layer 3 radio interface are defined in 3GPP TS 24.007 and 3GPP TS 24.008.

The following supplementary service belongs to the MultiParty supplementary services and is described in this document:

– MultiParty service (MPTY).

##### 5.1.2.12.43 TS 24.085

Closed User Group (CUG) supplementary service; Stage 3

This document specifies the procedures used at the radio interface (reference point Um as defined in 3GPP TS 24.002) for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of community of interest supplementary services.

In 3GPP TS 24.010, the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

3GPP TS 24.080 specifies the formats coding for the supplementary services.

Definitions and descriptions of supplementary services are given in 3GPP TS 22.004 and 3GPP TS 22.08x and 3GPP TS 22.09x-series. 3GPP TS 22.085 is related to the community of interest supplementary services.

Technical realization of supplementary services is described in technical specifications 3GPP TS 23.011 and 3GPP TS TS 23.08x and 3GPP TS 23.09x-series. 3GPP TS 23.085 is related to the community of interest supplementary services.

The procedures for Call Control, Mobility Management and Radio Resource management at the layer 3 radio interface are defined in 3GPP TS 24.007 and 3GPP TS 24.008.

Signalling interworking for supplementary services between 3GPP TS 29.002 and 3GPP TS 24.008 and between 3GPP TS 29.002 and 3GPP TS 24.080 is defined in 3GPP TS 29.011.

The following supplementary services belong to the community of interest supplementary services and are described in this TS:

– Closed User Group (CUG).

##### 5.1.2.12.44 TS 24.086

Advice of Charge (AoC) supplementary services; Stage 3

This document specifies the procedures used at the radio interface (reference point Um as defined in 3GPP TS 24.002) for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of charging supplementary services.

In 3GPP TS 24.010 the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

3GPP TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in 3GPP TS 22.004 and 3GPP TS 22.08x and 3GPP TS 22.09x series. 3GPP TS 22.024 and 02.86 are related to the charging supplementary services.

Technical realization of supplementary services is described in 3GPP TS 23.011 and 3GPP TS 23.08x and 3GPP TS 23.09x series. 3GPP TS 23.086 is related to the charging supplementary services.

The procedures for Call Control, Mobility Management and Radio Resource management at the layer 3 radio interface are defined in 3GPP TS 24.007 and 3GPP TS 24.008.

The following supplementary services belong to the charging supplementary services and are described in this document:

– Advice of Charge (Information) (AoCI)

– Advice of Charge (Charging) (AoCC).

##### 5.1.2.12.45 TS 24.087

User-to-User Signalling (UUS) Supplementary Service; Stage 3

This document gives the stage 3 description of the three User-to-User signalling supplementary services.

##### 5.1.2.12.46 TS 24.088

Call Barring (CB) supplementary service; Stage 3

This document specifies the procedures used at the radio interface (reference point Um as defined in 3GPP TS 24.002) for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of call barring supplementary services.

In 3GPP TS 24.010 the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

3GPP TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in 3GPP TS 22.004, 22.08x and 22.09x series.

Technical realization of supplementary services is described in 3GPP TS 23.011, 23.08x and 23.09x series.

The procedures for Call Control, Mobility Management and Radio Resource management at the layer 3 radio interface are defined in 3GPP TS 24.007 and 3GPP TS 24.008.

The following supplementary services belong to the call restriction supplementary services and are described in this specification:

– Barring of outgoing calls

– Barring of incoming calls

##### 5.1.2.12.47 TS 24.090

Unstructured Supplementary Service Data (USSD); Stage 3

This document gives the stage 3 description of the Unstructured Supplementary Service Data (USSD) operations. The group of unstructured supplementary service data operations is divided into two different classes:

Network initiated unstructured supplementary service data operations

Mobile initiated unstructured supplementary service data operations.

##### 5.1.2.12.48 TS 24.091

Explicit Call Transfer (ECT) supplementary service; Stage 3

This document gives the stage 3 description of the call transfer supplementary services.

It specifies the procedures used at the radio interface (reference point Um as defined in 3GPP TS 24.002) for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of call transfer supplementary services.

In 3GPP TS 24.010 the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

3GPP TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in 3GPP TS 22.004, 3GPP TS 22.08x and 3GPP TS 22.09x series. 3GPP TS 22.091 is related specifically to call transfer supplementary services.

The technical realization of supplementary services is described in 3GPP TS 23.011, 3GPP TS 23.08x and 3GPP TS 23.09x series. 3GPP TS 23.091 is related specifically to call transfer supplementary services.

The procedures for Call Control, Mobility Management and Radio Resource management at the layer 3 radio interface are defined in 3GPP TS 24.007 and 3GPP TS 24.008.

The following supplementary services belong to the call transfer supplementary services and are described in this document:

- Explicit Call Transfer (ECT).

##### 5.1.2.12.49 TS 24.093

Completion of Calls to Busy Subscriber (CCBS); Stage 3

This dcoument gives the stage 3 description of the Completion of Calls to Busy Subscriber (CCBS) supplementary service. It specifies the procedures used at the radio interface (reference point Um as defined in 3GPP TS 24.002) for normal operation, activation, deactivation, invocation and interrogation of the completion of calls to busy subscriber supplementary services.

In 3GPP TS 24.010 the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

3GPP TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in 3GPP TS 22.004, 3GPP TS 22.08x and 3GPP TS 22.09x-series. Technical specification 3GPP TS 22.093 is related specifically to the Completion of Calls to Busy Subscriber supplementary service.

The technical realization of supplementary services is described in technical specifications 3GPP TS 23.011, 3GPP TS 23.08x and 3GPP TS 23.09x-series. 3GPP TS 23.093 is related specifically to Completion of Calls to Busy Subscriber supplementary service.

The procedures for Call Control, Mobility Management and Radio Resource management at the layer 3 radio interface are defined in 3GPP TS 24.007 and 3GPP TS 24.008.

The following supplementary services belong to the call completion supplementary services and are described in this document:

– Completion of Calls to Busy Subscriber (CCBS).

##### 5.1.2.12.50 TS 24.096

Name Identification supplementary services; Stage 3

This document specifies the procedures used at the radio interface for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of name identification supplementary services.

In 3GPP TS 24.010 the general aspects of the specification of supplementary services at the layer 3 radio interface are given. 3GPP TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in 3GPP TS 22.004 and 3GPP TS 22.08x and 3GPP TS 22.09x series. 3GPP TS 22.096 is related specially to name identification supplementary services.

Technical realization of supplementary services is described in 3GPP TS 23.011 and 3GPP TS 23.08x and 3GPP TS 23.09x series. Technical specification 3GPP TS 23.096 is related specially to name identification supplementary services.

The procedures for Call Control, Mobility Management and Radio Resource management at the layer 3 radio interface are defined in 3GPP TS 24.007 and 3GPP TS 24.008.

The following supplementary services belong to the name identification supplementary services and are described in this TS:

– Calling name presentation (CNAP).

##### 5.1.2.12.51 TS 24.109

Bootstrapping interface (Ub) and network application function interface (Ua); Protocol details

This document defines stage 3 for the HTTP Digest AKA based implementation of Ub interface (UE-BSF), the Disposable-Ks model based implementation of Upa interface (NAF-UE) and the HTTP Digest and the PSK TLS based implementation of bootstrapped security association usage over Ua interface (UE-NAF) in Generic Authentication Architecture (GAA) as specified in 3GPP TS 33.220. The purpose of the Ub interface is to create a security association between UE and BSF for further usage in GAA applications. The purpose of the Upa interface is to provide a push mechanism to created a bootstrapped security association between the UE and NAF for secure communication of pushed messages. The purpose of the Ua interface is to use the so created bootstrapped security association between UE and NAF for secure communication.

This document also defines stage 3 for the Authentication Proxy usage as specified in 3GPP TS 33.222.

This document also defines stage 3 for the subscriber certificate enrolment as specified in 3GPP TS 33.221 which is one realization of the Ua interface. The subscriber certificate enrolment uses the HTTP Digest based implementation of bootstrapped security association usage to enrol a subscriber certificate and the delivery of a CA certificate.

##### 5.1.2.12.52 TS 24.141

Presence service using the IP Multimedia (IM) Core Network (CN) subsystem; Stage 3

This specification provides the protocol details for the presence service within the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and SIP Events as defined in 3GPP TS 24.229.

##### 5.1.2.12.53 TS 24.147

Conferencing using the IP Multimedia (IM) Core Network (CN) subsystem; Stage 3

This specification provides the protocol details for conferencing within the IP Multimedia Core Network subsystem (IMS) based on the Session Initiation Protocol (SIP), SIP Events, the Session Description Protocol (SDP) and the Binary Floor Control Protocol (BFCP).

##### 5.1.2.12.54 TS 24.166

3GPP IP Multimedia Subsystem (IMS) conferencing Management Object (MO)

This document defines the IMS conferencing management object. The management object is compatible with OMA Device Management protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework as described in the Enabler Release Definition OMA-ERELD\_DM-V1\_2. The IMS conferencing management object consists of relevant parameters that can be managed for IMS conferencing capabilities.

##### 5.1.2.12.55 TS 24.167

3GPP IMS Management Object (MO); Stage 3

This document defines a mobile device 3GPP IMS Management Object. The management object is compatible with OMA Device Management protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework as described in the Enabler Release Definition OMA-ERELD \_DM-V1\_2. The 3GPP IMS Management Object consists of relevant parameters that can be managed for the IM CN Subsystem. This includes the basic framework defined in 3GPP TS 23.228 and 3GPP TS 24.229, and early IMS as defined in 3GPP TS 23.221. This also includes relevant parameters that can be managed for the application of SMS over IP networks defined in 3GPP TS 24.341. The IMS Management Object defines a repository of data into the ME including parameters that are provisioned from the ISIM application (i.e. 3GPP TS 31.103) or, after derivation, from the USIM application (i.e. 3GPP TS 31.102).

##### 5.1.2.12.56 TS 24.171

Control Plane Location Services (LCS) procedures in the Evolved Packet System (EPS)

This document specifies the operations and information coding for the Non-access Stratum (NAS) layer protocol for supporting the Location Services (LCS) in the Evolved Universal Terrestrial Radio Access Network (E-UTRAN). This document is applicable to the User Equipment (UE) and to the Mobility Management Entity (MME) in the Evolved Packet System (EPS). This document is developed in accordance to the general principles stated in 3GPP TS 23.271

##### 5.1.2.12.57 TS 24.173

IMS Multimedia telephony communication service and supplementary services; Stage 3

This specification provides the protocol details for multimedia telephony communication service and associated supplementary services in the IP Multimedia (IM) Core Network (CN) subsystem based on the requirements from 3GPP TS 22.173. Multimedia telephony and supplementary services allow users to establish communications between them and enrich that by enabling supplementary services.

##### 5.1.2.12.58 TS 24.182

IP Multimedia Subsystem (IMS) Customized Alerting Tones (CAT); Protocol specification

This document provides the protocol details for the Customized Alerting Tones (CAT) service in the IP Multimedia (IM) Core Network (CN) subsystem based on the requirements from 3GPP TS 22.182. The CAT service is an operator specific service by which an operator enables the subscriber to customize the media which is played to the calling party during alerting of the called party.

##### 5.1.2.12.59 TS 24.183

IP Multimedia Subsystem (IMS) Customized Ringing Signal (CRS); Protocol specification

The specification provides the protocol details for the Customized Ringing Signal (CRS) service in the IP Multimedia (IM) Core Network (CN) subsystem based on the requirements from 3GPP TS 22.183. The CRS service is an operator specific service by which an operator enables the subscriber to customize the media which is played to the called party as an incoming communication indication during establishment of a communication. This document is applicable to User Equipment (UE) and Application Servers (AS) which are intended to support the CRS service.

##### 5.1.2.12.60 TS 24.216

Communication Continuity Management Object (MO)

This document defines the Communication Continuity Management Object. The management object is compatible with OMA Device Management protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework as described in the Enabler Release Definition OMA-ERELD \_DM-V1\_2. The Communication Continuity Management Object consists of relevant parameters that can be managed for Communication Continuity capabilities.

##### 5.1.2.12.61 TS 24.229

IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3

This specification document defines a call control protocol for use in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP), and the associated Session Description Protocol (SDP).

##### 5.1.2.12.62 TS 24.237

IP Multimedia (IM) Core Network (CN) subsystem IP Multimedia Subsystem (IMS) service continuity; Stage 3

This specification provides the protocol details for voice call continuity between the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP) and the protocols of the 3GPP Circuit-Switched (CS) domain (CAP, MAP, ISUP, BICC and the NAS call control protocol for the CS access). Voice call continuity allows users to move between the CS domain and the IP Connectivity Access Network (e.g., WLAN interworking) with home IM CN subsystem functionality.

##### 5.1.2.12.63 TS 24.238

Session Initiation Protocol (SIP) based user configuration; Stage 3

This document provides a Session Initiation Protocol (SIP) based protocol framework that serves as a means of user configuration of supplementary services in the IP Multimedia (IM) Core Network (CN) subsystem. The protocol framework relies upon the contents of the Request-URI in a SIP INVITE request to enable basic configuration of services without requiring use of the Ut interface.

##### 5.1.2.12.64 TS 24.247

Messaging service using the IP Multimedia (IM) Core Network (CN) subsystem; Stage 3

This specification provides the protocol details for the messaging service within the IP Multimedia CN Subsystem (IMS) based on the Session Initiation Protocol (SIP), the Session Description Protocol (SDP) and, the Message Session Relay Protocol (MSRP).

##### 5.1.2.12.65 TS 24.259

Personal Network Management (PNM); Stage 3

Personal Network Management (PNM) is a home network-based application and provides the home network-based management of Personal Network (PN) consisting of multiple devices belonging to a single user, as described in 3GPP TS 22.259 and 3GPP TS 23.259. This document provides the protocol details for enabling Personal Network management (PNM) services in the IP Multimedia (IM) Core Network (CN) subsystem based on the protocols of XML Configuration Access Protocol (XCAP), Session Initiation Protocol (SIP) and the Session Description Protocol (SDP). The document provides the protocol details for enabling Personal Network management (PNM) services in Circuit Switched (CS) domain based on the protocols of CAP, MAP, ISUP, USSD and BICC.

##### 5.1.2.12.66 TS 24.279

Combining Circuit Switched (CS) and IP Multimedia Subsystem (IMS) services; Stage 3

This specification provides the technical realisation for the combination of Circuit Switched calls and IM sessions when using them simultaneously between the same two users. It also describes the use of CS and IM services in combination, using the existing procedures that have been defined for CS and IMS. It includes the necessary function as adding an IM session to an ongoing CS call, adding a CS call to an ongoing IM session, supplementary services as they relate to CSICS and supporting capability exchange.

##### 5.1.2.12.67 TS 24.285

Allowed Closed Subscriber Group (CSG) list; Management Object (MO)

This document specifies an Allowed Closed Subscriber Group (CSG) List Management Object (MO). The Allowed CSG List MO is compatible with the OMA Device Management (DM) protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework (DDF) as described in the Enabler Release Definition OMA-ERELD-DM-V1\_2. The Allowed CSG List MO consists of relevant parameters for that can be used by the UE to select the appropriate CSG cell based on its subscription. The Allowed CSG List MO defines the relevant parameters related to the Allowed CSG List and to the Operator CSG List. The usage of the Allowed CSG List for in the idle mode process and the mobility management procedure is defined in 3GPP TS 23.122, 3GPP TS 24.008 and 3GPP TS 24.301.

##### 5.1.2.12.68 TS 24.286

IP Multimedia (IM) Core Network (CN) subsystem Centralized Services (ICS); Management Object (MO)

This document defines the IMS Centralised Services Management Object (MO). The management object is compatible with OMA Device Management protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework as described in the Enabler Release Definition OMA-ERELD \_DM-V1\_2. The IMS Centralised Services Management Object consists of relevant parameters that can be managed for ICS.

##### 5.1.2.12.69 TS 24.292

IP Multimedia (IM) Core Network (CN) subsystem Centralized Services (ICS); Stage 3

IP Multimedia (IM) Core Network (CN) subsystem centralized services (ICS) allow for the delivery of consistent IMS services to the user regardless of the attached access type (e.g. CS domain access or IP-CAN). This document provides the protocol details for the realization of ICS based on the Session Initiation protocol (SIP), the Session Description Protocol (SDP), the I1 protocol, and the protocols of the 3GPP Circuit-Switched (CS) domain (e.g. CAP, MAP, ISUP, BICC and the NAS call control protocol for the CS access).

##### 5.1.2.12.70 TS 24.294

IP Multimedia Subsystem (IMS) Centralized Services (ICS) protocol via I1 interface

This document describes the I1 interface between IMS Centralized Services (ICS) UE and Service Centralization and Continuity (SCC) Application Server (AS). This specification defines a new application layer protocol over I1 interface, specifies the interaction between the ICS UE and the SCC AS including session control procedures and supplementary services control procedures. The protocol is intended to be independent of the transport protocol used so it can be applied to a number of technologies that need different transport protocols. The overall ICS architecture is specified in 3GPP TS 23.292

##### 5.1.2.12.71 TS 24.301

Non-Access-Stratum (NAS) protocol for Evolved Packet System (EPS); Stage 3

This document specifies the procedures used by the protocols for mobility management and session management between User Equipment (UE) and Mobility Management Entity (MME) in the Evolved Packet System (EPS). These protocols belong to the non-access stratum (NAS).

##### 5.1.2.12.72 TS 24.302

Access to the 3GPP Evolved Packet Core (EPC) via non-3GPP access networks; Stage 3

This document specifies the discovery and network selection procedures for access to 3GPP Evolved Packet Core (EPC) via non-3GPP access networks and includes Authentication and Access Authorization using Authentication, Authorization and Accounting (AAA) procedures used for the interworking of the 3GPP EPC and the non-3GPP access networks. The document also specifies the Tunnel management procedures used for establishing an end-to-end tunnel from the UE to the ePDG to the point of obtaining IP connectivity and includes the selection of the IP mobility mode. The non-3GPP access networks considered in this document are cdma2000® HRPD and Worldwide Interoperability for Microwave Access (WiMAX), and any access technologies covered in 3GPP TS 23.402. These non-3GPP access networks can be trusted or untrusted access networks.

##### 5.1.2.12.73 TS 24.303

Mobility management based on Dual-Stack Mobile IPv6; Stage 3

This document specifies the signalling procedures for accessing the 3GPP Evolved Packet Core network and handling the mobility between 3GPP and non-3GPP accesses via the S2c reference point defined in 3GPP TS 23.402. The document is applicable to the User Equipment (UE) and the network node implementing the Home Agent functionality. In addition the document specifies the procedures used for the DSMIPv6 Home Agent discovery, for bootstrapping the DSMIPv6 security association between the UE and the Home Agent and for managing the DSMIPv6 tunnel. The specification of these procedures is compliant to IETF RFCs. DSMIPv6 procedures can be used independently of the underlying access technology.

##### 5.1.2.12.74 TS 24.304

Mobility management based on Mobile IPv4; User Equipment (UE) - foreign agent interface; Stage 3

This document describes the stage 3 aspects of mobility management for User Equipment (UE) using IETF Mobile IPv4 foreign agent mode to access the Evolved Packet Core Network (EPC) through trusted non-3GPP access networks and for mobility management of UE between the 3GPP access network and trusted non-3GPP access networks. In particular, the document describes the UE – Mobile IPv4 Foreign Agent (FA) interface stage 3 aspects, where the FA functionality is located within the access network in the non-3GPP access domain. The document is applicable to the User Equipment (UE) and the network node implementing the FA functionality.

##### 5.1.2.12.75 TS 24.305

Selective Disabling of 3GPP User Equipment Capabilities (SDoUE) Management Object (MO)

This document specifies a mobile device Selective Disabling of 3GPP UE Capabilities (SDoUE) Management Object (MO) and the rules and corresponding behaviour of the UE with regard to the selective disabling of 3GPP UE capabilities, for example, when services or functions are disabled/enabled. The SDoUE MO is compatible with the OMA Device Management (DM) protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework (DDF) as described in the Enabler Release Definition OMA-ERELD-DM-V1\_2. The SDoUE MO consists of the relevant parameters that can be managed for selective disabling of 3GPP UE capabilities. The SDoUE MO defines a repository of data into the ME. The service requirements for selective disabling of 3GPP UE capabilities are defined in 3GPP TS 22.011.

##### 5.1.2.12.76 TS 24.312

Access Network Discovery and Selection Function (ANDSF) Management Object (MO)

This document defines management objects that can be used by the Access Network Discovery and Selection Function (ANDSF) and the UE. The Management Object (MO) is compatible with the OMA Device Management (DM) protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework (DDF) as described in the Enabler Release Definition OMA-ERELD-DM-V1\_2. The MO consists of relevant parameters for intersystem mobility policy- and access network discovery information that can be managed by the ANDSF. The service requirements and the functional requirements for the access network discovery and selection are described in 3GPP TS 22.278 and in 3GPP TS 23.402 respectively.

##### 5.1.2.12.77 TS 24.323

3GPP IP Multimedia Subsystem (IMS) service level tracing Management Object (MO)

This document defines the IMS service level tracing management object. The management object is compatible with OMA Device Management protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework as described in the Enabler Release Definition OMA-ERELD \_DM-V1\_2. The IMS service level tracing management object consists of relevant parameters that can be managed for IMS service level tracing capabilities.

##### 5.1.2.12.78 TS 24.337

IP Multimedia (IM) Core Network (CN) subsystem IP Multimedia Subsystem (IMS) inter-UE transfer; Stage 3

IP Multimedia (IM) Core Network (CN) subsystem inter-UE transfer (IUT) provides the capability of continuing ongoing communication sessions with multiple media across different user equipments (UEs) under the control of the same or different subscribers, and as part of Service Continuity (SC). This document provides the protocol details for enabling IMS inter-UE transfer based on the Session Initiation protocol (SIP) and the Session Description Protocol (SDP).

##### 5.1.2.12.79 TS 24.341

Support of SMS over IP networks; Stage 3

This specification provides the protocol details for SMS over IP functionality within the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP). The architecture for the SMS over IP functionality is specified in 3GPP TS 23.204.

##### 5.1.2.12.80 TS 24.368

Non-Access Stratum (NAS) configuration Management Object (MO)

This document defines a Management Object (MO) that can be used to configure the UE with parameters related to Non-Access Stratum (NAS) functionality. The MO is compatible with the OMA Device Management (DM) protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework (DDF) as described in the Enabler Release Definition OMA-ERELD-DM-V1\_2. The MO consists of relevant parameters for NAS related configuration of a UE.

##### 5.1.2.12.81 TS 24.604

Communication Diversion (CDIV) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification

This document specifies the Stage 3, Protocol Description of the Communications Diversion (CDIV) supplementary services, based on stage one and two of the ISDN Communication diversion supplementary services. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

##### 5.1.2.12.82 TS 24.605

Conference (CONF) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification

This document specifies the stage three Protocol Description of the Conference (CONF) service based on stage one and two of the ISDN CONF supplementary service. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

##### 5.1.2.12.83 TS 24.606

Message Waiting Indication (MWI) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification

This document specifies the stage three Protocol Description of the Message Waiting Indication (MWI) service, based on stage one and two of the ISDN MWI supplementary services. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

##### 5.1.2.12.84 TS 24.607

Originating Identification Presentation (OIP) and Originating Identification Restriction (OIR) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification

This document specifies the stage three (protocol description) of the Originating Identification Presentation (OIP) supplementary service and the Originating Identification Restriction (OIR) supplementary services, based on stage one and two of the ISDN CLIP and CLIR supplementary service. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

##### 5.1.2.12.85 TS 24.608

Terminating Identification Presentation (TIP) and Terminating Identification Restriction (TIR) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification

This document specifies the stage three protocol description of the Terminating Identification Presentation (TIP) and Terminating Identification Restriction (TIR) services, based on stage one and two of the ISDN COLP and COLR supplementary services. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

##### 5.1.2.12.86 TS 24.610

Communication HOLD (HOLD) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification

This document specifies the stage three Protocol Description of the Communication Hold (HOLD) services, based on stages one and two of the ISDN Hold (HOLD) supplementary services. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

##### 5.1.2.12.87 TS 24.611

Anonymous Communication Rejection (ACR) and Communication Barring (CB) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification

This document specifies the stage three, Protocol Description of the Anonymous Communication Rejection (ACR) and Communication Barring (CB) supplementary service, based on stage one and two of the ISDN supplementary service Anonymous Call Rejection (ACR), Incoming Communication Barring (ICB) and Outgoing Communication Barring (OCB). It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

##### 5.1.2.12.88 TS 24.615

Communication Waiting (CW) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol Specification

This document specifies the stage 3, Protocol Description of the Communication Waiting (CW) service, based on Stage 1 and Stage 2 of the ISDN call waiting supplementary services. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

##### 5.1.2.12.89 TS 24.616

Malicious Communication Identification (MCID) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification

This document specifies the stage three Protocol Description of the Malicious Call Communication Identification (MCID) service based on the stage one and two of ISDN Malicious Call Identification supplementary service. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP). The MCID service will store session related information independent of the service requested.

##### 5.1.2.12.90 TS 24.623

Extensible Markup Language (XML) Configuration Access Protocol (XCAP) over the Ut interface for Manipulating Supplementary Services

This document defines a protocol used for manipulating data related to supplementary services. The protocol is based on the eXtensible Markup Language (XML) Configuration Access Protocol (XCAP) RFC 4825. A new XCAP application usage is defined for the purpose of manipulating the supplementary services data. The common XCAP related aspects that are applicable to supplementary services are specified in this document. The protocol allows authorized users to manipulate service related data either when they are connected to IMS or when they are connected to non IMS networks (e.g., the public Internet).

##### 5.1.2.12.91 TS 24.628

Common Basic Communication procedures using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification

This document describes the stage three protocol for basic communication procedures common to several services in the IP Multimedia (IM) Core Network (CN) subsystem when at least one Application Server (AS) is included in the communication. The common procedures are based on stage three specifications for supplementary services.

##### 5.1.2.12.92 TS 24.629

Explicit Communication Transfer (ECT) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification

This document specifies the stage three (protocol description) of the Explicit Communication transfer (ECT) supplementary service, based on stage one and two of the ISDN ECT supplementary service. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

##### 5.1.2.12.93 TS 24.642

Completion of Communications to Busy Subscriber (CCBS) and Completion of Communications by No Reply (CCNR) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification

This document specifies the stage three Protocol Description of the Completion of Communications to Busy Subscriber (CCBS) service and the Completion of Communication on no Reply (CCNR) service, based on stage one and two of the ISDN supplementary services. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

##### 5.1.2.12.94 TS 24.647

Advice Of Charge (AOC) using IP Multimedia (IM) Core Network (CN) subsystem

This document specifies the stage three Protocol Description of the Advice Of Charge (AOC) service, based on Stage 1 and 2 of the ISDN Supplementary Service Advice Of Charge for all calls (permanent mode). It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

##### 5.1.2.12.95 TS 24.654

Closed User Group (CUG) using IP Multimedia (IM) Core Network (CN) subsystem, Protocol Specification

This document specifies the stage three Protocol Description of the Closed User Group (CUG) service, based on stage one and two of the ISDN Communication diversion supplementary services. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

##### 5.1.2.12.96 TS 27.005

Use of Data Terminal Equipment - Data Circuit terminating Equipment (DTE - DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)

This document defines three interface protocols for control of SMS functions within a GSM/UMTS mobile telephone from a remote terminal via an asynchronous interface. The "block mode" protocol includes error protection and is suitable for use where the link may not be completely reliable. It is of particular use where control of remote devices is required. Efficient transfer of binary encoded user data is possible. The "text mode", based on AT commands, is suitable for unintelligent terminals or terminal emulators, and for application software built on command structures like those defined in V.25ter. The character based "PDU mode" is suitable for software drivers based on AT command structures which do not understand the content of the message blocks and can only pass them between the MT and higher level software resident in the TE.

In all three modes, the terminal is considered to be in control for SMS/CBS transactions.

The document considers the mobile termination to be a single entity. Other 3GPP/GSM Technical Specifications describe the split of functionality between the mobile equipment and (U)SIM.

##### 5.1.2.12.97 TS 27.007

AT command set for User Equipment (UE)

This document specifies a profile of AT commands and recommends that this profile be used for controlling Mobile Termination (MT) functions and GSM/UMTS network services from a Terminal Equipment (TE) through Terminal Adaptor (TA). The command prefix +C is reserved for Digital Cellular in ITU-T Recommendation V.250. The document has also the syntax details used to construct these extended GSM/UMTS commands. Commands from ITU-T Recommendation V.250 and existing digital cellular standards (TIA IS 99 and TIA IS 135) are used whenever applicable. Some of the new commands are defined such way that they can be easily applied to MT of networks other than GSM/UMTS. ITU T Recommendation T.31 and ITU-T Recommendation T.32 fax AT commands may be used for GSM/UMTS fax transmission from TE. GSM/UMTS Short Message Service AT commands are defined in 3GPP TS 27.005. AT commands for GPRS and EPC are defined in this specification. The document assumes an abstract architecture comprising a TE (e.g. a computer) and a MT interfaced by a TA.

The commands described in this document may be observed on the link between the TE and the TA. However, most of the commands retrieve information about the MT, not about the TA.

##### 5.1.2.12.98 TS 27.010

Terminal Equipment to User Equipment (TE-UE) multiplexer protocol

This document defines a multiplexing protocol between a UE and a TE. The multiplexing protocol can be used to send any data, for instance voice, SMS, USSD, fax etc. The document describes the protocol, but not the commands or data transported with it.

##### 5.1.2.12.99 TS 29.002

Mobile Application Part (MAP) specification

It is necessary to transfer between entities of a Public Land Mobile Network (PLMN) information specific to the PLMN in order to deal with the specific behaviour of roaming Mobile Stations (MS)s. The Signalling System No. 7 specified by CCITT is used to transfer this information.

##### 5.1.2.12.100 TS 29.016

General Packet Radio Service (GPRS); Serving GPRS Support Node (SGSN) - Visitors Location Register (VLR); Gs interface network service specification

This document specifies the subset of MTP and SCCP which is used for the reliable transport of BSSAP+ messages in the Gs interface. The document references 3GPP TS 29.202 which specifies alternative transport layers that can be applied instead of the MTP. The document also specifies the SCCP addressing capabilities to be provided in the Gs interface.

##### 5.1.2.12.101 TS 29.018

General Packet Radio Service (GPRS); Serving GPRS Support Node (SGSN) - Visitors Location Register (VLR); Gs interface layer 3 specification

This document specifies procedures used on the Serving GPRS Support Node (SGSN) to Visitors Location Register (VLR) interface for interoperability between circuit switched services and packet data services. The document specifies the layer 3 messages and procedures on the Gs interface to allow coordination between databases and to relay certain messages related to GSM circuit switched services over the GPRS subsystem.

##### 5.1.2.12.102 TS 29.060

General Packet Radio Service (GPRS); GPRS Tunnelling Protocol (GTP) across the Gn and Gp interface

This document defines the second version of GTP used on: – the Gn and Gp interfaces of the General Packet Radio Service (GPRS);- the Iu, Gn and Gp interfaces of the UMTS system.

##### 5.1.2.12.103 TS 29.061

Interworking between the Public Land Mobile Network (PLMN) supporting packet based services and Packet Data Networks (PDN)

This document defines the requirements for Packet Domain interworking between a: a) PLMN and PDN; b) PLMN and PLMN.

This document is valid for a PLMN in A/Gb mode as well as for a PLMN in Iu mode. If text applies only for one of these systems it is explicitly mentioned by using the terms “A/Gb mode” and “Iu mode”. The A interface does not play any role in the scope of this document although the term “A/Gb mode” is used.

##### 5.1.2.12.104 TS 29.079

Optimal media routeing within the IP Multimedia Subsystem (IMS); Stage 3

This document defines optional Optimal Media Routeing (OMR) procedures that can be applied by entities in the IP Multimedia Subsystem (IMS) that control media resources and are capable of manipulating the Session Description Protocol (SDP) as defined by IETF RFC 4566. The OMR procedures relate to the handling of OMR-specific SDP attributes that are documented in TS 24.229. The OMR procedures use SDP offer/answer related procedures in IETF RFC 3264 and in 3GPP TS 24.229 in a backward-compatible manner.

##### 5.1.2.12.105 TS 29.118

Mobility Management Entity (MME) - Visitor Location Register (VLR) SGs interface specification

CS Fallback in the Evolved Packet System (EPS) enables the provisioning of CS-domain services (e.g. voice call, Location Services (LCS) or supplementary services) by reuse of CS infrastructure when the UE is served by E-UTRAN. Additionally, SMS delivery via the CS core network is realized without CS fallback. This document specifies the procedures and the SGs Application Part (SGsAP) messages used on the SGs interface between the Mobility Management Entity (MME) in the EPS and the Visitor Location Register (VLR), to allow location management coordination and to relay certain messages related to GSM circuit switched services over the EPS system. It also specifies the use of Stream Control Transmission Protocol (SCTP) for the transport of SGsAP messages.

##### 5.1.2.12.106 TS 29.162

Interworking between the IM CN subsystem and IP networks

The IM CN subsystem interworks with the external IP networks through the Mb reference point. This document details the interworking between the IM CN subsystem and external IP networks for IM service support. It addresses the issues of control plane interworking and, user plane interworking for specific interworking use cases. The document describes the IMS-Ix interface requirements in the form of Use Cases which require H.248 protocol procedures and also details the additional Information Elements required to perform the specific procedures.

The IP version Interworking, between IP version 4 (IETF RFC 791) and IP version 6 (IETF RFC 2460) detailed in terms of the processes and protocol mappings required in order to support both mobile originated and terminated calls.

##### 5.1.2.12.107 TS 29.163

Interworking between the IP Multimedia (IM) Core Network (CN) subsystem and Circuit Switched (CS) networks

This document specifies the principles of interworking between the 3GPP IM CN subsystem and BICC/ISUP based legacy CS networks, in order to support IM basic voice, data and multimedia calls. This document addresses the areas of control and user plane interworking between the IM CN subsystem and CS networks through the network functions, which include the MGCF and IM-MGW. For the specification of control plane interworking, areas such as the interworking between SIP and BICC or ISUP are detailed in terms of the processes and protocol mappings required for the support of both IM originated and terminated voice and multimedia calls. Other areas addressed encompass the transport protocol and signalling issues for negotiation and mapping of bearer capabilities and QoS information.

##### 5.1.2.12.108 TS 29.164

Interworking between the 3GPP CS domain with BICC or ISUP as signalling protocol and external SIP-I networks

This document defines interworking procedures between a 3GPP CS domain (see 3GPP TS 23.205) which applies either BICC or ISUP as signalling protocol, and external networks that use SIP-I (see ITU-T Q.1912.5, Profile C) as signalling protocol. The document also describes the related interworking architecture. The control plane interworking is performed by an interworking unit at the interconnection between the 3GPP CS domain and an external SIP-I network. The user plane interworking is performed by an MGW. The document defines stage 2 procedures for the control of the MGW.

##### 5.1.2.12.109 TS 29.165

Inter-IMS Network to Network Interface (NNI)

This document addresses the Inter-IMS Network to Network Interface (II-NNI) consisting of Ici and Izi reference points between IMS networks in order to support end-to-end service interoperability. The document addresses the issues related to control plane signalling (3GPP usage of SIP and SDP protocols, required SIP header fields) as well as other interconnecting aspects like security, numbering/naming/addressing and user plane issues as transport protocol, media and codecs actually covered in a widespread set of 3GPP specifications. A profiling of the Inter-IMS Network to Network Interface (II-NNI) is also provided. Charging aspects are addressed as far as SIP signalling is concerned.

##### 5.1.2.12.110 TS 29.168

Cell Broadcast Centre interfaces with the Evolved Packet Core; Stage 3

This document specifies the procedures and the SBc Application Part (SBc-AP) messages used on the SBc-AP interface between the Mobility Management Entity (MME) and the Cell Broadcast Centre (CBC). This document supports the following functions.- Warning Message Transmission function in the EPS.

##### 5.1.2.12.111 TS 29.171

Location Services (LCS); LCS Application Protocol (LCS-AP) between the Mobile Management Entity (MME) and Evolved Serving Mobile Location Centre (E-SMLC); SLs interface

This document specifies the procedures and information coding for LCS Application Protocol (LCS-AP) that is needed to support the location services in E-UTRAN. The LCS-AP message set is applicable to the SLs interface between the E-SMLC and the MME. LCS-AP is developed in accordance to the general principles stated in 3GPP TS 23.271.

##### 5.1.2.12.112 TS 29.172

Location Services (LCS); Evolved Packet Core (EPC) LCS Protocol (ELP) between the Gateway Mobile Location Centre (GMLC) and the Mobile Management Entity (MME); SLg interface

This document specifies the procedures and information coding for the EPC LCS Protocol (ELP) that is needed to support the location services in E-UTRAN. The ELP message set is applicable to the SLg interface between the MME and the GMLC. ELP is developed in accordance to the general principles stated in 3GPP TS 23.271

##### 5.1.2.12.113 TS 29.173

Location Services (LCS); Diameter-based SLh interface for Control Plane LCS

This document describes the Diameter-based SLh interface between the GMLC and the HSS defined for the Control Plane LCS in EPC.

##### 5.1.2.12.114 TS 29.202

Signalling System No. 7 (SS7) signalling transport in core network; Stage 3

This document defines the possible protocol architectures for transport of SS7 signalling protocols in Core Network.

##### 5.1.2.12.115 TS 29.204

Signalling System No. 7 (SS7) security gateway; Architecture, functional description and protocol details

This document provides the functional description of the SS7 Security Gateway. The document covers also network architecture, routeing considerations, and protocol details.

##### 5.1.2.12.116 TS 29.205

Application of Q.1900 series to bearer independent Circuit Switched (CS) core network architecture; Stage 3

This document describes the protocols to be used when ITU-T Q.1902 “Bearer Independent Call Control” is used as call control protocol in a 3GPP Bearer Independent CS core network 3GPP TS 23.205 The Q.1902 operates between (G)MSC servers. The BICC architecture as described in ITU-T Q.1902 consists of a number of protocols. The following types of protocols are described: call control protocol, bearer control protocols and a resource control protocol for this architecture. The architecture complies with the requirements imposed by 3GPP TS 23.205 and TS 23.153.

##### 5.1.2.12.117 TS 29.212

Policy and Charging Control (PCC) over Gx/Sd reference point

This document provides the stage 3 specification of the Gx and Gxx reference points. The functional requirements and the stage 2 specifications of the Gx and Gxx reference point are contained in 3GPP TS 23.203. The Gx reference point lies between the Policy and Charging Rule Function and the Policy and Charging Enforcement Function. The Gxx reference point lies between the Policy and Charging Rule Function and the Bearer Binding and Event Reporting Function. Whenever possible the document specifies the requirements for the protocol by reference to specifications produced by the IETF within the scope of Diameter. Where this is not possible, extensions to Diameter are defined within the document itself.

##### 5.1.2.12.118 TS 29.213

Policy and charging control signalling flows and Quality of Service (QoS) parameter mapping

This specification adds detailed flows of Policy and Charging Control (PCC) over the Rx , Gx, Gxx and S9 reference points and their relationship with the bearer level signalling flows over the Gn/Gp, S4, S5/S8, S2a and S2c interfaces. The call flows depicted represent usual cases, but not all situations are covered. The document also describes the binding and the mapping of QoS parameters among SDP, UMTS QoS parameters, and QoS authorization parameters, as well as PCRF addressing using DRA.

##### 5.1.2.12.119 TS 29.214

Policy and charging control over Rx reference point

This document provides the stage 3 specification of the Rx reference point. The functional requirements and the stage 2 specifications of the Rx reference point are contained in 3GPP TS 23.203. The Rx reference point lies between the Application Function and the Policy and Charging Rule Function. Whenever possible this document specifies the requirements for the protocol by reference to specifications produced by the IETF within the scope of Diameter. Where this is not possible, extensions to Diameter are defined within the document itself.

##### 5.1.2.12.120 TS 29.215

Policy and Charging Control (PCC) over S9 reference point; Stage 3

This document provides the Stage 3 specification of the S9 reference point. The functional requirements of Stage 2 specification for the S9 reference point are contained in 3GPP TS 23.203. The S9 reference point lies between the PCRF in the home PLMN (also known as H-PCRF) and the PCRF in the visited PLMN (also known as V-PCRF). Whenever it is possible this document specifies the requirements for the protocols by reference to specifications produced by the IETF within the scope of Diameter. Where this is not possible extensions to Diameter are defined within this document.

##### 5.1.2.12.121 TS 29.228

IP Multimedia (IM) Subsystem Cx and Dx Interfaces; Signalling flows and message contents

This 3GPP Technical Specification (TS) specifies the interactions between the HSS (Home Subscriber Server) and the CSCF (Call Session Control Functions), referred to as the Cx interface, and the interactions between the CSCF and the SLF (Server Locator Function), referred to as the Dx interface.

##### 5.1.2.12.122 TS 29.229

Cx and Dx interfaces based on the Diameter protocol; Protocol details

This specification defines a transport protocol for use in the IP multimedia (IM) Core Network (CN) subsystem based on Diameter.

##### 5.1.2.12.123 TS 29.232

Media Gateway Controller (MGC) - Media Gateway (MGW) interface; Stage 3

This document describes the protocol to be used on the Media Gateway Controller (MGC) – Media Gateway (MGW) interface. The Media Gateway Controllers covered in this specification are the MSC server and the GMSC server. The basis for this interface profile is the H.248.1 protocol. The usage of this protocol is described in 3GPP TS 23.205 and 3GPP TS 29.205 for BICC circuit switched core network, in 3GPP TS 23.231 and 3GPP TS 29.231 for SIP-I circuit switched core network.

This profile includes the support for the enhanced MSC server to provide access to IMS Centralised services as described in 3GPP TS 23.292 and thus the procedures related to this interface are described in 3GPP TS 29.292. As a result the interworking with SIP and the associated MGW control procedures described in 3GPP TS 29.163 for the interworking between BICC/ISUP circuit switched core network and IP Multimedia core network are incorporated.

This specification describes the changes to H.248 which are needed to handle 3GPP specific traffic cases. This is done by using the H.248 standard extension mechanism. In addition certain aspects of the base protocol H.248 are not needed for this interface and thus excluded by this profile.

##### 5.1.2.12.124 TS 29.235

Interworking between SIP-I based circuit-switched core network and other networks

This specification defines the interworking between SIP-I based circuit-switched core network with out-of-band transcoder control related procedures and: - an external SIP-I based signalling network - an ISUP based network such as an ISUP based 3GPP CS Domain or an PSTN - an BICC based network such as an BICC based 3GPP CS Domain - an Internet Multimedia Subsystem.

##### 5.1.2.12.125 TS 29.238

Interconnection Border Control Functions (IBCF) - Transition Gateway (TrGW) interface, Ix interface; Stage 3

This document describes the protocol to be used on the Interconnection Border Control Function (IBCF) – Transition Gateway (TrGW) interface and the CS-IBCF – CS-TrGW interface. The basis for this protocol is the H.248 protocol. The Profile provides MG control function for IMS and CS Border Control. The IMS architecture is described in 3GPP TS 23.228. The underlying reference model and stage 2 information is described in 3GPP TS 23.228 and in 3GPP TS 29.162. The CS architecture is described in 3GPP TS 29.235. This specification describes the application of H.248 Ix profile for both Ix and CS-Ix interfaces. Required extensions use the H.248 standard extension mechanism. In addition certain aspects of the base protocol H.248 are not needed for this interface and thus excluded by this profile.

##### 5.1.2.12.126 TS 29.272

Evolved Packet System (EPS); Mobility Management Entity (MME) and Serving GPRS Support Node (SGSN) related interfaces based on Diameter protocol

This document describes the Mobility Management Entity (MME) and Serving GPRS Support Node (SGSN) related diameter-based interfaces towards the Home Subscriber Server (HSS), and the MME and the SGSN related diameter-based interface towards the Equipment Identity Register (EIR). This specification defines the Diameter application for the MME-HSS, S6a reference point, and for the SGSN-HSS, S6d reference point. The interactions between the HSS and the MME/SGSN are specified, including the signalling flows. This specification defines the Diameter application for the MME-EIR, S13 reference point, and for the SGSN-EIR, S13’ reference point. The interactions between the MME/SGSN and the EIR are specified, including the signalling flows.

##### 5.1.2.12.127 TS 29.273

Evolved Packet System (EPS); 3GPP EPS AAA interfaces

This document defines the stage-3 protocol description for several reference points for the non-3GPP access in EPS.

##### 5.1.2.12.128 TS 29.274

3GPP Evolved Packet System (EPS); Evolved General Packet Radio Service (GPRS) Tunnelling Protocol for Control plane (GTPv2-C); Stage 3

This document specifies the stage 3 of the control plane of the GPRS Tunnelling Protocol, Version 2 for Evolved Packet System interfaces (GTPv2-C). In this document, unless otherwise specified the S5 interface refers always to “GTP-based S5” and S8 interface refers always to “GTP-based S8” interface.

##### 5.1.2.12.129 TS 29.275

Proxy Mobile IPv6 (PMIPv6) based Mobility and Tunnelling protocols; Stage 3

This document specifies the Stage 3 of the PMIPv6 Based Mobility and Tunnelling Protocols used over the PMIP-based S2a, S2b, S5, and S8 reference points defined in 3GPP TS 23.402, and are thus applicable to the Serving GW, PDN Gateway, ePDG, and Trusted Non-3GPP Access. Protocols specifications are compliant with relevant IETF RFCs. In this specification PMIP refers to PMIPv6 as defined in IETF RFC 5213.

##### 5.1.2.12.130 TS 29.276

3GPP Evolved Packet System (EPS); Optimized handover procedures and protocols between E-UTRAN access and cdma2000 HRPD Access; Stage 3

This document specifies the Stage 3 of the Evolved Packet System S101 interface between the MME and the HRPD Access Network. The S101 interface supports procedures for Pre-Registration, Session Maintenance and Active handoffs between E-UTRAN and HRPD networks.

##### 5.1.2.12.131 TS 29.280

Evolved Packet System (EPS); 3GPP Sv interface (MME to MSC, and SGSN to MSC) for SRVCC

This document describes the Sv interface between the Mobility Management Entity (MME) or Serving GPRS Support Node (SGSN) and 3GPP MSC server enhanced for SRVCC. Sv interface is used to support Inter-RAT handover from VoIP/IMS over EPS to CS domain over 3GPP UTRAN/GERAN access or from UTRAN (HSPA) to 3GPP UTRAN/GERAN access.

##### 5.1.2.12.132 TS 29.281

General Packet Radio System (GPRS) Tunnelling Protocol User Plane (GTPv1-U)

This document defines the user plane of GTP used on: – the Gn and Gp interfaces of the General Packet Radio Service (GPRS);- the Iu, Gn and Gp interfaces of the UMTS system;- the S1-U, X2, S4, S5, S8 and S12 interfaces of the Evolved Packet System (EPS).

##### 5.1.2.12.133 TS 29.292

Interworking between the IP Multimedia (IM) Core Network (CN) subsystem (IMS) and MSC Server for IMS Centralized Services (ICS)

IMS Centralized Services (ICS) enable the delivery of IM CN subsystem based multimedia telephony and supplementary services as defined in 3GPP TS 24.173 to users regardless of the attached access network type; e.g. CS domain access or IP-CAN.

This document specifies the principles of interworking between the IM CN subsystem and CS domain in order to enable ICS for UEs using CS domain access. The document addresses the area of registration procedures interworking between the CS domain and IM CN subsystem, and the areas of control and user plane interworking between the IM CN subsystem and CS domain through an MSC Server enhanced for ICS and CS-MGW respectively. This includes the signalling procedures between the MSC Server and CS-MGW. For the specification of control plane interworking, the document defines the protocol interworking between the 3GPP profile of SIP as described in 3GPP TS 24.229 and NAS signalling as described in 3GPP TS 24.008 required for the support of IM CN subsystem based multimedia telephony and supplementary services. The document addresses the area of supplementary service configuration interworking between the CS domain and IM CN subsystem. It is applicable to the MSC Server and CS-MGW.

##### 5.1.2.12.134 TS 29.311

Service level interworking for Messaging Services

This document specifies the protocol details of service level interworking between Instant Message (OMA-TS-SIMPLE\_IM) or Chat Session (OMA-TS-CPM\_Conv\_Fnct) using the 3GPP IP Multimedia CN subsystem and the Short Message Service over both legacy CS/PS network as specified in the 3GPP TS 23.040 and a generic IP Conectivity Access Network (IP-CAN) as specified in the 3GPP TS 24.341. These include:

– Procedures to implement service level interworking between IM and SM;

– Procedures to implement service level interworking between CPM and SM;

– Enhancement of the IP-SM-GW as an Application Server to support service selection, authorization and mapping between IM or CPM and SM protocols; and

– Interaction between service level interworking and transport layer interworking.

##### 5.1.2.12.135 TS 29.328

IP Multimedia (IM) Subsystem Sh interface; Signalling flows and message contents

This document specifies:

1. The interactions between the HSS (Home Subscriber Server) and the SIP AS (Application Server) and between the HSS and the OSA SCS (Service Capability Server). This interface is referred to as the Sh reference point.

2. The interactions between the SIP AS and the SLF (Subscription Locator Function) and between the OSA SCS and the SLF. This interface is referred to as the Dh reference point.

The IP Multimedia (IM) Core Network Subsystem stage 2 is specified in 3GPP TS 23.228 and the signalling flows for the IP multimedia call control based on SIP and SDP are specified in 3GPP TS 24.228.

The IP Multimedia (IM) Session Handling with the IP Multimedia (IM) call model is specified in 3GPP TS 23.218.

This document addresses the signalling flows and message contents for the protocol at the Sh and Dh interface and also addresses how the functionality of Ph interface is accomplished. The Presence Service Stage 2 description (architecture and functional solution) is specified in 3GPP TS 23.141.

##### 5.1.2.12.136 TS 29.329

Sh interface based on the Diameter protocol; Protocol details

This document defines a transport protocol for use in the IP multimedia (IM) Core Network (CN) subsystem based on Diameter and is applicable to:

– The Sh interface between an AS and the HSS.

– The Sh interface between an SCS and the HSS.

Whenever it is possible this document specifies the requirements for this protocol by reference to specifications produced by the IETF within the scope of Diameter. Where this is not possible, extensions to Diameter are defined within this document.

##### 5.1.2.12.137 TS 29.332

Media Gateway Control Function (MGCF) - IM Media Gateway; Mn interface

This document describes the protocol to be used on the Media Gateway Control Function (MGCF) – IM Media Gateway (IM-MGW) interface. This interface provides the Media Gateway Control for interworking between the IP Multimedia Subsystem (IMS) and CS domain (ISUP, BICC and SIP-I). The basis for this protocol is the H.248 protocol. The IMS architecture is described in 3GPP TS 23.228. The interaction of the MGCF-IM MGW interface signalling procedures in relation to the SIP, and BICC/ISUP signalling at the MGCF are described in 3GPP TS 29.163.

The interaction of the MGCF-IM MGW interface signalling procedures in relation to the IMS SIP and SIP-I on Nc at the MGCF are described in 3GPP TS 29.235.

This specification describes the application of H.248 on the Mn interface. Required extensions use the H.248 standard extension mechanism. In addition certain aspects of the base protocol H.248 are not needed for this interface and thus excluded by this profile.

In addition this profile provides support for PSTN/ISDN Emulation as required by ETSI TISPAN.

The main body of the specification provides an introduction to the use of the profile for the Mn interface and introduces any specific functionality (e.g. new packages) associated with the Mn.

##### 5.1.2.12.138 TS 29.333

Multimedia Resource Function Controller (MRFC) - Multimedia Resource Function Processor (MRFP) Mp interface; Stage 3

This document describes the protocol to be used on the Multimedia Resource Function Controller (MRFC) – Multimedia Resource Function Processor (MRFP) interface (Mp interface). The IMS architecture is described in 3GPP TS 23.228, the functional requirements are described in 3G TS 23.333. This specification defines a profile of the Gateway Control Protocol (H.248.1) for controlling Multimedia Resource Function Processor supporting in-band user interaction, conferencing and transcoding for multimedia-services.

##### 5.1.2.12.139 TS 29.334

IMS Application Level Gateway (IMS-ALG) - IMS Access Gateway (IMS-AGW); Iq Interface; Stage 3

This document describes the protocol to be used on the IMS Application Level Gateway (ALG) – IMS Access Gateway (IMS-AGW) interface. The basis for this protocol is the H.248 protocol as specified in ITU-T. The IMS architecture is described in 3GPP TS 23.228. The underlying reference model and stage 2 information is described in 3GPP TS 23.228 and in 3GPP TS 23.334. This specification describes the application of H.248 on the Iq interface. Required extensions use the H.248 standard extension mechanism. In addition certain aspects of the base protocol H.248 are not needed for this interface and thus excluded by this profile.

##### 5.1.2.12.140 TS 29.335

User Data Convergence (UDC); User data repository access protocol over the Ud interface; Stage 3

This document describes the Stage 3 user data repository access protocol over Ud interface.

##### 5.1.2.12.141 TS 29.364

IP Multimedia Subsystem (IMS) Application Server (AS) service data descriptions for AS interoperability

This specification standardizes the structure and the coding of the service data that are transported over the Sh interface between an Application Server supporting Multimedia Telephony supplementary services as defined in 3GPPP TS 22.173 and the HSS. Two optional formats are specified. One is based on a binary coding of the service data and supports the subset of MMTEL services corresponding to PSTN/ISDN and CS supplementary services. The other uses an XML format and supports the full set of MMTEL Services.

##### 5.1.2.12.142 TS 31.101

UICC-terminal interface; Physical and logical characteristics

This document specifies the interface between the UICC and the Terminal for 3G telecom network operation. It specifies:

– the requirements for the physical characteristics of the UICC;

– the electrical interface between the UICC and the Terminal;

– the initial communication establishment and the transport protocols;

– the model which serves as a basis for the logical structure of the UICC;

– the communication commands and the procedures;

– the application independent files and protocols.

##### 5.1.2.12.143 TS 31.102

Characteristics of the Universal Subscriber Identity Module (USIM) application

This document defines the USIM application for 3G telecom network operation. It specifies:

– specific command parameters;

– file structures;

– contents of EFs (Elementary Files);

– security functions;

– application protocol to be used on the interface between UICC (USIM) and ME.

This is to ensure interoperability between a USIM and an ME independently of the respective manufacturer, card issuer or operator

##### 5.1.2.12.144 TS 31.103

Characteristics of the IP Multimedia Services Identity Module (ISIM) application

This document defines the ISIM application for access to IMS services.

This document specifies:

– specific command parameters;

– file structures;

– contents of EFs (Elementary Files);

– security functions;

– application protocol to be used on the interface between UICC (ISIM) and Terminal.

This is to ensure interoperability between an ISIM and Terminal independently of the respective manufacturer, card issuer or operator.

This document does not define any aspects related to the administrative management phase of the ISIM. Any internal technical realisation of either the ISIM or the Terminal is only specified where these are reflected over the interface. This document does not specify any of the security algorithms that may be used.

##### 5.1.2.12.145 TS 31.111

Universal Subscriber Identity Module (USIM) Application Toolkit (USAT)

This document defines the ISIM application for access to IMS services. It specifies:

– specific command parameters;

– file structures;

– contents of EFs (Elementary Files);

– security functions;

– application protocol to be used on the interface between UICC (ISIM) and Terminal.

This is to ensure interoperability between an ISIM and Terminal independently of the respective manufacturer, card issuer or operator. This document defines the interface between the UICC and the Mobile Equipment (ME), and mandatory ME procedures, specifically for "USIM Application Toolkit".

The document mainly refers to ETSI TS 102 223, which describes the generic aspects of application toolkits within the UICC. USAT is a set of commands and procedures for use during the network operation phase of 3G/LTE, in addition to those defined in TS 31.101.

Specifying the interface is to ensure interoperability between a UICC and an ME independently of the respective manufacturers and operators.

This document defines for 3G/LTE technology:

– the commands;

– the application protocol;

– the mandatory requirements on the UICC and ME for each procedure.

##### 5.1.2.12.146 TS 31.115

Secured packet structure for (Universal) Subscriber Identity Module (U)SIM Toolkit applications

This document specifies the structure of the Secured Packets in implementations using Short Message Service Point to Point (SMS-PP), Short Message Service Cell Broadcast (SMS-CB), Unstructured Supplementary Service Data (USSD) and and Hyper Text Transfer Protocol (HTTP) based on ETSI TS 102 225. The structure of the Secured Packets complies with the one defined in ETSI TS 102 225. This document only contains additional requirements or explicit limitations for SIM/USIM applications. It is applicable to the exchange of secured packets between an entity in a 3G or GSM PLMN and an entity in the (U)SIM. Secured Packets contain application messages to which certain mechanisms according to ETSI TS 102 224 have been applied. Application messages are commands or data exchanged between an application resident in or behind the PLMN and on the (U)SIM. The Sending/Receiving Entity in the 3G or GSM PLMN and the UICC are responsible for applying the security mechanisms to the application messages and thus turning them into Secured Packets.

##### 5.1.2.12.147 TS 31.116

Remote APDU Structure for (U)SIM Toolkit applications

This document defines the remote management of files and applets on the SIM/USIM/ISIM.

It describes the APDU format for remote management. Furthermore the document specifies:

– a set of commands coded according to this APDU structure and used in the remote file management on the SIM/USIM specified in TS 51.011, TS 31.101, TS 31.102, TS 31.103;

– a set of commands coded according to this APDU structure and used in the remote applet management on the SIM/USIM. This is based on ETSI TS 102 226.

The remote APDU structure for SIM/USIM/ISIM applications complies with the one defined in ETSI TS 102 226. This document only contains additional requirements or explicit limitations for SIM/USIM/ISIM applications.

##### 5.1.2.12.148 TS 31.130

(U)SIM Application Programming Interface (API); (U)SIM API for Java™ Card

This document defines the (U)SIM Application Programming Interface extending the UICC API for Java Card™, ETSI TS 102 241. This API allows the development of a (U)SAT application running together with a (U)SIM application and using GSM/3G network features.

##### 5.1.2.12.149 TS 31.133

IP Multimedia Services Identity Module (ISIM) Application Programming Interface (API); ISIM API for Java Card™

This document defines the ISIM Application Programming Interface extending the UICC API for Java Card™, ETSI TS 102 241. This API allows the development of an application running together with a ISIM application.

##### 5.1.2.12.150 TS 31.220

Characteristics of the Contact Manager for 3GPP UICC applications

This document defines the Contact Manager for 3GPP UICC applications based on OMA DS. It specifies the external interface between the Contact Manager Server in the UICC and the Contact Manager External Client in the ME.

##### 5.1.2.12.151 TS 31.221

Contact Manager Application Programming Interface (API); Contact Manager API for Java Card

This document defines the internal interface characteristics of the Contact Manager for 3GPP UICC applications. The internal interface between the Contact Manager Server application on the UICC and the Contact Manager Client application on the UICC enables Java Card™ platform based applets to invoke and register to the Contact Manager Server services. In particular, the Contact Manager Java Card™ based API provides methods to:

– Read/Update/Create/Delete contact(s) in the Contact Manager Server;

– Manage group of contacts in the Contact Manager Server;

– Search for a contact in the Contact Manager Server storage;

– manage the contacts structure;

– Register/Un-register the application to pre-defined events (e.g. application to be notified when contacts are modified in the Contact Manager Server).

#### 5.1.2.13 System aspects

IMT-2000 CDMA Direct Spread specification also includes the following documents which are useful and related to this Recommendation.

##### 5.1.2.13.1 TS 21.101

Technical Specifications and Technical Reports for a UTRAN-based 3GPP system

The listed Specifications are required to build a system based on UTRAN radio technology.

##### 5.1.2.13.2 TS 21.133

3G security; Security threats and requirements

Detailed security requirements.

##### 5.1.2.13.3 TS 21.201

Technical Specifications and Technical Reports for an Evolved Packet System (EPS) based 3GPP system

This document identifies the 3GPP Technical Specifications and Technical Reports required or potentially required to build a system based on the Evolved Packet System/LTE/E UTRAN radio technology.

##### 5.1.2.13.4 TS 22.001

Principles of circuit telecommunication services supported by a Public Land Mobile Network (PLMN)

This document covers the definition of the circuit telecommunication services supported by a PLMN. The purpose of this document is to provide a method for the characterization and the description of these telecommunication services.

##### 5.1.2.13.5 TS 22.002

Circuit Bearer Services (BS) supported by a Public Land Mobile Network (PLMN)

This 3G specification describes a set of bearer services to be provided to 3G subscribers by a 3G network itself and in connection with other networks. This document is also be used as a reference for defining the corresponding required mobile network capabilities which are specified by means of the connection type concept.

##### 5.1.2.13.6 TS 22.003

Circuit Teleservices supported by a Public Land Mobile Network (PLMN)

This document describes and defines a recommended set of Circuit Teleservices to be supported by a PLMN in connection with other networks as a basis for defining the network capabilities required.

##### 5.1.2.13.7 TS 22.004

General on supplementary services

This specification describes a recommended set of supplementary services to the teleservices and bearer services which will be supported by a 3G network in connection with other networks as a basis for the definition of the network capabilities required.

##### 5.1.2.13.8 TS 22.011

Service accessibility

This specification describes the service access procedures as presented to the user. The document contains definitions and procedures are provided for international roaming, national roaming and regionally provided service. These are mandatory in relation to the technical realization of the UE.

##### 5.1.2.13.9 TS 22.016

International Mobile station Equipment Identities (IMEI)

This specification describes the principal purpose and use of unique equipment identities.

##### 5.1.2.13.10 TS 22.022

Personalisation of Mobile Equipment (ME); Mobile functionality specification

This specification describes functional specifications of five features to personalize UE. These features are called: – network personalization; – network subset personalization; – service provider (SP) personalization; – corporate personalization; – UMTS subscriber identity module (USIM) personalization. This specification describes requirements for UE, which provide these personalization features.

##### 5.1.2.13.11 TS 22.034

High Speed Circuit Switched Data (HSCSD); Stage 1

This specification describes the Stage 1 description of HSCSD. HSCSD is a feature that allows users subscribing to the general bearer services to access user rates that can be achieved with one or more traffic channel. HSCSD also defines a flexible use of air interface resources, which makes efficient and flexible use of higher user rates feasible.

##### 5.1.2.13.12 TS 22.038

(U)SIM Application Toolkit (USAT); Service description; Stage 1

This specification describes the Stage 1 description of the SAT primarily from the subscriber’s and serving environment’s points of view, and does not deal with the details of the human interface itself. It includes information applicable to network operators, serving environments and terminal, switch and database manufacturers and contains the core requirements for a SAT which are sufficient to provide a complete service.

##### 5.1.2.13.13 TS 22.057

Mobile Execution Environment (MExE); Service description; Stage 1

This document defines the stage one description of the Mobile Execution Environment (MExE). The scope of this 3GPP TS encompasses the MExE functionality in the UE, interaction with the MExE service environment. The MExE service environment is not necessarily restricted to the PLMN, and nodes providing MExE services (i.e. MExE servers) may also exist outside the PLMN. Aspects of the support provided by MExE servers within the MExE service environment (such as charging aspects, security level classification etc.) are covered by this specification, but not the MExE servers themselves.

##### 5.1.2.13.14 TS 22.060

General Packet Radio Service (GPRS); Service description; Stage 1

This specification describes the Stage 1 description of the GPRS.

##### 5.1.2.13.15 TS 22.067

enhanced Multi Level Precedence and Pre-emption service (eMLPP); Stage 1

This specification describes the Stage 1 description of the enhanced multi-level precedence and pre-emption (eMLPP) service. This service has two parts: precedence and pre-emption. Precedence involves assigning a priority level to a call in combination with fast call set-up. Pre-emption involves the seizing of resources, which are in use by a call of a lower precedence, by a higher level precedence call in the absence of idle resources. Pre-emption can also involve the disconnection of an on-going call of lower precedence to accept an incoming call of higher precedence.

##### 5.1.2.13.16 TS 22.071

Location Services (LCS); Service description; Stage 1

LCS is a network provided enabling technology consisting of standardized service capabilities which enables the provision of location applications. This application may be service provider specific. The description of the numerous and varied possible location applications which are enabled by this technology are outside the scope of this specification. However, clarifying examples of how the functionality being specified may be used to provide specific LCS is included in various sections of the specification.

##### 5.1.2.13.17 TS 22.078

Customized Applications for Mobile network Enhanced Logic (CAMEL); Service description; Stage 1

This specification describes the Stage 1 description for CAMEL feature which provides the mechanisms to support services consistently independently of the serving network. The CAMEL features shall facilitate service control of operator specific services external from the serving network. The CAMEL feature is a network feature and not a supplementary service. It is a tool to help the network operator to provide the subscribers with the operator specific services even when roaming outside the home network.

##### 5.1.2.13.18 TS 22.090

Unstructured Supplementary Service Data (USSD); Stage 1

There are two modes of USSD: MMI-mode and application mode. MMI-mode USSD is for the transparent transport of MMI strings entered by the user to the network and for the transparent transport of text strings from the network that are displayed by the mobile for user information. Application mode USSD is for the transparent transport of data between the network and the mobile station. Application mode USSD is intended to be used by applications in the network and their peer applications in the UE. The communication over the radio interface takes place on the signalling channels using short dialogues with peak data throughput rate capabilities of up to approximately 600 bit/s outside of a call and 1 000 bit/s during a call.

##### 5.1.2.13.19 TS 22.100

UMTS Phase 1

This specification describes contains how the definition of the UMTS system will be achieved in a phased approach. This document also specifies the requirements for release 99 of UMTS. Some requirements which are necessary to ensure a smooth transition to later releases are also indicated. This document should, however, be read in conjunction with the other 22.000 series documents which provide a complete description of the requirements for UMTS release 1999 and beyond.

##### 5.1.2.13.20 TS 22.101

Service aspects; Service principles

This specification describes the service principles of the UMTS.

##### 5.1.2.13.21 TS 22.105

Services and service capabilities

Pre-UMTS systems have largely standardized the complete sets of bearer services, teleservices and supplementary services which they provide. One major difference between UMTS and pre-UMTS systems is that service capabilities rather than services are standardized for UMTS, allowing service differentiation and system continuity. This document describes how and what kind of services the UMTS user has access to.

##### 5.1.2.13.22 TS 22.115

Service aspects; Charging and billing

This specification describes the service aspects of charging and billing of the UMTS. This standard is not intended to duplicate existing standards or standards being developed by other groups on these topics, and will reference these where appropriate. This standard will elaborate on the charging requirements described in the charging principles in TS 22.101 UMTS service principles. It will allow the generation of accurate charging information to be used in the commercial and contractual relationships between the parties concerned.

##### 5.1.2.13.23 TS 22.129

Service aspects; Handover requirements between UTRAN and GERAN or other radio systems

This specification describes service requirements for handover (terms are defined below) within UMTS systems and between UMTS, other IMT 2000 family members and second generation systems. Particular emphasis has been placed on the description of requirements for handover between UMTS and GSM but requirements specific to other systems are incorporated as required.

##### 5.1.2.13.24 TS 22.135

Multicall; Service description; Stage 1

This specification describes multicall scenarios and requirements for UMTS phase 1 release 1999. Multicall feature specifies functionality and interactions related to usage of several simultaneous bearers between a terminal and a network. Multicall features allows both circuit-switched call(s) and packet session(s) to exist simultaneously.

##### 5.1.2.13.25 TS 22.146

Multimedia Broadcast/Multicast Service (MBMS); Stage 1

The document describes MBMS User Services that use the capabilities of MBMS. Application scenarios including charging, QoS aspects and related service requirements derived from them are described. These scenarios and service requirements can be used as guidance for the design of codecs and bearers.

##### 5.1.2.13.26 TS 22.153

Multimedia priority service

The document specifies the service requirements for Multimedia Priority Service (MPS). Its scope is to specify those requirements of MPS necessary to provide an end-to-end service and to interwork with external networks where needed. Service interactions with external networks are considered within the scope of this document although these interactions may be specified in other standards.

##### 5.1.2.13.27 TS 22.168

Earthquake and Tsunami Warning System (ETWS) requirements; Stage 1

The Document defines the stage one description of the Earthquake and Tsunami Warning System (ETWS) Requirements. Stage one is the set of requirements seen primarily from the user’s and service provider’s points of view. It includes information applicable to network operators, service providers, terminal and network manufacturers, in case of deployment of ETWS. ETWS deployment depends on operator decision or national regulations. The TS contains the core requirements for the Earthquake and Tsunami Warning System, which are sufficient to provide a complete service. It also contains regional requirements for Earthquake and Tsunami Warning System.

##### 5.1.2.13.28 TS 22.173

IP Multimedia Core Network Subsystem (IMS) Multimedia Telephony Service and supplementary services; Stage 1

The document defines the IMS Multimedia Telephony service and the minimum set of capabilities required to secure multi-vendor and multi-operator inter-operability for Multimedia Telephony and related Supplementary Services.

##### 5.1.2.13.29 TS 22.182

Customized Alerting Tones (CAT) requirements; Stage 1

This document specifies the requirements and technical considerations for Customized Alerting Tone (CAT) service in both CS and PS domains, especially additional features for roaming and interoperability support.

##### 5.1.2.13.30 TS 22.183

Customized Ringing Signal (CRS) requirements; Stage 1

The document specifies the requirements and technical considerations for Customized Ringing Signal (CRS) service in the PS and CS domains, especially additional features for roaming and interoperability support.

##### 5.1.2.13.31 TS 22.220

Service requirements for Home Node B (HNB) and Home eNode B (HeNB)

This specification defines the service requirements for the basic functionalities for the support of Home NodeB (HNB) and Home eNodeB (HeNB) – jointly referred to as H(e)NB – and the further functionalities that will enable the mobile operators to provide more advanced services as well as improving the user experience.

##### 5.1.2.13.32 TS 22.228

Service requirements for the Internet Protocol (IP) multimedia core network subsystem (IMS); Stage 1

This specification describes all IP Multimedia services offered by UMTS Systems and second generation systems.

##### 5.1.2.13.33 TS 22.234

Requirements on 3GPP system to Wireless Local Area Network (WLAN) interworking

The document specifies the functional requirements placed on the 3GPP system for interworking WLAN with the 3GPP system. Guidance is given for WLAN operators intending to provide the interworked WLAN capability.

##### 5.1.2.13.34 TS 22.246

Multimedia Broadcast/Multicast Service (MBMS) user services; Stage 1

This document describes MBMS User Services that use the capabilities of MBMS. Application scenarios including charging, QoS aspects and related service requirements derived from them are described. These scenarios and service requirements can be used as guidance for the design of codecs and bearers.

##### 5.1.2.13.35 TS 22.268

Public Warning System (PWS) requirements

This document covers the core requirements for the PWS that are sufficient to provide a complete service. This TS also covers subsystem additional requirements for the Earthquake and Tsunami Warning System (ETWS) and the Commercial Mobile Alert System (CMAS).

##### 5.1.2.13.36 TS 22.278

Service requirements for the Evolved Packet System (EPS)

This document describes the service requirements for the Evolved Packet System.

##### 5.1.2.13.37 TS 22.368

Service requirements for Machine-Type Communications (MTC); Stage 1

This document specifies the service requirements for Network Improvements for Machine Type Communications. In particular it will:

– identify and specify general requirements for machine type communications;

– identify service aspects where network improvements (compared to the current human-to-human oriented services) are needed to cater for the specific nature of machine-type communications;

– specify machine type communication requirements for these service aspects where network improvements are needed for machine type communication.

##### 5.1.2.13.38 TR 22.971

Automatic establishment of roaming relationships

This report describes a proposed framework for commercial and technical interworking between UMTS home environments and serving networks who have no direct prior commercial agreements with each other. This text is applicable to UMTS standardization within ETSI, and is produced with the intent to clarify the concepts involved, and identify those areas which require standardization.

##### 5.1.2.13.39 TS 23.002

Network architecture

This specification describes the possible architectures of the mobile system.

##### 5.1.2.13.40 TS 23.032

Universal Geographical Area Description (GAD)

This document defines an intermediate universal Geographical Area Description which subscriber applications, GSM or UMTS services can use and the network can convert into an equivalent radio coverage map.

For GSM or UMTS services which involve the use of an "area", it can be assumed that in the majority of cases the Service Requester will be forbidden access to data on the radio coverage map of a particular PLMN and that the Service Requester will not have direct access to network entities (e.g. BSC/BTS or RNC/Node B).

The interpretation by the PLMN operator of the geographical area in terms of cells actually used, cells that are partly within the given area and all other technical and quality of service aspects are out of the scope of this document.

This specification also provides a description of velocity that may be associated with a universal Geographical Area Description when both are applied to a common entity at a common time.

##### 5.1.2.13.41 TS 23.101

General Universal Mobile Telecommunications System (UMTS) architecture

This specification describes the basic physical and functional separation of UMTS. The content of this specification is limited to those features that are common to all UMTS networks independent of their origin. It identifies and names the reference points and functional groupings appearing at this level.

##### 5.1.2.13.42 TS 23.107

Quality of Service (QoS) concept and architecture

This specification describes the framework for QoS in UMTS. The document shall be used as a living document which will cover all issues related QoS in UMTS.

##### 5.1.2.13.43 TS 23.121

Architectural requirements for Release 1999

This specification describes architectural requirements for release 1999 related to the evolution of the GSM platform towards UMTS with the overall goal of fulfilling the UMTS service requirements, support of roaming and support of new functionality, signalling systems and interfaces.

##### 5.1.2.13.44 TS 23.141

Presence service; Architecture and functional description

This document describes the stage 2 description (architectural solution and functionalities) for the Presence Service, which includes the elements necessary to realise the stage 1 requirements in TS 22.141.

##### 5.1.2.13.45 TS 23.167

IP Multimedia Subsystem (IMS) emergency sessions

This document defines the stage 2 service description for emergency services in the IP Multimedia Core Network Subsystem (IMS), including the elements necessary to support IP Multimedia (IM) emergency services.

This document covers also the Access Network aspects that are crucial for the provisioning of IMS emergency services. Other 3GPP specifications that are related to the IMS emergency services are TS 23.228 on IMS in general, including fixed broadband access aspects, TS 23.060 describing GPRS (UTRAN), TS 23.401, TS 23.060; TS 23.402 describing EPS (UTRAN and E-UTRAN); TS 23.234 describing 3GPP/WLAN Interworking; TS 23.271 that covers location services and TS 23.216 and TS 23.237 describing Single Radio Voice Call Continuity for IMS Emergency session. TS 25.301 contains an overall description of the UMTS Terrestrial Radio Access Network TS 36.300 contains an overall description of the Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN). Other non-3GPP specifications that are related to the IMS emergency services include 3GPP2 cdma2000 HRPD IP CAN, as specified in 3GPP2 X.S0060 when the UE is connected to a PDS core network and 3GPP2 X.S0057 A when the UE is connected to an EPC core network.

The emergency support in different IP-CANs is described in the Informative Annex E.

##### 5.1.2.13.46 TS 23.171

Location Services (LCS); Functional description; Stage 2 (UMTS)

This document specifies the stage 2 of the LoCation Services (LCS) feature in UMTS, which provides the mechanisms to support mobile location services for operators, subscribers and third party service providers.

Location Services may be considered as a network provided enabling technology consisting of standardised service capabilities, which enable the provision of location applications. The application(s) may be service provider specific. The description of the numerous and varied possible location applications which are enabled by this technology are outside the scope of this document. However, clarifying examples of how the functionality being described may be used to provide specific location services may be included.

This stage 2 service description covers the LCS system functional model for the whole system, the LCS system architecture, state descriptions, message flows, etc.

##### 5.1.2.13.47 TS 23.203

Policy and charging control architecture

This document specifies the overall stage 2 level functionality for Policy and Charging Control that encompasses the following high level functions for IP CANs (e.g. GPRS, I WLAN, Fixed Broadband, etc.): (i) Flow Based Charging, including charging control and online credit control; (ii) Policy control (e.g. gating control, QoS control, QoS signalling, etc.).

##### 5.1.2.13.48 TS 23.204

Support of Short Message Service (SMS) over generic 3GPP Internet Protocol (IP) access; Stage 2

This document specifies the new capabilities and enhancements needed to support SMS over a generic IP Connectivity Access Network (IP-CAN) using IMS capabilities (TS 23.228).

##### 5.1.2.13.49 TS 23.207

End-to-end Quality of Service (QoS) concept and architecture

This document provides the framework for end-to-end Quality of Service involving GPRS and complements TS 23.107 which describes the framework for Quality of Service within UMTS. The document describes the interaction between the TE/MT Local Bearer Service, the GPRS Bearer Service, and the External Bearer Service, and how these together provide Quality of Service for the End-to-End Service. The document also describes IP level mechanisms necessary in providing end-to-end Quality of Service involving GPRS networks, including possible interaction between the IP level and the GPRS level, as well as the application level and the IP level.

##### 5.1.2.13.50 TS 23.216

Single Radio Voice Call Continuity (SRVCC); Stage 2

This Technical Specification specifies the architecture enhancements for Single Radio Voice Call Continuity (SRVCC) between E-UTRAN access and 3GPP2’s 1xCS, and between E-UTRAN access and 3GPP’s UTRAN/GERAN accesses and between UTRAN (HSPA) access and 3GPP’s UTRAN/GERAN accesses, for Circuit Switched (CS) calls that are anchored in the IMS.

##### 5.1.2.13.51 TS 23.221

Architectural requirements

This document covers the architectural requirements for 3GPP systems based on UTRAN, E-UTRAN and Iu mode GERAN. In particular it details the high level requirements for the Circuit Switched (CS) Domain and the stage 2 procedures that span more than one domain/subsystem. The reference model to which these procedures apply can be found within TS 23.002. In addition, A mode to Iu mode handover for CS services is addressed. Detailed architectural requirements within the subsystems are contained within the remainder of the 23 series of specifications e.g. the requirements for the Packet Switched (PS) domain are contained within TS 23.060, TS 23.401 and the requirements for the Bearer Independent CS Core Network are contained in TS 23.205.

##### 5.1.2.13.52 TS 23.226

Global text telephony (GTT); Stage 2

This 3GPP Technical Specification defines the stage 2 description of the real time Text Conversation Feature called Global Text Telephony, GTT. GTT Stage 2 identifies the functional capabilities needed to support the service described in GTT Stage 1.

This TS contains the core functions for a real time Text Conversation Feature GTT, to be used in combination with other media in conversational services.

GTT offers real time conversation in text, to be used alone or in combination with other conversational media, and interworking with current and emerging text conversation features in the fixed networks and other mobile networks.

GTT uses a number of functional entities to realise the requirements of the stage 1 description (TS 22.226). This TS describes how the service requirements are realised with these functional entities. As far as possible existing protocols shall be used for the realisation of the Global Text Telephony Feature. This may include e.g. , SIP, 3G.324, or Circuit Switched Voice service as protocol environments, and CTM, AL1 and RTP/text as transmission protocols. It also means usage of existing text presentation format ITU T Recommendation T.140, common to all GTT text conversation environments.

##### 5.1.2.13.53 TS 23.228

IP Multimedia Subsystem (IMS); Stage 2

This specifications describes the architectural requirement for an IP Multimedia Components incorporated in an UMTS System as well as second generation systems for GSM inside the core network and identify relevant interfaces to the existing system and the new one in between the new components incorporated.

##### 5.1.2.13.54 TS 23.236

Intra-domain connection of Radio Access Network (RAN) nodes to multiple Core Network (CN) nodes

UMTS will build on the success of GSM and is likely to become even more widespread, increasing the importance of a flexible network structure to permit the different operational configurations in which these networks will be deployed. The requirements to have a RNC or BSC controlled by a single MSC server or SGSN lead to certain limitations. Allowing the BSCs and RNCs to connect to a number of MSC servers or SGSNs increases the networks performance in terms of scalability, distributing the network load amongst the serving entities, and reducing the required signalling as the user roams.

##### 5.1.2.13.55 TS 23.237

IP Multimedia Subsystem (IMS) Service Continuity; Stage 2

This document specifies the architectural requirements and procedures for delivery of IMS Service Continuity.

The scope of the specification includes:

– Access Transfer related functionality:

– PS-CS Access Transfer;

– PS-PS Access Transfer;

– PS-PS Access Transfer in conjunction with PS-CS Access Transfer;

– Adding and/or removing media flows to support service;

. MSC Server assisted mid-call feature;

– SRVCC session transfer of IMS emergency session.

– Inter UE Transfer related functionality:

– Establishment and release of a Collaborative Session;

– Addition of media flows to, modification of media flows in, and release of media flows from a Collaborative Session;

– Transfer of media flows from one UE to another;

– Transfer of the Collaborative Session Control with or without transfer of media flows;

– Transfer of all media flows to a target UE without establishing a Collaborative Session;

– Session discovery;

– Inter-UE Transfer initiated by the target UE or by the SCC AS;

– Replication of media flows by means of Inter-UE Transfer procedures;

– Authorization and other aspects to support Inter-UE Transfer across multiple IMS subscriptions.

The solution is restricted to service continuity using IMS procedures, i.e. mobility mechanisms on the IP-CAN level are not within the scope of this specification.

##### 5.1.2.13.56 TS 23.240

3GPP Generic User Profile (GUP); Architecture (Stage 2)

This document defines the stage 2 architecture description to the 3GPP Generic User Profile (GUP), which includes the elements necessary to realise the stage 1 requirements in TS 22.240.

This document includes the GUP reference architecture with descriptions of functional entities, and their interfaces and procedures, as well as the high-level information model for the GUP data.

##### 5.1.2.13.57 TS 23.246

Multimedia Broadcast/Multicast Service (MBMS); Architecture and functional description

This document describes the stage 2 description (architectural solution and functionalities) for the MBMS Bearer Service, which includes, together with MBMS User Services defined in TS 26.346, all the elements necessary to realise the stage 1 requirements in TS 22.146 and TS 22.246. This document encompasses both GPRS and EPS.

##### 5.1.2.13.58 TS 23.251

Network sharing; Architecture and functional description

This document covers the details of Network Sharing for GERAN, UTRAN and E-UTRAN. It shows how several core network operators can share one radio access network and details the impacts on the network architecture. All UEs shall comply with existing requirements, among them PLMN selection and system information reception. This document also defines requirements for network-sharing supporting UEs

##### 5.1.2.13.59 TS 23.261

IP flow mobility and seamless Wireless Local Area Network (WLAN) offload; Stage 2

This document specifies the Stage 2 system description for IP flow mobility between a 3GPP and a WLAN. The technical solution is based on the working principles of DSMIPv62 and it is applicable to both the Evolved Packet System and the I-WLAN mobility architecture. The specification covers the system description of seamless WLAN offload and IP flow mobility between 3GPP and WLAN as well as the respective interactions with the PCC and ANDSF frameworks. The system description for non-seamless WLAN offload is covered in 3GPP TS 23.402. This document specifies also the detailed extensions to S2c and H1 reference points for IP flow mobility. The extensions to the PCC and to the ANDSF framework are specified respectively in 3GPP TS 23.203 and in 3GPP TS 23.402.

##### 5.1.2.13.60 TS 23.271

Functional stage 2 description of Location Services (LCS)

This document specifies the stage 2 of the Location Services (LCS) feature in UMTS, GSM and EPS (for E-UTRAN), which provides the mechanisms to support mobile location services for operators, subscribers and third party service providers.

##### 5.1.2.13.61 TS 23.272

Circuit Switched (CS) fallback in Evolved Packet System (EPS); Stage 2

This document defines the Stage 2 architecture and specification for the CS Fallback and for SMS over SGs for EPS or CS Fallback and SMS over S102. The scope of this document includes the architecture enhancements for functionality to enable fallback from E-UTRAN access to UTRAN/GERAN CS domain access and to CDMA 1x RTT CS domain access, and functionality to reuse of voice and other CS-domain services (e.g. CS UDI video / LCS / USSD) by reuse of the CS domain. The functionality specified to support SMS over SGs does not trigger any CS Fallback to UTRAN/GERAN. The functionality specified to support SMS over S102 does not trigger any CS Fallback to CDMA 1xRTT CS domain

##### 5.1.2.13.62 TS 23.279

Combining Circuit Switched (CS) and IP Multimedia Subsystem (IMS) services; Stage 2

This document provides architectural details to combine CS services and IMS services for using them in parallel between the same two users in a peer-to-peer context. The document provides a detailed description of how capabilities and identities are exchanged to enable the combination of CS and IMS services between the same two UEs

##### 5.1.2.13.63 TS 23.292

IP Multimedia Subsystem (IMS) centralized services; Stage 2

This document specifies the architectural requirements for delivery of consistent services to the user regardless of the attached access type (e.g. CS domain access, or IP-CAN). This is achieved by implementing the services in the IP Multimedia Subsystem (IMS).

##### 5.1.2.13.64 TS 23.401

General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access

This Technical Specification defines the Stage 2 service description for the Evolved 3GPP Packet Switched Domain – also called the Evolved Packet System (EPS) in this document. The Evolved 3GPP Packet Switched Domain provides IP connectivity using the Evolved Universal Terrestrial Radio Access Network (E-UTRAN). The specification also covers mobility between E-UTRAN and pre-E-UTRAN 3GPP radio access technologies.

##### 5.1.2.13.65 TS 23.402

Architecture enhancements for non-3GPP accesses

This Technical Specification defines the Stage 2 service description for providing IP connectivity using non-3GPP accesses to the Evolved 3GPP Packet Switched domain. In addition, for E-UTRAN and non-3GPP accesses, the specification describes the Evolved 3GPP PS Domain where the protocols between its Core Network elements are IETF based.

##### 5.1.2.13.66 TS 23.682

Architecture enhancements to facilitate communications with packet data networks and applications

This document specifies architecture enhancements to facilitate communications with packet data networks and applications (e.g. Machine Type Communication (MTC) applications on the (external) network/MTC servers) as per the use cases and service requirements defined in TS 22.368, TS 22.101 and related 3GPP requirements specifications. Both roaming and non-roaming scenarios are covered.

– Device triggering by applications/servers (e.g.: MTC applications on the (external) network/MTC servers).

– PS-Only support with and without MSISDN.

##### 5.1.2.13.67 TR 23.930

Iu principles

This specification describes the requirements on the Iu and studies relevant principles to guide further standardization of the related interface(s).

##### 5.1.2.13.68 TS 26.071

Mandatory speech CODEC speech processing functions; AMR speech Codec; General description

This specification describes an introduction to the set of the adaptive multi-rate (AMR) specifications.

##### 5.1.2.13.69 TS 26.090

Mandatory Speech Codec speech processing functions; Adaptive Multi-Rate (AMR) speech codec; Transcoding functions

This specification describes a detailed description of the AMR speech codec transcoding functions.

##### 5.1.2.13.70 TS 26.091

Mandatory Speech Codec speech processing functions; Adaptive Multi-Rate (AMR) speech codec; Error concealment of lost frames

This specification describes example procedures for the error concealment, also called frame substitution or muting procedure, of lost speech or silence indicator frames.

##### 5.1.2.13.71 TS 26.092

Mandatory speech codec speech processing functions; Adaptive Multi-Rate (AMR) speech codec; Comfort noise aspects

This specification describes the detailed requirements for the correct operation of the background acoustic noise evaluation, noise parameter encoding/decoding and comfort noise generation for the AMR speech codec during source controlled rate (SCR) operation.

##### 5.1.2.13.72 TS 26.093

Mandatory speech codec speech processing functions Adaptive Multi-Rate (AMR) speech codec; Source controlled rate operation

This specification describes the operation of the AMR speech codec during SCR operation.

##### 5.1.2.13.73 TS 26.094

Mandatory speech codec speech processing functions; Adaptive Multi-Rate (AMR) speech codec; Voice Activity Detector (VAD)

This specification describes two alternatives for the VAD to be used during SCR operation in conjunction with the AMR codec.

##### 5.1.2.13.74 TS 26.110

Codec for circuit switched multimedia telephony service; General description

This specification describes an introduction to the set of specifications for the support of circuit-switched 3G-324M multimedia telephony service.

##### 5.1.2.13.75 TS 26.111

Codec for circuit switched multimedia telephony service; Modifications to H.324

This specification describes the modifications applicable to the ITU-T Recommendation H.324, Annex C for the support of circuit-switched 3G 324M multimedia telephony service.

##### 5.1.2.13.76 TS 26.346

Multimedia Broadcast/Multicast Service (MBMS); Protocols and codecs

This document defines a set of media codecs, formats and transport/application protocols to enable the deployment of MBMS user services either over the MBMS bearer service or other UMTS Bearer Services within the 3GPP system.

In this version of the specification, only MBMS download and streaming delivery methods are specified. This document does not preclude the use of other delivery methods.

This document includes information applicable to network operators, service providers and manufacturers.

##### 5.1.2.13.77 TR 26.911

Codec(s) for Circuit-Switched (CS) multimedia telephony service; Terminal implementor’s guide

This report describes non-mandatory Recommendations for the use of the different codec implementation options for the circuit-switched 3G-324M multimedia telephony service based on ITU-T Recommendation H.324, Annex C. These Recommendations address issues specific to the third generation operating environment, including guaranteeing sufficient error resilience and inter-working between terminals.

##### 5.1.2.13.78 TS 32.101

Telecommunication management; Principles and high level requirements

This document establishes and defines the management principles and high-level requirements for the management of PLMNs. In particular, this document identifies the requirements for:

– the upper level of a management system;

– the reference model, showing the elements the management system interacts with;

– the network operator processes needed to run, operate and maintain a network;

– the functional architecture of the management system;

– the principles to be applied to management interfaces.

The requirements identified in this document are directed to the further development of management specifications as well as the development of management products. This document can be seen as guidance for the development of all other technical specifications addressing the management of PLMNs.

##### 5.1.2.13.79 TS 32.102

Telecommunication management; Architecture

This document identifies and standardizes the most important and strategic contexts in the physical architecture for the management of PLMNs. It serves as a framework to help define a telecom management physical architecture for a planned PLMN and to adopt standards and provide products that are easy to integrate. The requirements identified in this document are applicable to all further development of 3GPP Telecom Management specifications as well as the development of PLMN Management products. This document can be seen as guidance for the development of all other technical specifications addressing the management of PLMNs, except TS 32.101.

##### 5.1.2.13.80 TS 33.102

3G security; Security architecture

Provides a specification of all security mechanisms and protocols, except algorithms.

##### 5.1.2.13.81 TS 33.103

3G security; Integration guidelines

Defines how elements of the 3G-security architecture are to be integrated into some entities of the system architecture.

##### 5.1.2.13.82 TS 33.105

3G Security; Cryptographic algorithm requirements

Defines requirements for standard cipher and integrity algorithm.

##### 5.1.2.13.83 TS 33.106

3G security; Lawful interception requirements

Defines all requirements for network based lawful interception.

##### 5.1.2.13.84 TS 33.107

3G security; Lawful interception architecture and functions

This document describes the architecture and functional requirements within a Third Generation Mobile Communication System (3GMS) and the Evolved Packet System (EPS).

The specification shows the service requirements from a Law Enforcement point of view only. The aim of this document is to define a 3GMS and EPS interception system that supports a number of regional interception regulations, but these regulations are not repeated here as they vary. Regional interception requirements shall be met in using specific (regional) mediation functions allowing only required information to be transported.

##### 5.1.2.13.85 TS 33.108

3G security; Handover interface for Lawful Interception (LI)

This specification addresses the handover interfaces for Lawful Interception (LI) of Packet-Data Services, Circuit Switched Services, Multimedia Services within the UMTS network and Evolved Packet System (EPS). The handover interface in this context includes the delivery of Intercept Related Information (HI2) and Content of Communication (HI3) to the Law Enforcement Monitoring Facility.

##### 5.1.2.13.86 TS 33.110

Key establishment between a Universal Integrated Circuit Card (UICC) and a terminal

This document describes the security features and mechanisms to provision a shared key between a UICC and a terminal that may host the UICC or be connected to the device hosting the UICC via a local interface. Candidate applications to use this key establishment mechanism include but are not restricted to secure channel between a UICC and a terminal.

The scope of this specification includes an architecture overview and the detailed procedure how to establish the shared key between the UICC and the terminal.

##### 5.1.2.13.87 TS 33.120

Security Objectives and Principles

Elaborates on the basic principles underlying the security.

##### 5.1.2.13.88 TS 33.141

Presence service; Security

This document is the Stage 2 specification for the security requirements, security architecture, security features and security mechanisms for the Presence Service, which includes the elements necessary to realise the requirements in TS 22.141 and TS 23.141. As far as SIP-based procedures are concerned, this specification refers to TS 33.203. The main content of this specification is the security for the Ut reference point, which is HTTP–based, as applied in presence services.

The document includes information applicable to network operators, service providers and manufacturers.

##### 5.1.2.13.89 TS 33.203

3G security; Access security for IP-based services

The scope for this technical specification is to specify the security features and mechanisms for secure access to the IM subsystem (IMS) for the 3G mobile telecommunication system.

Since the scope also encompasses the use of these security features and mechanisms for secure access to IMS in the context of fixed broadband networks and 3GPP2 networks, Annex L and Annex S specify how the material in the main body and other normative Annexes of this document apply to the fixed broadband networks and 3GPP2 networks respectively.

The IMS supports IP Multimedia applications such as video, audio and multimedia conferences. SIP, Session Initiation Protocol, was chosen as the signalling protocol for creating and terminating Multimedia sessions, cf. RFC 3261. This specification only deals with how the SIP signalling is protected between the subscriber and the IMS, how the subscriber is authenticated and how the subscriber authenticates the IMS.

##### 5.1.2.13.90 TS 33.204

3G Security; Network Domain Security (NDS); Transaction Capabilities Application Part (TCAP) user security

This technical specification covers the security mechanisms and procedures necessary to protect all TCAP user messages which are sent between different security domains. The complete set of enhancements and extensions to facilitate security protection for the TCAP protocol is termed TCAPsec and it covers transport security in the TCAP protocol itself and the security management procedures. This technical specification contains the stage 2 specification for security protection of the TCAP protocol. The actual implementation (stage 3) specification can be found in TS 29.204.

##### 5.1.2.13.91 TS 33.210

3G security; Network Domain Security (NDS); IP network layer security

This document defines the security architecture for network domain IP based control planes, which shall be applied to NDS/IP-networks (i.e. 3GPP and fixed broadband networks). The scope of network domain control plane security is to cover the control signalling on selected interfaces between network elements of NDS/IP networks.

##### 5.1.2.13.92 TS 33.220

Generic Authentication Architecture (GAA); Generic Bootstrapping Architecture (GBA)

This document describes the security features and a mechanism to bootstrap authentication and key agreement for application security from the 3GPP AKA mechanism. Candidate applications to use this bootstrapping mechanism include but are not restricted to subscriber certificate distribution TS 33.221. Subscriber certificates support services whose provision mobile operator assists, as well as services that mobile operator provides. The scope of this specification includes a generic AKA bootstrapping function, an architecture overview and the detailed procedure how to bootstrap the credential. Clause 4 of this specification describes a mechanism, called GBA\_ME, to bootstrap authentication and key agreement, which does not require any changes to the UICC. Clause 5 of this specification describes a mechanism, called GBA\_U, to bootstrap authentication and key agreement, which does require changes to the UICC, but provides enhanced security by storing certain derived keys on the UICC.

##### 5.1.2.13.93 TS 33.221

Generic Authentication Architecture (GAA); Support for subscriber certificates

This document describes subscriber certificate distribution by means of generic bootstrapping architecture (GBA) TS 33.220. Subscriber certificates support services whose provision the mobile operator assists, as well as services that are offered by the mobile operator. The scope of this specification presents signalling procedures for support of issuing certificates to subscribers and the standard format of certificates and digital signatures. It is not intended to duplicate existing standards being developed by other groups on these topics, and will reference these where appropriate.

##### 5.1.2.13.94 TS 33.222

Generic Authentication Architecture (GAA); Access to network application functions using Hypertext Transfer Protocol over Transport Layer Security (HTTPS)

This document specifies secure access methods to Network Application Functions (NAF) using HTTP over TLS in the Generic Authentication Architecture (GAA), and provides Stage 2 security requirements, principles and procedures for the access. This document describes both direct access to an Application Server (AS) and access to an Application Server through an Authentication Proxy (AP).

##### 5.1.2.13.95 TS 33.223

Generic Authentication Architecture (GAA); Generic Bootstrapping Architecture (GBA) Push function

This document specifies a Push Function as a functional add-on for the Generic Authentication Architecture (GAA).

##### 5.1.2.13.96 TS 33.224

Generic Authentication Architecture (GAA); Generic Bootstrapping Architecture (GBA) push layer

This document specifies a generic push layer that makes use of the GBA Push Function as specified in TS 33.223. The GPL specification includes a message format, cipher suites and processing model. GPL assumes that keys and other SA parameters have been preinstalled in the Push-NAF and UE in the form of a NAF SA. GPL is a protection protocol that can be applied in a unidirectional fashion. The rationale for GPL is that having each application specify its own security mechanisms would for obvious reasons lead to duplication of work, specifications and implementations. Using a generic secure push layer avoids these problems. A generic secure push layer may also relieve the applications using the service of having to be aware of inner working of the security layer.

##### 5.1.2.13.97 TS 33.234

3G security; Wireless Local Area Network (WLAN) interworking security

This document specifies the security architecture; trust model and security requirements for the interworking of the 3GPP System and WLAN Access Networks. This specification is not limited to WLAN technologies. It is also valid for other IP based Access Networks that support the same security capabilities towards the interworking system as WLAN does. Specifications of the appropriate mechanisms for user and network authentication, key management, service authorization, confidentiality and integrity protection of user and signalling data are also provided.

##### 5.1.2.13.98 TS 33.246

3G Security; Security of Multimedia Broadcast/Multicast Service (MBMS)

The Technical Specification covers the security procedures of the Multimedia Broadcast/Multicast Service (MBMS) for 3GPP systems (UTRAN, GERAN and E-UTRAN). MBMS is a 3GPP system network bearer service over which many different applications could be carried. The actual method of protection may vary depending on the type of MBMS application.

##### 5.1.2.13.99 TS 33.259

Key establishment between a UICC hosting device and a remote device

This document describes the security features and mechanisms to provision a shared key between a UICC Hosting Device and a Remote Device connected via a local interface. The shared secret is then intended to be used to secure the interface between the Remote Device and the UICC hosting device. Candidate applications to use this key establishment mechanism include but are not restricted to Personal Network Management (see TS 22.259). The scope of this specification includes an architecture overview and the detailed procedure how to establish the shared key between the UICC Hosting Device and the Remote Device. This is different from the Technical Specification TS 33.110 that describes an architecture overview and the detailed procedure how to establish the shared key between the UICC itself and the terminal hosting the UICC. The use cases utilizing the mechanisms described in this specification are seen to be different to the use cases where "Key establishment between a UICC and a terminal", IETF RFC 4279 is utilized. The solution described in this document is built on the existing infrastructure defined in "GBA", TS 33.220.

##### 5.1.2.13.100 TS 33.310

Network Domain Security (NDS); Authentication Framework (AF)

The scope of this Technical Specification is limited to authentication of network elements, which are using NDS/IP or TLS. In the case of NDS/IP this specification includes both the authentication of Security Gateways (SEG) at the corresponding Za-interfaces and the authentication between NEs and between NEs and SEGs at the Zb-interface. Authentication of end entities (i.e. NEs and SEGs) in the intra-operator domain is considered an internal issue for operators. This is quite much in line with 3GPP TS 33.210 which states that only Za is mandatory and that the security domain operator can decide if the Zb-interface is deployed or not, as the Zb-interface is optional for implementation. Validity of certificates may be restricted to the operator's domain in case of Zb interface or in case of Za-interface between two security domains of the same operator. In the case of TLS this Specification concentrates on authentication of TLS entities across inter-operator links. For example, TLS is specified for inter-operator communications between IMS and non-IMS networks TS 33.203 and on the Zn' interface in GBA TS 33.220. Authentication of TLS entities across intra-operator links is considered an internal issue for operators. However, NDS/AF can easily be adapted to the intra-operator use case since it is just a simplification of the inter-operator case when all TLS NEs and the PKI infrastructure belong to the same operator. Validity of certificates may be restricted to the operator's domain. An Annex contains information on the manual handling of TLS certificates in case automatic enrolment and revocation according to NDS/AF for TLS is not implemented.

##### 5.1.2.13.101 TS 33.320

Security of Home Node B (HNB) / Home evolved Node B (HeNB)

This document specifies the security architecture for the H(e)NB subsystem. This includes security requirements on Home Node Bs, Home eNode Bs, and other H(e)NB-associated network nodes (e.g. SeGW and H(e)MS), as well as the procedures and features which are provided to meet those requirements.

##### 5.1.2.13.102 TS 33.328

IP Multimedia Subsystem (IMS) media plane security

This document presents IMS media plane security for RTP based media which is designed to meet the following three main objectives:

– to provide security for media usable across all access networks

– to provide an end-to-end (e2e) media security solution to satisfy major user categories

– to provide end-to-end (e2e) media security for important user groups like enterprises, National Security and Public Safety (NSPS) organizations and different government authorities who may have weaker trust in the inherent IMS security and/or may desire to provide their own key management service.

The media plane security in this release of the TS is based on the well established protocol SRTP. Key management solutions for SRTP are defined in this specification.

##### 5.1.2.13.103 TS 33.401

3GPP System Architecture Evolution (SAE); Security architecture

This document specifies the security architecture, i.e., the security features and the security mechanisms for the Evolved Packet System and the Evolved Packet Core, and the security procedures performed within the evolved Packet System (EPS) including the Evolved Packet Core (EPC) and the Evolved UTRAN (E-UTRAN).

##### 5.1.2.13.104 TR 33.901

Criteria for cryptographic Algorithm design process

This report describes the process used to design cipher and integrity algorithm.

##### 5.1.2.13.105 TR 33.902

Formal Analysis of the 3G Authentication Protocol

Formal analysis using BAN and temporal logic of authentication mechanism.

##### 5.1.2.13.106 TR 33.905

Recommendations for Trusted Open Platforms

This technical report investigates relevant trust standards and technologies, both existing as well as the ones that are work-in-progress. It develops the recommendations for trusted open platforms for delivery of new applications and services to open platforms.

##### 5.1.2.13.107 TR 33.908

3G Security; General report on the design, specification and evaluation of 3GPP standard confidentiality and integrity algorithms

This technical report is a description of the work undertaken by SAGE Task Force for the design of the standard 3GPP Confidentiality and Integrity Algorithms (SAGE TF 3GPP).

With regard to the design of the algorithms, the scope of this document is confined to a description of the design criteria, the design methodology and an outline of the content and structure of the specification and test data documents.

The standard 3GPP Confidentiality and Integrity Algorithms are based on a Block Cipher named KASUMI. The algorithms specification and associated test data are documented in the Specification of the 3GPP Confidentiality and Integrity Algorithms which consists of the following four documents:

– Specification of the 3GPP Confidentiality and Integrity Algorithms; Document 1: f8 and f9 specifications (TS 35.201).

– Specification of the 3GPP Confidentiality and Integrity Algorithms; Document 2: KASUMI algorithm specification (TS 35.202).

– Specification of the 3GPP Confidentiality and Integrity Algorithms; Document 3: Implementors' test data (TS 35.203).

– Specification of the 3GPP Confidentiality and Integrity Algorithms; Document 4: Design conformance test data (TS 35.204).

With regard to the evaluation of the algorithm, the scope of this report is restricted to a description of the evaluation criteria, the method of evaluation and the main conclusions from the evaluation that led to the Task Force approving the specification. A detailed summary of conclusions of the evaluation is provided in a public evaluation report TS 33.909 produced by the Task Force.

##### 5.1.2.13.108 TR 33.909

3G Security; Report on the design and evaluation of the MILENAGE algorithm set; Deliverable 5: An example algorithm for the 3GPP authentication and key generation functions

This public report contains a detailed summary of the work performed during the design and evaluation of the 3GPP Authentication Functions denoted as the MILENAGE algorithm set. It contains all results and findings from this work and should be read as a supplement to the specifications of the algorithms in TS 35.205 and the general project report, TS 35.209.

##### 5.1.2.13.109 TR 33.918

Generic Authentication Architecture (GAA); Early implementation of Hypertext Transfer Protocol over Transport Layer Security (HTTPS) connection between a Universal Integrated Circuit Card (UICC) and a Network Application Function (NAF)

This document gives guidance on how to perform an early implementation of HTTPS connections between a UICC-based application and a Network Application Function in the Generic Authentication Architecture (GAA).

##### 5.1.2.13.110 TR 33.919

3G Security; Generic Authentication Architecture (GAA); System description

This 3GPP Technical Report gives an overview of the different mechanisms that mobile applications can rely upon for authentication between server and client (i.e. the UE). Additionally it provides guidelines related to the use of GAA and to the choice of authentication mechanism in a given situation and for a given application. To this end the TR puts the different 3GPP GAA related specifications into perspective. It clarifies the logic for having the technical specifications and technical reports, sketches their content and explains the inter-relation between these 3GPP TSs and TRs and their relation with this TR. The heart of GAA consists out of the Generic Bootstrapping Architecture (GBA): The GBA core specifications consist out of TS 33.220, TS 24.109 and TS 29.109. GBA in turn is then used by many other TSs and TRs to enable specific usages e.g. HTTPS, subscriber certificates.

##### 5.1.2.13.111 TR 33.920

SIM card based Generic Bootstrapping Architecture (GBA); Early implementation feature

This document describes which change requests are to be implemented in addition to the Release 6 specifications TS 33.220, TS 29.109, and TS 24.109 to enable the usage of 2G GBA.

##### 5.1.2.13.112 TR 33.924

Identity management and 3GPP security interworking; Identity management and Generic Authentication Architecture (GAA) interworking

The objective is to extend identity management as outlined in TS 33.220, TS 33.222, TS 29.109 and TR 33.980 with the latest developments on identity management outside of the 3GPP sphere. This will allow a better integration and usage of identity management for services in 3GPP and seamless integration with existing services that are not standardized in 3GPP. This report outlines the interworking of GBA and OpenID.

##### 5.1.2.13.113 TR 33.937

Study of mechanisms for Protection against Unsolicited Communication for IMS (PUCI)

The scope of this report is to highlight alternative solutions that could be used to protect mobile subscribers from receiving unsolicited communication over IMS and to analyze these solutions in respect of their requirements and impacts on standardized interfaces. This activity took into account the study done in ETSI TISPAN TR 187 009 on “Feasibility study of prevention of unsolicited communications in the NGN”.

##### 5.1.2.13.114 TR 33.980

Liberty Alliance and 3GPP security interworking; Interworking of Liberty Alliance Identity Federation Framework (ID-FF), Identity Web Services Framework (ID-WSF) and Generic Authentication Architecture (GAA)

This document provides guidelines on the interworking of the Generic Authentication Architecture (GAA) and the Liberty Alliance architecture. The document studies the details of possible interworking methods between the Security Assertion Markup Language v2.0, SAML v2.0 (or alternatively the Liberty Alliance Identity Federation Framework, ID-FF), the Identity Web Services Framework (ID-WSF) , the Security Assertion Markup Language (SAML) and a component of GAA called the Generic Bootstrapping Architecture (GBA). This document only applies if Liberty Alliance and GBA or SAML v2.0 and GBA are used in combination.

##### 5.1.2.13.115 TS 35.201

3G Security; Specification of the 3GPP confidentiality and integrity algorithms; Document 1: f8 and f9 specification

This specification gives a detailed specification of the 3GPP confidentiality algorithm f8, and the 3GPP integrity algorithm f9.

##### 5.1.2.13.116 TS 35.202

3G Security; Specification of the 3GPP confidentiality and integrity algorithms; Document 2: Kasumi specification

This specification gives a detailed specification of the 3GPP Algorithm KASUMI. KASUMI is a block cipher that forms the heart of the 3GPP confidentiality algorithm f8, and the 3GPP integrity algorithm f9.

##### 5.1.2.13.117 TS 35.203

3G Security; Specification of the 3GPP confidentiality and integrity algorithms; Document 3: Implementors' test data

This specification gives detailed test data for implementors of the algorithm set. It provides visibility of the internal state of the algorithm to aid in the realisation of the algorithms.

##### 5.1.2.13.118 TS 35.204

3G Security; Specification of the 3GPP confidentiality and integrity algorithms; Document 4: Design conformance test data

This specification gives black-box test data for the algorithm set. The test data has been selected to give a high degree of confidence that the implementation is correct. However, no claim is made that conformance with this test data guarantees a correct implementation.

##### 5.1.2.13.119 TS 35.205

3G Security; Specification of the MILENAGE algorithm set: An example algorithm set for the 3GPP authentication and key generation functions f1, f1\*, f2, f3, f4, f5 and f5\*; Document 1: General

This report is a description of the work undertaken by an ETSI SAGE Task Force on the design of the Milenage Algorithm Set: an example set of 3GPP Authentication and Key Generation Functions.

The 3GPP Authentication and Key Generation Functions are not standardized. An example set of these algorithms has been produced on request from 3GPP with the intent that it shall be offered to the UMTS operators, to utilise instead of developing their own. An ETSI SAGE Task Force has carried out this work.

The requirement specification from 3GPP SA3 stated that operator personalisation of the example set must be possible and that the basic kernel must be possible to replace.

The example set is based on the block cipher Rijndael, which at the time was one of the AES candidates and the specification describes how the 7 algorithms used in 3GPP authentication and key generation are scheduled around this basic kernel. The specification and associated test data for the example algorithm set is documented in three documents:

– A formal specification of both the modes and the example kernel

– A detailed test data document, covering modes and the example kernel

– A "black box" test data document

A detailed summary of the evaluation is provided in a public evaluation report, ETSI SAGE 3GPP AF TF: "Report on the design and evaluation of 3GPP Authentication and Key Generation Functions". This report gives an overview of the overall work by the task force.

##### 5.1.2.13.120 TS 35.206

3G Security; Specification of the MILENAGE algorithm set: An example algorithm set for the 3GPP authentication and key generation functions f1, f1\*, f2, f3, f4, f5 and f5\*; Document 2: Algorithm specification

This document has been prepared by the 3GPP Task Force, and contains an example set of algorithms which may be used as the authentication and key generation functions f1, f1\*, f2, f3, f4, f5 and f5\*. (It is not mandatory that the particular algorithms specified in this document are used - all seven functions are operator-specifiable rather than being fully standardised.)

##### 5.1.2.13.121 TS 35.207

3G Security; Specification of the MILENAGE algorithm set: An example algorithm set for the 3GPP authentication and key generation functions f1, f1\*, f2, f3, f4, f5 and f5\*; Document 3: Implementors’ test data

This document has been prepared by the 3GPP Task Force, and contains an example set of algorithms which may be used as the authentication and key generation functions f1, f1\*, f2, f3, f4, f5 and f5\*. (It is not mandatory that the particular algorithms specified in this document are used - all seven functions are operator-specifiable rather than being fully standardised.)

##### 5.1.2.13.122 TS 35.208

3G Security; Specification of the MILENAGE algorithm set: An example algorithm set for the 3GPP authentication and key generation functions f1, f1\*, f2, f3, f4, f5 and f5\*; Document 4: Design conformance test data

This document has been prepared by the 3GPP Task Force, and contains an example set of algorithms which may be used as the authentication and key generation functions f1, f1\*, f2, f3, f4, f5 and f5\*. (It is not mandatory that the particular algorithms specified in this document are used - all seven functions are operator-specifiable rather than being fully standardised.)

##### 5.1.2.13.123 TS 35.215

Specification of the 3GPP Confidentiality and Integrity Algorithms UEA2 & UIA2; Document 1: UEA2 and UIA2 specifications

This document specifies the 3GPP confidentiality and integrity algorithms known as UEA2 and UIA2.

##### 5.1.2.13.124 TS 35.216

Specification of the 3GPP Confidentiality and Integrity Algorithms UEA2 & UIA2; Document 2: SNOW 3G specification

This document specifies the 3GPP confidentiality and integrity algorithms known as UEA2 and UIA2.

##### 5.1.2.13.125 TS 35.217

Specification of the 3GPP Confidentiality and Integrity Algorithms UEA2 & UIA2; Document 3: Implementors' test data

This document specifies the 3GPP confidentiality and integrity algorithms known as UEA2 and UIA2.

##### 5.1.2.13.126 TS 35.218

Specification of the 3GPP Confidentiality and Integrity Algorithms UEA2 & UIA2; Document 4: Design conformance test data

This document specifies the 3GPP confidentiality and integrity algorithms known as UEA2 and UIA2.

##### 5.1.2.13.127 TR 35.909

3G Security; Specification of the MILENAGE algorithm set: an example algorithm set for the 3GPP authentication and key generation functions f1, f1\*, f2, f3, f4, f5 and f5\*; Document 5: Summary and results of design and evaluation

This report contains a detailed summary of the work performed during the design and evaluation of the 3GPP Authentication Functions denoted as the MILENAGE algorithm set. It contains all results and findings from this work and should be read as a supplement to the specifications of the algorithms in ETSI/SAGE Specification of the MILENAGE Algorithm Set: an Example Algorithm Set for the 3GPP Authentication and Key generation Functions, f1, f1\*, f2, f3, f4, f5 and f5\*; Document 1: Algorithm Specification. and the general project report on the Design and Evaluation of the 3GPP Authentication and Key generation Functions.

##### 5.1.2.13.128 TR 35.919

Specification of the 3GPP Confidentiality and Integrity Algorithms UEA2 & UIA2; Document 5: Design and evaluation report

This document specifies the 3GPP confidentiality and integrity algorithms known as UEA2 and UIA2.

#### 5.1.2.14 Vocabulary

##### 5.1.2.14.1 TR 21.905

Vocabulary for 3GPP Specifications

Document 21.905 is a collection of terms, definitions and abbreviations related to the baseline documents defining the objectives and systems framework. This document provides a tool for further work on the technical documentation and facilitates their understanding.

### 5.3.2 Detailed specification of the radio interface

The standards contained in this section are derived from the global core specifications for IMT 2000 contained at http://ties.itu.int/u/itu-r/ede/rsg5/IMT-2000/GCS/GCSrev11/.

The following notes apply to the sections below, where indicated:

1) The relevant SDOs should make their reference material available from their Web site.

2) This information was supplied by the recognized external organizations and relates to their own deliverables of the transposed global core specification.

#### 5.3.2.1 25.200 series

##### 5.3.2.1.1 TS 25.201

Physical layer - general description

This specification gives a general description of the physical layer of the UTRA radio interface.

##### 5.3.2.1.2 TS 25.202

7.68 Mcps Time Division Duplex (TDD) option; Overall description: Stage 2

This document is the overall technical specification for the support of the 7.68 Mcps TDD option in UTRA.

##### 5.3.2.1.3 TS 25.221

Physical channels and mapping of transport channels onto physical channels (TDD)

This specification describes the characteristics of the Layer 1 transport channels and physical channel in the TDD mode of UTRA. The main objectives of the document are to be a part of the full description of the UTRA Layer 1, and to serve as a basis for the drafting of the actual technical specification (TS).

##### 5.3.2.1.4 TS 25.222

Multiplexing and channel coding (TDD)

This specification describes multiplexing, channel coding and interleaving for UTRA physical layer TDD mode.

##### 5.3.2.1.5 TS 25.223

Spreading and modulation (TDD)

This specification describes the characteristics of the spreading and modulation in the TDD mode. The main objectives of the document are to be a part of the full description of the Layer 1, and to serve as a basis for the drafting of the actual technical specification (TS).

##### 5.3.2.1.6 TS 25.224

Physical layer procedures (TDD)

This specification describes the physical layer procedures in the TDD mode of UTRA.

##### 5.3.2.1.7 TS 25.225

Physical layer; Measurements (TDD)

This specification describes the description of the measurements done at the UE and network in order to support operation in idle mode and connected mode for TDD mode.

#### 5.3.2.2 25.300 series

##### 5.3.2.2.1 TS 25.301

Radio interface protocol architecture

This specification describes an overview and overall description of the UE-UTRAN radio interface protocol architecture. Details of the radio protocols will be specified in companion documents.

##### 5.3.2.2.2 TS 25.302

Services provided by the physical layer

This specification describes a technical specification of the services provided by the physical layer of UTRA to upper layers.

##### 5.3.2.2.3 TS 25.303

Interlayer procedures in Connected Mode

This specification describes informative interlayer procedures to perform the required tasks. This specification attempts to provide a comprehensive overview of the different states and transitions within the connected mode of universal mobile telecommunications system (UMTS) terminal.

##### 5.3.2.2.4 TS 25.304

User Equipment (UE) procedures in idle mode and procedures for cell reselection in connected mode

This specification describes the overall idle mode process for the UE and the functional division between the non-access stratum and access stratum in the UE. The UE is in idle mode when the connection of the UE is closed on all layers, e.g., there is neither an MM connection nor an RRC connection. This specification presents also examples of inter-layer procedures related to the idle mode processes and describes idle mode functionality of a dual mode UMTS/GSM UE.

##### 5.3.2.2.5 TS 25.305

Stage 2 functional specification of User Equipment (UE) positioning in UTRAN

This document specifies the Stage 2 of the UE Positioning function of UTRAN, which provides the mechanisms to support the calculation of the geographical position of a UE.

##### 5.3.2.2.6 TS 25.306

UE Radio Access capabilities

This document identifies the parameters of the access stratum part of the UE radio access capabilities. Furthermore, some reference configurations of these values are defined. The intention is that these configurations will be used for test specifications.

##### 5.3.2.2.7 TS 25.307

Requirements on User Equipments (UEs) supporting a release-independent frequency band

This document specifies requirements on UEs supporting a frequency band that is independent of release.

##### 5.3.2.2.8 TS 25.308

High Speed Downlink Packet Access (HSDPA); Overall description; Stage 2

This document is a technical specification of the overall support of High Speed Downlink Packet Access in UTRA.

##### 5.3.2.2.9 TS 25.319

Enhanced uplink; Overall description; Stage 2

This document is a technical specification of the overall support of FDD and TDD Enhanced Uplink in UTRA.

##### 5.3.2.2.10 TS 25.321

Medium Access Control (MAC) protocol specification

This specification describes the MAC protocol.

##### 5.3.2.2.11 TS 25.322

Radio Link Control (RLC) protocol specification

This specification describes the RLC protocol.

##### 5.3.2.2.12 TS 25.323

Packet Data Convergence Protocol (PDCP) specification

This document provides the description of the Packet Data Convergence Protocol (PDCP). PDCP provides its services to the NAS at the UE or the relay at the Radio Network Controller (RNC). PDCP uses the services provided by the Radio Link Control (RLC) sublayer.

##### 5.3.2.2.13 TS 25.324

Broadcast/Multicast Control (BMC)

This document provides the description of the Broadcast/Multicast Control Protocol (BMC). This protocol adapts broadcast and multicast services on the radio interface.

##### 5.3.2.2.14 TS 25.331

Radio Resource Control (RRC); Protocol specification

This specification describes the RRC protocol for the radio system. The scope of this specification contains also the information to be transported in a transparent container between source RNC and target RNC in connection to SRNC relocation.

##### 5.3.2.2.15 TS 25.346

Introduction of the Multimedia Broadcast/Multicast Service (MBMS) in the Radio Access Network (RAN); Stage 2

This document is a technical specification of the overall support of Multimedia Broadcast and Multicast Services in UTRA.

#### 5.3.2.3 25.400 series

##### 5.3.2.3.1 TS 25.401

UTRAN overall description

This specification describes the overall architecture of the UTRAN, including internal interfaces and assumptions on the radio and Iu interfaces.

##### 5.3.2.3.2 TS 25.402

Synchronisation in UTRAN Stage 2

This document constitutes the Stage 2 specification of different synchronisation mechanisms in UTRAN and on Uu.

##### 5.3.2.3.3 TS 25.410

UTRAN Iu interface: General aspects and principles

This specification describes an introduction to the 25.41x series of technical specifications that define the Iu interface for the interconnection of RNC component of the UTRAN to the CN.

##### 5.3.2.3.4 TS 25.411

UTRAN Iu interface layer 1

This specification describes the standards allowed to implement Layer 1 on the Iu interface. The specification of transmission delay requirements and O&M requirements are not in the scope of this specification.

##### 5.3.2.3.5 TS 25.412

UTRAN Iu interface signalling transport

This specification describes the standards for Signalling Transport to be used across Iu Interface.

##### 5.3.2.3.6 TS 25.413

UTRAN Iu interface Radio Access Network Application Part (RANAP) signalling

This specification describes the signalling between the CN and the UTRAN over the Iu interface.

##### 5.3.2.3.7 TS 25.414

UTRAN Iu interface data transport and transport signalling

This specification describes the standards for user data transport protocols and related signalling protocols to establish user plane transport bearers over the Iu interface.

##### 5.3.2.3.8 TS 25.415

UTRAN Iu interface user plane protocols

This specification describes the protocols being used to transport and control over the Iu interface, the Iu user data streams.

##### 5.3.2.3.9 TS 25.419

UTRAN Iu-BC interface: Service Area Broadcast Protocol (SABP)

This document specifies the Service Area Broadcast Protocol (SABP) between the Cell Broadcast Centre (CBC) and the Radio Network Controller (RNC).

##### 5.3.2.3.10 TS 25.420

UTRAN Iur interface general aspects and principles

This specification describes an introduction to the TSG RAN TS 25.42x series of technical specifications that define the Iur interface. It is a logical interface for the interconnection of two RNC components of the UTRAN.

##### 5.3.2.3.11 TS 25.421

UTRAN Iur interface layer 1

This specification describes the standards allowed to implement Layer 1 on the Iur interface. The specification of transmission delay requirements and O&M requirements are not in the scope of this specification.

##### 5.3.2.3.12 TS 25.422

UTRAN Iur interface signalling transport

This specification describes the standards for Signalling Transport to be used across Iur Interface.

##### 5.3.2.3.13 TS 25.423

UTRAN Iur interface Radio Network Subsystem Application Part (RNSAP) signalling

This specification describes the radio network layer signalling procedures between RNCs in UTRAN.

##### 5.3.2.3.14 TS 25.424

UTRAN Iur interface data transport & transport signalling for Common Transport Channel data streams

This specification describes the UTRAN RNS-RNS (Iur) interface data transport and transport signalling for common transport channel data streams.

##### 5.3.2.3.15 TS 25.425

UTRAN Iur interface user plane protocols for Common Transport Channel data streams

This specification describes the UTRAN RNS-RNS (Iur) interface user plane protocols for common transport channel data streams.

##### 5.3.2.3.16 TS 25.426

UTRAN Iur and Iub interface data transport & transport signalling for DCH data streams

This specification describes the transport bearers for the DCH data streams on UTRAN Iur and Iub interfaces. The corresponding transport network control plane is also specified. The physical layer for the transport bearers is outside the scope of this TS.

##### 5.3.2.3.17 TS 25.427

UTRAN Iub/Iur interface user plane protocol for DCH data streams

This specification describes the UTRAN Iur and Iub interfaces user plane protocols for dedicated transport channel data streams.

##### 5.3.2.3.18 TS 25.430

UTRAN Iub Interface: general aspects and principles

This specification describes the TSG RAN TS 25.43x series of UMTS technical specifications that define the Iub interface. The Iub interface is a logical interface for the interconnection of Node B and RNC components of the UTRAN.

##### 5.3.2.3.19 TS 25.431

UTRAN Iub interface Layer 1

This specification describes the standards allowed to implement Layer 1 on the Iub interface. The specification of transmission delay requirements and O&M requirements is not in the scope of this specification.

##### 5.3.2.3.20 TS 25.432

UTRAN Iub interface: signalling transport

This specification describes the signalling transport related to the Node B application part (NBAP) signalling to be used across the Iub interface. The Iub interface is a logical interface for the interconnection of Node B and RNC components of the UTRAN. The RNC signalling between these nodes is based on NBAP.

##### 5.3.2.3.21 TS 25.433

UTRAN Iub interface Node B Application Part (NBAP) signalling

This specification describes the standards for NBAP specification to be used over Iub interface.

##### 5.3.2.3.22 TS 25.434

UTRAN Iub interface data transport and transport signalling for Common Transport Channel data streams

This specification describes the UTRAN RNC-Node B (Iub) interface data transport and transport signalling for CCH data streams.

##### 5.3.2.3.23 TS 25.435

UTRAN Iub interface user plane protocols for Common Transport Channel data streams

This specification describes the UTRAN RNC-Node B (Iub) interface user plane protocols for common transport channel data streams.

##### 5.3.2.3.24 TS 25.442

UTRAN implementation-specific O&M transport

This specification describes the transport of implementation specific O&M signalling between Node B and the management platform in case that the transport is routed via the RNC.

##### 5.3.2.3.25 TS 25.450

UTRAN Iupc interface general aspects and principles

This document is an introduction to the TSG RAN TS 25.45z series of UMTS Technical Specifications that define the Iupc Interface. The Iupc interface is a logical interface for the interconnection of Standalone SMLC (SAS) and Radio Network Controller (RNC) components of the Universal Terrestrial Radio Access Network (UTRAN) for the UMTS system.

##### 5.3.2.3.26 TS 25.451

UTRAN Iupc interface layer 1

This document specifies the standards allowed to implement Layer 1 on the Iupc interface.

##### 5.3.2.3.27 TS 25.452

UTRAN Iupc interface: signalling transport

This document specifies the signalling transport related to PCAP signalling to be used across the Iupc interface.

##### 5.3.2.3.28 TS 25.453

UTRAN Iupc interface Positioning Calculation Application Part (PCAP) signalling

This document specifies the Positioning Calculation Application Part (PCAP) between the Radio Network Controller (RNC) and the Stand-alone SMLC (SAS).

##### 5.3.2.3.29 TS 25.460

UTRAN Iuant interface: General aspects and principles

This document is an introduction to the TSG RAN TS 25.46x series of UMTS Technical Specifications that define the Iuant Interface. The logical Iuant interface is a Node B internal interface between the implementation specific O&M function and the Remote Electrical Tilting (RET) Antenna Control unit function of the Node B.

##### 5.3.2.3.30 TS 25.461

UTRAN Iuant interface: Layer 1

This document specifies the standards allowed to implement Layer 1 on the Iuant interface. The specification of transmission delay requirements and O&M requirements are not in the scope of this document.

##### 5.3.2.3.31 TS 25.462

UTRAN Iuant interface: Signalling transport

This document specifies the signalling transport related to RETAP signalling to be used across the Iuant interface.

##### 5.3.2.3.32 TS 25.466

UTRAN Iuant interface: Application part

This document specifies the Remote Electrical Tilting Application Part (RETAP) between the implementation specific O&M transport function and the RET Antenna Control unit function of the Node B. The document also specifies the Tower Mounted Amplifier Application Part (TMAAP) between the implementation specific O&M transport function and the TMA control function of the Node B. It defines the Iuant interface and its associated signaling procedures.

##### 5.3.2.3.33 TS 25.467

UTRAN architecture for 3G Home Node B (HNB); Stage 2

This document specifies the UTRAN architecture for 3G Home NodeB (3G HNB).

##### 5.3.2.3.34 TS 25.468

UTRAN Iuh Interface RANAP User Adaption (RUA) signalling

This document specifies the RANAP User Adaption (RUA) between the Home Node B (HNB) and the Home Node B Gateway (HNB-GW).

##### 5.3.2.3.35 TS 25.469

UTRAN Iuh interface Home Node B (HNB) Application Part (HNBAP) signalling

This document specifies the Home Node B Application Part (HNBAP) between the Home Node B (HNB) and the Home Node B Gateway (HNB-GW).

##### 5.3.2.3.36 TS 25.484

Automatic Neighbour Relation (ANR) for UTRAN; Stage 2

This document specifies the Automatic Neighbour Relation (ANR) function for UTRAN.

#### 5.3.2.4 25.100 series

##### 5.3.2.4.1 TS 25.102

User Equipment (UE) radio transmission and reception (TDD)

This document establishes the minimum RF characteristics of the UTRA User Equipment (UE) operating in the TDD mode. The values in the TS make no allowance for measurement uncertainty in conformance testing. Test limits to be used for conformance testing are specified separately in the UE conformance test specifications TS 34.122.

##### 5.3.2.4.2 TS 25.123

Requirements for support of radio resource management (TDD)

This specification describes the requirements for support of radio resource management for TDD including requirements on measurements in UTRAN and the UE as well as on node dynamic behaviour and interaction, in terms of delay and response characteristics.

##### 5.3.2.4.3 TS 25.105

Base Station (BS) radio transmission and reception (TDD)

This specification describes the minimum RF characteristics of the TDD mode of UTRA. The values in the TS make no allowance for measurements uncertainties in conformance testing. Test limit to be used for conformance testing are specified separately in the base station conformance test Specification TS 25.142.

##### 5.3.2.4.4 TS 25.142

Base Station (BS) conformance testing (TDD)

This specification describes the radio frequency (RF) test methods and conformance requirements for UTRA base transceiver stations (BTS) operating in the TDD mode. These have been derived from, and are consistent with, the core UTRA specifications specified in the requirements reference sub-clause of each test. The maximum acceptable measurement uncertainty is specified in the TS for each test, where appropriate.

##### 5.3.2.4.5 TS 25.113

Base station (BS) and repeater electromagnetic compatibility (EMC)

This specification describes the assessment of base stations and associated ancillary equipment in respect of EMC. This specification does not include the antenna port immunity and emissions.

##### 5.3.2.4.6 TS 25.144

User Equipment (UE) and Mobile Station (MS) over the air performance requirements

This document establishes Over the Air antenna minimum requirements for User Equipment (UE) and Mobile Station (MS).

#### 5.3.2.5 34.100 series

##### 5.3.2.5.1 TS 34.108

Common test environments for User Equipment (UE); Conformance testing

This document contains definitions of reference conditions and test signals, default parameters, reference Radio Bearer configurations, common requirements for test equipment and generic set-up procedures for use in UE conformance tests.

##### 5.3.2.5.2 TS 34.109

Terminal logical test interface; Special conformance testing functions

This document specifies for User Equipment (UE), in UMTS system, for FDD and TDD modes, those UE functions that are required for conformance testing purposes.

##### 5.3.2.5.3 TS 34.122

Terminal conformance specification; Radio transmission and reception (TDD)

This document specifies the Radio Frequency (RF) test methods and conformance requirements for UTRA User Equipment (UE) operating in the TDD mode. These have been derived from, and are consistent with, the core UTRA specifications. The maximum acceptable measurement uncertainty is specified in the TS for each test, where appropriate.

##### 5.3.2.5.4 TS 34.123-1

User Equipment (UE) conformance specification; Part 1: Protocol conformance specification

This document specifies the protocol conformance testing for the 3rd Generation User Equipment (UE). This is the first part of a multi-part test specification.

##### 5.3.2.5.5 TS 34.123-2

User Equipment (UE) conformance specification; Part 2: Implementation conformance statement (ICS) proforma specification

This document provides the Implementation Conformance Statement (ICS) proforma for 3rd Generation User Equipment (UE), in compliance with the relevant requirements, and in accordance with the relevant guidance given in ISO/IEC 9646-7 and ETS 300 406. This document also specifies a recommended applicability statement for the test cases included in TS 34.123-1. These applicability statements are based on the features implemented in the UE.

##### 5.3.2.5.6 TS 34.124

Electromagnetic compatibility (EMC) requirements for mobile terminals and ancillary equipment

This document establishes the essential EMC requirements for “3rd generation” digital cellular mobile terminal equipment and ancillary accessories in combination with a 3GPP user equipment (UE).

#### 5.3.2.6 36.200 series

##### 5.3.2.6.1 TS 36.201

Evolved Universal Terrestrial Radio Access (E-UTRA); LTE physical layer; General description

This specification describes an overview of the physical layer of the EUTRA radio interface.

##### 5.3.2.6.2 TS 36.211

Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation

This specification describes the physical channels for evolved UTRA.

##### 5.3.2.6.3 TS 36.212

Evolved Universal Terrestrial Radio Access (E-UTRA); Multiplexing and channel coding

This specification describes the coding, multiplexing and mapping to physical channels for E-UTRA.

##### 5.3.2.6.4 TS 36.213

Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures

This specification describes the characteristics of the physical layer procedures of E-UTRA.

##### 5.3.2.6.5 TS 36.214

Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer; Measurements

This specification describes the measurements done at the UE and network in order to support operation in idle mode and connected mode.

##### 5.3.2.6.6 TS 36.216

Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer for relaying operation

This document describes the characteristics of eNodeB – relay node transmissions.

#### 5.3.2.7 36.300 series

##### 5.3.2.7.1 TS 36.300

Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2

This specification describes an overview and overall description of the E-UTRA radio interface and E-UTRAN architecture and radio interface protocol architecture.

##### 5.3.2.7.2 TS 36.302

Evolved Universal Terrestrial Radio Access (E-UTRA); Services provided by the physical layer

This specification describes the services provided by the physical layer of E-UTRA to upper layers.

##### 5.3.2.7.3 TS 36.304

Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) procedures in idle mode

This specification describes the Access Stratum (AS) part of the Idle Mode procedures applicable to a UE and the model for the functional division between the NAS and AS in a UE.

##### 5.3.2.7.4 TS 36.306

Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio access capabilities

This specification defines the E-UTRA UE Radio Access Capability Parameters.

##### 5.3.2.7.5 TS 36.314

Evolved Universal Terrestrial Radio Access (E-UTRA); Layer 2 - Measurements

This document contains the description and definition of the measurements performed by E-UTRAN that are transferred over the standardised interfaces in order to support E-UTRA radio link operations, radio resource management (RRM), network operations and maintenance (OAM), and self-organising networks (SON).

##### 5.3.2.7.6 TS 36.321

Evolved Universal Terrestrial Radio Access (E-UTRA); Medium Access Control (MAC) protocol specification

This specification describes the E-UTRA MAC protocol.

##### 5.3.2.7.7 TS 36.322

Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Link Control (RLC) protocol specification

This specification describes the E-UTRA Radio Link Control (RLC) protocol.

##### 5.3.2.7.8 TS 36.323

Evolved Universal Terrestrial Radio Access (E-UTRA); Packet Data Convergence Protocol (PDCP) specification

This specification describes the Packet Data Convergence Protocol (PDCP).

##### 5.3.2.7.9 TS 36.331

Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification

This specification describes the Radio Resource Control protocol for the UE-eUTRAN radio interface.

##### 5.3.2.7.10 TS 36.305

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Stage 2 functional specification of User Equipment (UE) positioning in E-UTRAN

This document specifies the stage 2 of the UE positioning function of E-UTRAN, which provides the mechanisms to support or assist the calculation of the geographical position of a UE. The purpose of this stage 2 specification is to define the E-UTRAN UE Positioning architecture, functional entities and operations to support positioning methods. This description is confined to the E-UTRAN Access Stratum. This stage 2 specification covers the E-UTRAN positioning methods, state descriptions, and message flows to support UE positioning.

##### 5.3.2.7.11 TS 36.355

Evolved Universal Terrestrial Radio Access (E-UTRA); LTE Positioning Protocol (LPP)

This document contains the definition of the LTE Positioning Protocol (LPP).

#### 5.3.2.8 36.400 series

##### 5.3.2.8.1 TS 36.401

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Architecture description

This specification describes the overall architecture of the EUTRAN, including internal interfaces and assumptions on the radio, S1 and X2 interfaces.

##### 5.3.2.8.2 TS 36.410

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 general aspects and principles

This specification provides an introduction to the 3GPP TS 36.41x series of technical specifications that define the S1 interface.

##### 5.3.2.8.3 TS 36.411

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 layer 1

This specification describes the standards allowed to implement Layer 1 on the S1 interface.

##### 5.3.2.8.4 TS 36.412

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 signalling transport

This specification describes the Signalling Transport to be used across S1 interface.

##### 5.3.2.8.5 TS 36.413

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 Application Protocol (S1AP)

This specification describes the E-UTRAN radio network layer signalling protocol for the S1 interface.

##### 5.3.2.8.6 TS 36.414

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 data transport

This specification describes the standards for user data transport protocols and related signalling protocols to establish user plane transport bearers over the S1 interface.

##### 5.3.2.8.7 TS 36.420

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 general aspects and principles

This specification provides an introduction to the TSG RAN TS 36.42x series of UMTS Technical Specifications that define the X2 interface.

##### 5.3.2.8.8 TS 36.421

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 layer 1

This specification describes the standards allowed to implement Layer 1 on the X2 interface.

##### 5.3.2.8.9 TS 36.422

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 signalling transport

This specification describes the Signalling Transport to be used across X2 interface.

##### 5.3.2.8.10 TS 36.423

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 Application Protocol (X2AP)

This specification describes the E-UTRAN radio network layer signalling protocol for the X2 interface.

##### 5.3.2.8.11 TS 36.424

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 data transport

This specification describes the standards for user data transport protocols and related signalling protocols to establish user plane transport bearers over the X2 interface.

##### 5.3.2.8.12 TS 36.440

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); General aspects and principles for interfaces supporting Multimedia Broadcast Multicast Service (MBMS) within E-UTRAN

This document describes the overall architecture of the interface for the provision of MBMS in the E-UTRAN. This includes also a description of the general aspects, assumptions and principles guiding the architecture and interface. The MBMS functions to be provided within that architecture are summarized. It provides an introduction to the TSG RAN TS 36.44x series of UMTS technical specifications that define the different interfaces introduced for MBMS provision in E-UTRAN.

##### 5.3.2.8.13 TS 36.441

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Layer 1 for interfaces supporting Multimedia Broadcast Multicast Service (MBMS) within E-UTRAN

This document specifies the standards allowed to implement layer 1 on the interfaces supporting Multimedia Broadcast Multicast Service (MBMS) within E-UTRAN. In the following, “layer 1” and “physical layer” are assumed to be synonymous.

##### 5.3.2.8.14 TS 36.442

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Signalling Transport for interfaces supporting Multimedia Broadcast Multicast Service (MBMS) within E-UTRAN

This document specifies the standards for signalling transport to be used across M2 and M3 interfaces. M2 interface is a logical interface between the eNodeB and the MCE. M3 interface is a logical interface between the MCE and the MME. This document describes how the M2-AP signalling messages are transported over M2, and how the M3-AP signalling messages are transported over M3.

##### 5.3.2.8.15 TS 36.443

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); M2 Application Protocol (M2AP)

This document specifies the E-UTRAN radio network layer signalling protocol for the M2 interface. The M2 Application Protocol (M2AP) supports the functions of M2 interface by signalling procedures defined in this document.

##### 5.3.2.8.16 TS 36.444

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); M3 Application Protocol (M3AP)

This document specifies the E-UTRAN radio network layer signalling protocol for the M3 interface. The M3 Application Protocol (M3AP) supports the functions of M3 interface by signalling procedures defined in this document.

##### 5.3.2.8.17 TS 36.445

Evolved Universal Terrestrial Radio Access Network (E-UTRAN); M1 data transport

This document specifies the standards for user data transport protocols over the E-UTRAN M1 interface.

##### 5.3.2.8.18 TS 36.455

Evolved Universal Terrestrial Radio Access (E-UTRA); LTE Positioning Protocol A (LPPa)

This document specifies the control plane radio network layer signalling procedures between eNodeB and E-SMLC. LPPa supports the concerned functions by signalling procedures defined in this document.

#### 5.3.2.9 36.100 series

##### 5.3.2.9.1 TS 36.101

Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception

This specification describes the User Equipment (UE) minimum RF characteristics of E-UTRA for both FDD and TDD modes.

##### 5.3.2.9.2 TS 36.104

Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) radio transmission and reception

This specification describes the Base Station minimum RF characteristics of E-UTRA in paired and unpaired bands.

##### 5.3.2.9.3 TS 36.113

Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) and repeater ElectroMagnetic Compatibility (EMC)

This document covers the assessment of E-UTRA base stations, repeaters and associated ancillary equipment in respect of Electromagnetic Compatibility (EMC).

##### 5.3.2.9.4 TS 36.124

Evolved Universal Terrestrial Radio Access (E-UTRA); Electromagnetic compatibility (EMC) requirements for mobile terminals and ancillary equipment

This document establishes the essential EMC requirements for “3rd generation” digital cellular mobile terminal equipment and ancillary accessories in combination with a 3GPP E-UTRA user equipment (UE).

##### 5.3.2.9.5 TS 36.133

Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for support of radio resource management

This specification specifies requirements for support of Radio Resource Management for the FDD and TDD modes of Evolved UTRA. These requirements include requirements on measurements in UTRAN and the UE as well as requirements on node dynamical behaviour and interaction, in terms of delay and response characteristics.

##### 5.3.2.9.6 TS 36.141

Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) conformance testing

This document specifies the Radio Frequency (RF) test methods and conformance requirements for E-UTRA Base Stations (BS).

##### 5.3.2.9.7 TS 36.171

Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for Support of Assisted Global Navigation Satellite System (A-GNSS)

This document establishes the minimum performance requirements for A-GNSS (including A-GPS) for FDD or TDD mode of E-UTRA for the User Equipment (UE).

#### 5.3.2.10 36.500 series

##### 5.3.2.10.1 TS 36.508

Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); Common test environments for User Equipment (UE) conformance testing

This document contains definitions of reference conditions and test signals, default parameters, reference radio bearer configurations used in radio bearer interoperability testing, common radio bearer configurations for other test purposes, common requirements for test equipment and generic set-up procedures for use in conformance tests for the 3rd Generation E-UTRAN User Equipment (UE).

##### 5.3.2.10.2 TS 36.509

Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); Special conformance testing functions for User Equipment (UE)

This document defines for User Equipment (UE) those special functions and their activation methods that are required in User Equipment (UE) for conformance testing purposes.

##### 5.3.2.10.3 TS 36.521-1

Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) conformance specification; Radio transmission and reception; Part 1: Conformance testing

This document specifies the measurement procedures for the conformance test of the user equipment (UE) that contain transmitting characteristics, receiving characteristics and performance requirements.

##### 5.3.2.10.4 TS 36.521-2

Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) conformance specification; Radio transmission and reception; Part 2: Implementation Conformance Statement (ICS)

This document provides the Implementation Conformance Statement (ICS) proforma for 3G Evolved Universal Terrestrial Radio Access (E-UTRA) User Equipment (UE), in compliance with the relevant requirements, and in accordance with the relevant guidance given in ISO/IEC 9646-1 and ISO/IEC 9646-7.

##### 5.3.2.10.5 TS 36.523-1

Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification; Part 1: Protocol conformance specification

This document specifies the protocol conformance testing for the 3rd Generation E-UTRAN User Equipment (UE).

##### 5.3.2.10.6 TS 36.523-2

Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification; Part 2: Implementation Conformance Statement (ICS) proforma specification

This document provides the Implementation Conformance Statement (ICS) proforma for 3rd Generation User Equipment (UE), in compliance with the relevant EPS (E-UTRA/EPC) requirements, and in accordance with the relevant guidance given in ISO/IEC 9646-1 and ISO/IEC 9646-7.

#### 5.3.2.11 Multiple radio access technology aspects specifications

##### 5.3.2.11.1 TS 37.104

E-UTRA, UTRA and GSM/EDGE; Multi-Standard Radio (MSR) Base Station (BS) radio transmission and reception

This specification establishes the minimum RF characteristics of E-UTRA, UTRA and GSM/EDGE Multi-Standard Radio (MSR) Base Station (BS). Requirements for multi-RAT and single-RAT operation of MSR BS are covered in this document. The requirements in this document for E-UTRA and UTRA single-RAT operation of MSR BS are also applicable to E-UTRA and UTRA multi-carrier capable single-RAT BS. Requirements for GSM BS that are only single-RAT capable are not covered.

##### 5.3.2.11.2 TS 37.113

E-UTRA, UTRA and GSM/EDGE; Multi-Standard Radio (MSR) Base Station (BS) Electromagnetic Compatibility (EMC)

This document covers the assessment of E-UTRA, UTRA and GSM/EDGE Multi-Standard Radio (MSR) Base Stations and associated ancillary equipment in respect of Electromagnetic Compatibility (EMC). This document specifies the applicable test conditions, performance assessment and performance criteria for E-UTRA, UTRA and GSM/EDGE Base Stations and associated ancillary equipment in one of the following categories: (i) Multi-Standard Radio (MSR) Base Stations for E-UTRA, UTRA and GSM/EDGE meeting the requirements of TS 37.104, with conformance demonstrated by compliance to TS 37.141; (ii) Base Stations for E-UTRA meeting the requirements of TS 36.104, with conformance demonstrated by compliance to TS 36.141; (iii) Base Stations for UTRA FDD meeting the requirements of TS 25.104, with conformance demonstrated by compliance to TS 25.141; (iv) Base Stations for UTRA TDD meeting the requirements of TS 25.105, with conformance demonstrated by compliance to TS 25.142; (v) Base Stations for GSM/EDGE meeting the requirements of TS 45.005, with conformance demonstrated by compliance to TS 51.021. The environment classification used in this document refers to the environment classification used in IEC 61000-6-1 and IEC 61000-6-3. The EMC requirements have been selected to ensure an adequate level of compatibility for apparatus at residential, commercial and light industrial environments. The levels, however, do not cover extreme cases which may occur in any location but with low probability of occurrence.

##### 5.3.2.11.3 TS 37.141

E-UTRA, UTRA and GSM/EDGE; Multi-Standard Radio (MSR) Base Station (BS) conformance testing

This document specifies the Radio Frequency (RF) test methods and conformance requirements for E-UTRA, UTRA and GSM/EDGE Multi-Standard Radio (MSR) Base Station (BS).

##### 5.3.2.11.4 TS 37.320

Universal Terrestrial Radio Access (UTRA) and Evolved Universal Terrestrial Radio Access (E-UTRA); Radio measurement collection for Minimization of Drive Tests (MDT); Overall description; Stage 2

This document provides an overview and overall description of the minimization of drive tests functionality. The document describes functions and procedures to support collection of UE-specific measurements for MDT using Control Plane architecture, for both UTRAN and E-UTRAN.

#### 5.3.2.12 Core network and Terminal aspects

##### 5.3.2.12.1 TS 21.111

USIM and IC card requirements

This document defines the requirements of the USIM (Universal Subscriber Identity Module) and the IC card for 3G (UICC). These are derived from the service and security requirements defined in TS 22.100 and TS 22.101. The USIM is a 3G application on an IC card. It inter-operates with a 3G terminal and provides access to 3G services. This document is intended to serve as a basis for the detailed specification of the USIM and the UICC, and the interface to the 3G terminal.

##### 5.3.2.12.2 TS 23.003

Numbering, addressing and identification

This document defines the principal purpose and use of International Mobile station Equipment Identities (IMEI) within the digital cellular telecommunications system and the 3GPP system.

##### 5.3.2.12.3 TS 23.007

Restoration procedures

The data stored in location registers are automatically updated in normal operation; the main information stored in a location register defines the location of each mobile station and the subscriber data required to handle traffic for each mobile subscriber. The loss or corruption of these data will seriously degrade the service offered to mobile subscribers; it is therefore necessary to define procedures to limit the effects of failure of a location register, and to restore the location register data automatically. This document defines the necessary procedures.

##### 5.3.2.12.4 TS 23.008

Organization of subscriber data

This document provides details concerning information to be stored in home subscriber servers, visitor location registers, GPRS Support Nodes and Call Session Control Function (CSCF) concerning mobile subscriber.

##### 5.3.2.12.5 TS 23.009

Handover procedures

This document contains a detailed description of the handover procedures to be used in PLMNs. The purpose of the handover procedures are to ensure that the connection to the Mobile Station (MS) or User Equipment (UE) is maintained as it moves from one cell or radio network to another. The document defines the circuit switched handover functionality based on the service requirements in 3GPP TS 22.129. For the circuit switched handover functionality related to SRVCC, it is based on the service requirements in 3GPP TS 23.216.

##### 5.3.2.12.6 TS 23.018

Basic call handling; Technical realization

This document specifies the technical realization of the handling of calls originated by a UMTS or GSM mobile subscriber and calls directed to a UMTS or GSM mobile subscriber, up to the point where the call is established. Normal release of the call after establishment is also specified. Trunk Originated call is also modelled.

##### 5.3.2.12.7 TS 23.034

High Speed Circuit Switched Data (HSCSD); Stage 2

This document contains the stage 2 service description for a High Speed Circuit Switched Data (HSCSD) on GSM/GERAN in A/Gb mode and Iu mode. HSCSD utilizes the multislot mechanism, i.e. using multiple traffic channels (/bearers) for the communication. Additionally, this document specifies some HSCSD related requirements for multi system mobile stations operating in UTRAN Iu mode. In UTRAN Iu mode one bearer can provide all needed data rates, and the multislot mechanism is therefore not needed. However, for inter-system handover to GERAN, certain information has to be provided by the mobile station during the service negotiation.

##### 5.3.2.12.8 TS 23.038

Alphabets and language-specific information

This document defines the character sets, languages and message handling requirements for SMS, CBS and USSD and may additionally be used for Man Machine Interface (MMI) (3GPP TS 22.030).

##### 5.3.2.12.9 TS 23.040

Technical realization of the Short Message Service (SMS)

This document describes the Short Message Service (SMS) for GSM/UMTS networks. It defines:

– the services and service elements;

– the network architecture;

– the Service Centre functionality;

– the SMS Router functionality;

– the MSC functionality (with regard to the SMS);

– the SGSN functionality (with regard to the SMS);

– the routing requirements;

– the protocols and protocol layering;

for the Mobile Originated and Mobile Terminated Short Message Service Teleservices, as specified in 3GPP TS 22.003 and 3GPP TS 22.105.

The use of radio resources for the transfer of short messages between the MS and the MSC or the SGSN is described in 3GPP TS 24.011.

##### 5.3.2.12.10 TS 23.041

Technical realization of Cell Broadcast Service (CBS)

This document describes the Cell Broadcast short message service (CBS) for GSM and UMTS.

For GSM it defines the primitives over the Cell Broadcast Centre - Base Station System (CBC-BSS) interface and the message formats over the Base Station System - Mobile Station (BSS-MS) interface for Teleservice 23 as specified in 3GPP TS 22.003. For UMTS it defines the interface requirements for the Cell Broadcast Center – UMTS Radio Network System (RNS) interface and the radio interface requirements for UMTS Radio Acces Networks to support CBS as specified in 3GPP TS 22.003. The document also describes the Public Warning System (PWS) for GSM, UMTS and E-UTRAN, see 3GPP TS 22.268.

##### 5.3.2.12.11 TS 23.042

Compression algorithm for text messaging services

This document introduces the concepts and mechanisms involved in the compression and decompression of a stream of data.

##### 5.3.2.12.12 TS 23.057

Mobile Execution Environment (MExE); Functional description; Stage 2

This document defines stage 2 and stage 3 of the Mobile Execution Environment (MExE). Stage 2 identifies the functional capabilities and information flows needed to support the service described in stage 1. MExE uses a number of technologies to realise the requirements of the stage 1 description (3GPP TS 22.057). The document describes how the service requirements are realised with the selected technologies. The specification covers areas of MExE common to all technologies.

##### 5.3.2.12.13 TS 23.060

General Packet Radio Service (GPRS); Service description; Stage 2

This specification describes a general overview over the GPRS architecture as well as a more detailled overview of the MS – CN protocol architecture. Details of the protocols will be specified in companion documents.

##### 5.3.2.12.14 TS 23.066

Support of Mobile Number Portability (MNP); Technical realization; Stage 2

This document describes several alternatives for the realisation of Mobile Number Portability. It is left to operator and implementation decisions which option, or combination of options, is used, taking into account the regulatory and architectural constraints that may prevail.

##### 5.3.2.12.15 TS 23.078

Customised Applications for Mobile network Enhanced Logic (CAMEL) Phase 4; Stage 2

This document specifies the stage 2 description for the fourth phase (see 3GPP TS 22.078) of the Customized Applications for Mobile network Enhanced Logic (CAMEL) feature which provides the mechanisms to support services of operators which are not covered by standardized services even when roaming outside the HPLMN.

##### 5.3.2.12.16 TS 23.090

Unstructured Supplementary Service Data (USSD); Stage 2

This document gives the stage 2 description of Unstructured Supplementary Service Data (USSD). The unstructured supplementary service data (USSD) mechanism allows the Mobile Station (MS) user and a PLMN operator defined application to communicate in a way which is transparent to the MS and to intermediate network entities. The mechanism allows development of PLMN specific supplementary services. This document defines the requirements for handling USSD at the MS and network entities.

##### 5.3.2.12.17 TS 23.108

Mobile radio interface layer 3 specification, core network protocols; Stage 2

This specification describes the procedures used at the radio interface for Call Control (CC), Mobility Management (MM) and Session Management (SM). It contains examples of the structured procedures.

##### 5.3.2.12.18 TS 23.110

Universal Mobile Telecommunications System (UMTS) access stratum; Services and functions

This specification describes the detailed specifications of the protocols which rule the information flows, both control and user data, between the access stratum and the parts of UMTS outside the access stratum, and of the detailed specifications of the UTRAN. These detailed specifications are to be found in other technical specifications.

##### 5.3.2.12.19 TS 23.122

Non-Access-Stratum (NAS) functions related to Mobile Station (MS) in idle mode

This specification provides an overview of the tasks undertaken by a Mobile Station (MS) when in idle mode, that is, switched on but not having a dedicated channel allocated, e.g., not making or receiving a call, or when in group receive mode, that is, receiving a group call or broadcast call but having a dedicated connection. It also describes the corresponding network functions.

##### 5.3.2.12.20 TS 23.142

Value-added Services for SMS (VAS4SMS); Interface and signalling flow

The specification describes the Stage 2 of the VAS4SMS (Value Added Service for SMS). It includes: – The logic architecture;– The logic elements functionality;– The signaling flows;– The interaction with other features.

##### 5.3.2.12.21 TS 23.153

Out of band transcoder control; Stage 2

This document specifies the stage 2 description of the Out-of-Band Transcoder Control for speech services. It describes the principles and procedures to support Transcoder Free Operation, Tandem Free Operation and the interworking between TrFO and TFO. Transcoder at the edge is also part of this document.

##### 5.3.2.12.22 TS 23.205

Bearer-independent circuit-switched core network; Stage 2

This document defines the stage 2 description for the bearer independent CS core network. The stage 2 covers the information flow between the GMSC server, MSC server and media gateways. The document shows the CS core network termination of the Iu interface in order to cover the information flow stimulus to the core network and describe the interaction with the supplementary and value added services and capabilities.

The protocol used over the Nc interface is an enhanced call control protocol supporting call bearer separation such as BICC. The protocol used over the Mc interface is H.248. SIP-I based CS core network is further specified in 3GPP TS 23.231.

Local Call Local Switch (LCLS) functionality is further specified in 3GPP TS 23.284.

This document is applicable only for ATM or IP transport in the CS core network.

##### 5.3.2.12.23 TS 23.218

IP Multimedia (IM) session handling; IM call model; Stage 2

This document specifies the IP Multimedia (IM) Call Model for handling of an IP multimedia session origination and termination for an IP Multimedia subscriber. The document includes interactions between an Application Server and IP multimedia sessions.

##### 5.3.2.12.24 TS 23.227

Application and user interaction in the UE; Principles and specific requirements

This document defines the principles for scheduling UE resources and controlling UE interactions and resolving conflicts between independently running applications in different application execution environment (e.g. MExE, USAT etc.) and internal and external peripherals (e.g. infra-red, Bluetooth, USIM, radio interface, MMI, memory etc.).

##### 5.3.2.12.25 TS 23.231

SIP-I based circuit-switched core network; Stage 2

This document defines the stage 2 description for the SIP-I based CS core network. The logical architecture for the SIP-I based CS core network is defined in 3GPP TS 23.205.

Stage 2 covers the information flows between the GMSC server, MSC server and media gateways that are required to support a SIP-I based Nc interface. The document shows the CS core network termination of the Iu and A interfaces in order to cover the information flow stimulus to the core network and describe the interaction with the supplementary and value added services and capabilities.

The Nc interface profile is based on ITU-T Q.1912.5 SIP-I profile C and is specified in 3GPP TS 29.231. The Mc interface profile is based on ITU-T H.248.1 and is specified in 3GPP TS 29.232. Local Call Local Switch (LCLS) functionality is further specified in 3GPP TS 23.284.

This document is applicable only for IP transport in the CS core network.

##### 5.3.2.12.26 TS 23.259

Personal Network Management (PNM); Procedures and information flows; Stage 2

This document provides the procedure details and the information flows for support of Personal Network Management including the PN UE redirection and PN access control applications enabled by Personal Network Management (PNM).

##### 5.3.2.12.27 TS 23.278

Customized Applications for Mobile network Enhanced Logic (CAMEL) Phase 4; Stage 2; IM CN Interworking

This document specifies the stage 2 description for the Customized Applications for Mobile network Enhanced Logic (CAMEL) feature which provides the mechanisms to support services for the IP Multimedia Core Network (IM CN) Subsystem.

##### 5.3.2.12.28 TS 23.333

Multimedia Resource Function Controller (MRFC) - Multimedia Resource Function Processor (MRFP) Mp interface: Procedures descriptions

This specification describes the functional requirements and information flows that generate procedures between the Multimedia Resource Function Controller (MRFC) and the Multimedia Resource Function Processor (MRFP), the Mp Interface. This specification is limited to information flows relevant to the Mp Interface; in order to define these procedures and make the functional requirements clear some triggers from an external interface may be described; these may be specified within the Mr interface for example or within an AS in which the MRFC function resides. However for the overall stage 2 procedures of IMS. The protocol on the Mp interface is defined to comply with ITU-T H.248.1 Gateway Control Protocol.

##### 5.3.2.12.29 TS 23.334

IP Multimedia Subsystem (IMS) Application Level Gateway (IMS-ALG) – IMS Access Gateway (IMS-AGW) interface: Procedures descriptions

Annex G of 3GPP TS 23.228 gives out an IMS Application Level Gateway (IMS-ALG) and IMS Access Media Gateway (IMS-AGW) based reference model to support NAPT-PT, gate control and traffic policing between IP-CAN and IMS domain. The Iq reference point is between the P-CSCF (IMS-ALG) and the IMS-AGW. It conveys the necessary information that is needed to allocate, modify and release (IP) transport addresses. This document defines the stage 2 description for the Iq reference point. Stage 2 covers the information flow between the P-CSCF (IMS-ALG) and IMS-AGW. The protocol used over the Iq interface is the gateway control protocol according ITU-T Recommendation H.248 (which is specified for Iq by an H.248 profile according 3GPP TS 29.334).

##### 5.3.2.12.30 TS 23.335

User Data Convergence (UDC); Technical realization and information flows; Stage 2

This document describes the procedures and signalling flows associated to the technical realization of the 3GPP User Data Convergence (UDC). It furthermore indicates some requirements for the Stage 3 specifications. Special consideration is put in the following areas: – reference architecture for the UDC concept – general description of procedures for the user data manipulation (e.g., create, delete, update, etc.) – identification of the requirements on the UDC for the applicability of the mechanisms described in this document. User data convergence is an optional concept to ensure data consistency and simplify creation of new services by providing easy access to the user data, as well as to ensure the consistency of storage and data models and to have minimum impact on traffic mechanisms, reference points and protocols of network elements.

##### 5.3.2.12.31 TS 23.380

IMS Restoration Procedures

This document specifies the IMS procedures required to handle a S-CSCF service interruption scenario with minimum impact to the service to the end user.

##### 5.3.2.12.32 TS 24.002

GSM - UMTS Public Land Mobile Network (PLMN) Access Reference Configuration

This document describes the reference configuration for access to a PLMN. A user accesses a PLMN via a number of interfaces, including the MS-BS (in A/Gb mode and GERAN Iu mode), UE-UTRAN (in UTRAN Iu mode) and UE-E-UTRAN interface. The purpose of this document is to indicate the possible access arrangements that may be used in conjunction with the MS-BS (in A/Gb mode and GERAN Iu mode), UE-UTRAN (in UTRAN Iu mode) and UE-E - UTRAN interface.

##### 5.3.2.12.33 TS 24.007

Mobile radio interface signalling layer 3; General Aspects

This specification describes the principal architecture of Layer 3 and its sub-layers on the GSM Um interface, i.e., the interface between mobile station (MS) and network; for the CM sub-layer, the description is restricted to paradigmatic examples, CC, supplementary services, and short message services for non-general packet radio service (GPRS) services. It also defines the basic message format and error handling applied by the Layer 3 protocols.

##### 5.3.2.12.34 TS 24.008

Mobile radio interface Layer 3 specification; Core network protocols; Stage 3

This specification describes the procedures used at the radio interface for Call Control, Mobility Management and Session Management. The procedures currently described are for the CC of circuit-switched connections, SM for GPRS services, MM and radio resource management for circuit-switched and GPRS services. MBMS is also added.

##### 5.3.2.12.35 TS 24.010

Mobile radio interface layer 3; Supplementary services specification; General aspects

This specification describes the general aspects of the specification of supplementary services at the Layer 3 radio interface. Details will be specified in other TS.

##### 5.3.2.12.36 TS 24.011

Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface

This specification describes the procedures used across the mobile radio interface by the signalling Layer 3 function short message control (SMC) and short message relay (SM-RL) function for both circuit-switched GSM and GPRS.

##### 5.3.2.12.37 TS 24.022

Radio Link Protocol (RLP) for circuit switched bearer and teleservices

This specification describes the RLP for data transmission over the UMTS public land mobile network (PLMN). RLP covers the Layer 2 functionality of the ISO OSI reference model (IS 7498). It is based on ideas contained in IS 3309, IS 4335 and IS 7809 (HDLC of ISO) as well as ITU-T Recommendations X.25, Q.921 and Q.922 (LAP-B and LAP-D, respectively). RLP has been tailored to the special needs of digital radio transmission. RLP provides to its users the OSI data link service (IS 8886).

##### 5.3.2.12.38 TS 24.080

Mobile radio interface layer 3 supplementary services specification; Formats and coding

This specification describes the coding of information necessary for support of supplementary service operation on the mobile radio interface L3. Details are specified in other TS.

##### 5.3.2.12.39 TS 24.081

Line Identification supplementary services; Stage 3

This document specifies the procedures used at the radio interface for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of line identification supplementary services. Provision and withdrawal of supplementary services is an administrative matter between the mobile subscriber and the service provider and cause no signalling on the radio interface.

In 3GPP TS 24.010 the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

3GPP TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in 3GPP TS 22.004 and 3GPP TS 22.08x and 3GPP TS 22.09x series. 3GPP TS 22.081 is related specially to line identification supplementary services:

– Calling line identification presentation (CLIP)

– Calling line identification restriction (CLIR)

– Connected line identification presentation (COLP)

– Connected line identification restriction (COLR).

##### 5.3.2.12.40 TS 24.082

Call Forwarding (CF) supplementary services; Stage 3

This document specifies the procedures used at the radio interface (reference point Um as defined in 3GPP TS 24.002) for normal operation, registration, erasure, activation, deactivation, interrogation and network invocation of call offering supplementary services.

In 3GPP TS 24.010, the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

3GPP TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in 3GPP TS 22.004 and 3GPP TS 22.08x and 3GPP TS 22.09x series. 3GPP TS 22.082 is related specially to call offering supplementary services.

Technical realization of supplementary services is described in 3GPP TS 23.011 and 3GPP TS 23.08x and 3GPP TS 23.09x series. 3GPP TS 23.082 is related specially to call offering supplementary services.

The procedures for Call Control, Mobility Management and Radio Resource management at the layer 3 radio interface are defined in 3GPP TS 24.007 and 3GPP TS 24.008.

The following supplementary services belong to the call offering supplementary services and are described in this document:

– Call forwarding unconditional (CFU)

– Call forwarding on mobile subscriber busy (CFB)

– Call forwarding on no reply (CFNRy)

– Call forwarding on mobile subscriber not reachable (CFNRc).

##### 5.3.2.12.41 TS 24.083

Call Waiting (CW) and Call Hold (HOLD) supplementary services; Stage 3

This document specifies the procedures used at the radio interface (reference point Um as defined in 3GPP TS 24.002) for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of call completion supplementary services.

In 3GPP TS 24.010 the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

3GPP TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in 3GPP TS 22.004 and 3GPP TS 22.08x and 3GPP TS 22.09x series. 3GPP TS 22.083 is related specially to call completion supplementary services.

Technical realization of supplementary services is described in 3GPP TS 23.011 and GSM 03.8x and GSM 03.9x series.

3GPP TS 23.083 is related specially to call completion supplementary services.

The procedures for Call Control, Mobility Management and Radio Resource management at the layer 3 radio interface are defined in 3GPP TS 24.007 and 3GPP TS 24.008.

The following supplementary services belong to the call completion supplementary services and are described in this document:

– Call waiting (CW)

– Call hold (HOLD).

##### 5.3.2.12.42 TS 24.084

Multi Party (MPTY) supplementary service; Stage 3

This document specifies the procedures used at the radio interface (reference point Um as defined in 3GPP TS 24.002) for normal operation and invocation of MultiParty supplementary services.

In 3GPP TS 24.010 the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

3GPP TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in 3GPP TS 22.004 and the 3GPP TS 22.08x and 3GPP TS 22.09x series.

3GPP TS 22.084 is related specially to MultiParty supplementary services.

Technical realization of supplementary services is described in 3GPP TS 23.011 and the 3GPP TS 23.08x and 3GPP TS 23.09x series.

3GPP TS 23.084 is related specially to MultiParty supplementary services.

The procedures for Call Control, Mobility Management and Radio Resource management at the layer 3 radio interface are defined in 3GPP TS 24.007 and 3GPP TS 24.008.

The following supplementary service belongs to the MultiParty supplementary services and is described in this document:

– MultiParty service (MPTY).

##### 5.3.2.12.43 TS 24.085

Closed User Group (CUG) supplementary service; Stage 3

This document specifies the procedures used at the radio interface (reference point Um as defined in 3GPP TS 24.002) for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of community of interest supplementary services.

In 3GPP TS 24.010, the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

3GPP TS 24.080 specifies the formats coding for the supplementary services.

Definitions and descriptions of supplementary services are given in 3GPP TS 22.004 and 3GPP TS 22.08x and 3GPP TS 22.09x-series. 3GPP TS 22.085 is related to the community of interest supplementary services.

Technical realization of supplementary services is described in technical specifications 3GPP TS 23.011 and 3GPP TS TS 23.08x and 3GPP TS 23.09x-series. 3GPP TS 23.085 is related to the community of interest supplementary services.

The procedures for Call Control, Mobility Management and Radio Resource management at the layer 3 radio interface are defined in 3GPP TS 24.007 and 3GPP TS 24.008.

Signalling interworking for supplementary services between 3GPP TS 29.002 and 3GPP TS 24.008 and between 3GPP TS 29.002 and 3GPP TS 24.080 is defined in 3GPP TS 29.011.

The following supplementary services belong to the community of interest supplementary services and are described in this TS:

– Closed User Group (CUG).

##### 5.3.2.12.44 TS 24.086

Advice of Charge (AoC) supplementary services; Stage 3

This document specifies the procedures used at the radio interface (reference point Um as defined in 3GPP TS 24.002) for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of charging supplementary services.

In 3GPP TS 24.010 the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

3GPP TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in 3GPP TS 22.004 and 3GPP TS 22.08x and 3GPP TS 22.09x series. 3GPP TS 22.024 and 02.86 are related to the charging supplementary services.

Technical realization of supplementary services is described in 3GPP TS 23.011 and 3GPP TS 23.08x and 3GPP TS 23.09x series. 3GPP TS 23.086 is related to the charging supplementary services.

The procedures for Call Control, Mobility Management and Radio Resource management at the layer 3 radio interface are defined in 3GPP TS 24.007 and 3GPP TS 24.008.

The following supplementary services belong to the charging supplementary services and are described in this document:

– Advice of Charge (Information) (AoCI)

– Advice of Charge (Charging) (AoCC).

##### 5.3.2.12.45 TS 24.087

User-to-User Signalling (UUS) Supplementary Service; Stage 3

This document gives the stage 3 description of the three User-to-User signalling supplementary services.

##### 5.3.2.12.46 TS 24.088

Call Barring (CB) supplementary service; Stage 3

This document specifies the procedures used at the radio interface (reference point Um as defined in 3GPP TS 24.002) for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of call barring supplementary services.

In 3GPP TS 24.010 the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

3GPP TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in 3GPP TS 22.004, 22.08x and 22.09x series.

Technical realization of supplementary services is described in 3GPP TS 23.011, 23.08x and 23.09x series.

The procedures for Call Control, Mobility Management and Radio Resource management at the layer 3 radio interface are defined in 3GPP TS 24.007 and 3GPP TS 24.008.

The following supplementary services belong to the call restriction supplementary services and are described in this specification:

– Barring of outgoing calls

– Barring of incoming calls

##### 5.3.2.12.47 TS 24.090

Unstructured Supplementary Service Data (USSD); Stage 3

This document gives the stage 3 description of the Unstructured Supplementary Service Data (USSD) operations. The group of unstructured supplementary service data operations is divided into two different classes:

Network initiated unstructured supplementary service data operations

Mobile initiated unstructured supplementary service data operations.

##### 5.3.2.12.48 TS 24.091

Explicit Call Transfer (ECT) supplementary service; Stage 3

This document gives the stage 3 description of the call transfer supplementary services.

It specifies the procedures used at the radio interface (reference point Um as defined in 3GPP TS 24.002) for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of call transfer supplementary services.

In 3GPP TS 24.010 the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

3GPP TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in 3GPP TS 22.004, 3GPP TS 22.08x and 3GPP TS 22.09x series. 3GPP TS 22.091 is related specifically to call transfer supplementary services.

The technical realization of supplementary services is described in 3GPP TS 23.011, 3GPP TS 23.08x and 3GPP TS 23.09x series. 3GPP TS 23.091 is related specifically to call transfer supplementary services.

The procedures for Call Control, Mobility Management and Radio Resource management at the layer 3 radio interface are defined in 3GPP TS 24.007 and 3GPP TS 24.008.

The following supplementary services belong to the call transfer supplementary services and are described in this document:

- Explicit Call Transfer (ECT).

##### 5.3.2.12.49 TS 24.093

Completion of Calls to Busy Subscriber (CCBS); Stage 3

This dcoument gives the stage 3 description of the Completion of Calls to Busy Subscriber (CCBS) supplementary service. It specifies the procedures used at the radio interface (reference point Um as defined in 3GPP TS 24.002) for normal operation, activation, deactivation, invocation and interrogation of the completion of calls to busy subscriber supplementary services.

In 3GPP TS 24.010 the general aspects of the specification of supplementary services at the layer 3 radio interface are given.

3GPP TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in 3GPP TS 22.004, 3GPP TS 22.08x and 3GPP TS 22.09x-series. Technical specification 3GPP TS 22.093 is related specifically to the Completion of Calls to Busy Subscriber supplementary service.

The technical realization of supplementary services is described in technical specifications 3GPP TS 23.011, 3GPP TS 23.08x and 3GPP TS 23.09x-series. 3GPP TS 23.093 is related specifically to Completion of Calls to Busy Subscriber supplementary service.

The procedures for Call Control, Mobility Management and Radio Resource management at the layer 3 radio interface are defined in 3GPP TS 24.007 and 3GPP TS 24.008.

The following supplementary services belong to the call completion supplementary services and are described in this document:

– Completion of Calls to Busy Subscriber (CCBS).

##### 5.3.2.12.50 TS 24.096

Name Identification supplementary services; Stage 3

This document specifies the procedures used at the radio interface for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of name identification supplementary services.

In 3GPP TS 24.010 the general aspects of the specification of supplementary services at the layer 3 radio interface are given. 3GPP TS 24.080 specifies the formats and coding for the supplementary services.

Definitions and descriptions of supplementary services are given in 3GPP TS 22.004 and 3GPP TS 22.08x and 3GPP TS 22.09x series. 3GPP TS 22.096 is related specially to name identification supplementary services.

Technical realization of supplementary services is described in 3GPP TS 23.011 and 3GPP TS 23.08x and 3GPP TS 23.09x series. Technical specification 3GPP TS 23.096 is related specially to name identification supplementary services.

The procedures for Call Control, Mobility Management and Radio Resource management at the layer 3 radio interface are defined in 3GPP TS 24.007 and 3GPP TS 24.008.

The following supplementary services belong to the name identification supplementary services and are described in this TS:

– Calling name presentation (CNAP).

##### 5.3.2.12.51 TS 24.109

Bootstrapping interface (Ub) and network application function interface (Ua); Protocol details

This document defines stage 3 for the HTTP Digest AKA based implementation of Ub interface (UE-BSF), the Disposable-Ks model based implementation of Upa interface (NAF-UE) and the HTTP Digest and the PSK TLS based implementation of bootstrapped security association usage over Ua interface (UE-NAF) in Generic Authentication Architecture (GAA) as specified in 3GPP TS 33.220. The purpose of the Ub interface is to create a security association between UE and BSF for further usage in GAA applications. The purpose of the Upa interface is to provide a push mechanism to created a bootstrapped security association between the UE and NAF for secure communication of pushed messages. The purpose of the Ua interface is to use the so created bootstrapped security association between UE and NAF for secure communication.

This document also defines stage 3 for the Authentication Proxy usage as specified in 3GPP TS 33.222.

This document also defines stage 3 for the subscriber certificate enrolment as specified in 3GPP TS 33.221 which is one realization of the Ua interface. The subscriber certificate enrolment uses the HTTP Digest based implementation of bootstrapped security association usage to enrol a subscriber certificate and the delivery of a CA certificate.

##### 5.3.2.12.52 TS 24.141

Presence service using the IP Multimedia (IM) Core Network (CN) subsystem; Stage 3

This specification provides the protocol details for the presence service within the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and SIP Events as defined in 3GPP TS 24.229.

##### 5.3.2.12.53 TS 24.147

Conferencing using the IP Multimedia (IM) Core Network (CN) subsystem; Stage 3

This specification provides the protocol details for conferencing within the IP Multimedia Core Network subsystem (IMS) based on the Session Initiation Protocol (SIP), SIP Events, the Session Description Protocol (SDP) and the Binary Floor Control Protocol (BFCP).

##### 5.3.2.12.54 TS 24.166

3GPP IP Multimedia Subsystem (IMS) conferencing Management Object (MO)

This document defines the IMS conferencing management object. The management object is compatible with OMA Device Management protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework as described in the Enabler Release Definition OMA-ERELD\_DM-V1\_2. The IMS conferencing management object consists of relevant parameters that can be managed for IMS conferencing capabilities.

##### 5.3.2.12.55 TS 24.167

3GPP IMS Management Object (MO); Stage 3

This document defines a mobile device 3GPP IMS Management Object. The management object is compatible with OMA Device Management protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework as described in the Enabler Release Definition OMA-ERELD \_DM-V1\_2. The 3GPP IMS Management Object consists of relevant parameters that can be managed for the IM CN Subsystem. This includes the basic framework defined in 3GPP TS 23.228 and 3GPP TS 24.229, and early IMS as defined in 3GPP TS 23.221. This also includes relevant parameters that can be managed for the application of SMS over IP networks defined in 3GPP TS 24.341. The IMS Management Object defines a repository of data into the ME including parameters that are provisioned from the ISIM application (i.e. 3GPP TS 31.103) or, after derivation, from the USIM application (i.e. 3GPP TS 31.102).

##### 5.3.2.12.56 TS 24.171

Control Plane Location Services (LCS) procedures in the Evolved Packet System (EPS)

This document specifies the operations and information coding for the Non-access Stratum (NAS) layer protocol for supporting the Location Services (LCS) in the Evolved Universal Terrestrial Radio Access Network (E-UTRAN). This document is applicable to the User Equipment (UE) and to the Mobility Management Entity (MME) in the Evolved Packet System (EPS). This document is developed in accordance to the general principles stated in 3GPP TS 23.271

##### 5.3.2.12.57 TS 24.173

IMS Multimedia telephony communication service and supplementary services; Stage 3

This specification provides the protocol details for multimedia telephony communication service and associated supplementary services in the IP Multimedia (IM) Core Network (CN) subsystem based on the requirements from 3GPP TS 22.173. Multimedia telephony and supplementary services allow users to establish communications between them and enrich that by enabling supplementary services.

##### 5.3.2.12.58 TS 24.182

IP Multimedia Subsystem (IMS) Customized Alerting Tones (CAT); Protocol specification

This document provides the protocol details for the Customized Alerting Tones (CAT) service in the IP Multimedia (IM) Core Network (CN) subsystem based on the requirements from 3GPP TS 22.182. The CAT service is an operator specific service by which an operator enables the subscriber to customize the media which is played to the calling party during alerting of the called party.

##### 5.3.2.12.59 TS 24.183

IP Multimedia Subsystem (IMS) Customized Ringing Signal (CRS); Protocol specification

The specification provides the protocol details for the Customized Ringing Signal (CRS) service in the IP Multimedia (IM) Core Network (CN) subsystem based on the requirements from 3GPP TS 22.183. The CRS service is an operator specific service by which an operator enables the subscriber to customize the media which is played to the called party as an incoming communication indication during establishment of a communication. This document is applicable to User Equipment (UE) and Application Servers (AS) which are intended to support the CRS service.

##### 5.3.2.12.60 TS 24.216

Communication Continuity Management Object (MO)

This document defines the Communication Continuity Management Object. The management object is compatible with OMA Device Management protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework as described in the Enabler Release Definition OMA-ERELD \_DM-V1\_2. The Communication Continuity Management Object consists of relevant parameters that can be managed for Communication Continuity capabilities.

##### 5.3.2.12.61 TS 24.229

IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3

This specification document defines a call control protocol for use in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP), and the associated Session Description Protocol (SDP).

##### 5.3.2.12.62 TS 24.237

IP Multimedia (IM) Core Network (CN) subsystem IP Multimedia Subsystem (IMS) service continuity; Stage 3

This specification provides the protocol details for voice call continuity between the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP) and the protocols of the 3GPP Circuit-Switched (CS) domain (CAP, MAP, ISUP, BICC and the NAS call control protocol for the CS access). Voice call continuity allows users to move between the CS domain and the IP Connectivity Access Network (e.g., WLAN interworking) with home IM CN subsystem functionality.

##### 5.3.2.12.63 TS 24.238

Session Initiation Protocol (SIP) based user configuration; Stage 3

This document provides a Session Initiation Protocol (SIP) based protocol framework that serves as a means of user configuration of supplementary services in the IP Multimedia (IM) Core Network (CN) subsystem. The protocol framework relies upon the contents of the Request-URI in a SIP INVITE request to enable basic configuration of services without requiring use of the Ut interface.

##### 5.3.2.12.64 TS 24.247

Messaging service using the IP Multimedia (IM) Core Network (CN) subsystem; Stage 3

This specification provides the protocol details for the messaging service within the IP Multimedia CN Subsystem (IMS) based on the Session Initiation Protocol (SIP), the Session Description Protocol (SDP) and, the Message Session Relay Protocol (MSRP).

##### 5.3.2.12.65 TS 24.259

Personal Network Management (PNM); Stage 3

Personal Network Management (PNM) is a home network-based application and provides the home network-based management of Personal Network (PN) consisting of multiple devices belonging to a single user, as described in 3GPP TS 22.259 and 3GPP TS 23.259. This document provides the protocol details for enabling Personal Network management (PNM) services in the IP Multimedia (IM) Core Network (CN) subsystem based on the protocols of XML Configuration Access Protocol (XCAP), Session Initiation Protocol (SIP) and the Session Description Protocol (SDP). The document provides the protocol details for enabling Personal Network management (PNM) services in Circuit Switched (CS) domain based on the protocols of CAP, MAP, ISUP, USSD and BICC.

##### 5.3.2.12.66 TS 24.279

Combining Circuit Switched (CS) and IP Multimedia Subsystem (IMS) services; Stage 3

This specification provides the technical realisation for the combination of Circuit Switched calls and IM sessions when using them simultaneously between the same two users. It also describes the use of CS and IM services in combination, using the existing procedures that have been defined for CS and IMS. It includes the necessary function as adding an IM session to an ongoing CS call, adding a CS call to an ongoing IM session, supplementary services as they relate to CSICS and supporting capability exchange.

##### 5.3.2.12.67 TS 24.285

Allowed Closed Subscriber Group (CSG) list; Management Object (MO)

This document specifies an Allowed Closed Subscriber Group (CSG) List Management Object (MO). The Allowed CSG List MO is compatible with the OMA Device Management (DM) protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework (DDF) as described in the Enabler Release Definition OMA-ERELD-DM-V1\_2. The Allowed CSG List MO consists of relevant parameters for that can be used by the UE to select the appropriate CSG cell based on its subscription. The Allowed CSG List MO defines the relevant parameters related to the Allowed CSG List and to the Operator CSG List. The usage of the Allowed CSG List for in the idle mode process and the mobility management procedure is defined in 3GPP TS 23.122, 3GPP TS 24.008 and 3GPP TS 24.301.

##### 5.3.2.12.68 TS 24.286

IP Multimedia (IM) Core Network (CN) subsystem Centralized Services (ICS); Management Object (MO)

This document defines the IMS Centralised Services Management Object (MO). The management object is compatible with OMA Device Management protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework as described in the Enabler Release Definition OMA-ERELD \_DM-V1\_2. The IMS Centralised Services Management Object consists of relevant parameters that can be managed for ICS.

##### 5.3.2.12.69 TS 24.292

IP Multimedia (IM) Core Network (CN) subsystem Centralized Services (ICS); Stage 3

IP Multimedia (IM) Core Network (CN) subsystem centralized services (ICS) allow for the delivery of consistent IMS services to the user regardless of the attached access type (e.g. CS domain access or IP-CAN). This document provides the protocol details for the realization of ICS based on the Session Initiation protocol (SIP), the Session Description Protocol (SDP), the I1 protocol, and the protocols of the 3GPP Circuit-Switched (CS) domain (e.g. CAP, MAP, ISUP, BICC and the NAS call control protocol for the CS access).

##### 5.3.2.12.70 TS 24.294

IP Multimedia Subsystem (IMS) Centralized Services (ICS) protocol via I1 interface

This document describes the I1 interface between IMS Centralized Services (ICS) UE and Service Centralization and Continuity (SCC) Application Server (AS). This specification defines a new application layer protocol over I1 interface, specifies the interaction between the ICS UE and the SCC AS including session control procedures and supplementary services control procedures. The protocol is intended to be independent of the transport protocol used so it can be applied to a number of technologies that need different transport protocols. The overall ICS architecture is specified in 3GPP TS 23.292

##### 5.3.2.12.71 TS 24.301

Non-Access-Stratum (NAS) protocol for Evolved Packet System (EPS); Stage 3

This document specifies the procedures used by the protocols for mobility management and session management between User Equipment (UE) and Mobility Management Entity (MME) in the Evolved Packet System (EPS). These protocols belong to the non-access stratum (NAS).

##### 5.3.2.12.72 TS 24.302

Access to the 3GPP Evolved Packet Core (EPC) via non-3GPP access networks; Stage 3

This document specifies the discovery and network selection procedures for access to 3GPP Evolved Packet Core (EPC) via non-3GPP access networks and includes Authentication and Access Authorization using Authentication, Authorization and Accounting (AAA) procedures used for the interworking of the 3GPP EPC and the non-3GPP access networks. The document also specifies the Tunnel management procedures used for establishing an end-to-end tunnel from the UE to the ePDG to the point of obtaining IP connectivity and includes the selection of the IP mobility mode. The non-3GPP access networks considered in this document are cdma2000® HRPD and Worldwide Interoperability for Microwave Access (WiMAX), and any access technologies covered in 3GPP TS 23.402. These non-3GPP access networks can be trusted or untrusted access networks.

##### 5.3.2.12.73 TS 24.303

Mobility management based on Dual-Stack Mobile IPv6; Stage 3

This document specifies the signalling procedures for accessing the 3GPP Evolved Packet Core network and handling the mobility between 3GPP and non-3GPP accesses via the S2c reference point defined in 3GPP TS 23.402. The document is applicable to the User Equipment (UE) and the network node implementing the Home Agent functionality. In addition the document specifies the procedures used for the DSMIPv6 Home Agent discovery, for bootstrapping the DSMIPv6 security association between the UE and the Home Agent and for managing the DSMIPv6 tunnel. The specification of these procedures is compliant to IETF RFCs. DSMIPv6 procedures can be used independently of the underlying access technology.

##### 5.3.2.12.74 TS 24.304

Mobility management based on Mobile IPv4; User Equipment (UE) - foreign agent interface; Stage 3

This document describes the stage 3 aspects of mobility management for User Equipment (UE) using IETF Mobile IPv4 foreign agent mode to access the Evolved Packet Core Network (EPC) through trusted non-3GPP access networks and for mobility management of UE between the 3GPP access network and trusted non-3GPP access networks. In particular, the document describes the UE – Mobile IPv4 Foreign Agent (FA) interface stage 3 aspects, where the FA functionality is located within the access network in the non-3GPP access domain. The document is applicable to the User Equipment (UE) and the network node implementing the FA functionality.

##### 5.3.2.12.75 TS 24.305

Selective Disabling of 3GPP User Equipment Capabilities (SDoUE) Management Object (MO)

This document specifies a mobile device Selective Disabling of 3GPP UE Capabilities (SDoUE) Management Object (MO) and the rules and corresponding behaviour of the UE with regard to the selective disabling of 3GPP UE capabilities, for example, when services or functions are disabled/enabled. The SDoUE MO is compatible with the OMA Device Management (DM) protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework (DDF) as described in the Enabler Release Definition OMA-ERELD-DM-V1\_2. The SDoUE MO consists of the relevant parameters that can be managed for selective disabling of 3GPP UE capabilities. The SDoUE MO defines a repository of data into the ME. The service requirements for selective disabling of 3GPP UE capabilities are defined in 3GPP TS 22.011.

##### 5.3.2.12.76 TS 24.312

Access Network Discovery and Selection Function (ANDSF) Management Object (MO)

This document defines management objects that can be used by the Access Network Discovery and Selection Function (ANDSF) and the UE. The Management Object (MO) is compatible with the OMA Device Management (DM) protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework (DDF) as described in the Enabler Release Definition OMA-ERELD-DM-V1\_2. The MO consists of relevant parameters for intersystem mobility policy- and access network discovery information that can be managed by the ANDSF. The service requirements and the functional requirements for the access network discovery and selection are described in 3GPP TS 22.278 and in 3GPP TS 23.402 respectively.

##### 5.3.2.12.77 TS 24.323

3GPP IP Multimedia Subsystem (IMS) service level tracing Management Object (MO)

This document defines the IMS service level tracing management object. The management object is compatible with OMA Device Management protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework as described in the Enabler Release Definition OMA-ERELD \_DM-V1\_2. The IMS service level tracing management object consists of relevant parameters that can be managed for IMS service level tracing capabilities.

##### 5.3.2.12.78 TS 24.337

IP Multimedia (IM) Core Network (CN) subsystem IP Multimedia Subsystem (IMS) inter-UE transfer; Stage 3

IP Multimedia (IM) Core Network (CN) subsystem inter-UE transfer (IUT) provides the capability of continuing ongoing communication sessions with multiple media across different user equipments (UEs) under the control of the same or different subscribers, and as part of Service Continuity (SC). This document provides the protocol details for enabling IMS inter-UE transfer based on the Session Initiation protocol (SIP) and the Session Description Protocol (SDP).

##### 5.3.2.12.79 TS 24.341

Support of SMS over IP networks; Stage 3

This specification provides the protocol details for SMS over IP functionality within the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP). The architecture for the SMS over IP functionality is specified in 3GPP TS 23.204.

##### 5.3.2.12.80 TS 24.368

Non-Access Stratum (NAS) configuration Management Object (MO)

This document defines a Management Object (MO) that can be used to configure the UE with parameters related to Non-Access Stratum (NAS) functionality. The MO is compatible with the OMA Device Management (DM) protocol specifications, version 1.2 and upwards, and is defined using the OMA DM Device Description Framework (DDF) as described in the Enabler Release Definition OMA-ERELD-DM-V1\_2. The MO consists of relevant parameters for NAS related configuration of a UE.

##### 5.3.2.12.81 TS 24.604

Communication Diversion (CDIV) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification

This document specifies the Stage 3, Protocol Description of the Communications Diversion (CDIV) supplementary services, based on stage one and two of the ISDN Communication diversion supplementary services. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

##### 5.3.2.12.82 TS 24.605

Conference (CONF) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification

This document specifies the stage three Protocol Description of the Conference (CONF) service based on stage one and two of the ISDN CONF supplementary service. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

##### 5.3.2.12.83 TS 24.606

Message Waiting Indication (MWI) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification

This document specifies the stage three Protocol Description of the Message Waiting Indication (MWI) service, based on stage one and two of the ISDN MWI supplementary services. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

##### 5.3.2.12.84 TS 24.607

Originating Identification Presentation (OIP) and Originating Identification Restriction (OIR) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification

This document specifies the stage three (protocol description) of the Originating Identification Presentation (OIP) supplementary service and the Originating Identification Restriction (OIR) supplementary services, based on stage one and two of the ISDN CLIP and CLIR supplementary service. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

##### 5.3.2.12.85 TS 24.608

Terminating Identification Presentation (TIP) and Terminating Identification Restriction (TIR) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification

This document specifies the stage three protocol description of the Terminating Identification Presentation (TIP) and Terminating Identification Restriction (TIR) services, based on stage one and two of the ISDN COLP and COLR supplementary services. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

##### 5.3.2.12.86 TS 24.610

Communication HOLD (HOLD) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification

This document specifies the stage three Protocol Description of the Communication Hold (HOLD) services, based on stages one and two of the ISDN Hold (HOLD) supplementary services. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

##### 5.3.2.12.87 TS 24.611

Anonymous Communication Rejection (ACR) and Communication Barring (CB) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification

This document specifies the stage three, Protocol Description of the Anonymous Communication Rejection (ACR) and Communication Barring (CB) supplementary service, based on stage one and two of the ISDN supplementary service Anonymous Call Rejection (ACR), Incoming Communication Barring (ICB) and Outgoing Communication Barring (OCB). It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

##### 5.3.2.12.88 TS 24.615

Communication Waiting (CW) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol Specification

This document specifies the stage 3, Protocol Description of the Communication Waiting (CW) service, based on Stage 1 and Stage 2 of the ISDN call waiting supplementary services. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

##### 5.3.2.12.89 TS 24.616

Malicious Communication Identification (MCID) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification

This document specifies the stage three Protocol Description of the Malicious Call Communication Identification (MCID) service based on the stage one and two of ISDN Malicious Call Identification supplementary service. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP). The MCID service will store session related information independent of the service requested.

##### 5.3.2.12.90 TS 24.623

Extensible Markup Language (XML) Configuration Access Protocol (XCAP) over the Ut interface for Manipulating Supplementary Services

This document defines a protocol used for manipulating data related to supplementary services. The protocol is based on the eXtensible Markup Language (XML) Configuration Access Protocol (XCAP) RFC 4825. A new XCAP application usage is defined for the purpose of manipulating the supplementary services data. The common XCAP related aspects that are applicable to supplementary services are specified in this document. The protocol allows authorized users to manipulate service related data either when they are connected to IMS or when they are connected to non IMS networks (e.g., the public Internet).

##### 5.3.2.12.91 TS 24.628

Common Basic Communication procedures using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification

This document describes the stage three protocol for basic communication procedures common to several services in the IP Multimedia (IM) Core Network (CN) subsystem when at least one Application Server (AS) is included in the communication. The common procedures are based on stage three specifications for supplementary services.

##### 5.3.2.12.92 TS 24.629

Explicit Communication Transfer (ECT) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification

This document specifies the stage three (protocol description) of the Explicit Communication transfer (ECT) supplementary service, based on stage one and two of the ISDN ECT supplementary service. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

##### 5.3.2.12.93 TS 24.642

Completion of Communications to Busy Subscriber (CCBS) and Completion of Communications by No Reply (CCNR) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification

This document specifies the stage three Protocol Description of the Completion of Communications to Busy Subscriber (CCBS) service and the Completion of Communication on no Reply (CCNR) service, based on stage one and two of the ISDN supplementary services. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

##### 5.3.2.12.94 TS 24.647

Advice Of Charge (AOC) using IP Multimedia (IM) Core Network (CN) subsystem

This document specifies the stage three Protocol Description of the Advice Of Charge (AOC) service, based on Stage 1 and 2 of the ISDN Supplementary Service Advice Of Charge for all calls (permanent mode). It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

##### 5.3.2.12.95 TS 24.654

Closed User Group (CUG) using IP Multimedia (IM) Core Network (CN) subsystem, Protocol Specification

This document specifies the stage three Protocol Description of the Closed User Group (CUG) service, based on stage one and two of the ISDN Communication diversion supplementary services. It provides the protocol details in the IP Multimedia (IM) Core Network (CN) subsystem based on the Session Initiation Protocol (SIP) and the Session Description Protocol (SDP).

##### 5.3.2.12.96 TS 27.005

Use of Data Terminal Equipment - Data Circuit terminating Equipment (DTE - DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)

This document defines three interface protocols for control of SMS functions within a GSM/UMTS mobile telephone from a remote terminal via an asynchronous interface. The "block mode" protocol includes error protection and is suitable for use where the link may not be completely reliable. It is of particular use where control of remote devices is required. Efficient transfer of binary encoded user data is possible. The "text mode", based on AT commands, is suitable for unintelligent terminals or terminal emulators, and for application software built on command structures like those defined in V.25ter. The character based "PDU mode" is suitable for software drivers based on AT command structures which do not understand the content of the message blocks and can only pass them between the MT and higher level software resident in the TE.

In all three modes, the terminal is considered to be in control for SMS/CBS transactions.

The document considers the mobile termination to be a single entity. Other 3GPP/GSM Technical Specifications describe the split of functionality between the mobile equipment and (U)SIM.

##### 5.3.2.12.97 TS 27.007

AT command set for User Equipment (UE)

This document specifies a profile of AT commands and recommends that this profile be used for controlling Mobile Termination (MT) functions and GSM/UMTS network services from a Terminal Equipment (TE) through Terminal Adaptor (TA). The command prefix +C is reserved for Digital Cellular in ITU-T Recommendation V.250. The document has also the syntax details used to construct these extended GSM/UMTS commands. Commands from ITU-T Recommendation V.250 and existing digital cellular standards (TIA IS 99 and TIA IS 135) are used whenever applicable. Some of the new commands are defined such way that they can be easily applied to MT of networks other than GSM/UMTS. ITU T Recommendation T.31 and ITU-T Recommendation T.32 fax AT commands may be used for GSM/UMTS fax transmission from TE. GSM/UMTS Short Message Service AT commands are defined in 3GPP TS 27.005. AT commands for GPRS and EPC are defined in this specification. The document assumes an abstract architecture comprising a TE (e.g. a computer) and a MT interfaced by a TA.

The commands described in this document may be observed on the link between the TE and the TA. However, most of the commands retrieve information about the MT, not about the TA.

##### 5.3.2.12.98 TS 27.010

Terminal Equipment to User Equipment (TE-UE) multiplexer protocol

This document defines a multiplexing protocol between a UE and a TE. The multiplexing protocol can be used to send any data, for instance voice, SMS, USSD, fax etc. The document describes the protocol, but not the commands or data transported with it.

##### 5.3.2.12.99 TS 29.002

Mobile Application Part (MAP) specification

It is necessary to transfer between entities of a Public Land Mobile Network (PLMN) information specific to the PLMN in order to deal with the specific behaviour of roaming Mobile Stations (MS)s. The Signalling System No. 7 specified by CCITT is used to transfer this information.

##### 5.3.2.12.100 TS 29.016

General Packet Radio Service (GPRS); Serving GPRS Support Node (SGSN) - Visitors Location Register (VLR); Gs interface network service specification

This document specifies the subset of MTP and SCCP which is used for the reliable transport of BSSAP+ messages in the Gs interface. The document references 3GPP TS 29.202 which specifies alternative transport layers that can be applied instead of the MTP. The document also specifies the SCCP addressing capabilities to be provided in the Gs interface.

##### 5.3.2.12.101 TS 29.018

General Packet Radio Service (GPRS); Serving GPRS Support Node (SGSN) - Visitors Location Register (VLR); Gs interface layer 3 specification

This document specifies procedures used on the Serving GPRS Support Node (SGSN) to Visitors Location Register (VLR) interface for interoperability between circuit switched services and packet data services. The document specifies the layer 3 messages and procedures on the Gs interface to allow coordination between databases and to relay certain messages related to GSM circuit switched services over the GPRS subsystem.

##### 5.3.2.12.102 TS 29.060

General Packet Radio Service (GPRS); GPRS Tunnelling Protocol (GTP) across the Gn and Gp interface

This document defines the second version of GTP used on: – the Gn and Gp interfaces of the General Packet Radio Service (GPRS);- the Iu, Gn and Gp interfaces of the UMTS system.

##### 5.3.2.12.103 TS 29.061

Interworking between the Public Land Mobile Network (PLMN) supporting packet based services and Packet Data Networks (PDN)

This document defines the requirements for Packet Domain interworking between a: a) PLMN and PDN; b) PLMN and PLMN.

This document is valid for a PLMN in A/Gb mode as well as for a PLMN in Iu mode. If text applies only for one of these systems it is explicitly mentioned by using the terms “A/Gb mode” and “Iu mode”. The A interface does not play any role in the scope of this document although the term “A/Gb mode” is used.

##### 5.3.2.12.104 TS 29.079

Optimal media routeing within the IP Multimedia Subsystem (IMS); Stage 3

This document defines optional Optimal Media Routeing (OMR) procedures that can be applied by entities in the IP Multimedia Subsystem (IMS) that control media resources and are capable of manipulating the Session Description Protocol (SDP) as defined by IETF RFC 4566. The OMR procedures relate to the handling of OMR-specific SDP attributes that are documented in TS 24.229. The OMR procedures use SDP offer/answer related procedures in IETF RFC 3264 and in 3GPP TS 24.229 in a backward-compatible manner.

##### 5.3.2.12.105 TS 29.118

Mobility Management Entity (MME) - Visitor Location Register (VLR) SGs interface specification

CS Fallback in the Evolved Packet System (EPS) enables the provisioning of CS-domain services (e.g. voice call, Location Services (LCS) or supplementary services) by reuse of CS infrastructure when the UE is served by E-UTRAN. Additionally, SMS delivery via the CS core network is realized without CS fallback. This document specifies the procedures and the SGs Application Part (SGsAP) messages used on the SGs interface between the Mobility Management Entity (MME) in the EPS and the Visitor Location Register (VLR), to allow location management coordination and to relay certain messages related to GSM circuit switched services over the EPS system. It also specifies the use of Stream Control Transmission Protocol (SCTP) for the transport of SGsAP messages.

##### 5.3.2.12.106 TS 29.162

Interworking between the IM CN subsystem and IP networks

The IM CN subsystem interworks with the external IP networks through the Mb reference point. This document details the interworking between the IM CN subsystem and external IP networks for IM service support. It addresses the issues of control plane interworking and, user plane interworking for specific interworking use cases. The document describes the IMS-Ix interface requirements in the form of Use Cases which require H.248 protocol procedures and also details the additional Information Elements required to perform the specific procedures.

The IP version Interworking, between IP version 4 (IETF RFC 791) and IP version 6 (IETF RFC 2460) detailed in terms of the processes and protocol mappings required in order to support both mobile originated and terminated calls.

##### 5.3.2.12.107 TS 29.163

Interworking between the IP Multimedia (IM) Core Network (CN) subsystem and Circuit Switched (CS) networks

This document specifies the principles of interworking between the 3GPP IM CN subsystem and BICC/ISUP based legacy CS networks, in order to support IM basic voice, data and multimedia calls. This document addresses the areas of control and user plane interworking between the IM CN subsystem and CS networks through the network functions, which include the MGCF and IM-MGW. For the specification of control plane interworking, areas such as the interworking between SIP and BICC or ISUP are detailed in terms of the processes and protocol mappings required for the support of both IM originated and terminated voice and multimedia calls. Other areas addressed encompass the transport protocol and signalling issues for negotiation and mapping of bearer capabilities and QoS information.

##### 5.3.2.12.108 TS 29.164

Interworking between the 3GPP CS domain with BICC or ISUP as signalling protocol and external SIP-I networks

This document defines interworking procedures between a 3GPP CS domain (see 3GPP TS 23.205) which applies either BICC or ISUP as signalling protocol, and external networks that use SIP-I (see ITU-T Q.1912.5, Profile C) as signalling protocol. The document also describes the related interworking architecture. The control plane interworking is performed by an interworking unit at the interconnection between the 3GPP CS domain and an external SIP-I network. The user plane interworking is performed by an MGW. The document defines stage 2 procedures for the control of the MGW.

##### 5.3.2.12.109 TS 29.165

Inter-IMS Network to Network Interface (NNI)

This document addresses the Inter-IMS Network to Network Interface (II-NNI) consisting of Ici and Izi reference points between IMS networks in order to support end-to-end service interoperability. The document addresses the issues related to control plane signalling (3GPP usage of SIP and SDP protocols, required SIP header fields) as well as other interconnecting aspects like security, numbering/naming/addressing and user plane issues as transport protocol, media and codecs actually covered in a widespread set of 3GPP specifications. A profiling of the Inter-IMS Network to Network Interface (II-NNI) is also provided. Charging aspects are addressed as far as SIP signalling is concerned.

##### 5.3.2.12.110 TS 29.168

Cell Broadcast Centre interfaces with the Evolved Packet Core; Stage 3

This document specifies the procedures and the SBc Application Part (SBc-AP) messages used on the SBc-AP interface between the Mobility Management Entity (MME) and the Cell Broadcast Centre (CBC). This document supports the following functions.- Warning Message Transmission function in the EPS.

##### 5.3.2.12.111 TS 29.171

Location Services (LCS); LCS Application Protocol (LCS-AP) between the Mobile Management Entity (MME) and Evolved Serving Mobile Location Centre (E-SMLC); SLs interface

This document specifies the procedures and information coding for LCS Application Protocol (LCS-AP) that is needed to support the location services in E-UTRAN. The LCS-AP message set is applicable to the SLs interface between the E-SMLC and the MME. LCS-AP is developed in accordance to the general principles stated in 3GPP TS 23.271.

##### 5.3.2.12.112 TS 29.172

Location Services (LCS); Evolved Packet Core (EPC) LCS Protocol (ELP) between the Gateway Mobile Location Centre (GMLC) and the Mobile Management Entity (MME); SLg interface

This document specifies the procedures and information coding for the EPC LCS Protocol (ELP) that is needed to support the location services in E-UTRAN. The ELP message set is applicable to the SLg interface between the MME and the GMLC. ELP is developed in accordance to the general principles stated in 3GPP TS 23.271

##### 5.3.2.12.113 TS 29.173

Location Services (LCS); Diameter-based SLh interface for Control Plane LCS

This document describes the Diameter-based SLh interface between the GMLC and the HSS defined for the Control Plane LCS in EPC.

##### 5.3.2.12.114 TS 29.202

Signalling System No. 7 (SS7) signalling transport in core network; Stage 3

This document defines the possible protocol architectures for transport of SS7 signalling protocols in Core Network.

##### 5.3.2.12.115 TS 29.204

Signalling System No. 7 (SS7) security gateway; Architecture, functional description and protocol details

This document provides the functional description of the SS7 Security Gateway. The document covers also network architecture, routeing considerations, and protocol details.

##### 5.3.2.12.116 TS 29.205

Application of Q.1900 series to bearer independent Circuit Switched (CS) core network architecture; Stage 3

This document describes the protocols to be used when ITU-T Q.1902 “Bearer Independent Call Control” is used as call control protocol in a 3GPP Bearer Independent CS core network 3GPP TS 23.205 The Q.1902 operates between (G)MSC servers. The BICC architecture as described in ITU-T Q.1902 consists of a number of protocols. The following types of protocols are described: call control protocol, bearer control protocols and a resource control protocol for this architecture. The architecture complies with the requirements imposed by 3GPP TS 23.205 and TS 23.153.

##### 5.3.2.12.117 TS 29.212

Policy and Charging Control (PCC) over Gx/Sd reference point

This document provides the stage 3 specification of the Gx and Gxx reference points. The functional requirements and the stage 2 specifications of the Gx and Gxx reference point are contained in 3GPP TS 23.203. The Gx reference point lies between the Policy and Charging Rule Function and the Policy and Charging Enforcement Function. The Gxx reference point lies between the Policy and Charging Rule Function and the Bearer Binding and Event Reporting Function. Whenever possible the document specifies the requirements for the protocol by reference to specifications produced by the IETF within the scope of Diameter. Where this is not possible, extensions to Diameter are defined within the document itself.

##### 5.3.2.12.118 TS 29.213

Policy and charging control signalling flows and Quality of Service (QoS) parameter mapping

This specification adds detailed flows of Policy and Charging Control (PCC) over the Rx , Gx, Gxx and S9 reference points and their relationship with the bearer level signalling flows over the Gn/Gp, S4, S5/S8, S2a and S2c interfaces. The call flows depicted represent usual cases, but not all situations are covered. The document also describes the binding and the mapping of QoS parameters among SDP, UMTS QoS parameters, and QoS authorization parameters, as well as PCRF addressing using DRA.

##### 5.3.2.12.119 TS 29.214

Policy and charging control over Rx reference point

This document provides the stage 3 specification of the Rx reference point. The functional requirements and the stage 2 specifications of the Rx reference point are contained in 3GPP TS 23.203. The Rx reference point lies between the Application Function and the Policy and Charging Rule Function. Whenever possible this document specifies the requirements for the protocol by reference to specifications produced by the IETF within the scope of Diameter. Where this is not possible, extensions to Diameter are defined within the document itself.

##### 5.3.2.12.120 TS 29.215

Policy and Charging Control (PCC) over S9 reference point; Stage 3

This document provides the Stage 3 specification of the S9 reference point. The functional requirements of Stage 2 specification for the S9 reference point are contained in 3GPP TS 23.203. The S9 reference point lies between the PCRF in the home PLMN (also known as H-PCRF) and the PCRF in the visited PLMN (also known as V-PCRF). Whenever it is possible this document specifies the requirements for the protocols by reference to specifications produced by the IETF within the scope of Diameter. Where this is not possible extensions to Diameter are defined within this document.

##### 5.3.2.12.121 TS 29.228

IP Multimedia (IM) Subsystem Cx and Dx Interfaces; Signalling flows and message contents

This 3GPP Technical Specification (TS) specifies the interactions between the HSS (Home Subscriber Server) and the CSCF (Call Session Control Functions), referred to as the Cx interface, and the interactions between the CSCF and the SLF (Server Locator Function), referred to as the Dx interface.

##### 5.3.2.12.122 TS 29.229

Cx and Dx interfaces based on the Diameter protocol; Protocol details

This specification defines a transport protocol for use in the IP multimedia (IM) Core Network (CN) subsystem based on Diameter.

##### 5.3.2.12.123 TS 29.232

Media Gateway Controller (MGC) - Media Gateway (MGW) interface; Stage 3

This document describes the protocol to be used on the Media Gateway Controller (MGC) – Media Gateway (MGW) interface. The Media Gateway Controllers covered in this specification are the MSC server and the GMSC server. The basis for this interface profile is the H.248.1 protocol. The usage of this protocol is described in 3GPP TS 23.205 and 3GPP TS 29.205 for BICC circuit switched core network, in 3GPP TS 23.231 and 3GPP TS 29.231 for SIP-I circuit switched core network.

This profile includes the support for the enhanced MSC server to provide access to IMS Centralised services as described in 3GPP TS 23.292 and thus the procedures related to this interface are described in 3GPP TS 29.292. As a result the interworking with SIP and the associated MGW control procedures described in 3GPP TS 29.163 for the interworking between BICC/ISUP circuit switched core network and IP Multimedia core network are incorporated.

This specification describes the changes to H.248 which are needed to handle 3GPP specific traffic cases. This is done by using the H.248 standard extension mechanism. In addition certain aspects of the base protocol H.248 are not needed for this interface and thus excluded by this profile.

##### 5.3.2.12.124 TS 29.235

Interworking between SIP-I based circuit-switched core network and other networks

This specification defines the interworking between SIP-I based circuit-switched core network with out-of-band transcoder control related procedures and: - an external SIP-I based signalling network - an ISUP based network such as an ISUP based 3GPP CS Domain or an PSTN - an BICC based network such as an BICC based 3GPP CS Domain - an Internet Multimedia Subsystem.

##### 5.3.2.12.125 TS 29.238

Interconnection Border Control Functions (IBCF) - Transition Gateway (TrGW) interface, Ix interface; Stage 3

This document describes the protocol to be used on the Interconnection Border Control Function (IBCF) – Transition Gateway (TrGW) interface and the CS-IBCF – CS-TrGW interface. The basis for this protocol is the H.248 protocol. The Profile provides MG control function for IMS and CS Border Control. The IMS architecture is described in 3GPP TS 23.228. The underlying reference model and stage 2 information is described in 3GPP TS 23.228 and in 3GPP TS 29.162. The CS architecture is described in 3GPP TS 29.235. This specification describes the application of H.248 Ix profile for both Ix and CS-Ix interfaces. Required extensions use the H.248 standard extension mechanism. In addition certain aspects of the base protocol H.248 are not needed for this interface and thus excluded by this profile.

##### 5.3.2.12.126 TS 29.272

Evolved Packet System (EPS); Mobility Management Entity (MME) and Serving GPRS Support Node (SGSN) related interfaces based on Diameter protocol

This document describes the Mobility Management Entity (MME) and Serving GPRS Support Node (SGSN) related diameter-based interfaces towards the Home Subscriber Server (HSS), and the MME and the SGSN related diameter-based interface towards the Equipment Identity Register (EIR). This specification defines the Diameter application for the MME-HSS, S6a reference point, and for the SGSN-HSS, S6d reference point. The interactions between the HSS and the MME/SGSN are specified, including the signalling flows. This specification defines the Diameter application for the MME-EIR, S13 reference point, and for the SGSN-EIR, S13’ reference point. The interactions between the MME/SGSN and the EIR are specified, including the signalling flows.

##### 5.3.2.12.127 TS 29.273

Evolved Packet System (EPS); 3GPP EPS AAA interfaces

This document defines the stage-3 protocol description for several reference points for the non-3GPP access in EPS.

##### 5.3.2.12.128 TS 29.274

3GPP Evolved Packet System (EPS); Evolved General Packet Radio Service (GPRS) Tunnelling Protocol for Control plane (GTPv2-C); Stage 3

This document specifies the stage 3 of the control plane of the GPRS Tunnelling Protocol, Version 2 for Evolved Packet System interfaces (GTPv2-C). In this document, unless otherwise specified the S5 interface refers always to “GTP-based S5” and S8 interface refers always to “GTP-based S8” interface.

##### 5.3.2.12.129 TS 29.275

Proxy Mobile IPv6 (PMIPv6) based Mobility and Tunnelling protocols; Stage 3

This document specifies the Stage 3 of the PMIPv6 Based Mobility and Tunnelling Protocols used over the PMIP-based S2a, S2b, S5, and S8 reference points defined in 3GPP TS 23.402, and are thus applicable to the Serving GW, PDN Gateway, ePDG, and Trusted Non-3GPP Access. Protocols specifications are compliant with relevant IETF RFCs. In this specification PMIP refers to PMIPv6 as defined in IETF RFC 5213.

##### 5.3.2.12.130 TS 29.276

3GPP Evolved Packet System (EPS); Optimized handover procedures and protocols between E-UTRAN access and cdma2000 HRPD Access; Stage 3

This document specifies the Stage 3 of the Evolved Packet System S101 interface between the MME and the HRPD Access Network. The S101 interface supports procedures for Pre-Registration, Session Maintenance and Active handoffs between E-UTRAN and HRPD networks.

##### 5.3.2.12.131 TS 29.280

Evolved Packet System (EPS); 3GPP Sv interface (MME to MSC, and SGSN to MSC) for SRVCC

This document describes the Sv interface between the Mobility Management Entity (MME) or Serving GPRS Support Node (SGSN) and 3GPP MSC server enhanced for SRVCC. Sv interface is used to support Inter-RAT handover from VoIP/IMS over EPS to CS domain over 3GPP UTRAN/GERAN access or from UTRAN (HSPA) to 3GPP UTRAN/GERAN access.

##### 5.3.2.12.132 TS 29.281

General Packet Radio System (GPRS) Tunnelling Protocol User Plane (GTPv1-U)

This document defines the user plane of GTP used on: – the Gn and Gp interfaces of the General Packet Radio Service (GPRS);- the Iu, Gn and Gp interfaces of the UMTS system;- the S1-U, X2, S4, S5, S8 and S12 interfaces of the Evolved Packet System (EPS).

##### 5.3.2.12.133 TS 29.292

Interworking between the IP Multimedia (IM) Core Network (CN) subsystem (IMS) and MSC Server for IMS Centralized Services (ICS)

IMS Centralized Services (ICS) enable the delivery of IM CN subsystem based multimedia telephony and supplementary services as defined in 3GPP TS 24.173 to users regardless of the attached access network type; e.g. CS domain access or IP-CAN.

This document specifies the principles of interworking between the IM CN subsystem and CS domain in order to enable ICS for UEs using CS domain access. The document addresses the area of registration procedures interworking between the CS domain and IM CN subsystem, and the areas of control and user plane interworking between the IM CN subsystem and CS domain through an MSC Server enhanced for ICS and CS-MGW respectively. This includes the signalling procedures between the MSC Server and CS-MGW. For the specification of control plane interworking, the document defines the protocol interworking between the 3GPP profile of SIP as described in 3GPP TS 24.229 and NAS signalling as described in 3GPP TS 24.008 required for the support of IM CN subsystem based multimedia telephony and supplementary services. The document addresses the area of supplementary service configuration interworking between the CS domain and IM CN subsystem. It is applicable to the MSC Server and CS-MGW.

##### 5.3.2.12.134 TS 29.311

Service level interworking for Messaging Services

This document specifies the protocol details of service level interworking between Instant Message (OMA-TS-SIMPLE\_IM) or Chat Session (OMA-TS-CPM\_Conv\_Fnct) using the 3GPP IP Multimedia CN subsystem and the Short Message Service over both legacy CS/PS network as specified in the 3GPP TS 23.040 and a generic IP Conectivity Access Network (IP-CAN) as specified in the 3GPP TS 24.341. These include:

– Procedures to implement service level interworking between IM and SM;

– Procedures to implement service level interworking between CPM and SM;

– Enhancement of the IP-SM-GW as an Application Server to support service selection, authorization and mapping between IM or CPM and SM protocols; and

– Interaction between service level interworking and transport layer interworking.

##### 5.3.2.12.135 TS 29.328

IP Multimedia (IM) Subsystem Sh interface; Signalling flows and message contents

This document specifies:

1. The interactions between the HSS (Home Subscriber Server) and the SIP AS (Application Server) and between the HSS and the OSA SCS (Service Capability Server). This interface is referred to as the Sh reference point.

2. The interactions between the SIP AS and the SLF (Subscription Locator Function) and between the OSA SCS and the SLF. This interface is referred to as the Dh reference point.

The IP Multimedia (IM) Core Network Subsystem stage 2 is specified in 3GPP TS 23.228 and the signalling flows for the IP multimedia call control based on SIP and SDP are specified in 3GPP TS 24.228.

The IP Multimedia (IM) Session Handling with the IP Multimedia (IM) call model is specified in 3GPP TS 23.218.

This document addresses the signalling flows and message contents for the protocol at the Sh and Dh interface and also addresses how the functionality of Ph interface is accomplished. The Presence Service Stage 2 description (architecture and functional solution) is specified in 3GPP TS 23.141.

##### 5.3.2.12.136 TS 29.329

Sh interface based on the Diameter protocol; Protocol details

This document defines a transport protocol for use in the IP multimedia (IM) Core Network (CN) subsystem based on Diameter and is applicable to:

– The Sh interface between an AS and the HSS.

– The Sh interface between an SCS and the HSS.

Whenever it is possible this document specifies the requirements for this protocol by reference to specifications produced by the IETF within the scope of Diameter. Where this is not possible, extensions to Diameter are defined within this document.

##### 5.3.2.12.137 TS 29.332

Media Gateway Control Function (MGCF) - IM Media Gateway; Mn interface

This document describes the protocol to be used on the Media Gateway Control Function (MGCF) – IM Media Gateway (IM-MGW) interface. This interface provides the Media Gateway Control for interworking between the IP Multimedia Subsystem (IMS) and CS domain (ISUP, BICC and SIP-I). The basis for this protocol is the H.248 protocol. The IMS architecture is described in 3GPP TS 23.228. The interaction of the MGCF-IM MGW interface signalling procedures in relation to the SIP, and BICC/ISUP signalling at the MGCF are described in 3GPP TS 29.163.

The interaction of the MGCF-IM MGW interface signalling procedures in relation to the IMS SIP and SIP-I on Nc at the MGCF are described in 3GPP TS 29.235.

This specification describes the application of H.248 on the Mn interface. Required extensions use the H.248 standard extension mechanism. In addition certain aspects of the base protocol H.248 are not needed for this interface and thus excluded by this profile.

In addition this profile provides support for PSTN/ISDN Emulation as required by ETSI TISPAN.

The main body of the specification provides an introduction to the use of the profile for the Mn interface and introduces any specific functionality (e.g. new packages) associated with the Mn.

##### 5.3.2.12.138 TS 29.333

Multimedia Resource Function Controller (MRFC) - Multimedia Resource Function Processor (MRFP) Mp interface; Stage 3

This document describes the protocol to be used on the Multimedia Resource Function Controller (MRFC) – Multimedia Resource Function Processor (MRFP) interface (Mp interface). The IMS architecture is described in 3GPP TS 23.228, the functional requirements are described in 3G TS 23.333. This specification defines a profile of the Gateway Control Protocol (H.248.1) for controlling Multimedia Resource Function Processor supporting in-band user interaction, conferencing and transcoding for multimedia-services.

##### 5.3.2.12.139 TS 29.334

IMS Application Level Gateway (IMS-ALG) - IMS Access Gateway (IMS-AGW); Iq Interface; Stage 3

This document describes the protocol to be used on the IMS Application Level Gateway (ALG) – IMS Access Gateway (IMS-AGW) interface. The basis for this protocol is the H.248 protocol as specified in ITU-T. The IMS architecture is described in 3GPP TS 23.228. The underlying reference model and stage 2 information is described in 3GPP TS 23.228 and in 3GPP TS 23.334. This specification describes the application of H.248 on the Iq interface. Required extensions use the H.248 standard extension mechanism. In addition certain aspects of the base protocol H.248 are not needed for this interface and thus excluded by this profile.

##### 5.3.2.12.140 TS 29.335

User Data Convergence (UDC); User data repository access protocol over the Ud interface; Stage 3

This document describes the Stage 3 user data repository access protocol over Ud interface.

##### 5.3.2.12.141 TS 29.364

IP Multimedia Subsystem (IMS) Application Server (AS) service data descriptions for AS interoperability

This specification standardizes the structure and the coding of the service data that are transported over the Sh interface between an Application Server supporting Multimedia Telephony supplementary services as defined in 3GPPP TS 22.173 and the HSS. Two optional formats are specified. One is based on a binary coding of the service data and supports the subset of MMTEL services corresponding to PSTN/ISDN and CS supplementary services. The other uses an XML format and supports the full set of MMTEL Services.

##### 5.3.2.12.142 TS 31.101

UICC-terminal interface; Physical and logical characteristics

This document specifies the interface between the UICC and the Terminal for 3G telecom network operation. It specifies:

– the requirements for the physical characteristics of the UICC;

– the electrical interface between the UICC and the Terminal;

– the initial communication establishment and the transport protocols;

– the model which serves as a basis for the logical structure of the UICC;

– the communication commands and the procedures;

– the application independent files and protocols.

##### 5.3.2.12.143 TS 31.102

Characteristics of the Universal Subscriber Identity Module (USIM) application

This document defines the USIM application for 3G telecom network operation. It specifies:

– specific command parameters;

– file structures;

– contents of EFs (Elementary Files);

– security functions;

– application protocol to be used on the interface between UICC (USIM) and ME.

This is to ensure interoperability between a USIM and an ME independently of the respective manufacturer, card issuer or operator

##### 5.3.2.12.144 TS 31.103

Characteristics of the IP Multimedia Services Identity Module (ISIM) application

This document defines the ISIM application for access to IMS services.

This document specifies:

– specific command parameters;

– file structures;

– contents of EFs (Elementary Files);

– security functions;

– application protocol to be used on the interface between UICC (ISIM) and Terminal.

This is to ensure interoperability between an ISIM and Terminal independently of the respective manufacturer, card issuer or operator.

This document does not define any aspects related to the administrative management phase of the ISIM. Any internal technical realisation of either the ISIM or the Terminal is only specified where these are reflected over the interface. This document does not specify any of the security algorithms that may be used.

##### 5.3.2.12.145 TS 31.111

Universal Subscriber Identity Module (USIM) Application Toolkit (USAT)

This document defines the ISIM application for access to IMS services. It specifies:

– specific command parameters;

– file structures;

– contents of EFs (Elementary Files);

– security functions;

– application protocol to be used on the interface between UICC (ISIM) and Terminal.

This is to ensure interoperability between an ISIM and Terminal independently of the respective manufacturer, card issuer or operator. This document defines the interface between the UICC and the Mobile Equipment (ME), and mandatory ME procedures, specifically for "USIM Application Toolkit".

The document mainly refers to ETSI TS 102 223, which describes the generic aspects of application toolkits within the UICC. USAT is a set of commands and procedures for use during the network operation phase of 3G/LTE, in addition to those defined in TS 31.101.

Specifying the interface is to ensure interoperability between a UICC and an ME independently of the respective manufacturers and operators.

This document defines for 3G/LTE technology:

– the commands;

– the application protocol;

– the mandatory requirements on the UICC and ME for each procedure.

##### 5.3.2.12.146 TS 31.115

Secured packet structure for (Universal) Subscriber Identity Module (U)SIM Toolkit applications

This document specifies the structure of the Secured Packets in implementations using Short Message Service Point to Point (SMS-PP), Short Message Service Cell Broadcast (SMS-CB), Unstructured Supplementary Service Data (USSD) and and Hyper Text Transfer Protocol (HTTP) based on ETSI TS 102 225. The structure of the Secured Packets complies with the one defined in ETSI TS 102 225. This document only contains additional requirements or explicit limitations for SIM/USIM applications. It is applicable to the exchange of secured packets between an entity in a 3G or GSM PLMN and an entity in the (U)SIM. Secured Packets contain application messages to which certain mechanisms according to ETSI TS 102 224 have been applied. Application messages are commands or data exchanged between an application resident in or behind the PLMN and on the (U)SIM. The Sending/Receiving Entity in the 3G or GSM PLMN and the UICC are responsible for applying the security mechanisms to the application messages and thus turning them into Secured Packets.

##### 5.3.2.12.147 TS 31.116

Remote APDU Structure for (U)SIM Toolkit applications

This document defines the remote management of files and applets on the SIM/USIM/ISIM.

It describes the APDU format for remote management. Furthermore the document specifies:

– a set of commands coded according to this APDU structure and used in the remote file management on the SIM/USIM specified in TS 51.011, TS 31.101, TS 31.102, TS 31.103;

– a set of commands coded according to this APDU structure and used in the remote applet management on the SIM/USIM. This is based on ETSI TS 102 226.

The remote APDU structure for SIM/USIM/ISIM applications complies with the one defined in ETSI TS 102 226. This document only contains additional requirements or explicit limitations for SIM/USIM/ISIM applications.

##### 5.3.2.12.148 TS 31.130

(U)SIM Application Programming Interface (API); (U)SIM API for Java™ Card

This document defines the (U)SIM Application Programming Interface extending the UICC API for Java Card™, ETSI TS 102 241. This API allows the development of a (U)SAT application running together with a (U)SIM application and using GSM/3G network features.

##### 5.3.2.12.149 TS 31.133

IP Multimedia Services Identity Module (ISIM) Application Programming Interface (API); ISIM API for Java Card™

This document defines the ISIM Application Programming Interface extending the UICC API for Java Card™, ETSI TS 102 241. This API allows the development of an application running together with a ISIM application.

##### 5.3.2.12.150 TS 31.220

Characteristics of the Contact Manager for 3GPP UICC applications

This document defines the Contact Manager for 3GPP UICC applications based on OMA DS. It specifies the external interface between the Contact Manager Server in the UICC and the Contact Manager External Client in the ME.

##### 5.3.2.12.151 TS 31.221

Contact Manager Application Programming Interface (API); Contact Manager API for Java Card

This document defines the internal interface characteristics of the Contact Manager for 3GPP UICC applications. The internal interface between the Contact Manager Server application on the UICC and the Contact Manager Client application on the UICC enables Java Card™ platform based applets to invoke and register to the Contact Manager Server services. In particular, the Contact Manager Java Card™ based API provides methods to:

– Read/Update/Create/Delete contact(s) in the Contact Manager Server;

– Manage group of contacts in the Contact Manager Server;

– Search for a contact in the Contact Manager Server storage;

– manage the contacts structure;

– Register/Un-register the application to pre-defined events (e.g. application to be notified when contacts are modified in the Contact Manager Server).

#### 5.3.2.13 System aspects

IMT-2000 CDMA TDD specification also includes the following documents which are useful and related to this Recommendation.

##### 5.3.2.13.1 TS 21.101

Technical Specifications and Technical Reports for a UTRAN-based 3GPP system

The listed Specifications are required to build a system based on UTRAN radio technology.

##### 5.3.2.13.2 TS 21.133

3G security; Security threats and requirements

Detailed security requirements.

##### 5.3.2.13.3 TS 21.201

Technical Specifications and Technical Reports for an Evolved Packet System (EPS) based 3GPP system

This document identifies the 3GPP Technical Specifications and Technical Reports required or potentially required to build a system based on the Evolved Packet System/LTE/E UTRAN radio technology.

##### 5.3.2.13.4 TS 22.001

Principles of circuit telecommunication services supported by a Public Land Mobile Network (PLMN)

This document covers the definition of the circuit telecommunication services supported by a PLMN. The purpose of this document is to provide a method for the characterization and the description of these telecommunication services.

##### 5.3.2.13.5 TS 22.002

Circuit Bearer Services (BS) supported by a Public Land Mobile Network (PLMN)

This 3G specification describes a set of bearer services to be provided to 3G subscribers by a 3G network itself and in connection with other networks. This document is also be used as a reference for defining the corresponding required mobile network capabilities which are specified by means of the connection type concept.

##### 5.3.2.13.6 TS 22.003

Circuit Teleservices supported by a Public Land Mobile Network (PLMN)

This document describes and defines a recommended set of Circuit Teleservices to be supported by a PLMN in connection with other networks as a basis for defining the network capabilities required.

##### 5.3.2.13.7 TS 22.004

General on supplementary services

This specification describes a recommended set of supplementary services to the teleservices and bearer services which will be supported by a 3G network in connection with other networks as a basis for the definition of the network capabilities required.

##### 5.3.2.13.8 TS 22.011

Service accessibility

This specification describes the service access procedures as presented to the user. The document contains definitions and procedures are provided for international roaming, national roaming and regionally provided service. These are mandatory in relation to the technical realization of the UE.

##### 5.3.2.13.9 TS 22.016

International Mobile station Equipment Identities (IMEI)

This specification describes the principal purpose and use of unique equipment identities.

##### 5.3.2.13.10 TS 22.022

Personalisation of Mobile Equipment (ME); Mobile functionality specification

This specification describes functional specifications of five features to personalize UE. These features are called: – network personalization; – network subset personalization; – service provider (SP) personalization; – corporate personalization; – UMTS subscriber identity module (USIM) personalization. This specification describes requirements for UE, which provide these personalization features.

##### 5.3.2.13.11 TS 22.034

High Speed Circuit Switched Data (HSCSD); Stage 1

This specification describes the Stage 1 description of HSCSD. HSCSD is a feature that allows users subscribing to the general bearer services to access user rates that can be achieved with one or more traffic channel. HSCSD also defines a flexible use of air interface resources, which makes efficient and flexible use of higher user rates feasible.

##### 5.3.2.13.12 TS 22.038

(U)SIM Application Toolkit (USAT); Service description; Stage 1

This specification describes the Stage 1 description of the SAT primarily from the subscriber’s and serving environment’s points of view, and does not deal with the details of the human interface itself. It includes information applicable to network operators, serving environments and terminal, switch and database manufacturers and contains the core requirements for a SAT which are sufficient to provide a complete service.

##### 5.3.2.13.13 TS 22.057

Mobile Execution Environment (MExE); Service description; Stage 1

This document defines the stage one description of the Mobile Execution Environment (MExE). The scope of this 3GPP TS encompasses the MExE functionality in the UE, interaction with the MExE service environment. The MExE service environment is not necessarily restricted to the PLMN, and nodes providing MExE services (i.e. MExE servers) may also exist outside the PLMN. Aspects of the support provided by MExE servers within the MExE service environment (such as charging aspects, security level classification etc.) are covered by this specification, but not the MExE servers themselves.

##### 5.3.2.13.14 TS 22.060

General Packet Radio Service (GPRS); Service description; Stage 1

This specification describes the Stage 1 description of the GPRS.

##### 5.3.2.13.15 TS 22.067

enhanced Multi Level Precedence and Pre-emption service (eMLPP); Stage 1

This specification describes the Stage 1 description of the enhanced multi-level precedence and pre-emption (eMLPP) service. This service has two parts: precedence and pre-emption. Precedence involves assigning a priority level to a call in combination with fast call set-up. Pre-emption involves the seizing of resources, which are in use by a call of a lower precedence, by a higher level precedence call in the absence of idle resources. Pre-emption can also involve the disconnection of an on-going call of lower precedence to accept an incoming call of higher precedence.

##### 5.3.2.13.16 TS 22.071

Location Services (LCS); Service description; Stage 1

LCS is a network provided enabling technology consisting of standardized service capabilities which enables the provision of location applications. This application may be service provider specific. The description of the numerous and varied possible location applications which are enabled by this technology are outside the scope of this specification. However, clarifying examples of how the functionality being specified may be used to provide specific LCS is included in various sections of the specification.

##### 5.3.2.13.17 TS 22.078

Customized Applications for Mobile network Enhanced Logic (CAMEL); Service description; Stage 1

This specification describes the Stage 1 description for CAMEL feature which provides the mechanisms to support services consistently independently of the serving network. The CAMEL features shall facilitate service control of operator specific services external from the serving network. The CAMEL feature is a network feature and not a supplementary service. It is a tool to help the network operator to provide the subscribers with the operator specific services even when roaming outside the home network.

##### 5.3.2.13.18 TS 22.090

Unstructured Supplementary Service Data (USSD); Stage 1

There are two modes of USSD: MMI-mode and application mode. MMI-mode USSD is for the transparent transport of MMI strings entered by the user to the network and for the transparent transport of text strings from the network that are displayed by the mobile for user information. Application mode USSD is for the transparent transport of data between the network and the mobile station. Application mode USSD is intended to be used by applications in the network and their peer applications in the UE. The communication over the radio interface takes place on the signalling channels using short dialogues with peak data throughput rate capabilities of up to approximately 600 bit/s outside of a call and 1 000 bit/s during a call.

##### 5.3.2.13.19 TS 22.100

UMTS Phase 1

This specification describes contains how the definition of the UMTS system will be achieved in a phased approach. This document also specifies the requirements for release 99 of UMTS. Some requirements which are necessary to ensure a smooth transition to later releases are also indicated. This document should, however, be read in conjunction with the other 22.000 series documents which provide a complete description of the requirements for UMTS release 1999 and beyond.

##### 5.3.2.13.20 TS 22.101

Service aspects; Service principles

This specification describes the service principles of the UMTS.

##### 5.3.2.13.21 TS 22.105

Services and service capabilities

Pre-UMTS systems have largely standardized the complete sets of bearer services, teleservices and supplementary services which they provide. One major difference between UMTS and pre-UMTS systems is that service capabilities rather than services are standardized for UMTS, allowing service differentiation and system continuity. This document describes how and what kind of services the UMTS user has access to.

##### 5.3.2.13.22 TS 22.115

Service aspects; Charging and billing

This specification describes the service aspects of charging and billing of the UMTS. This standard is not intended to duplicate existing standards or standards being developed by other groups on these topics, and will reference these where appropriate. This standard will elaborate on the charging requirements described in the charging principles in TS 22.101 UMTS service principles. It will allow the generation of accurate charging information to be used in the commercial and contractual relationships between the parties concerned.

##### 5.3.2.13.23 TS 22.129

Service aspects; Handover requirements between UTRAN and GERAN or other radio systems

This specification describes service requirements for handover (terms are defined below) within UMTS systems and between UMTS, other IMT 2000 family members and second generation systems. Particular emphasis has been placed on the description of requirements for handover between UMTS and GSM but requirements specific to other systems are incorporated as required.

##### 5.3.2.13.24 TS 22.135

Multicall; Service description; Stage 1

This specification describes multicall scenarios and requirements for UMTS phase 1 release 1999. Multicall feature specifies functionality and interactions related to usage of several simultaneous bearers between a terminal and a network. Multicall features allows both circuit-switched call(s) and packet session(s) to exist simultaneously.

##### 5.3.2.13.25 TS 22.146

Multimedia Broadcast/Multicast Service (MBMS); Stage 1

The document describes MBMS User Services that use the capabilities of MBMS. Application scenarios including charging, QoS aspects and related service requirements derived from them are described. These scenarios and service requirements can be used as guidance for the design of codecs and bearers.

##### 5.3.2.13.26 TS 22.153

Multimedia priority service

The document specifies the service requirements for Multimedia Priority Service (MPS). Its scope is to specify those requirements of MPS necessary to provide an end-to-end service and to interwork with external networks where needed. Service interactions with external networks are considered within the scope of this document although these interactions may be specified in other standards.

##### 5.3.2.13.27 TS 22.168

Earthquake and Tsunami Warning System (ETWS) requirements; Stage 1

The Document defines the stage one description of the Earthquake and Tsunami Warning System (ETWS) Requirements. Stage one is the set of requirements seen primarily from the user’s and service provider’s points of view. It includes information applicable to network operators, service providers, terminal and network manufacturers, in case of deployment of ETWS. ETWS deployment depends on operator decision or national regulations. The TS contains the core requirements for the Earthquake and Tsunami Warning System, which are sufficient to provide a complete service. It also contains regional requirements for Earthquake and Tsunami Warning System.

##### 5.3.2.13.28 TS 22.173

IP Multimedia Core Network Subsystem (IMS) Multimedia Telephony Service and supplementary services; Stage 1

The document defines the IMS Multimedia Telephony service and the minimum set of capabilities required to secure multi-vendor and multi-operator inter-operability for Multimedia Telephony and related Supplementary Services.

##### 5.3.2.13.29 TS 22.182

Customized Alerting Tones (CAT) requirements; Stage 1

This document specifies the requirements and technical considerations for Customized Alerting Tone (CAT) service in both CS and PS domains, especially additional features for roaming and interoperability support.

##### 5.3.2.13.30 TS 22.183

Customized Ringing Signal (CRS) requirements; Stage 1

The document specifies the requirements and technical considerations for Customized Ringing Signal (CRS) service in the PS and CS domains, especially additional features for roaming and interoperability support.

##### 5.3.2.13.31 TS 22.220

Service requirements for Home Node B (HNB) and Home eNode B (HeNB)

This specification defines the service requirements for the basic functionalities for the support of Home NodeB (HNB) and Home eNodeB (HeNB) – jointly referred to as H(e)NB – and the further functionalities that will enable the mobile operators to provide more advanced services as well as improving the user experience.

##### 5.3.2.13.32 TS 22.228

Service requirements for the Internet Protocol (IP) multimedia core network subsystem (IMS); Stage 1

This specification describes all IP Multimedia services offered by UMTS Systems and second generation systems.

##### 5.3.2.13.33 TS 22.234

Requirements on 3GPP system to Wireless Local Area Network (WLAN) interworking

The document specifies the functional requirements placed on the 3GPP system for interworking WLAN with the 3GPP system. Guidance is given for WLAN operators intending to provide the interworked WLAN capability.

##### 5.3.2.13.34 TS 22.246

Multimedia Broadcast/Multicast Service (MBMS) user services; Stage 1

This document describes MBMS User Services that use the capabilities of MBMS. Application scenarios including charging, QoS aspects and related service requirements derived from them are described. These scenarios and service requirements can be used as guidance for the design of codecs and bearers.

##### 5.3.2.13.35 TS 22.268

Public Warning System (PWS) requirements

This document covers the core requirements for the PWS that are sufficient to provide a complete service. This TS also covers subsystem additional requirements for the Earthquake and Tsunami Warning System (ETWS) and the Commercial Mobile Alert System (CMAS).

##### 5.3.2.13.36 TS 22.278

Service requirements for the Evolved Packet System (EPS)

This document describes the service requirements for the Evolved Packet System.

##### 5.3.2.13.37 TS 22.368

Service requirements for Machine-Type Communications (MTC); Stage 1

This document specifies the service requirements for Network Improvements for Machine Type Communications. In particular it will:

– identify and specify general requirements for machine type communications;

– identify service aspects where network improvements (compared to the current human-to-human oriented services) are needed to cater for the specific nature of machine-type communications;

– specify machine type communication requirements for these service aspects where network improvements are needed for machine type communication.

##### 5.3.2.13.38 TR 22.971

Automatic establishment of roaming relationships

This report describes a proposed framework for commercial and technical interworking between UMTS home environments and serving networks who have no direct prior commercial agreements with each other. This text is applicable to UMTS standardization within ETSI, and is produced with the intent to clarify the concepts involved, and identify those areas which require standardization.

##### 5.3.2.13.39 TS 23.002

Network architecture

This specification describes the possible architectures of the mobile system.

##### 5.3.2.13.40 TS 23.032

Universal Geographical Area Description (GAD)

This document defines an intermediate universal Geographical Area Description which subscriber applications, GSM or UMTS services can use and the network can convert into an equivalent radio coverage map.

For GSM or UMTS services which involve the use of an "area", it can be assumed that in the majority of cases the Service Requester will be forbidden access to data on the radio coverage map of a particular PLMN and that the Service Requester will not have direct access to network entities (e.g. BSC/BTS or RNC/Node B).

The interpretation by the PLMN operator of the geographical area in terms of cells actually used, cells that are partly within the given area and all other technical and quality of service aspects are out of the scope of this document.

This specification also provides a description of velocity that may be associated with a universal Geographical Area Description when both are applied to a common entity at a common time.

##### 5.3.2.13.41 TS 23.101

General Universal Mobile Telecommunications System (UMTS) architecture

This specification describes the basic physical and functional separation of UMTS. The content of this specification is limited to those features that are common to all UMTS networks independent of their origin. It identifies and names the reference points and functional groupings appearing at this level.

##### 5.3.2.13.42 TS 23.107

Quality of Service (QoS) concept and architecture

This specification describes the framework for QoS in UMTS. The document shall be used as a living document which will cover all issues related QoS in UMTS.

##### 5.3.2.13.43 TS 23.121

Architectural requirements for Release 1999

This specification describes architectural requirements for release 1999 related to the evolution of the GSM platform towards UMTS with the overall goal of fulfilling the UMTS service requirements, support of roaming and support of new functionality, signalling systems and interfaces.

##### 5.3.2.13.44 TS 23.141

Presence service; Architecture and functional description

This document describes the stage 2 description (architectural solution and functionalities) for the Presence Service, which includes the elements necessary to realise the stage 1 requirements in TS 22.141.

##### 5.3.2.13.45 TS 23.167

IP Multimedia Subsystem (IMS) emergency sessions

This document defines the stage 2 service description for emergency services in the IP Multimedia Core Network Subsystem (IMS), including the elements necessary to support IP Multimedia (IM) emergency services.

This document covers also the Access Network aspects that are crucial for the provisioning of IMS emergency services. Other 3GPP specifications that are related to the IMS emergency services are TS 23.228 on IMS in general, including fixed broadband access aspects, TS 23.060 describing GPRS (UTRAN), TS 23.401, TS 23.060; TS 23.402 describing EPS (UTRAN and E-UTRAN); TS 23.234 describing 3GPP/WLAN Interworking; TS 23.271 that covers location services and TS 23.216 and TS 23.237 describing Single Radio Voice Call Continuity for IMS Emergency session. TS 25.301 contains an overall description of the UMTS Terrestrial Radio Access Network TS 36.300 contains an overall description of the Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN). Other non-3GPP specifications that are related to the IMS emergency services include 3GPP2 cdma2000 HRPD IP CAN, as specified in 3GPP2 X.S0060 when the UE is connected to a PDS core network and 3GPP2 X.S0057 A when the UE is connected to an EPC core network.

The emergency support in different IP-CANs is described in the Informative Annex E.

##### 5.3.2.13.46 TS 23.171

Location Services (LCS); Functional description; Stage 2 (UMTS)

This document specifies the stage 2 of the LoCation Services (LCS) feature in UMTS, which provides the mechanisms to support mobile location services for operators, subscribers and third party service providers.

Location Services may be considered as a network provided enabling technology consisting of standardised service capabilities, which enable the provision of location applications. The application(s) may be service provider specific. The description of the numerous and varied possible location applications which are enabled by this technology are outside the scope of this document. However, clarifying examples of how the functionality being described may be used to provide specific location services may be included.

This stage 2 service description covers the LCS system functional model for the whole system, the LCS system architecture, state descriptions, message flows, etc.

##### 5.3.2.13.47 TS 23.203

Policy and charging control architecture

This document specifies the overall stage 2 level functionality for Policy and Charging Control that encompasses the following high level functions for IP CANs (e.g. GPRS, I WLAN, Fixed Broadband, etc.): (i) Flow Based Charging, including charging control and online credit control; (ii) Policy control (e.g. gating control, QoS control, QoS signalling, etc.).

##### 5.3.2.13.48 TS 23.204

Support of Short Message Service (SMS) over generic 3GPP Internet Protocol (IP) access; Stage 2

This document specifies the new capabilities and enhancements needed to support SMS over a generic IP Connectivity Access Network (IP-CAN) using IMS capabilities (TS 23.228).

##### 5.3.2.13.49 TS 23.207

End-to-end Quality of Service (QoS) concept and architecture

This document provides the framework for end-to-end Quality of Service involving GPRS and complements TS 23.107 which describes the framework for Quality of Service within UMTS. The document describes the interaction between the TE/MT Local Bearer Service, the GPRS Bearer Service, and the External Bearer Service, and how these together provide Quality of Service for the End-to-End Service. The document also describes IP level mechanisms necessary in providing end-to-end Quality of Service involving GPRS networks, including possible interaction between the IP level and the GPRS level, as well as the application level and the IP level.

##### 5.3.2.13.50 TS 23.216

Single Radio Voice Call Continuity (SRVCC); Stage 2

This Technical Specification specifies the architecture enhancements for Single Radio Voice Call Continuity (SRVCC) between E-UTRAN access and 3GPP2’s 1xCS, and between E-UTRAN access and 3GPP’s UTRAN/GERAN accesses and between UTRAN (HSPA) access and 3GPP’s UTRAN/GERAN accesses, for Circuit Switched (CS) calls that are anchored in the IMS.

##### 5.3.2.13.51 TS 23.221

Architectural requirements

This document covers the architectural requirements for 3GPP systems based on UTRAN, E-UTRAN and Iu mode GERAN. In particular it details the high level requirements for the Circuit Switched (CS) Domain and the stage 2 procedures that span more than one domain/subsystem. The reference model to which these procedures apply can be found within TS 23.002. In addition, A mode to Iu mode handover for CS services is addressed. Detailed architectural requirements within the subsystems are contained within the remainder of the 23 series of specifications e.g. the requirements for the Packet Switched (PS) domain are contained within TS 23.060, TS 23.401 and the requirements for the Bearer Independent CS Core Network are contained in TS 23.205.

##### 5.3.2.13.52 TS 23.226

Global text telephony (GTT); Stage 2

This 3GPP Technical Specification defines the stage 2 description of the real time Text Conversation Feature called Global Text Telephony, GTT. GTT Stage 2 identifies the functional capabilities needed to support the service described in GTT Stage 1.

This TS contains the core functions for a real time Text Conversation Feature GTT, to be used in combination with other media in conversational services.

GTT offers real time conversation in text, to be used alone or in combination with other conversational media, and interworking with current and emerging text conversation features in the fixed networks and other mobile networks.

GTT uses a number of functional entities to realise the requirements of the stage 1 description (TS 22.226). This TS describes how the service requirements are realised with these functional entities. As far as possible existing protocols shall be used for the realisation of the Global Text Telephony Feature. This may include e.g. , SIP, 3G.324, or Circuit Switched Voice service as protocol environments, and CTM, AL1 and RTP/text as transmission protocols. It also means usage of existing text presentation format ITU T Recommendation T.140, common to all GTT text conversation environments.

##### 5.3.2.13.53 TS 23.228

IP Multimedia Subsystem (IMS); Stage 2

This specifications describes the architectural requirement for an IP Multimedia Components incorporated in an UMTS System as well as second generation systems for GSM inside the core network and identify relevant interfaces to the existing system and the new one in between the new components incorporated.

##### 5.3.2.13.54 TS 23.236

Intra-domain connection of Radio Access Network (RAN) nodes to multiple Core Network (CN) nodes

UMTS will build on the success of GSM and is likely to become even more widespread, increasing the importance of a flexible network structure to permit the different operational configurations in which these networks will be deployed. The requirements to have a RNC or BSC controlled by a single MSC server or SGSN lead to certain limitations. Allowing the BSCs and RNCs to connect to a number of MSC servers or SGSNs increases the networks performance in terms of scalability, distributing the network load amongst the serving entities, and reducing the required signalling as the user roams.

##### 5.3.2.13.55 TS 23.237

IP Multimedia Subsystem (IMS) Service Continuity; Stage 2

This document specifies the architectural requirements and procedures for delivery of IMS Service Continuity.

The scope of the specification includes:

– Access Transfer related functionality:

– PS-CS Access Transfer;

– PS-PS Access Transfer;

– PS-PS Access Transfer in conjunction with PS-CS Access Transfer;

– Adding and/or removing media flows to support service;

. MSC Server assisted mid-call feature;

– SRVCC session transfer of IMS emergency session.

– Inter UE Transfer related functionality:

– Establishment and release of a Collaborative Session;

– Addition of media flows to, modification of media flows in, and release of media flows from a Collaborative Session;

– Transfer of media flows from one UE to another;

– Transfer of the Collaborative Session Control with or without transfer of media flows;

– Transfer of all media flows to a target UE without establishing a Collaborative Session;

– Session discovery;

– Inter-UE Transfer initiated by the target UE or by the SCC AS;

– Replication of media flows by means of Inter-UE Transfer procedures;

– Authorization and other aspects to support Inter-UE Transfer across multiple IMS subscriptions.

The solution is restricted to service continuity using IMS procedures, i.e. mobility mechanisms on the IP-CAN level are not within the scope of this specification.

##### 5.3.2.13.56 TS 23.240

3GPP Generic User Profile (GUP); Architecture (Stage 2)

This document defines the stage 2 architecture description to the 3GPP Generic User Profile (GUP), which includes the elements necessary to realise the stage 1 requirements in TS 22.240.

This document includes the GUP reference architecture with descriptions of functional entities, and their interfaces and procedures, as well as the high-level information model for the GUP data.

##### 5.3.2.13.57 TS 23.246

Multimedia Broadcast/Multicast Service (MBMS); Architecture and functional description

This document describes the stage 2 description (architectural solution and functionalities) for the MBMS Bearer Service, which includes, together with MBMS User Services defined in TS 26.346, all the elements necessary to realise the stage 1 requirements in TS 22.146 and TS 22.246. This document encompasses both GPRS and EPS.

##### 5.3.2.13.58 TS 23.251

Network sharing; Architecture and functional description

This document covers the details of Network Sharing for GERAN, UTRAN and E-UTRAN. It shows how several core network operators can share one radio access network and details the impacts on the network architecture. All UEs shall comply with existing requirements, among them PLMN selection and system information reception. This document also defines requirements for network-sharing supporting UEs

##### 5.3.2.13.59 TS 23.261

IP flow mobility and seamless Wireless Local Area Network (WLAN) offload; Stage 2

This document specifies the Stage 2 system description for IP flow mobility between a 3GPP and a WLAN. The technical solution is based on the working principles of DSMIPv62 and it is applicable to both the Evolved Packet System and the I-WLAN mobility architecture. The specification covers the system description of seamless WLAN offload and IP flow mobility between 3GPP and WLAN as well as the respective interactions with the PCC and ANDSF frameworks. The system description for non-seamless WLAN offload is covered in 3GPP TS 23.402. This document specifies also the detailed extensions to S2c and H1 reference points for IP flow mobility. The extensions to the PCC and to the ANDSF framework are specified respectively in 3GPP TS 23.203 and in 3GPP TS 23.402.

##### 5.3.2.13.60 TS 23.271

Functional stage 2 description of Location Services (LCS)

This document specifies the stage 2 of the Location Services (LCS) feature in UMTS, GSM and EPS (for E-UTRAN), which provides the mechanisms to support mobile location services for operators, subscribers and third party service providers.

##### 5.3.2.13.61 TS 23.272

Circuit Switched (CS) fallback in Evolved Packet System (EPS); Stage 2

This document defines the Stage 2 architecture and specification for the CS Fallback and for SMS over SGs for EPS or CS Fallback and SMS over S102. The scope of this document includes the architecture enhancements for functionality to enable fallback from E-UTRAN access to UTRAN/GERAN CS domain access and to CDMA 1x RTT CS domain access, and functionality to reuse of voice and other CS-domain services (e.g. CS UDI video / LCS / USSD) by reuse of the CS domain. The functionality specified to support SMS over SGs does not trigger any CS Fallback to UTRAN/GERAN. The functionality specified to support SMS over S102 does not trigger any CS Fallback to CDMA 1xRTT CS domain

##### 5.3.2.13.62 TS 23.279

Combining Circuit Switched (CS) and IP Multimedia Subsystem (IMS) services; Stage 2

This document provides architectural details to combine CS services and IMS services for using them in parallel between the same two users in a peer-to-peer context. The document provides a detailed description of how capabilities and identities are exchanged to enable the combination of CS and IMS services between the same two UEs

##### 5.3.2.13.63 TS 23.292

IP Multimedia Subsystem (IMS) centralized services; Stage 2

This document specifies the architectural requirements for delivery of consistent services to the user regardless of the attached access type (e.g. CS domain access, or IP-CAN). This is achieved by implementing the services in the IP Multimedia Subsystem (IMS).

##### 5.3.2.13.64 TS 23.401

General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access

This Technical Specification defines the Stage 2 service description for the Evolved 3GPP Packet Switched Domain – also called the Evolved Packet System (EPS) in this document. The Evolved 3GPP Packet Switched Domain provides IP connectivity using the Evolved Universal Terrestrial Radio Access Network (E-UTRAN). The specification also covers mobility between E-UTRAN and pre-E-UTRAN 3GPP radio access technologies.

##### 5.3.2.13.65 TS 23.402

Architecture enhancements for non-3GPP accesses

This Technical Specification defines the Stage 2 service description for providing IP connectivity using non-3GPP accesses to the Evolved 3GPP Packet Switched domain. In addition, for E-UTRAN and non-3GPP accesses, the specification describes the Evolved 3GPP PS Domain where the protocols between its Core Network elements are IETF based.

##### 5.3.2.13.66 TS 23.682

Architecture enhancements to facilitate communications with packet data networks and applications

This document specifies architecture enhancements to facilitate communications with packet data networks and applications (e.g. Machine Type Communication (MTC) applications on the (external) network/MTC servers) as per the use cases and service requirements defined in TS 22.368, TS 22.101 and related 3GPP requirements specifications. Both roaming and non-roaming scenarios are covered.

– Device triggering by applications/servers (e.g.: MTC applications on the (external) network/MTC servers).

– PS-Only support with and without MSISDN.

##### 5.3.2.13.67 TR 23.930

Iu principles

This specification describes the requirements on the Iu and studies relevant principles to guide further standardization of the related interface(s).

##### 5.3.2.13.68 TS 26.071

Mandatory speech CODEC speech processing functions; AMR speech Codec; General description

This specification describes an introduction to the set of the adaptive multi-rate (AMR) specifications.

##### 5.3.2.13.69 TS 26.090

Mandatory Speech Codec speech processing functions; Adaptive Multi-Rate (AMR) speech codec; Transcoding functions

This specification describes a detailed description of the AMR speech codec transcoding functions.

##### 5.3.2.13.70 TS 26.091

Mandatory Speech Codec speech processing functions; Adaptive Multi-Rate (AMR) speech codec; Error concealment of lost frames

This specification describes example procedures for the error concealment, also called frame substitution or muting procedure, of lost speech or silence indicator frames.

##### 5.3.2.13.71 TS 26.092

Mandatory speech codec speech processing functions; Adaptive Multi-Rate (AMR) speech codec; Comfort noise aspects

This specification describes the detailed requirements for the correct operation of the background acoustic noise evaluation, noise parameter encoding/decoding and comfort noise generation for the AMR speech codec during source controlled rate (SCR) operation.

##### 5.3.2.13.72 TS 26.093

Mandatory speech codec speech processing functions Adaptive Multi-Rate (AMR) speech codec; Source controlled rate operation

This specification describes the operation of the AMR speech codec during SCR operation.

##### 5.3.2.13.73 TS 26.094

Mandatory speech codec speech processing functions; Adaptive Multi-Rate (AMR) speech codec; Voice Activity Detector (VAD)

This specification describes two alternatives for the VAD to be used during SCR operation in conjunction with the AMR codec.

##### 5.3.2.13.74 TS 26.110

Codec for circuit switched multimedia telephony service; General description

This specification describes an introduction to the set of specifications for the support of circuit-switched 3G-324M multimedia telephony service.

##### 5.3.2.13.75 TS 26.111

Codec for circuit switched multimedia telephony service; Modifications to H.324

This specification describes the modifications applicable to the ITU-T Recommendation H.324, Annex C for the support of circuit-switched 3G 324M multimedia telephony service.

##### 5.3.2.13.76 TS 26.346

Multimedia Broadcast/Multicast Service (MBMS); Protocols and codecs

This document defines a set of media codecs, formats and transport/application protocols to enable the deployment of MBMS user services either over the MBMS bearer service or other UMTS Bearer Services within the 3GPP system.

In this version of the specification, only MBMS download and streaming delivery methods are specified. This document does not preclude the use of other delivery methods.

This document includes information applicable to network operators, service providers and manufacturers.

##### 5.3.2.13.77 TR 26.911

Codec(s) for Circuit-Switched (CS) multimedia telephony service; Terminal implementor’s guide

This report describes non-mandatory Recommendations for the use of the different codec implementation options for the circuit-switched 3G-324M multimedia telephony service based on ITU-T Recommendation H.324, Annex C. These Recommendations address issues specific to the third generation operating environment, including guaranteeing sufficient error resilience and inter-working between terminals.

##### 5.3.2.13.78 TS 32.101

Telecommunication management; Principles and high level requirements

This document establishes and defines the management principles and high-level requirements for the management of PLMNs. In particular, this document identifies the requirements for:

– the upper level of a management system;

– the reference model, showing the elements the management system interacts with;

– the network operator processes needed to run, operate and maintain a network;

– the functional architecture of the management system;

– the principles to be applied to management interfaces.

The requirements identified in this document are directed to the further development of management specifications as well as the development of management products. This document can be seen as guidance for the development of all other technical specifications addressing the management of PLMNs.

##### 5.3.2.13.79 TS 32.102

Telecommunication management; Architecture

This document identifies and standardizes the most important and strategic contexts in the physical architecture for the management of PLMNs. It serves as a framework to help define a telecom management physical architecture for a planned PLMN and to adopt standards and provide products that are easy to integrate. The requirements identified in this document are applicable to all further development of 3GPP Telecom Management specifications as well as the development of PLMN Management products. This document can be seen as guidance for the development of all other technical specifications addressing the management of PLMNs, except TS 32.101.

##### 5.3.2.13.80 TS 33.102

3G security; Security architecture

Provides a specification of all security mechanisms and protocols, except algorithms.

##### 5.3.2.13.81 TS 33.103

3G security; Integration guidelines

Defines how elements of the 3G-security architecture are to be integrated into some entities of the system architecture.

##### 5.3.2.13.82 TS 33.105

3G Security; Cryptographic algorithm requirements

Defines requirements for standard cipher and integrity algorithm.

##### 5.3.2.13.83 TS 33.106

3G security; Lawful interception requirements

Defines all requirements for network based lawful interception.

##### 5.3.2.13.84 TS 33.107

3G security; Lawful interception architecture and functions

This document describes the architecture and functional requirements within a Third Generation Mobile Communication System (3GMS) and the Evolved Packet System (EPS).

The specification shows the service requirements from a Law Enforcement point of view only. The aim of this document is to define a 3GMS and EPS interception system that supports a number of regional interception regulations, but these regulations are not repeated here as they vary. Regional interception requirements shall be met in using specific (regional) mediation functions allowing only required information to be transported.

##### 5.3.2.13.85 TS 33.108

3G security; Handover interface for Lawful Interception (LI)

This specification addresses the handover interfaces for Lawful Interception (LI) of Packet-Data Services, Circuit Switched Services, Multimedia Services within the UMTS network and Evolved Packet System (EPS). The handover interface in this context includes the delivery of Intercept Related Information (HI2) and Content of Communication (HI3) to the Law Enforcement Monitoring Facility.

##### 5.3.2.13.86 TS 33.110

Key establishment between a Universal Integrated Circuit Card (UICC) and a terminal

This document describes the security features and mechanisms to provision a shared key between a UICC and a terminal that may host the UICC or be connected to the device hosting the UICC via a local interface. Candidate applications to use this key establishment mechanism include but are not restricted to secure channel between a UICC and a terminal.

The scope of this specification includes an architecture overview and the detailed procedure how to establish the shared key between the UICC and the terminal.

##### 5.3.2.13.87 TS 33.120

Security Objectives and Principles

Elaborates on the basic principles underlying the security.

##### 5.3.2.13.88 TS 33.141

Presence service; Security

This document is the Stage 2 specification for the security requirements, security architecture, security features and security mechanisms for the Presence Service, which includes the elements necessary to realise the requirements in TS 22.141 and TS 23.141. As far as SIP-based procedures are concerned, this specification refers to TS 33.203. The main content of this specification is the security for the Ut reference point, which is HTTP–based, as applied in presence services.

The document includes information applicable to network operators, service providers and manufacturers.

##### 5.3.2.13.89 TS 33.203

3G security; Access security for IP-based services

The scope for this technical specification is to specify the security features and mechanisms for secure access to the IM subsystem (IMS) for the 3G mobile telecommunication system.

Since the scope also encompasses the use of these security features and mechanisms for secure access to IMS in the context of fixed broadband networks and 3GPP2 networks, Annex L and Annex S specify how the material in the main body and other normative Annexes of this document apply to the fixed broadband networks and 3GPP2 networks respectively.

The IMS supports IP Multimedia applications such as video, audio and multimedia conferences. SIP, Session Initiation Protocol, was chosen as the signalling protocol for creating and terminating Multimedia sessions, cf. RFC 3261. This specification only deals with how the SIP signalling is protected between the subscriber and the IMS, how the subscriber is authenticated and how the subscriber authenticates the IMS.

##### 5.3.2.13.90 TS 33.204

3G Security; Network Domain Security (NDS); Transaction Capabilities Application Part (TCAP) user security

This technical specification covers the security mechanisms and procedures necessary to protect all TCAP user messages which are sent between different security domains. The complete set of enhancements and extensions to facilitate security protection for the TCAP protocol is termed TCAPsec and it covers transport security in the TCAP protocol itself and the security management procedures. This technical specification contains the stage 2 specification for security protection of the TCAP protocol. The actual implementation (stage 3) specification can be found in TS 29.204.

##### 5.3.2.13.91 TS 33.210

3G security; Network Domain Security (NDS); IP network layer security

This document defines the security architecture for network domain IP based control planes, which shall be applied to NDS/IP-networks (i.e. 3GPP and fixed broadband networks). The scope of network domain control plane security is to cover the control signalling on selected interfaces between network elements of NDS/IP networks.

##### 5.3.2.13.92 TS 33.220

Generic Authentication Architecture (GAA); Generic Bootstrapping Architecture (GBA)

This document describes the security features and a mechanism to bootstrap authentication and key agreement for application security from the 3GPP AKA mechanism. Candidate applications to use this bootstrapping mechanism include but are not restricted to subscriber certificate distribution TS 33.221. Subscriber certificates support services whose provision mobile operator assists, as well as services that mobile operator provides. The scope of this specification includes a generic AKA bootstrapping function, an architecture overview and the detailed procedure how to bootstrap the credential. Clause 4 of this specification describes a mechanism, called GBA\_ME, to bootstrap authentication and key agreement, which does not require any changes to the UICC. Clause 5 of this specification describes a mechanism, called GBA\_U, to bootstrap authentication and key agreement, which does require changes to the UICC, but provides enhanced security by storing certain derived keys on the UICC.

##### 5.3.2.13.93 TS 33.221

Generic Authentication Architecture (GAA); Support for subscriber certificates

This document describes subscriber certificate distribution by means of generic bootstrapping architecture (GBA) TS 33.220. Subscriber certificates support services whose provision the mobile operator assists, as well as services that are offered by the mobile operator. The scope of this specification presents signalling procedures for support of issuing certificates to subscribers and the standard format of certificates and digital signatures. It is not intended to duplicate existing standards being developed by other groups on these topics, and will reference these where appropriate.

##### 5.3.2.13.94 TS 33.222

Generic Authentication Architecture (GAA); Access to network application functions using Hypertext Transfer Protocol over Transport Layer Security (HTTPS)

This document specifies secure access methods to Network Application Functions (NAF) using HTTP over TLS in the Generic Authentication Architecture (GAA), and provides Stage 2 security requirements, principles and procedures for the access. This document describes both direct access to an Application Server (AS) and access to an Application Server through an Authentication Proxy (AP).

##### 5.3.2.13.95 TS 33.223

Generic Authentication Architecture (GAA); Generic Bootstrapping Architecture (GBA) Push function

This document specifies a Push Function as a functional add-on for the Generic Authentication Architecture (GAA).

##### 5.3.2.13.96 TS 33.224

Generic Authentication Architecture (GAA); Generic Bootstrapping Architecture (GBA) push layer

This document specifies a generic push layer that makes use of the GBA Push Function as specified in TS 33.223. The GPL specification includes a message format, cipher suites and processing model. GPL assumes that keys and other SA parameters have been preinstalled in the Push-NAF and UE in the form of a NAF SA. GPL is a protection protocol that can be applied in a unidirectional fashion. The rationale for GPL is that having each application specify its own security mechanisms would for obvious reasons lead to duplication of work, specifications and implementations. Using a generic secure push layer avoids these problems. A generic secure push layer may also relieve the applications using the service of having to be aware of inner working of the security layer.

##### 5.3.2.13.97 TS 33.234

3G security; Wireless Local Area Network (WLAN) interworking security

This document specifies the security architecture; trust model and security requirements for the interworking of the 3GPP System and WLAN Access Networks. This specification is not limited to WLAN technologies. It is also valid for other IP based Access Networks that support the same security capabilities towards the interworking system as WLAN does. Specifications of the appropriate mechanisms for user and network authentication, key management, service authorization, confidentiality and integrity protection of user and signalling data are also provided.

##### 5.3.2.13.98 TS 33.246

3G Security; Security of Multimedia Broadcast/Multicast Service (MBMS)

The Technical Specification covers the security procedures of the Multimedia Broadcast/Multicast Service (MBMS) for 3GPP systems (UTRAN, GERAN and E-UTRAN). MBMS is a 3GPP system network bearer service over which many different applications could be carried. The actual method of protection may vary depending on the type of MBMS application.

##### 5.3.2.13.99 TS 33.259

Key establishment between a UICC hosting device and a remote device

This document describes the security features and mechanisms to provision a shared key between a UICC Hosting Device and a Remote Device connected via a local interface. The shared secret is then intended to be used to secure the interface between the Remote Device and the UICC hosting device. Candidate applications to use this key establishment mechanism include but are not restricted to Personal Network Management (see TS 22.259). The scope of this specification includes an architecture overview and the detailed procedure how to establish the shared key between the UICC Hosting Device and the Remote Device. This is different from the Technical Specification TS 33.110 that describes an architecture overview and the detailed procedure how to establish the shared key between the UICC itself and the terminal hosting the UICC. The use cases utilizing the mechanisms described in this specification are seen to be different to the use cases where "Key establishment between a UICC and a terminal", IETF RFC 4279 is utilized. The solution described in this document is built on the existing infrastructure defined in "GBA", TS 33.220.

##### 5.3.2.13.100 TS 33.310

Network Domain Security (NDS); Authentication Framework (AF)

The scope of this Technical Specification is limited to authentication of network elements, which are using NDS/IP or TLS. In the case of NDS/IP this specification includes both the authentication of Security Gateways (SEG) at the corresponding Za-interfaces and the authentication between NEs and between NEs and SEGs at the Zb-interface. Authentication of end entities (i.e. NEs and SEGs) in the intra-operator domain is considered an internal issue for operators. This is quite much in line with 3GPP TS 33.210 which states that only Za is mandatory and that the security domain operator can decide if the Zb-interface is deployed or not, as the Zb-interface is optional for implementation. Validity of certificates may be restricted to the operator's domain in case of Zb interface or in case of Za-interface between two security domains of the same operator. In the case of TLS this Specification concentrates on authentication of TLS entities across inter-operator links. For example, TLS is specified for inter-operator communications between IMS and non-IMS networks TS 33.203 and on the Zn' interface in GBA TS 33.220. Authentication of TLS entities across intra-operator links is considered an internal issue for operators. However, NDS/AF can easily be adapted to the intra-operator use case since it is just a simplification of the inter-operator case when all TLS NEs and the PKI infrastructure belong to the same operator. Validity of certificates may be restricted to the operator's domain. An Annex contains information on the manual handling of TLS certificates in case automatic enrolment and revocation according to NDS/AF for TLS is not implemented.

##### 5.3.2.13.101 TS 33.320

Security of Home Node B (HNB) / Home evolved Node B (HeNB)

This document specifies the security architecture for the H(e)NB subsystem. This includes security requirements on Home Node Bs, Home eNode Bs, and other H(e)NB-associated network nodes (e.g. SeGW and H(e)MS), as well as the procedures and features which are provided to meet those requirements.

##### 5.3.2.13.102 TS 33.328

IP Multimedia Subsystem (IMS) media plane security

This document presents IMS media plane security for RTP based media which is designed to meet the following three main objectives:

– to provide security for media usable across all access networks

– to provide an end-to-end (e2e) media security solution to satisfy major user categories

– to provide end-to-end (e2e) media security for important user groups like enterprises, National Security and Public Safety (NSPS) organizations and different government authorities who may have weaker trust in the inherent IMS security and/or may desire to provide their own key management service.

The media plane security in this release of the TS is based on the well established protocol SRTP. Key management solutions for SRTP are defined in this specification.

##### 5.3.2.13.103 TS 33.401

3GPP System Architecture Evolution (SAE); Security architecture

This document specifies the security architecture, i.e., the security features and the security mechanisms for the Evolved Packet System and the Evolved Packet Core, and the security procedures performed within the evolved Packet System (EPS) including the Evolved Packet Core (EPC) and the Evolved UTRAN (E-UTRAN).

##### 5.3.2.13.104 TR 33.901

Criteria for cryptographic Algorithm design process

This report describes the process used to design cipher and integrity algorithm.

##### 5.3.2.13.105 TR 33.902

Formal Analysis of the 3G Authentication Protocol

Formal analysis using BAN and temporal logic of authentication mechanism.

##### 5.3.2.13.106 TR 33.905

Recommendations for Trusted Open Platforms

This technical report investigates relevant trust standards and technologies, both existing as well as the ones that are work-in-progress. It develops the recommendations for trusted open platforms for delivery of new applications and services to open platforms.

##### 5.3.2.13.107 TR 33.908

3G Security; General report on the design, specification and evaluation of 3GPP standard confidentiality and integrity algorithms

This technical report is a description of the work undertaken by SAGE Task Force for the design of the standard 3GPP Confidentiality and Integrity Algorithms (SAGE TF 3GPP).

With regard to the design of the algorithms, the scope of this document is confined to a description of the design criteria, the design methodology and an outline of the content and structure of the specification and test data documents.

The standard 3GPP Confidentiality and Integrity Algorithms are based on a Block Cipher named KASUMI. The algorithms specification and associated test data are documented in the Specification of the 3GPP Confidentiality and Integrity Algorithms which consists of the following four documents:

– Specification of the 3GPP Confidentiality and Integrity Algorithms; Document 1: f8 and f9 specifications (TS 35.201).

– Specification of the 3GPP Confidentiality and Integrity Algorithms; Document 2: KASUMI algorithm specification (TS 35.202).

– Specification of the 3GPP Confidentiality and Integrity Algorithms; Document 3: Implementors' test data (TS 35.203).

– Specification of the 3GPP Confidentiality and Integrity Algorithms; Document 4: Design conformance test data (TS 35.204).

With regard to the evaluation of the algorithm, the scope of this report is restricted to a description of the evaluation criteria, the method of evaluation and the main conclusions from the evaluation that led to the Task Force approving the specification. A detailed summary of conclusions of the evaluation is provided in a public evaluation report TS 33.909 produced by the Task Force.

##### 5.3.2.13.108 TR 33.909

3G Security; Report on the design and evaluation of the MILENAGE algorithm set; Deliverable 5: An example algorithm for the 3GPP authentication and key generation functions

This public report contains a detailed summary of the work performed during the design and evaluation of the 3GPP Authentication Functions denoted as the MILENAGE algorithm set. It contains all results and findings from this work and should be read as a supplement to the specifications of the algorithms in TS 35.205 and the general project report, TS 35.209.

##### 5.3.2.13.109 TR 33.918

Generic Authentication Architecture (GAA); Early implementation of Hypertext Transfer Protocol over Transport Layer Security (HTTPS) connection between a Universal Integrated Circuit Card (UICC) and a Network Application Function (NAF)

This document gives guidance on how to perform an early implementation of HTTPS connections between a UICC-based application and a Network Application Function in the Generic Authentication Architecture (GAA).

##### 5.3.2.13.110 TR 33.919

3G Security; Generic Authentication Architecture (GAA); System description

This 3GPP Technical Report gives an overview of the different mechanisms that mobile applications can rely upon for authentication between server and client (i.e. the UE). Additionally it provides guidelines related to the use of GAA and to the choice of authentication mechanism in a given situation and for a given application. To this end the TR puts the different 3GPP GAA related specifications into perspective. It clarifies the logic for having the technical specifications and technical reports, sketches their content and explains the inter-relation between these 3GPP TSs and TRs and their relation with this TR. The heart of GAA consists out of the Generic Bootstrapping Architecture (GBA): The GBA core specifications consist out of TS 33.220, TS 24.109 and TS 29.109. GBA in turn is then used by many other TSs and TRs to enable specific usages e.g. HTTPS, subscriber certificates.

##### 5.3.2.13.111 TR 33.920

SIM card based Generic Bootstrapping Architecture (GBA); Early implementation feature

This document describes which change requests are to be implemented in addition to the Release 6 specifications TS 33.220, TS 29.109, and TS 24.109 to enable the usage of 2G GBA.

##### 5.3.2.13.112 TR 33.924

Identity management and 3GPP security interworking; Identity management and Generic Authentication Architecture (GAA) interworking

The objective is to extend identity management as outlined in TS 33.220, TS 33.222, TS 29.109 and TR 33.980 with the latest developments on identity management outside of the 3GPP sphere. This will allow a better integration and usage of identity management for services in 3GPP and seamless integration with existing services that are not standardized in 3GPP. This report outlines the interworking of GBA and OpenID.

##### 5.3.2.13.113 TR 33.937

Study of mechanisms for Protection against Unsolicited Communication for IMS (PUCI)

The scope of this report is to highlight alternative solutions that could be used to protect mobile subscribers from receiving unsolicited communication over IMS and to analyze these solutions in respect of their requirements and impacts on standardized interfaces. This activity took into account the study done in ETSI TISPAN TR 187 009 on “Feasibility study of prevention of unsolicited communications in the NGN”.

##### 5.3.2.13.114 TR 33.980

Liberty Alliance and 3GPP security interworking; Interworking of Liberty Alliance Identity Federation Framework (ID-FF), Identity Web Services Framework (ID-WSF) and Generic Authentication Architecture (GAA)

This document provides guidelines on the interworking of the Generic Authentication Architecture (GAA) and the Liberty Alliance architecture. The document studies the details of possible interworking methods between the Security Assertion Markup Language v2.0, SAML v2.0 (or alternatively the Liberty Alliance Identity Federation Framework, ID-FF), the Identity Web Services Framework (ID-WSF) , the Security Assertion Markup Language (SAML) and a component of GAA called the Generic Bootstrapping Architecture (GBA). This document only applies if Liberty Alliance and GBA or SAML v2.0 and GBA are used in combination.

##### 5.3.2.13.115 TS 35.201

3G Security; Specification of the 3GPP confidentiality and integrity algorithms; Document 1: f8 and f9 specification

This specification gives a detailed specification of the 3GPP confidentiality algorithm f8, and the 3GPP integrity algorithm f9.

##### 5.3.2.13.116 TS 35.202

3G Security; Specification of the 3GPP confidentiality and integrity algorithms; Document 2: Kasumi specification

This specification gives a detailed specification of the 3GPP Algorithm KASUMI. KASUMI is a block cipher that forms the heart of the 3GPP confidentiality algorithm f8, and the 3GPP integrity algorithm f9.

##### 5.3.2.13.117 TS 35.203

3G Security; Specification of the 3GPP confidentiality and integrity algorithms; Document 3: Implementors' test data

This specification gives detailed test data for implementors of the algorithm set. It provides visibility of the internal state of the algorithm to aid in the realisation of the algorithms.

##### 5.3.2.13.118 TS 35.204

3G Security; Specification of the 3GPP confidentiality and integrity algorithms; Document 4: Design conformance test data

This specification gives black-box test data for the algorithm set. The test data has been selected to give a high degree of confidence that the implementation is correct. However, no claim is made that conformance with this test data guarantees a correct implementation.

##### 5.3.2.13.119 TS 35.205

3G Security; Specification of the MILENAGE algorithm set: An example algorithm set for the 3GPP authentication and key generation functions f1, f1\*, f2, f3, f4, f5 and f5\*; Document 1: General

This report is a description of the work undertaken by an ETSI SAGE Task Force on the design of the Milenage Algorithm Set: an example set of 3GPP Authentication and Key Generation Functions.

The 3GPP Authentication and Key Generation Functions are not standardized. An example set of these algorithms has been produced on request from 3GPP with the intent that it shall be offered to the UMTS operators, to utilise instead of developing their own. An ETSI SAGE Task Force has carried out this work.

The requirement specification from 3GPP SA3 stated that operator personalisation of the example set must be possible and that the basic kernel must be possible to replace.

The example set is based on the block cipher Rijndael, which at the time was one of the AES candidates and the specification describes how the 7 algorithms used in 3GPP authentication and key generation are scheduled around this basic kernel. The specification and associated test data for the example algorithm set is documented in three documents:

– A formal specification of both the modes and the example kernel

– A detailed test data document, covering modes and the example kernel

– A "black box" test data document

A detailed summary of the evaluation is provided in a public evaluation report, ETSI SAGE 3GPP AF TF: "Report on the design and evaluation of 3GPP Authentication and Key Generation Functions". This report gives an overview of the overall work by the task force.

##### 5.3.2.13.120 TS 35.206

3G Security; Specification of the MILENAGE algorithm set: An example algorithm set for the 3GPP authentication and key generation functions f1, f1\*, f2, f3, f4, f5 and f5\*; Document 2: Algorithm specification

This document has been prepared by the 3GPP Task Force, and contains an example set of algorithms which may be used as the authentication and key generation functions f1, f1\*, f2, f3, f4, f5 and f5\*. (It is not mandatory that the particular algorithms specified in this document are used - all seven functions are operator-specifiable rather than being fully standardised.)

##### 5.3.2.13.121 TS 35.207

3G Security; Specification of the MILENAGE algorithm set: An example algorithm set for the 3GPP authentication and key generation functions f1, f1\*, f2, f3, f4, f5 and f5\*; Document 3: Implementors’ test data

This document has been prepared by the 3GPP Task Force, and contains an example set of algorithms which may be used as the authentication and key generation functions f1, f1\*, f2, f3, f4, f5 and f5\*. (It is not mandatory that the particular algorithms specified in this document are used - all seven functions are operator-specifiable rather than being fully standardised.)

##### 5.3.2.13.122 TS 35.208

3G Security; Specification of the MILENAGE algorithm set: An example algorithm set for the 3GPP authentication and key generation functions f1, f1\*, f2, f3, f4, f5 and f5\*; Document 4: Design conformance test data

This document has been prepared by the 3GPP Task Force, and contains an example set of algorithms which may be used as the authentication and key generation functions f1, f1\*, f2, f3, f4, f5 and f5\*. (It is not mandatory that the particular algorithms specified in this document are used - all seven functions are operator-specifiable rather than being fully standardised.)

##### 5.3.2.13.123 TS 35.215

Specification of the 3GPP Confidentiality and Integrity Algorithms UEA2 & UIA2; Document 1: UEA2 and UIA2 specifications

This document specifies the 3GPP confidentiality and integrity algorithms known as UEA2 and UIA2.

##### 5.3.2.13.124 TS 35.216

Specification of the 3GPP Confidentiality and Integrity Algorithms UEA2 & UIA2; Document 2: SNOW 3G specification

This document specifies the 3GPP confidentiality and integrity algorithms known as UEA2 and UIA2.

##### 5.3.2.13.125 TS 35.217

Specification of the 3GPP Confidentiality and Integrity Algorithms UEA2 & UIA2; Document 3: Implementors' test data

This document specifies the 3GPP confidentiality and integrity algorithms known as UEA2 and UIA2.

##### 5.3.2.13.126 TS 35.218

Specification of the 3GPP Confidentiality and Integrity Algorithms UEA2 & UIA2; Document 4: Design conformance test data

This document specifies the 3GPP confidentiality and integrity algorithms known as UEA2 and UIA2.

##### 5.3.2.13.127 TR 35.909

3G Security; Specification of the MILENAGE algorithm set: an example algorithm set for the 3GPP authentication and key generation functions f1, f1\*, f2, f3, f4, f5 and f5\*; Document 5: Summary and results of design and evaluation

This report contains a detailed summary of the work performed during the design and evaluation of the 3GPP Authentication Functions denoted as the MILENAGE algorithm set. It contains all results and findings from this work and should be read as a supplement to the specifications of the algorithms in ETSI/SAGE Specification of the MILENAGE Algorithm Set: an Example Algorithm Set for the 3GPP Authentication and Key generation Functions, f1, f1\*, f2, f3, f4, f5 and f5\*; Document 1: Algorithm Specification. and the general project report on the Design and Evaluation of the 3GPP Authentication and Key generation Functions.

##### 5.3.2.13.128 TR 35.919

Specification of the 3GPP Confidentiality and Integrity Algorithms UEA2 & UIA2; Document 5: Design and evaluation report

This document specifies the 3GPP confidentiality and integrity algorithms known as UEA2 and UIA2.

#### 5.3.2.14 Vocabulary

##### 5.3.2.14.1 TR 21.905

Vocabulary for 3GPP Specifications

Document 21.905 is a collection of terms, definitions and abbreviations related to the baseline documents defining the objectives and systems framework. This document provides a tool for further work on the technical documentation and facilitates their understanding.