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Contents

Foreword

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

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x the first digit:

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y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

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1 Scope

This Technical Specification (TS) describes the Service Principles for PLMNs specified by 3GPP. Principles and requirements for interworking with WLAN are covered in TS 22.234 [35].

3GPP specifications provide integrated personal communications services. The system will support different applications ranging from narrow-band to wide-band communications capability with integrated personal and terminal mobility to meet the user and service requirements of the 21st century.

3GPP specifications allow the realisation of a new generation of mobile communications technology for a world in which personal communications services should allow person-to-person calling, independent of location, the terminal used, the means of transmission (wired or wireless) and the choice of technology. Personal communication services should be based on a combination of fixed and wireless/mobile services to form a seamless end-to-end service for the user.

3GPP specifications should be in compliance with the following objectives:

a) to provide a single integrated system in which the user can access services in an easy to use and uniform way in all environments;

b) to allow differentiation between service offerings of various serving networks and home environments;

c) to provide a wide range of telecommunications services including those provided by fixed networks and requiring user bit rates of up to 100 Mbit/s as well as services special to mobile communications. These services should be supported in residential, public and office environments and in areas of diverse population densities. These services are provided with a quality comparable with that provided by fixed networks such as ISDN and fixed broadband Internet access;

d) to provide services via hand held, portable, vehicular mounted, movable and fixed terminals (including those which normally operate connected to fixed networks), in all environments (in different service environments - residential, private domestic and different radio environments) provided that the terminal has the necessary capabilities;

e) to provide support of roaming users by enabling users to access services provided by their home environment in the same way even when roaming.

f) to provide audio, data, video and particularly multimedia services;

g) to provide for the flexible introduction of telecommunication services;

h) to provide within the residential environment the capability to enable a pedestrian user to access all services normally provided by fixed networks;

i) to provide within the office environment the capability to enable a pedestrian user to access all services normally provided by PBXs and LANs;

j) to provide a substitute for fixed networks in areas of diverse population densities, under conditions approved by the appropriate national or regional regulatory authority.

k) to provide support for interfaces which allow the use of terminals normally connected to fixed networks.

2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

2.1 Normative references

[1] 3GPP TS 22.105 "Services and Service Capabilities"

[2] Void

[3] 3GPP TS 22.038: "(U)SIM Application Toolkit (USAT); Service description; Stage 1".

[4] 3GPP TS 22.001: "Principles of Circuit telecommunication services supported by a Public Land Mobile Network (PLMN)".

[5] 3GPP TS 22.004: "General on supplementary services"

[6] 3GPP TS 22.030: "Man-Machine Interface (MMI) of the User Equipment (UE)"

[7] 3GPP TS 22.066: "Support of Mobile Number Portability (MNP); Service description; Stage 1"

[8] 3GPP TS 22.079: "Support of Optimal Routeing (SOR); Service definition; Stage 1".

[9] 3GPP TS 22.129: "Handover Requirements between UTRAN and GERAN or other Radio Systems".

[10] 3GPP TS 33.102: "Security Architecture".

[11] 3GPP TS 22.011: "Service Accessibility".

[12] 3GPP TS 22.016: "International mobile Station Equipment Identities (IMEI)".

[13] 3GPP TS 24.008: "Mobile Radio Interface Layer 3 Specification".

[14] 3GPP TS 22.003: "Circuit Teleservices supported by a Public Land Mobile Network (PLMN)".

[15] 3GPP TS 21.133: "Security Threats and Requirements".

[16] 3GPP TS 33.120: "Security Principles".

[17] 3GPP TS 22.042: "Network Identity and Time Zone, Service Description, Stage 1".

[18] 3GPP TS 42.009: "Security Aspects".

[19] 3GPP TS 31.102: "USIM Application Characteristics".

[20] 3GPP TS 23.221 "Architectural Requirements".

[21] 3GPP TS 22.002: "Circuit Bearer Services (BS) supported by a Public Land Mobile Network (PLMN)".

[22] 3GPP TS 22.060: "General Packet Radio Service (GPRS); Service description; Stage 1".

[23] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[24] 3GPP TR 23.972: "Circuit switched multimedia telephony".

[25] 3GPP TS 22.140: " Multimedia Messaging Service (MMS); Stage 1".

[26] 3GPP TS 22.226: "Global Text Telephony, Stage 1".

[27] 3GPP TS 22.228: "Service requirements for the Internet Protocol (IP) multimedia core network subsystem (IMS); Stage 1".

[28] RFC 3261: "SIP: Session Initiation Protocol".

[29] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[30] 3GPP TS 26.233: "Packet Switched Streaming Service (PSS); General Description".

[31] 3GPP TS 26.234: "Packet Switched Streaming Service (PSS); Protocols and Codecs".

[32] 3GPP TR 22.934: "Feasibility study on 3GPP system to Wireless LAN (WLAN) interworking".

[33] RFC 2486: "The Network Access Identifier".

[34] 3GPP TS 51.011: "Specification of the Subscriber Identity Module - Mobile Equipment (SIM-ME) interface Release 4)".

[35] 3GPP TS 22.234: "Requirements on 3GPP system to wireless local area network (WLAN) interworking".

[36] 3GPP TS 31.101: "UICC-terminal interface; Physical and logical characteristics".

[37] OMA Device Management V1.2 specifications

[38] OMA Client Provisioning V1.1 specifications

[39] void

[40] 3GPP TS 22.173: " IP Multimedia Core Network Subsystem (IMS) Multimedia Telephony Service and supplementary services; Stage 1".

[41] 3GPP TS 22.082: "Call Forwarding (CF) supplementary services - Stage 1".

[42] 3GPP TS 22.278: "Service Requirements for the Evolved Packet System (EPS)".

[44] 3GPP TS 22.071: "Location Services (LCS); Service description; Stage 1".

[45] 3GPP TR 22.985: "Service requirement for the 3GPP User Data Convergence (UDC), Release 9".

[46] EN 15722:2015 "Intelligent transport systems - eSafety - eCall minimum set of data (MSD)"

[47] 3GPP TS 23.226: "Global text telephony (GTT); Stage 2".

[48] 3GPP TS 22.220: "Service requirements for Home Node B (HNB) and Home eNode B (HeNB) ".

[49] ETSI TS 181 019 V2.0.0 (2007-11): "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Business Communication Requirements".

[50] 3GPP TS 23.335: "User Data Convergence (UDC); Technical realization and information flows; stage 2".

[51] OpenID Foundation: "OpenID Authentication 2.0", http://openid.net/specs/openid-authentication-2_0.html.

[52] 3GPP TS 22.368: "Service requirements for Machine-Type Communications (MTC); Stage 1".

[53] OMA Presence API: "OMA-TS-REST_NetAPI_Presence-V1_0-20130212-C".

[54] IETF RFC-5491: "GEOPRIV Presence Information Data Format Location Object (PIDF-LO) Usage Clarification, Considerations, and Recommendations".

[55] IETF RFC-5139: "Revised Civic Location Format for Presence Information Data Format Location Object (PIDF-LO)".

[56] 3GPP TS 23.032: "Universal Geographical Area Description (GAD)".

[57] 3GPP TS 23.402: "Architecture enhancements for non-3GPP accesses".

[58] Void

[59] 3GPP TS 22.261: "Service requirements for the 5G system; Stage 1".

[60] 3GPP TS 32.130: "Network Sharing; Concepts and requirements"

2.2 Informative references

[43] GSMA PRD IR.34: "Inter-Service Provider IP Backbone Guidelines"

[58] ETSI TR 103.140 V1.1.1 (2014-04): "eCall for VoIP"

[59] Void

[60] Code of Federal Regulations (CFR) Title 47; https://www.fcc.gov/general/rules-regulations-title-47

[61] 3GPP TR 22.904: "Study on user centric identifiers and authentication".

[62] GSMA SGP.21: "RSP Architecture".

[63] GSMA SGP.01: "Embedded SIM Remote Provisioning Architecture".

3 Definitions and abbreviations

3.1 Definitions

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

3GPP SSO Authentication: Authentication performed between an SSO-capable UE and 3GPP SSO Identity Provider using Operator-controlled credentials and without requiring user involvement.

3GPP SSO Identity Provider: An entity that maintains Operator-controlled identity and credential information for a user, performs 3GPP SSO Authentication, and asserts the user's identity to a Data Application Provider.

3rd Party SSO Identity Provider: An entity that maintains identity and credential information (that is not Operator-controlled) for a user, performs authentication, and asserts the user's identity to a Data Application Provider.

Attended Data Traffic: Data traffic of which the user is aware he/she initiated, e.g. based on the screen/keypad lock being deactivated, length of time since the UE last received any input from the user, known type of application (e.g. an application monitoring a user's health – "mHealth" – which may need its data always treated as Attended Data Traffic.)

eCall: A manually or automatically initiated emergency call (TS12 or IMS emergency call), from a vehicle, supplemented with a minimum set of emergency related data (MSD).

Data Application Provider: An entity that offers data application services to users (e.g., over the public Internet). The data applications can be browser or non-browser based services.

Free-to-air (FTA) TV: A TV service characterised by no content encryption and being made available at no additional cost to the end user.

Free-to-view (FTV) TV: A TV service characterised by optional content encryption and being made available at no additional cost to the end user.

Gateway UE: a UE, which acts as a gateway providing access to and from the 3GPP network for one or more non-3GPP devices that are connected to the gateway UE.

GERAN or UTRAN Sharing: The sharing of GERAN or UTRAN among a number of operators.

Hosting E-UTRAN/NG-RAN Operator: The Operator that has operational control of a Shared E-UTRAN and/or NG-RAN. With regard to management of the Shared E-UTRAN the Hosting E-UTRAN/NG-RAN Operator is a Master Operator [60].

Hosting RAN: The Shared RAN that is owned or controlled by the Hosting RAN Operator.

Hosting RAN Operator: The Operator that has operational control of a Shared NG-RAN, Shared E-UTRAN, Shared GERAN or UTRAN.

IMS Centralized Services: The provision of communication services wherein services and service control are based on IMS mechanisms and enablers, and support is provided for a diversity of access networks (including CS domain and IP based, wireless and wireline), and for service continuity between access networks.

MSD: The Minimum Set of Data [46] forming the data component of an eCall sent from a vehicle to a Public Safety Answering Point or other designated emergency call centre. The MSD has a maximum size of 140 bytes and includes, for example, vehicle identity, location information and time-stamp.

NG-RAN: A radio access network connecting to the 5G core network which uses NR, E-UTRA, or both.

Participating Operator: Authorized operator that is using Shared NG-RAN, Shared E-UTRAN, Shared GERAN or UTRAN resources provided by a Hosting RAN Operator

RAN user plane congestion: The situation where the demand for RAN resources to transfer user data exceeds the available RAN capacity to deliver the user data for a significant period of time in the order of few seconds or longer.

(S)Gi-LAN: The network infrastructure connecting to 3GPP network over the SGi or Gi reference point that provides various IP-based services (e.g. NAT, antimalware, parental control, DDoS protection, video optimization).

Shared E-UTRAN: E-UTRAN that is shared among a number of operators.

Shared RAN: GERAN, UTRAN, E-UTRAN or NG-RAN that is shared among a number of operators.

Shared GERAN or UTRAN: GERAN or UTRAN that is shared among a number of operators.

Shared NG-RAN: NG-RAN that is shared among a number of operators.

SSO Provider: An entity that provides SSO Service. The SSO Provider enables a user to authenticate to an IdP and thereby to have their identity asserted to a DAP. Each data application, whether provided by different DAPs or the same DAP, may have its own policy regarding authentication. In the 3GPP SSO Service, the SSO Provider is the 3GPP Operator.

SSO Service: A service in which the user of a data application is authenticated once, and as a result of that authentication is provided with seamless and transparent access to multiple data applications offered by one or more Data Application Providers.

SSO Local User Authentication: Authentication performed by the UE that establishes the presence of the registered user of the data application by requiring input which only the registered user would be able to provide.

Subscribed TV service: A TV service which is characterised by requiring a subscription (to content owner, content provider, or MNO) in order to access the service.

Unattended Data Traffic: Data traffic of which the user is unaware he/she initiated, e.g. based on the screen/keypad lock being activated, length of time since the UE last received any input from the user, known type of app (e.g. an application monitoring a user's health – "mHealth" – may need its data never treated as Unattended Data Traffic.)

User: As defined in TR 21.905 [29]: An entity, not part of the 3GPP System, which uses 3GPP System services. Example: a person using a 3GPP System mobile station as a portable telephone.

Additional examples for a user in the context of this TS: a non-3GPP device connected to the 3GPP system via a gateway, or an application running on a UE.

User Identity: information representing a user in a specific context. A user can have several user identities, e.g. a User Identity in the context of his profession, or a private User Identity for some aspects of private life.

User Identifier: a piece of information used to identify one specific User Identity in one or more systems.

User Identity Profile: A collection of information associated with the User Identities of a user.

MUSIM UE: An ME with multiple USIMs.

3.2 Abbreviations

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

DAP	Data Application Provider
IdP	Identity Provider
IVS	In Vehicle System (eCall terminal and associated sub-systems in vehicle)
ME	Mobile Equipment
OTT	Over The Top
PC	Personal Computer
SSO	Single Sign-On