

Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Service and Capability Requirements

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN).

The present document describes the Service and Capability Requirements of TISPAN NGN Release 2.

Introduction

The present document specifies the requirements that need to be fulfilled by NGN technical specifications to provide services in an NGN.

The present document considers different service sets: IP Multimedia Services, PSTN/ISDN Emulation services and IPTV. Each of these service sets has its own clause, which is further divided into clauses providing clear and precise requirements for each of these two service sets. Further clauses provide generic network requirements to support service deployment and interoperability.

The present document provides generic requirements on networks from a service point of view. Specific details of individual services and capabilities are provided in other documents.

1 Scope

The present document specifies network requirements in terms of service-related capabilities for TISPAN NGN. The present document places requirements for all TISPAN NGN subsystems.

The present document provides generic requirements for services and interoperability in TISPAN NGN in terms of the capabilities for a network or networks.

Requirements on service-related subsystems provide sufficient details for architecture, networking requirements and protocols to be specified. Requirements on service independent subsystems are contained within the service-related subsystem requirements.

Specific service requirements may be contained in other documents, as identified in the present document, and by other documents referencing the present document.

The present document does not define services, only capabilities and requirements. The present document does not place requirements on terminals or other customer-owned equipment. The present document specifies the service-related requirements that are used to determine the network architecture, requirements and control protocols for a network interface to a customer environment.

NOTE: The present document uses the term "NGN" only in the context of TISPAN.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.
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2.1 Normative references

The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

- [1] ETSI TS 122 340: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; IP Multimedia Subsystem (IMS) messaging; Stage 1 (3GPP TS 22.340)".
- [2] ETSI TS 122 141: "Universal Mobile Telecommunications System (UMTS); Presence service; Stage 1 (3GPP TS 22.141 version 7.0.0 Release 7)".
- [3] ETSI TS 102 424: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Requirements of the NGN network to support Emergency Communication from Citizen to Authority".

- [4] ETSI TS 188 003: "Telecommunications and Internet Converged Services and Protocols for Advanced Networking (TISPAN); OSS requirements; OSS definition of requirements and priorities for further network management specifications for NGN".
- [5] ETSI TS 187 001 (V2.y.z): "Telecommunications and Internet Converged Services and Protocols for Advanced Networking (TISPAN); NGN SECURITY (SEC); Requirements".

NOTE: The latest version in the V2.y.z series applies.

- [6] Void.
- [7] ETSI TS 122 228: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Service requirements for the Internet Protocol (IP) multimedia core network subsystem (IMS); Stage 1 (3GPP TS 22.228 version 7.3.0 Release 7)".
- [8] ITU-T Recommendation G.722: "7 kHz audio-coding within 64 kbit/s".
- [9] ITU-T Recommendation G.729.1: "G.729 based Embedded Variable bit-rate coder: An 8-32 kbit/s scalable wideband coder bitstream interoperable with G.729".
- [10] 3GPP2 C.S0014-C (Version 1.0): "Software Distribution for Enhanced Variable Rate 2 Codec (EVRC), Speech Service Options 3, 68, and 3 70, Specification", January 2007.

NOTE: Available at C.R0014-C v1.0 http://www.3gpp2.org/public_html/specs/C.S0014-C_v1.0_070116.pdf.

- [11] ETSI TS 122 101: "Universal Mobile Telecommunications System (UMTS); LTE; Service aspects; Service principles (3GPP TS 22.101 Release 7)".
- [12] ETSI TS 181 018 (V2.y.z): "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Requirements for QoS in a NGN".

NOTE: The latest version in the V2.y.z series applies.

- [13] ETSI TS 122 173: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; IP Multimedia Core Network Subsystem (IMS) Multimedia Telephony Service and supplementary services; Stage 1 (3GPP TS 22.173 Release 8)".
- [14] ETSI TS 122 115: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Service aspects; Charging and billing (3GPP TS 22.115 Release 8)".
- [15] ETSI TS 122 401: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); TISPAN; Videotelephony over NGN Service Description (3GPP TS 22.401 Release 8)".
- [16] ETSI TS 122 182: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Customized Alerting Tone (CAT) requirements; Stage 1 (3GPP TS 22.182 Release 8)".
- [17] 3GPP TS 22.183: "Customized Ringing Signal (CRS) requirements; Stage 1 (Release 9)".
- [18] ETSI TS 122 071: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Location Services (LCS); Service description; Stage 1 (3GPP TS 22.071 Release 8)".
- [19] ETSI TS 123 228: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; IP Multimedia Subsystem (IMS); Stage 2 (3GPP TS 23.228 Release 7)".
- [20] ETSI TS 123 003: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Numbering, addressing and identification (3GPP TS 23.003 Release 7)".

- [21] ETSI TS 181 016 (V2.y.z): "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN);Service Layer Requirements to integrate NGN services and IPTV".

NOTE: The latest version in the V2.y.z series applies.

- [22] ETSI TS 181 014 (V2.y.z): "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN);Requirements for network transport capabilities to support IPTV services".

NOTE: The latest version in the V2.y.z series applies.

- [23] ITU-T Recommendation G.711: "Pulse code modulation (PCM) of voice frequencies".
- [24] ITU-T Recommendation G.729 (Annex A): "Coding of speech at 8 kbit/s using conjugate-structure algebraic-code-excited linear prediction (CS-ACELP); Annex A: Reduced complexity 8 kbit/s CS-ACELP speech codec".
- [25] ITU-T Recommendation H.263: "Video coding for low bit rate communication".
- [26] ITU-T Recommendation H.264: "Advanced video coding for generic audiovisual services".
- [27] ETSI TS 187 005: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Release 2 Lawful Interception; Stage 1 and Stage 2 definition".

2.2 Informative references

The following referenced documents are not essential to the use of the present document but they assist the user with regard to a particular subject area. For non-specific references, the latest version of the referenced document (including any amendments) applies.

- [i.1] ETSI TR 180 000: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Terminology".
- [i.2] Void.
- [i.3] IETF RFC 4282: "The Network Access Identifier".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TS 122 228 [7], TR 180 000 [i.1] and the following apply:

- IP multimedia application (see TS 122 228 [7]);
- IP multimedia service (see TS 122 228 [7]);
- IP multimedia session: (see TS 122 228 [7]);
- IP Multimedia Core Network Subsystem (IM CN Subsystem) (see TS 122 228 [7]);
- nomadism (see TR 180 000 [i.1]);
- portability (see TR 180 000 [i.1]).

application Provider: NGN operator role that offers NGN applications to the Customers making use of the services capabilities provided by the NGN Service Provider

NOTE: It can perform user authentication at the application level.

black list: list of identity information whom parties are identified as with malicious information

NOTE: This list is managed by the user or the service provider.

NGN operator role: activity or set of activities performed by a telecom operator played in the context of a NGN deployment scenario

NOTE: Each activity may denote different types of roles, e.g., business role or technical role, depending on the nature of the services or tasks performed in each scenario. Independently of the numbers and types of roles identified for the players in these deployment scenarios, the following rules apply:

- a telecom operator player is composed of one or more roles;
- each of these roles is either a business role, a technical role or both;
- at least one role is a business role within an administrative domain.

NGN Core Network Provider (NCNP): NGN operator role that relies in infrastructure supported by different types of high-speed technology, e.g. ATM, SDH, others, and aggregates traffic between edge nodes located in different access networks, or between an edge node located in an access network and an external network, e.g. PSTN, or other IP network types

NOTE: The NCNP is also responsible for core resource management, gating, QoS control and traffic control, between the core network border entities, e.g. C-BGF and I-BGF, according to the transport control service requested by the NGN Connectivity Provider. The NCNP is also responsible for policy enforcement and NAT related handling.

NGN Connectivity Provider (NCP): NGN operator role that provides connectivity between the user and one or multiple Core Transport Networks

NOTE: The NCP provides a connectivity service to users and therefore owns the commercial relationship with them and the subscriber access profile data (e.g. user authentication credentials, set of allowed QoS-enabled applications). The NCP is also responsible for performing admission control decisions as well as guaranteeing and monitoring the agreed QoS and security characteristics of traffic to and from a particular user.

NGN Access Network Provider (NANP): NGN operator role that aggregates traffic between multiple last mile access networks and one or multiple NGN Connectivity Providers

NOTE: The NANP is also responsible for resource management, gating and traffic control between the User Equipment and the IP edge as appropriate, according to the transport control service requested by the NGN Connectivity Provider. The NANP holds the subscriber access profile (e.g. ADSL line QoS profile, NCP associated with a physical ADSL line, etc.) as well as policy and configuration data associated with the NGN connectivity provider. The NANP does not own subscriber access profile information.

NGN Service Provider (NSP): NGN operator role that offers NGN based services which share a consistent set of policies and common technologies

NOTE: The NSP provides common functionalities e.g. user service authentication and identification, service control, charging, etc. Several Application Providers can use the same NSP to deliver applications to the Customers.

unknown party: party who is unknown by the other party (e.g. not in his Address Book), different from "anonymous")

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ACR	Anonymous Communications Rejection service requirements
ADSL	Asymmetric Digital Subscriber Line
AMR	Adaptive Multi-Rate
AN	Access Network

ATM	Asynchronous Transfer Mode
C-BGF	Core-Border Gateway Function
CDR	Charging Data Record
CN	Core Network
CoIx	Connectivity-oriented Interconnection
COMIF	Customized Originating Multimedia Information Filtering
COMIP	Customized Originating Multimedia Information Presentation
CPE	Customer Premise Equipment
CS	Circuit Switched
CTMIF	Customized Terminating Multimedia Information Filtering
CTMIP	Customized Terminating Multimedia Information Presentation
DECT	Digital Enhanced Cordless Telecommunications
DOS	Denial Of Service
DSL	Digital Subscriber Line
EVRC	Enhanced Variable Rate Codec
EVRC-B	EVRC wideband
HW	HardWare
I-BGF	Interconnection Border Gateway Function
IM	IP Multimedia
IMS	IP Multimedia Subsystem
IP	Internet Protocol
IPTV	IP Television
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
ISDN	Integrated Services Digital Network
ISP	Internet Service Provider
MCID	Malicious Communication Identity service requirements
NAI	Network Access Identifier
NASS	Network Attachment Subsystem
NAT	Network Address Translation
NB	NarrowBand
NCNP	NGN Core Network Provider
NCP	NGN Connectivity Provider
NG	Next Generation
NGN	Next Generation Network
PES	PSTN/ISDN Emulation Subsystem
PLMN	Public Land Mobile Network
PSTN	Public Switched Telephone Network
QoS	Quality of Service
RACS	Resource and Admission Control Subsystem
SDH	Synchronous Digital Hierarchy
SLA	Service Level Agreements
SoIx	Service-oriented Interconnection
SP	Service Provider
SUB	Subaddressing
TDM	Time Division Multiplexing
TE	Terminal Equipment
URI	Uniform Resource Identifier
UUS	User-to-User Signalling
VPN	Virtual Private Network
WB	WideBand

4 Capabilities for the support of IP Multimedia Services

This clause covers the requirements of the IP Multimedia services supported by the NGN IMS.

4.1 Business models

The business models shall be as described in TS 122 228 [7].

4.2 Service requirements

4.2.1 General services requirements

As specified in TS 122 228 [7].

4.2.2 Handling of sessions

As specified in TS 122 228 [7] and TS 122 173 [13] in addition to the following.

4.2.2.1 Service re-configuration

To allow rich service offerings by networks without overloading the terminals and clients, user centric networking service capability may be offered. With the intelligence in the network, the services can be downloaded and used only when they are requested.

4.2.2.1.1 General requirement

As a service provider/network option the IMS may support the re-configuration of services available to the user when the users access its services from a location other than the home (subscribed-to) location.

The services may be dependent on the access network and arrangements between the Application provider and the access network provider including roaming cases.

The network shall be able to determine the capability of a user device based on the capability announced by the end user device before offering its services/applications to the end user.

The network shall be able to announce one or more of the network services and applications to the user device based on the user device capability and the requirements of one or more network services and applications supported by the network.

The network shall accept the customized service profile requested by the end user after successful authentication/authorization of the user, and update the subscription database accordingly for billing/charging purposes and for future record of the user preferences.

The lifetime of a service client downloaded on a user device shall be agreed between the user and the network before the download. The service provider/network provider shall be able to determine the lifetime.

Basic services shall be supported permanently on the user device (e.g. voice services).

4.2.1.1.2 Service reconfiguration when roaming

When roaming into a new network, the service client(s) may be overwritten by new applicable version depending on the capability of the network and the offered service in that network.

4.2.3 PSTN/ISDN simulation service

As specified in TS 122 228 [7] and TS 122 173 [13].

4.2.4 IMS messaging

The capabilities to support immediate messaging and session based messaging shall be as described in TS 122 340 [1].

4.2.5 Presence service

The capabilities to support Presence Service shall be as described in TS 122 141 [2].