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Foreword

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Contents

Intellectual Property Rights	2
Foreword.....	2
Foreword.....	5
Introduction	5
1 Scope	6
2 References	6
3 Definitions, symbols and abbreviations	7
3.1 Definitions	7
3.2 Abbreviations	7
4 Capabilities for the support of IP Multimedia Services	8
4.1 Business models	8
4.2 Service requirements	9
4.2.1 General services requirements	9
4.2.2.1 Handling of session establishment	10
4.2.2.1.1 Presentation of session originator identity	10
4.2.2.1.2 Negotiation of an incoming session.....	10
4.2.2.1.3 Accepting or rejecting an incoming session	10
4.2.2.2 Handling of an ongoing session	10
4.2.2.2.1 User modification of media in an ongoing session	10
4.2.2.2.2 Presentation of identity of session terminator.....	10
4.2.2.3 Handling end of session	10
4.2.2.4 Capability negotiation	11
4.2.2.5 Redirecting of IP Multimedia sessions.....	11
4.2.2.6 User busy	11
4.2.2.6.1 User determined user busy	11
4.2.2.6.2 Network determined user busy	12
4.2.3 PSTN/ISDN Simulation Service.....	12
4.2.4 IMS messaging	12
4.2.5 Presence Service	12
4.2.6 Location Service.....	13
4.2.7 VideoTelephony Service.....	13
4.3 Mobility.....	13
4.4 Number, naming and addressing	13
4.6 Regulatory service requirements	14
4.6.1 Lawful Intercept.....	14
4.6.2 Emergency service	14
4.6.3 Identifying malicious communications.....	14
4.6.4 Anonymous communications rejection.....	14
4.9 Interworking	14
4.9.1 Interworking with Legacy PSTN/ISDN.....	14
4.9.1.1 Overlap Signalling	15
4.9.2 Interworking with PSTN/ISDN Emulation.....	15
4.9.3 Interworking with PLMN	15
4.9.3.1 Interworking with IMS based PLMN.....	15
4.9.3.2 Interworking with PLMN - CS Domain.....	15
4.9.4 Interworking with Packet Cable network.....	16
4.9.5 Interworking with other IMS network	16
4.9.6 Interworking with other networks.....	16
4.10 Quality of Service (QoS).....	16
4.11 Security Requirements	16
4.11.1 General.....	16
4.11.2 NGN Security	16
4.11.3 Network Domain Security	16

4.12 Charging and Accounting.....	16
Annex A (informative): Basic communication cases for IMS networks.....	17
Annex B (informative): Guidance for terminal implementation	19
Annex C (informative): Bibliography.....	20
Annex D (informative): Change history	21
History	22

Foreword

This Technical Specification (TS) was been produced by ETSI Technical Committee Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN) and originally published as parts of ETSI TS 181 005 [11]. It was transferred to the 3rd Generation Partnership Project (3GPP) in July 2008.

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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 one service set: IP Multimedia Services. Other service sets and generic network requirements to support service deployment and interoperability, are contained in ETSI TS 181 005 [11].

The present document provides generic requirements on networks from a services 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 a TISPAN NGN incorporating an IMS. The present document places requirements for TISPAN NGN Release 1 subsystems.

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

Requirements on service-related subsystems provide sufficient detail for architecture, networking requirements and protocols to be specified.

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 on an IMS 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 ETSI TISPAN.

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*.

Referenced documents which are not found to be publicly available in the expected location might be found at <http://docbox.etsi.org/Reference>.

- [1] ETSI TR 180 000: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Terminology".
- [2] ETSI TS 122 340: "Universal Mobile Telecommunications System (UMTS); IP Multimedia Subsystem (IMS) messaging; Stage 1 (3GPP TS 22.340)".
- [3] ETSI TS 122 141 (V7.0.0): "Universal Mobile Telecommunications System (UMTS); Presence service; Stage 1 (3GPP TS 22.141 version 7.0.0 Release 7)".
- [4] 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".
- [5] 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 NGNOSS definition of requirements and priorities for further network management specifications for NGN".
- [6] IETF RFC 3966: "The tel URI for Telephone Numbers".
- [7] IETF RFC 3261: "SIP: Session Initiation Protocol".

- [8] ETSI TS 187 001: " Telecommunications and Internet Converged Services and Protocols for Advanced Networking (TISPAN); NGN SECurity (SEC); Requirements".
- [9] ETSI TS 122 115: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Service aspects; Charging and billing (3GPP TS 22.115)".
- [10] 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)".
- [11] ETSI TS 181 005 (V1.2.1): " Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Services and Capabilities Requirements".
- [12] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the definitions given in TS 122 228 [10] and TR 180 000 [1] apply:

- IP multimedia application (see TS 122 228 [10]);
- IP multimedia service (see TS 122 228 [10]);
- IP multimedia session: (see TS 122 228 [10]);
- IP Multimedia Core Network Subsystem (IM CN Subsystem) (see TS 122 228 [10]);
- nomadism (see TR 180 000 [1]);
- portability (see TR 180 000 [1]).

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [12] 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 [12].

ACR	Anonymous Communications Rejection service requirements
AMR	Adaptive Multi-Rate
AN	Access Network
CLIP	Calling Line Identification Presentation
CN	Core Network
CS	Circuit Switched
DSL	Digital Subscriber Line
ECN	Electronic Communication Network
IM	IP Multimedia
IMS	IP Multimedia Subsystem
IP	Internet Protocol
IPCAN	IP-Connectivity Access Network
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
ISDN	Integrated Services Digital Network
LI	Lawful Interception
MCID	Malicious Communication Identity service requirements
NAI	Network Access Identifier
NAT	Network Address Translation
NGN	Next Generation Network
PBX	Private Branch eXchange

PLMN	Public Land Mobile Network
PSTN	Public Switched Telephone Network
QoS	Quality of Service
SLA	Service Level Agreements
UE	User Equipment
URI	Uniform Resource Identifier

4 Capabilities for the support of IP Multimedia Services

This clause covers the requirements of IP Multimedia services supported by 3GPP IMS.

4.1 Business models

The NGN supports business agreements between the access network operator and the network operator providing IMS services (IMS operator).

The IMS shall be able to offer services to users that are attached to access networks owned by another operator.

The service offering may be restricted by the capabilities of the access network and the business agreement between the access network operator and the IMS operator.

The NGN shall support at least the following operator's business domain relationships:

a) Access network to IMS relationships

- a.1) Access network and the IMS network it connects to, belong to the same operator as shown in figure 1.

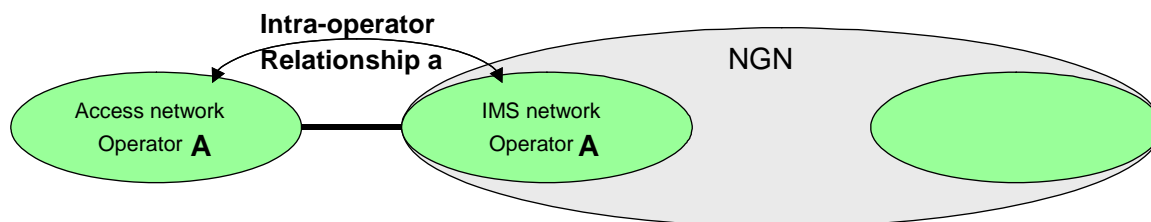


Figure 1

- a.2) Access network and the IMS network it connects to, belong to different operators having an interconnection agreement as shown in figure 2.

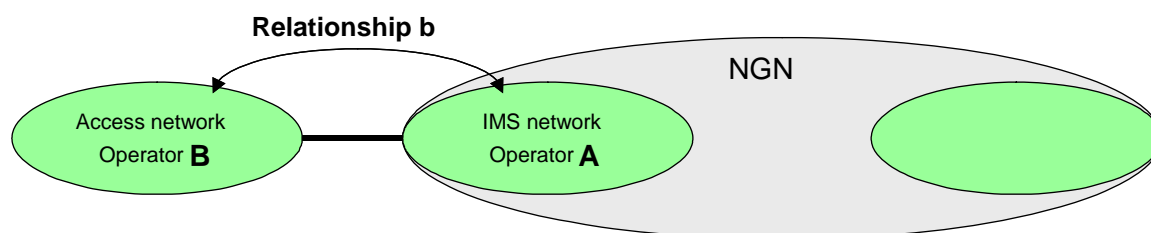


Figure 2

b) IMS level relationships

- b.1) The IMS network (e.g. 3GPP or NGN) to which the access network connects and the Home IMS network (e.g. NGN or 3GPP) which provides the IMS services belong to different operators as shown in figure 3.

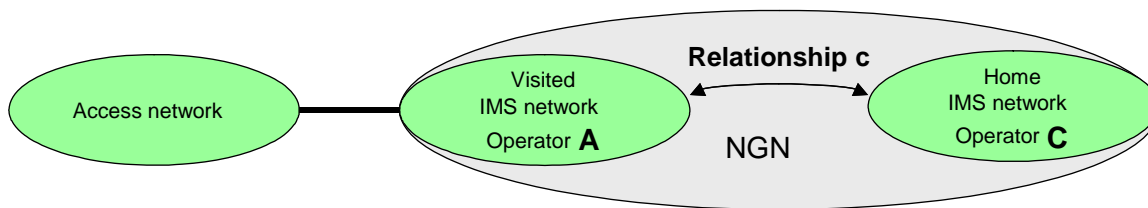


Figure 3

b.2) The IMS network (e.g. 3GPP or NGN) to which the access network connects and the Home IMS network (e.g. NGN or 3GPP) which provides the IMS services are the same as shown in figure 4.

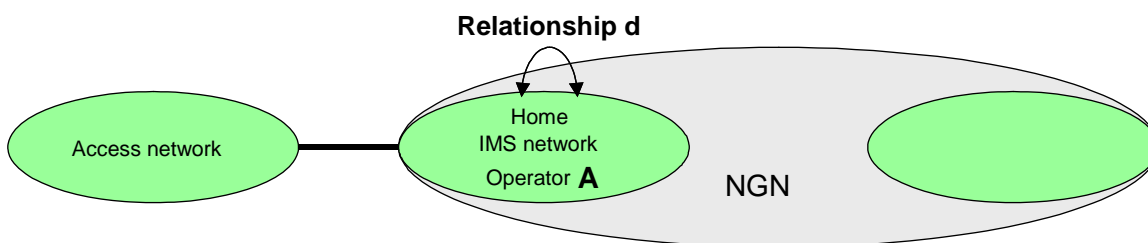


Figure 4

b.3) The IMS network (e.g. 3GPP or NGN) to which the access network connects and the Home IMS network (e.g. NGN or 3GPP) which provides the IMS services belong to the same operator as shown in figure 5.

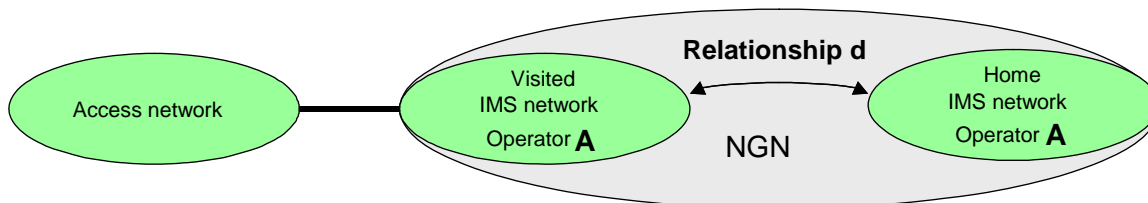


Figure 5

A IMS operator shall be capable of connecting to other network operators via:

- an interconnect model where bi-lateral Service Level Agreements are established between two operators;
- an interconnect model where intermediate network(s) can provide interconnect on behalf of multiple operators (and may be based on a single Service Level Agreement between the operators and their intermediate network provider).

A single IMS operator shall be able to choose to support either of the interconnect models, or both of the interconnect models simultaneously.

4.2 Service requirements

4.2.1 General services requirements

The principle of access independence, as defined by the business models described above, shall be supported.

It is desirable that an operator should be able to offer services to their subscribers regardless of how they obtain an IP connection through an access network as long as there is a business (roaming) agreement between access operator and IMS operator.

IP multimedia sessions shall be able to support a variety of different media types.

Within each IP multimedia session, one or more IP multimedia applications shall be supported.

The network shall provide the capability for the user to invoke one or more IP multimedia sessions. Where more than one application is supported within a multimedia session by the network, the user may activate concurrent IP multimedia applications within each IP multimedia session.

The network shall store information about the state (e.g. attached/non-attached) of a user's access connection, whether the user is roaming or not. According to policies this information may be provided to applications.

The network shall have the capability to hold user location information, whether the user is roaming or not. According to policies this information may be provided to applications.

The network shall deliver additional information (e.g. Picture, Video, text), provided by the user, to the parties involved, during any phase of the communication. The additional information may not be related to any media flow.

4.2.2.1 Handling of session establishment

4.2.2.1.1 Presentation of session originator identity

The network shall present the identity of the session originator (as in clause 4.4). The network shall suppress the presentation of the identity when requested by the session originator.

NOTE: The requirements for support of emergency communications may over-ride the user request for suppression.

4.2.2.1.2 Negotiation of an incoming session

Interaction with the user profile shall be supported, and additionally direct interaction with the user may be required. Refer to clause 4.2.2.4 for further details on capability negotiation on an incoming IP multimedia session.

4.2.2.1.3 Accepting or rejecting an incoming session

The network shall support the capability for the user to accept, reject, ignore or re-direct an incoming IP multimedia session.

4.2.2.2 Handling of an ongoing session

4.2.2.2.1 User modification of media in an ongoing session

The user shall be able to negotiate the addition or deletion of media components of IP multimedia applications during an IP multimedia session. Refer to clause 4.2.8 for further details on capability negotiation during an IP multimedia session.

4.2.2.2.2 Presentation of identity of session terminator

The network shall support the capability to present to the session originator the identity (as in clause 4.4) of the session terminator. The network shall suppress the presentation of the identity when requested by the session terminator.

NOTE: The requirements for support of emergency communications may over-ride the user request for suppression.

4.2.2.3 Handling end of session

If there are one or two participants in the IP multimedia session, the network shall end an IP multimedia session at any time during the session, when requested by any of the IP multimedia session users. The network may end an IP multimedia session at any time during the session (e.g. in failure conditions).

If there are more than two participants in the IP multimedia session the network may end an IP multimedia session at any time during the session, when requested by any of the IP multimedia session users. The network may end an IP multimedia session at any time during the session (e.g. in failure conditions).

4.2.2.4 Capability negotiation

The network shall provide the capability for IP multimedia applications (whether it is an application of a user or the network) to negotiate their capabilities by identifying and selecting the available media components, QoS etc. of IP multimedia sessions. The network shall support the capability for negotiation to take place on invocation, acceptance and during an ongoing IP multimedia session (e.g. following a change in UE capabilities, change in media types, etc.). The user, network, or an application on behalf of the user or network may initiate capability negotiation.

In order to support user preferences for IP multimedia applications, the capability negotiation shall take into account the information in the user profile whenever applicable. This includes the capability to route the IP multimedia session to a specific UE, when multiple UEs share the same IMS service subscription.

4.2.2.5 Redirecting of IP Multimedia sessions

The network shall support the capability for the user, or the network on behalf of the user, to identify an alternative destination for an IP multimedia session or individual media of an IP multimedia session. The originating entity, terminating entity or the network on their behalf, may initiate redirection to alternative destinations. It shall be possible for redirection to be initiated at various stages of an IP Multimedia session. For example:

- Prior to the initial request of an IP Multimedia session.
- During the initial request for an IP Multimedia session.
- During the establishment of an IP Multimedia session.
- While the IP Multimedia session is ongoing.

Redirection can be applied for all Multimedia sessions unconditionally or it can be caused by any of a set list of events or conditions. Typical causes could be:

- Identity of the originator.
- Location or presence of the originator or terminator.
- If the terminator is already in a session.
- If the terminator is unreachable or unavailable in some other way.
- If the terminator does not respond.
- After a specified alerting interval.
- User's preference on routing for specific IP Multimedia session based on the capabilities of multiple UEs sharing the same IMS service subscription.
- Time of day.

4.2.2.6 User busy

4.2.2.6.1 User determined user busy

The network shall support the capability of a user to reject an incoming IP multimedia session with an indication of "user busy". This indication may be used by the network as a trigger for certain services e.g. Call Forwarding on Busy. If the session rejection is propagated back to the originator, the "user busy" indication must be provided as the cause of the rejection.

The conditions for user determined "user busy" include:

- the session is offered to a single contact that rejects with a "user busy" indication; or

- the session is offered to multiple contacts with a single public identity, and one contact rejects with a "user busy" indication on behalf of the set of contacts; or
- the session is offered to multiple contacts; and
 - none of the contacts progress the session; and
 - one or more of the contacts rejects with a "user busy" indication.

4.2.2.6.2 Network determined user busy

The capability of network determined user busy is a network option.

The network may determine busy conditions at the time an incoming IP multimedia session is about to be offered.

The conditions for network determined user busy are identified, on a per subscription basis, based on the availability of limited resources assigned to the terminating user, or due to other information such as presence.

The conditions for network determined "user busy" include:

- the maximum number of total communications permitted has been reached;
- the maximum number of simultaneous media streams supported at the given subscriber's interface(s) has been reached;
- the maximum bandwidth supported at the given subscriber's interface(s) has been reached.

The network determined user busy condition may be used to trigger certain services (e.g. Call Forwarding on Busy), or reject the session, or both. If the session rejection is propagated back to the originator, a "user busy" indication must be provided as the cause of the rejection.

In addition, a further condition, "approaching network determined user busy" that is related to the Network determined user busy condition, may be provided. This condition may be used to trigger certain services. However, this condition is not a busy condition and shall not cause a "user busy" indication being sent towards the session originator.

The conditions for approaching network determined user busy are identified, on a per subscription basis, based on the availability of limited resources assigned to the terminating user.

The conditions for approaching network determined user busy include:

- a pre-determined number, or less, of communications are available (i.e. the maximum number of communications minus the current number); or
- a pre-determined number, or less, of simultaneous media streams available (i.e. the maximum number of simultaneous media streams minus the current number); or
- a certain limit in the bandwidth used at the given subscriber's interface(s) has been reached.

4.2.3 PSTN/ISDN Simulation Service

The NGN shall provide the capability for a service operator to simulate one or more PSTN/ISDN services. PSTN/ISDN simulation that provides the user with an experience that may or may not differ to an existing PSTN/ISDN experience. The way in which PSTN/ISDN services are delivered shall not impact on the delivery of new NGN services.

The specific requirements for the PSTN/ISDN simulation service are described in TS 181 002 (see Bibliography).

4.2.4 IMS messaging

The capabilities to support immediate messaging and session based messaging shall be as described in TS 122 340 [2].

4.2.5 Presence Service

The capabilities to support Presence Service shall be as described in TS 122 141 [3].

4.2.6 Location Service

The NGN location service shall provide a mechanism that may offer network asserted location information to applications. The provision of location information to applications shall depend on policies and user preferences.

The network asserted location mechanism shall identify the physical access through which user connectivity is granted.

The network asserted location mechanism shall locate individual users that have authenticated with the access network.

The NGN access network shall provide location information to the IMS . Location information provided by the NGN access network to the IMS shall include network asserted location information.

The actual location information may take various forms (e.g. network location, geographical coordinates, post mail address, etc.), depending on agreements between the access and IMS providers and on user preferences regarding the requested privacy of their location.

4.2.7 VideoTelephony Service

The capabilities to support a video telephony service are described in TS 181 001 (see Bibliography).

4.3 Mobility

The NGN shall support terminal portability as defined in TR 180 000 [1].

The NGN shall support nomadism, as defined in TR 180 000 [1], and described below.

The NGN shall support the capability for a user to change to a different device or devices connected to one or more access networks to gain access to their services.

The NGN shall support the capability of the user to change network access point whilst moving.

Note: where the access network technologies are identical and owned by the same access network operator, session continuity or handover shall be supported if the technology allows. Where session continuity or handover is not supported, the user's service session is completely stopped.

NOTE: Where the access network technologies are not identical, session continuity or handover need not be supported.

The NGN home network and visited network shall support the capability of providing services from the NGN home network to a user connected to the visited network. This is shown by diagram under b.1) within clause 4.1 (Business Models).

Services should be able to be reconfigured so as to be suitable for the target network and target device. The service shall be reconfigured at the time the user first accesses the service from a new location.

For particular services, mobility shall not interfere with the provision of all information required by the service (e.g. geographic location information).

4.4 Number, naming and addressing

The NGN shall provide the capability to uniquely identify each user. This Identity Information shall include at least the asserted public identity. This identity information is verified.

Both telecom and Internet numbering and addressing schemes shall be supported as public identities. IP multimedia communication establishment (both originating and terminating) depending on originator shall be able to be based on E.164/tel URI (see RFC 3966 [6]) or SIP URI (see RFC 3261[7]). It shall be possible to assign several public identities for one subscription.

NOTE: Numbering and addressing schemes other than E.164/tel URI or SIP URI are not precluded from later releases.

Public identities shall be administered by the network operator and shall not be changeable by the user.

The network operator shall guarantee the authenticity of a public identity presented for an incoming session to a user where the communication is wholly across trusted network. This is equivalent to the situation for CLIP with today's telephony networks.

The IMS is not required to support the generation of overlap signalling. Interworking Requirements (as in clause 4.9) require options for conversion.

4.6 Regulatory service requirements

4.6.1 Lawful Intercept

The capabilities to support Lawful Intercept shall be as described in TS 187 005 (see Bibliography).

4.6.2 Emergency service

The capabilities to support the Emergency Service shall be as described in TS 102 424 [4].

4.6.3 Identifying malicious communications

The NGN shall support the capability for a user to identify a communication as malicious. This service may be available to a user only after subscription. Once the user has indicated to the network that the communication is malicious, the IMS shall register at least the following information:

- Terminating Identity Information;
- Originator Identity Information;
- Local Time and Date of the invocation in the network serving the terminating entity;

The information shall not be available to the terminating entity nor the originating entity. The information shall be under the control of the network operator.

The user may identify the communication as malicious during the alerting phase, during an ongoing communication, or for a limited period after the communication has ceased.

4.6.4 Anonymous communications rejection

A session is considered anonymous when a user receiving an incoming session cannot identify the originator.

Anonymous communications rejection provides the capability for network, on behalf of the user, to reject incoming sessions from users who have restricted the presentation of their originating identity.

The IMS shall support the capability to be able to reject all terminating sessions when the originating entity cannot be identified, i.e. the asserted originating identity is marked "presentation restricted" or "presentation restricted by network".

4.9 Interworking

4.9.1 Interworking with Legacy PSTN/ISDN

The IMS shall support interworking with the legacy PSTN/ISDN network.

The IMS interworking with the legacy PSTN/ISDN network shall not impact the IMS subsystem or the PSTN/ISDN network. The IMS network shall support the capability for limited interoperability with an existing PSDN/ISDN.

The IMS shall support the interoperability of PSTN/ISDN like services with PSTN/ISDN Supplementary Services and vice versa. The scope of this interworking may result in a limited service capability.

4.9.1.1 Overlap Signalling

Support for overlap signalling in the IMS is as an operator option limited to the interworking with legacy PSTN/ISDN networks that use overlap signalling.

NGN Networks that interconnect to legacy PSTN/ISDN networks that do not implement overlap signalling are not required to support the feature.

For these requirements, PSTN/ISDN networks that convert overlap signalling (received from other PSTN/ISDN networks) to en-bloc, are considered to be a network that does not support overlap signalling.

The IMS shall interoperate to legacy PSTN/ISDN networks that supply overlap signalling. The following requirements shall be taken into account:

- Conversion of overlap signalling to en-bloc shall take place within the NGN domain (without change to the legacy PSTN/ISDN).
- Impact on the IMS shall be minimized.
- A network option shall be provided to enable conversion to be performed using either:
 - a simple solution (digit counting, simple look-up, or end-of-digit timer, etc.);
 - complete solution - which shall minimize the post-dialling delay (may require an iterative look-up solution).

NOTE: Overlap signalling support should not be linked to E.164 numbering schemes.

The IMS is not required to support the generation of overlap signalling.

The IMS is not required to support overlap signalling from terminals and customer networks.

4.9.2 Interworking with PSTN/ISDN Emulation

The IMS shall support interworking with the PSTN/ISDN Emulation subsystem.

The IMS shall support the capability for limited interoperability with an emulation subsystem.

The IMS shall provide at least the same level of interoperability with an emulation subsystem as achieved with legacy PSTN/ISDN networks.

Support for overlap signalling between the IMS and PSTN/ISDN Emulation is dependent on the network options for conversion.

4.9.3 Interworking with PLMN

4.9.3.1 Interworking with IMS based PLMN

The IMS shall interwork with an IMS based PLMN without impacting either the IMS or the IMS-based PLMN.

4.9.3.2 Interworking with PLMN - CS Domain

The IMS networks shall provide interfaces to PLMN - CS Domain networks.

The IMS shall support interworking with the PLMN - CS Domain network.

The IMS interworking with the legacy PLMN - CS Domain network shall not impact the IMS subsystem or the PLMN - CS Domain network. The IMS network shall support the capability for limited interoperability with an existing PLMN - CS Domain.

The IMS shall support the interoperability of PSTN/ISDN like services with PSTN/ISDN Supplementary Services and vice versa. The scope of this interworking may result in a limited service capability.

4.9.4 Interworking with Packet Cable network

The IMS shall support interworking with Packet Cable networks.

The IMS interworking with the Packet Cable network shall not impact the IMS subsystem or the Packet Cable network. The IMS network shall support the capability for limited interoperability with an existing Packet Cable Network.

4.9.5 Interworking with other IMS network

A TISPAN-compliant IMS shall interwork with other IMS based networks without impacting the TISPAN IMS.

4.9.6 Interworking with other networks

The IMS shall support interworking with non-IMS and non-TDM multimedia networks. The interworking with non-IMS and non-TDM multimedia networks shall not impact the IMS.

4.10 Quality of Service (QoS)

Void.

4.11 Security Requirements

4.11.1 General

The NGN shall provide sufficient security services and mechanisms to meet the service requirements given in the proceeding clauses. The security threat & risk analysis gives the rationale for qualifying what is to be understood as "sufficient security".

The IMS subsystem shall provide services, including connectivity, to a user entitled to use the resources of the NGN and the IMS subsystem.

However, to facilitate the early deployment of NGN, two special legacy scenarios, permit the verification to be linked. These two special deployment scenarios are:

- A) IMS authentication is linked to access line authentication (no nomadism).
- B) IMS authentication is linked to access authentication for IP Connectivity (limited nomadism can be provided).

Both scenarios A and B shall allow UEs to perform access independent authentication to the IMS.

4.11.2 NGN Security

Detailed Security Requirements shall be as contained in TS 187 001 [8].

4.11.3 Network Domain Security

The detailed requirements for network domain security are contained in TS 187 001 [8].

4.12 Charging and Accounting

Charging and accounting in NGN will be based on the collection of information from appropriate entities in the form of Charging Data Records (CDRs). The requirements for charging and accounting shall be as contained in TS 122 115 [9].

Annex A (informative): Basic communication cases for IMS networks

A basic communication case can be described on a per IMS domain basis by stating the IMS domain entry point and an exit point for the communication as shown in figure A.1.

The following general types of entry/exit point can be identified for NGN R1:

- Access (for communication to from NGN terminals);
- Interconnect to non-IMS network;
- Interconnect to other IMS domain;
- Internal network resource (e.g. a conference bridge for conferencing services).

As a general rule a NGN shall support the following basic communication cases on a per NGN network basis.

Table A.1

From (entry point)	To (exit point)			
	Access Network	Interconnect to other IMS domain 1	Interconnect to non-IMS network	Internal Network Resource
Access Network	Required	Required	Required	Required
Interconnect to other IMS domain 1	Required			Required
Interconnect to non-IMS network	Required		Required	Required
Internal Network Resource	Required			

NOTE 1: A basic communication case having an "interconnect to other IMS domain" as exit point need to be concatenated with another basic communication case having an "Interconnect to other IMS domain" as entry point to provide an IMS end-to-end communication.

It is not precluded that other, more complex communication cases may be provided by service level concatenation of basic communication cases, e.g. by means of call diversion services.

NOTE 2: The case of interconnection of non-IMS networks via the IMS network may be provided in Release 1 depending on capabilities provided by WG2 and WG3. This interconnection is offered in a transparent way meaning that no further service (e.g. clearing house) is expected to be offered by the IMS network.

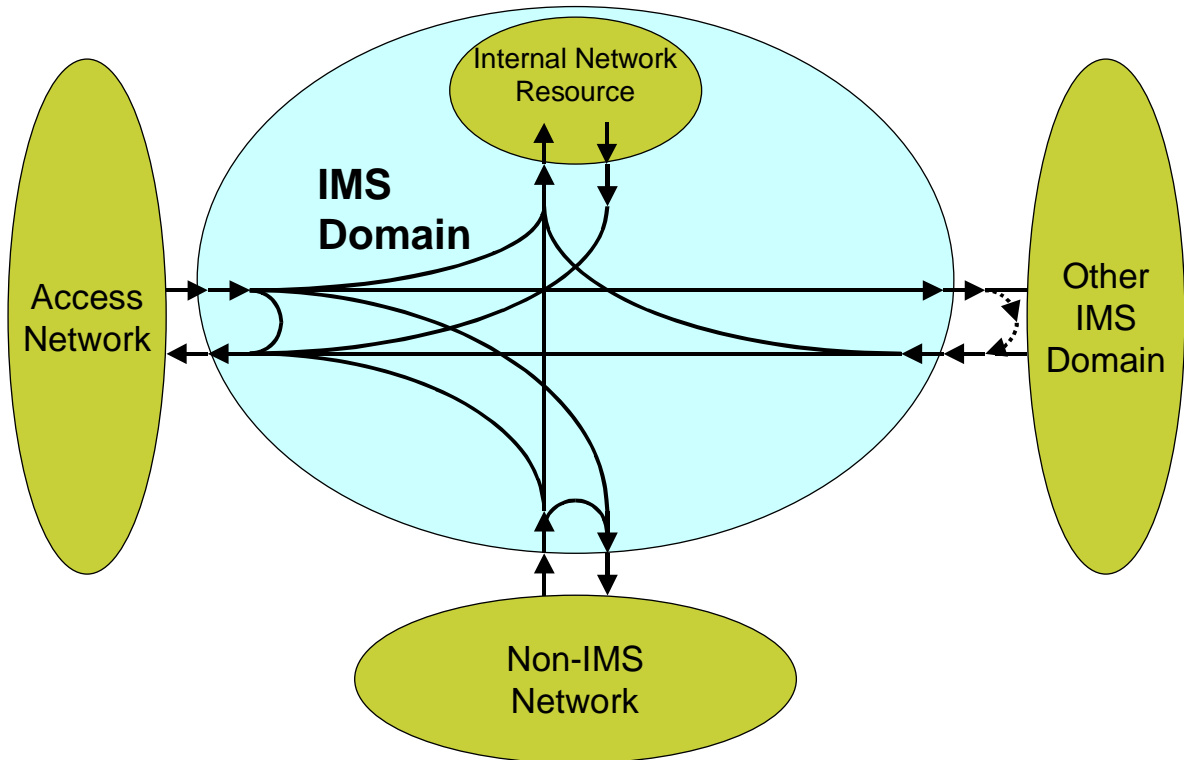


Figure A.1: Graphical representation of supported basic communication cases

Annex B (informative): Guidance for terminal implementation

For a terminal to attach to the TISPAN IMS Subsystem it should be capable of using an ISIM to authenticate to the IMS.

However, this does not preclude the use of non-ISIM capable terminals, if access using an ISIM application in another device is supported. Authentication based on line authentication (as in clause 4.11) if applicable to the access is also supported.

Annex C (informative): Bibliography

ETSI TS 181 002: "Requirements for Multimedia Telephony with PSTN/ISDN Simulation Services".

ETSI TS 181 001: "NGN Videotelephony; Stage 1 Service Description".

ETSI TS 187 005: " Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Lawful Interception; Lawful Interception".

IETF RFC 2486: "The Network Access Identifier".

Annex D (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
2006-03					ETSI publication: TS 181 005		1.1.1
2008-07					Endorsement as 3GPP TS		

Change history											
TSG SA#	SA Doc.	SA1 Doc	Spec	CR	Rev	Rel	Cat	Subject/Comment	Old	New	WI
41	SP-080500		22.495	-	-	-	-	Approval by SA#41	1.3.1	7.0.0	FBI

History

Document history		
V7.0.0	November 2008	Publication