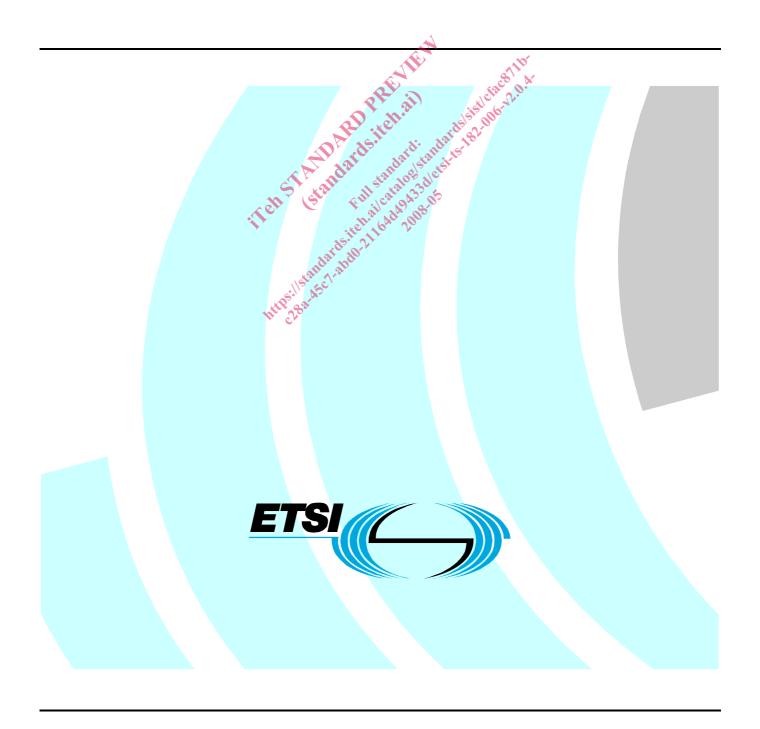# ETSI TS 182 006 V2.0.4 (2008-05)

Technical Specification

Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); IP Multimedia Subsystem (IMS); Stage 2 description

[3GPP TS 23.228 Release 7, modified]

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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).

1   Scope

The present document provides the ETSI endorsement of the 3GPP TS 23.228 "IP Multimedia Subsystem; Stage 2, Release 7".

The present document provides the necessary adaptions to the 3GPP IP Multimedia Core Network Subsystem (IMS), in order to support the Access Networks and terminals in the scope of the present NGN Release. The present document also includes certain elements from 3GPP Release 8 (TS 23.228 V8.2.0)

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.

- •   Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:

    -    if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;

    -    for informative references.

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NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

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]   3GPP TS 23.228: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; IP Multimedia Subsystem (IMS); Stage 2 (Release 7)".

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.

Not applicable.

Endorsement notice

The elements of 3GPP TS 23.228 [1] apply, with the following modifications.

NOTE: Underlining and/or strike-out are used to highlight detailed modifications where necessary.

Global modifications to 3GPP TS 23.228

Throughout the text of TS 23.228

3GPP TS 23.228 [1] was originally written specifically with mobile terminals in mind accessing the IMS using GPRS. Unless otherwise specified in the present document, requirements indicating mobile terminals should be taken as also being applicable to all terminals accessing the NGN.

Additionally replace items in 3GPP TS 23.228 [1] as follows:

- "HSS" with "UPSF".

- "IM CN Subsystem" with "IMS Core".

NOTE: Those changes are assumed globally for the present document.

2 References

Insert the following references at the end of clause 2:

[57] IETF RFC 4769 (November 2006): "IANA Registration for an Enumservice Containing Public Switched Telephone Network (PSTN) Signaling Information".

[96] IETF RFC 3022: "Traditional IP Network Address Translator (Traditional NAT)".

[97] ETSI ES 282 003: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Resource and Admission Control Subsystem (RACS)": Functional Architecture".

[98] ETSI TS 183 017: "Telecommunications and Internet Converged Services and Protocols for Advanced Networking (TISPAN); Resource and Admission Control: DIAMETER protocol for session based policy set-up information exchange between the Application Function (AF) and the Service Policy Decision Function (SPDF); Protocol specification".

[99] 3GPP TR 23.981 (Release 6): "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Interworking aspects and migration scenarios for IPv4 based IMS Implementations (Release 6)".

Replace the references in 3GPP TS 23.228 [1] as shown in the table below.

	References in 3GPP TS 23.228 [1]	Replaced references
1	3GPP TS 23.002: "Network Architecture".	ETSI ES 282 001: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Functional Architecture Release 1". (note 1)
5	GSM 03.64: "Digital cellular telecommunication system (Phase 2+); Overall Description of the General Packet Radio Service (GPRS) Radio Interface; Stage 2".	(note 2)
6	GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".	(note 2)
7	3GPP TS 23.221: "Architectural Requirements".	(note 2)
8	3GPP TS 22.228: "Service requirements for the IP multimedia core network subsystem".	ETSI TR 181 005 "Telecommunications and Internet Converged Services and Protocols for Advanced Networking (TISPAN); Service and Capability Requirements". (note 1)

		References in 3GPP TS 23.228 [1]	Replaced references
9		3GPP TS 23.207: "End-to-end QoS concept and architecture".	(note 2)
10		3GPP TS 24.228: "Signalling flows for the IP multimedia call control based on SIP and SDP".	(note 2)
10a		3GPP TS 24.229: "IP Multimedia Call Control based on SIP and SDP; Stage 3".	ETSI ES 283 003: " Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); IP Multimedia Call Control Protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP) Stage 3 [3GPP TS 24.229 (Release 7), modified]". (note 1)
11		3GPP TS 25.301: "Radio interface protocol architecture".	(note 2)
19		3GPP TS 33.203: "Access Security for IP-based services".	(note 2)
21		3GPP TS 26.235: "Packet Switched Multimedia Applications; Default Codecs".	ETSI TR 181 005 "Telecommunications and Internet Converged Services and Protocols for Advanced Networking (TISPAN); Service and Capability Requirements". (note 1)
23		3GPP TS 23.060: "General Packet Radio Service (GPRS); Service description; Stage 2".	(note 2)
24		3GPP TS 23.003: "Technical Specification Group Core Network; Numbering, addressing and identification".	(note 2)
25		3GPP TS 32.240: "Telecommunication management; Charging management; Charging architecture and principles".	ETSI ES 282 010: "Telecommunications and Internet Converged Services and Protocols for Advanced Networking (TISPAN); Charging (Endorsement of 3GPP TS 32.240 v6.3.0, 3GPP TS 32.260 v6.3.0, 3GPP TS 32.297 v6.1.0, 3GPP TS 32.298 v6.1.0 and 3GPP TS 32.299 v6.4.0 modified)". (note 1)
26		3GPP TS 32.260: "Telecommunication Management; Charging Management; IP Multimedia Subsystem (IMS) charging".	ETSI ES 282 010: "Telecommunications and Internet Converged Services and Protocols for Advanced Networking (TISPAN); Charging (Endorsement of 3GPP TS 32.240 v6.3.0, 3GPP TS 32.260 v6.3.0, 3GPP TS 32.297 v6.1.0, 3GPP TS 32.298 v6.1.0 and 3GPP TS 32.299 v6.4.0 modified)". (note 1)
27		3GPP TS 22.071: "Technical Specification Group Services and System Aspects, Location Services (LCS); Service description, Stage 1".	(note 2)
28		3GPP TS 23.271: "Technical Specification Group Services and System Aspects, Functional stage 2 description of LCS".	(note 2)
29		3GPP TS 23.078: "Customised Applications for Mobile network Enhanced Logic (CAMEL) Phase 3 - Stage 2".	(note 2)
29a		3GPP TS 22.340: "IMS Messaging; Stage 1".	(note 2)
30		3GPP TS 29.228: "IP Multimedia (IM) Subsystem Cx and Dx Interfaces; Signalling flows and message contents".	ETSI TS 183 033: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); IP Multimedia; Diameter based protocol for the interfaces between the Call Session Control Function and the User Profile Server Function/Subscription Locator Function; Signalling flows and protocol details [3GPP TS 29.228 V6.8.0 and 3GPP TS 29.229 V6.6.0, modified]". (note 1)
31		3GPP TS 23.240: "3GPP Generic User Profile - Architecture; Stage 2".	(note 2)
32		3GPP TS 22.250: "IP Multimedia Subsystem (IMS) group management; Stage 1".	(note 2)
36		3GPP TS 23.141: "Technical Specification Group Services and System Aspects, Presence Service".	ETSI TS 182 008: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Presence Service; Architecture and functional description (Endorsement of 3GPP TS 23.141 and OMA-AD-Presence_SIMPLE-V1_0)". (note 1)
37		3GPP TS 26.141:"IMS messaging and Presence; Media formats and codecs".	(note 2)
NOTE 1:		The reference in 3GPP TS 23.228 [1] is replaced by the document listed on the right column. This replacement is applicable to all occurrences of the reference throughout the present endorsement.	
NOTE 2:		The reference in 3GPP TS 23.228 [1] contains 3GPP specific requirements and is not generally applicable to the present endorsement.	

3.1 Definitions

Add the following definition:

Network Address Translation (NA(P)T): method by which IP addresses are mapped from one group to another, transparently to end users. Network Address Port Translation, or NA(P)T is a method by which many network addresses and their TCP/UDP (Transmission Control Protocol/User Datagram Protocol) ports are translated into a single network address and its TCP/UDP ports. See RFC 3022 [96] for further details

Replace the definition of "ALG" as follows:

Application Level Gateway (ALG): application specific functional entity that allows communication between disparate address realm or IP versions when certain applications carry network addresses in the payloads like SIP/SDP. NA(P)T-PT or NA(P)T is application unaware whereas ALGs are application specific translation entities that allow a host running an application to communicate transparently with another host running the same application but in a different IP version or IP address realm

For IMS, an **IMS ALG** provides the necessary application function for SIP/SDP protocols in order to communicate between different address realms or IP versions.

3.2 Symbols

Add the following symbol.

Gq'   Reference Point between an IBCF and the SPDF

3.3 Abbreviations

Modify the following abbreviation:

HSS   Home Subscriber Server   (Not relevant in NGN Release 1)

Add the following abbreviations:

IN   Intelligent Network
NAPT   Network Address Port Translation
NAT   Network Address Translation
NASS   Network Attachment SubSystem
RACS   Resource and Admission Control Subsystem
SPDF   Service Policy Decision Function
UPSF   User Profile Server Function
NP   Number portability

4.0 General

Modify as shown below:

- figure 4.0 is not endorsed

4.1 Relationship to CS domain and the IP-Connectivity Access Network

Modify the following sentence:

~~The~~ IP-CAN~~s~~, that maintain~~s~~ the service while the terminal moves~~, and~~ hide~~s~~ these moves from the IP multimedia subsystem.

4.2.1.1 Support for CAMEL

Modify the title and the text as follows:

- replace "CAMEL" with "CAMEL or IN"

- replace "CSE" with "CSE or IN Service Environment"

4.6.1   Proxy-CSCF

Add the following above the paragraph starting "The functions peformed by the P-CSCF"

The Service Policy Decision Function (SPDF) may be a logical entity of the P-CSCF or a separate physical node. If the SPDF is implemented in a separate physical node, the interface between the SPDF and the P-CSCF is the Gq' interface standardised in TS 183 017 [98].

Modify as shown below:

-    If required for certain users, mMaintain a Security Association between itself and each UE, as defined in
     TS 33.203 [19].

-    Should pPerforms SIP message compression/decompression depending on the resources provided by the
     access technology in use and local policy.

-    Authorisation of bearer resources and QoS management. For details see TS 23.203 [54] and ES 282 003 [97].

     NOTE 2: TS 23.203 [54] is not applicable when RACS is used.

Add the following clause.

4.18   Support of Number portability

    NOTE: The text of clause 4.18 is except for this note identical to the text of clause 4.18 of TS 23.228
             version 8.2.0.

4.18.1   Number portability

Number portability (NP) allows a user to retain their E.164 number when changing subscriptions from one network operator to another. As such, NP applies to TEL URIs and SIP URI with user=phone parameters. NP is subject to regional requirements and is accomplished through the retrieval of ported data from those data bases. The specification of these data bases is out of scope of this document, but the NP data may be accessed through ENUM/DNS or accessed via existing (PSTN- and CS-domain) NP databases using the legacy PSTN/CS-domain protocols, such as TCAP.

Support of NP within a network and the exact means to make the number portability data available to IMS, is subject to and configured per operator policy. NP is not mandated by this specification on any network operator.

As configured per operator policy, IMS ENUM interfaces can be updated to support handling of the PSTN ENUM service per RFC 4769 [57], which provides a URI containing an E.164 number with NP routing information and NP dip indicators. The IMS entity receiving NP information as a result of an ENUM/DNS query, the S-CSCF as an example, needs to support, or not remove, NP protocol parameters retrieved as part of ENUM/DNS procedures contained in this specification. Subsequent network elements used to process the call to the PSTN do not remove the NP protocol parameters inserted in SIP messaging as part of the NP data retrieval procedure.

NP data can also be made available by means of direct access to PSTN/CS-domain NP Databases using the legacy PSTN/CS-Domain interfaces and protocols. To support this existing interface within the network, the requesting and subsequent network elements need to support, or not remove, NP protocol parameters within SIP messages that result from the NP data retrieval procedures. The procedures to retrieve the NP data using the legacy PSTN/CS-domain interfaces are out of scope of this specification.

Alternatively, per operator policy, the BGCF can retrieve NP data as part of the procedures to select an MGCF for PSTN connection. The interface used at the BGCF to retrieve the NP data is out of scope of this specification.

Alternatively, per operator policy, the MGCF may support legacy interfaces to retrieve number portability data.

    NOTE: Although legacy protocols are used to access the number portability database, this does not imply that the
             IMS nodes (CSCFs, BGCFs) need to implement such protocols.

5.0   General

Modify the text as follows:

This section documents the main procedures that are used for the provision of services in the IP multimedia subsystem. These procedures are described using text description as well as information flow diagrams. The procedures described in this document are meant to provide a high level description and are not intended to be exhaustive. ~~Additional procedures and details are provided in TS 24.228 [10].~~

5.2.2.5   Stored information

Modify the text as follows:

Table 5.1 provides an indication of some of the information stored in the indicated nodes during and after the registration process. Note that Table 5.1 is not an exhaustive list of stored information, i.e. there can be additional information stored due to registration.

Table 5.1: Information Storage before, during and after the registration process

Node	Before Registration	During Registration	After Registration
UE - in local network	Credentials Home Domain Proxy Name/Address	Same as before registration	Credentials Home Domain Proxy Name/Address UE P-GRUU At least one T-GRUU
Proxy-CSCF - in Home or Visited network	Routing Function	Initial Network Entry point UE Address Public and Private User IDs <u>And if the P-CSCF is located in a visited network:</u> <u>- IBCF in the visited network address/name</u>	Final Network Entry point UE Address Public and Private User IDs <u>And if the P-CSCF is located in a visited network:</u> <u>- IBCF in the visited network address/name</u>
Interrogating-CSCF - in Home network	HSS or SLF Address	Serving-CSCF address/name P-CSCF Network ID Home Network contact Information	No State Information
HSS	User Service Profile	P-CSCF Network ID	Serving-CSCF address/name\
Serving-CSCF (Home)	No state information	HSS Address/name User profile (limited – as per network scenario) Proxy address/name P-CSCF Network ID Public/Private User ID UE IP Address <u>UE P-GRUU</u> <u>UE T-GRUU</u>	May have session state Information Same as during registration

5.4   Procedures for IP Multi-media sessions

5.4.2a   IP version interworking concepts

Modify as shown below:

It should be possible for users connected to an IMS network to communicate with users that are connected to SIP based networks that use a different IP version via interworking <u>or that are in a separate addressing range (e.g., NA(P)T functionality is set at the border of the IMS)</u>.