

ETSI TS 183 043 V1.2.1 (2009-02)

Technical Specification

Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); IMS-based PSTN/ISDN Emulation; Stage 3 specification

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Full standard:
<https://standards.iteh.ai/catalog/standards/sist/f5ae29af-1f09-4202-bdae-4194882597b4/etsi-ts-183-043-v1.2.1-2009-02>



Reference

 RTS/TISPAN-03190-NGN-R1

Keywords

 IMS, ISDN, PSTN, stage 3

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Important notice

Individual copies of the present document can be downloaded from:

<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at

<http://portal.etsi.org/tb/status/status.asp>

If you find errors in the present document, please send your comment to one of the following services:

http://portal.etsi.org/chaicor/ETSI_support.asp

Copyright Notification

No part may be reproduced except as authorized by written permission.
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2009.
All rights reserved.

DECT™, **PLUGTESTS™**, **UMTS™**, **TIPHON™**, the TIPHON logo and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.

3GPP™ is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

LTE™ is a Trade Mark of ETSI currently being registered

for the benefit of its Members and of the 3GPP Organizational Partners.

GSM® and the GSM logo are Trade Marks registered and owned by the GSM Association.

Contents

Intellectual Property Rights	7
Foreword.....	7
1 Scope	8
2 References	8
2.1 Normative references	9
2.2 Informative references.....	11
3 Definitions and abbreviations.....	11
3.1 Definitions.....	11
3.2 Abbreviations	11
4 IMS-based PSTN Emulation Subsystem (PES) overview	13
4.1 General	13
4.2 URI and address assignments.....	13
5 Protocol using SIP and SIP events for PES.....	13
5.1 Introduction	13
5.2 Functional Entities.....	14
5.2.1 User Equipment (UE)	14
5.2.2 Access Gateway Control Function (AGCF)	14
5.2.3 Application Server (AS)	14
5.2.4 Media Resource Function Controller (MRFC)	14
5.2.5 Media Gateway Controller Function (MGCF).....	14
5.2.6 Interconnection border control function (IBCF).....	14
5.3 Role	15
5.3.1 PES Endpoint.....	15
5.3.1.1 General	15
5.3.1.2 Subscription for dial tone management.....	15
5.3.1.3 Registration procedures.....	15
5.3.2 PES Access Point.....	15
5.3.2.1 General	15
5.3.2.2 Subscription for dial tone management.....	15
5.3.2.3 Registration Procedures	16
5.3.2.4 Outgoing Call Control procedures	17
5.3.2.5 Incoming Call Control procedures	17
5.3.3 PES Application Server	17
5.3.3.1 General	17
5.3.3.2 Basic call procedures.....	17
5.3.3.3 Announcement procedures.....	17
5.3.3.4 Dial Tone Management.....	18
5.3.3.5 Transport of ISUP information	18
5.3.3.5.1 General	18
5.3.3.5.2 Sending NSS message bodies to a peer SIP signalling entity	18
5.3.3.5.3 Receiving an NSS message body from a peer SIP signalling entity	21
5.3.3.6 Handling of charging information.....	21
5.3.4 PES Announcement Server.....	21
5.3.4.1 General	21
5.3.4.2 Announcement procedures.....	21
5.3.5 PES Interworking Application.....	21
5.3.5.1 General	21
5.3.5.2 Routing procedures	21
5.3.5.3 Handling of charging information.....	22
5.3.5.4 Transport of ISUP information	22
5.3.5.4.1 General	22
5.3.5.4.2 Sending ISUP information to a peer SIP signalling entity	22
5.3.5.4.3 Receiving an NSS message body from a peer SIP signalling entity.....	24

5.3.5.4.4	ISUP messages for special consideration	25
5.3.5.5	Optional SIP/ISUP interworking procedures for PSTN Bridging.....	27
5.3.6	PES interconnection application.....	27
5.3.6.1	General.....	27
5.3.6.2	Procedures related to NSS message bodies.....	27
6	Protocol using SIP/SDP for PES.....	28
6.1	Introduction.....	28
6.2	Functional Entities.....	28
6.2.1	User Equipment (UE).....	28
6.2.2	Access Gateway Control Function (AGCF).....	28
6.2.3	Application Server (AS).....	28
6.2.4	Media Resource Function Controller (MRFC).....	28
6.3	Roles.....	28
6.3.1	PES Endpoint.....	28
6.3.2	PES Access Point.....	28
6.3.2.1	General.....	28
6.3.2.2	Originating calls.....	28
6.3.2.3	Terminating calls.....	29
6.3.2.4	Modifying SDP within existing dialogues.....	29
6.3.3	PES Application Server.....	29
6.3.3.1	General.....	29
6.3.4	PES Announcement Server.....	30
6.3.4.1	General.....	30
7	Protocol using H.248 for PES.....	30
7.1	Introduction.....	30
7.2	Functional Entities.....	30
7.2.1	Access Gateway Control Function (AGCF).....	30
7.2.2	Media Gateway Function (MGF).....	30
7.3	Roles.....	30
7.3.1	PES Access Point.....	30
7.3.1.1	General.....	30
7.3.1.2	Registration.....	30
7.3.1.3	Basic Session control procedures for analog lines.....	31
7.3.1.3.1	Originating side procedures.....	31
7.3.1.3.2	Terminating side procedures.....	34
7.3.1.4	Procedures for fax/modems calls over analog access.....	36
7.3.1.5	Message Waiting Indication.....	36
7.3.2	PES Media Gateway.....	36
Annex A (normative):	XML document structure for Dial Tone Management	37
Annex B (normative):	AGCF internal communication	38
B.1	General.....	38
B.2	Internal communication principles.....	38
B.3	Internal primitives.....	39
B.4	Feature manager behaviour.....	40
B.4.1	Registration procedures.....	40
B.4.1.1	Global registration procedures.....	40
B.4.1.2	Per line registration procedures.....	40
B.4.1.2.1	User-initiated registration.....	40
B.4.1.2.2	User-initiated deregistration.....	40
B.4.1.2.3	Exception procedures.....	41
B.4.2	Call Processing.....	41
B.4.2.1	General procedures.....	41
B.4.2.2	Flash-Hook Management.....	41
B.4.2.2.1	General rules.....	41
B.4.2.2.2	Loose coupling procedures.....	42
B.4.2.2.3	Tight coupling procedures.....	43

Annex C (informative):	Implementation of Supplementary Services.....	45
C.1	General principles	45
C.1.1	Introduction	45
C.1.2	Supplementary service control	45
C.1.2.1	Service code commands.....	45
C.1.2.1.1	Command syntax.....	45
C.1.2.1.2	Generic procedure at the AGCF side	46
C.1.2.1.3	Generic procedure at the AS side.....	46
C.1.2.2	Switching order commands	46
C.1.3	Setting of initial filter criteria.....	47
C.1.4	Supplementary services using ISUP information	48
C.2	Advice of Charge	49
C.2.1	Actions at the Originating AGCF.....	49
C.2.2	Actions at the Originating AS	49
C.2.3	Actions at the Terminating AGCF	49
C.2.4	Actions at the Terminating AS	49
C.3	Anonymous Call Rejection	49
C.3.1	Actions at the Originating AGCF.....	49
C.3.2	Actions at the Originating AS	49
C.3.3	Actions at the Terminating AS	49
C.3.4	Actions at the Terminating AGCF	50
C.4	Automatic Call Return.....	50
C.4.1	Actions at the AGCF at the invoker side.....	50
C.4.2	Actions at the AS at the invoker side	50
C.5	Calling Line Identity Presentation / Restriction.....	50
C.5.1	Actions at the Originating AGCF.....	50
C.5.2	Actions at the Originating AS	50
C.5.3	Actions at the Terminating AS.....	51
C.5.4	Actions at the Terminating AGCF	51
C.6	Calling Name Delivery.....	51
C.6.1	Actions at the Originating AGCF.....	51
C.6.2	Actions at the Originating Application Server	51
C.6.3	Actions at the Terminating Application Server	51
C.6.4	Actions at the Terminating AGCF.....	51
C.7	Call Forwarding.....	52
C.7.1	Activation/Deactivation/Interrogation.....	52
C.7.1.1	Actions at the AGCF.....	52
C.7.1.2	Actions at the AS	52
C.7.2	Invocation.....	52
C.7.2.1	Actions at the Originating AGCF	52
C.7.2.2	Actions at the Originating AS.....	52
C.7.2.3	Actions at the Forwarding AS.....	52
C.7.2.4	Actions at the Forwarding AGCF.....	52
C.7.2.5	Actions at the Terminating AS	52
C.7.2.6	Actions at the Terminating AGCF.....	52
C.8	Distinctive Ringing	53
C.8.1	Actions at the Originating AGCF.....	53
C.8.2	Actions at the Originating Application Server	53
C.8.3	Actions at the Terminating Application Server	53
C.8.4	Actions at the Terminating AGCF	53
C.9	Call Waiting	53
C.9.1	General	53
C.9.1.1	Actions at the AGCF at the terminating side	53
C.9.1.2	Actions at the AS at the terminating side.....	54
C.9.2	Option 1 (Loose coupling)	54
C.9.2.1	Actions at the AGCF at the terminating side	54

C.9.2.2	Actions at the AS at the terminating side.....	55
C.9.3	Option 2 (Tight coupling).....	56
C.9.3.1	Actions at the AGCF at the terminating side	56
C.9.3.2	Actions at the AS at the terminating side.....	57
C.10	Incoming Call Barring.....	59
C.10.1	Activation/Deactivation/Interrogation.....	59
C.10.1.1	Actions at the AGCF.....	59
C.10.1.2	Actions at the AS	59
C.10.2	Invocation.....	59
C.10.2.1	Actions at the Originating AGCF	59
C.10.2.2	Actions at the Originating AS.....	59
C.10.2.3	Actions at the Terminating AS	59
C.10.2.4	Actions at the Terminating AGCF.....	59
C.11	Malicious Call Identification.....	59
C.11.1	Actions at the Originating AGCF.....	59
C.11.2	Actions at the Originating AS	59
C.11.3	Actions at the Terminating AS	60
C.11.4	Actions at the Terminating AGCF	60
C.12	Message Waiting Indicator.....	60
C.12.1	Actions at the AGCF	60
C.12.2	Actions at the AS.....	60
C.13	Outgoing Call Barring	60
C.13.1	Activation/Deactivation/Interrogation.....	60
C.13.1.1	Actions at the AGCF.....	60
C.13.1.2	Actions at the AS	60
C.13.2	Invocation.....	60
C.13.2.1	Actions at the Originating AGCF	60
C.13.2.2	Actions at the Originating AS	61
C.13.2.3	Actions at the Terminating AS	61
C.13.2.4	Actions at the Terminating AGCF.....	61
C.14	Three party service	61
C.14.1	General	61
C.14.1.1	Actions at the AGCF at the service invocation side	61
C.14.1.2	Actions at the AS at the service invocation side	62
C.14.2	Option 1 (Loose coupling)	63
C.14.2.1	Actions at the AGCF at the invoking side	63
C.14.2.2	Actions at the Originating AS at the invoking side.....	63
C.14.3	Option 2 (Tight coupling).....	64
C.14.3.1	Actions at the AGCF at the originating side	64
C.14.3.2	Actions at the Originating AS at the originating side	64
C.15	Repeat Last Call	64
C.15.1	AGCF at the served user side	64
C.15.2	AS at the served user side.....	64
Annex D (normative):	Mapping between SIP and the subscriber line protocol.....	65
D.1	Introduction	65
D.2	Call Setup message.....	65
D.3	Message Waiting Indicator message	66
D.4	Advice of Charge message	67
Annex E (informative):	Bibliography.....	68
Annex F (informative):	Change history	69
History		70

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<http://webapp.etsi.org/IPR/home.asp>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
<https://standards.iteh.ai/catalog/standards/sist/f5ae29af-1f09-4202-bdae-4194882597b4/etsi-ts-183-043-v1.2.1-2009-02>

1 Scope

The present document defines call control protocols and procedures for use in the IMS-based PSTN/ISDN Emulation subsystem based on the Media Gateway Control Protocol (MEGACO), the Session Initiation Protocol (SIP), and the associated Session Description Protocol (SDP).

NOTE: The present document relies on the architectural framework defined in TS 182 012 [3] for IMS-based PES Emulation and may need to be updated once the open issues identified in the present document are resolved.

The present document is applicable to:

- the interface between the User Equipment (UE) and the Call Session Control Function (CSCF);
- the interface between the Access Gateway Control Function (AGCF) and the Media Gateway Function (MGF);
- the interface between the Access Gateway Control Function (AGCF) and the Call Session Control Function (CSCF);
- the interface between the CSCF and any other CSCF;
- the interface between the CSCF and an Application Server (AS);
- the interface between the CSCF and the Media Gateway Control Function (MGCF);
- the interface between the S-CSCF and the Multimedia Resource Function Controller (MRFC);
- the interface between the CSCF and the Breakout Gateway Control Function (BGCF);
- the interface between the BGCF and the MGCF;
- the interface between the BGCF and any other BGCF;
- the interface between the CSCF and an external Multimedia IP network;
- the interface between the CSCF and the IBCF;
- the interface between the CSCF and the IBCF.

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.

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

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] ETSI ES 282 001: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Functional Architecture Release 1".
- [2] ETSI TS 182 006: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); IP Multimedia Subsystem (IMS); Stage 2 description (3GPP TS 23.228 v7.2.0, modified)".
- [3] ETSI TS 182 012: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); IMS-based PSTN/ISDN Emulation Subsystem; Functional architecture".
- [4] 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]".
- [5] ETSI ES 283 002: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Release 1 H.248 Profile for controlling Access and Residential Gateways".
- [6] ETSI TS 183 028: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Common Basic Communication procedures; Protocol specification".
- [7] ETSI TS 183 047: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN IMS Supplementary Services; Advice of Charge (AoC)".
- [8] ETSI TS 183 010: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Signalling Control Protocol; Communication HOLD (HOLD) PSTN/ISDN simulation services; Protocol specification".
- [9] ETSI TS 183 004: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); PSTN/ISDN simulation services: Communication Diversion (CDIV); Protocol specification".
- [10] ETSI ES 200 659-3: "Access and Terminals (AT); Analogue access to the Public Switched Telephone Network (PSTN); Subscriber line protocol over the local loop for display (and related) services; Part 3: Data link message and parameter codings".
- [11] ETSI EG 201 973-2: "Access and Terminals (AT); Public Switched Telephone Network; Support of legacy terminals by Broadband IP networks and equipment; Part 2: Analogue PSTN terminals".
- [12] ETSI ETS 300 738: "Human Factors (HF); Minimum Man-Machine Interface (MMI) to public network based supplementary services".
- [13] ITU-T Recommendation H.248.23: "Gateway control protocol: Enhanced Alerting packages".
- [14] ITU-T Recommendation H.248.26: "Gateway control protocol: Enhanced analog lines packages".
- [15] IETF draft-ietf-sipping-config-framework-08: "A Framework for Session Initiation Protocol User Agent Profile Delivery".
- [16] IETF RFC 4240: "Basic Network Media Services with SIP".
- [17] IETF RFC 2833: "RTP Payload for DTMF Digits, Telephony Tones and Telephony Signals".
- [18] IETF RFC 3842: "A Message Summary and Message Waiting Indication Event Package for the Session Initiation Protocol (SIP)".

- [19] IETF RFC 3966: "The tel URI for Telephone Numbers".
- [20] ETSI EN 383 001: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Interworking between Session Initiation Protocol (SIP) and Bearer Independent Call Control (BICC) Protocol or ISDN User Part (ISUP) [ITU-T Recommendation Q.1912.5, modified]".
- [21] IETF RFC 2805: "Media Gateway Control Protocol Architecture and Requirements".
- [22] ITU-T Recommendation H.248.1: "Gateway control protocol".
- [23] ITU-T Recommendation G.711: "Pulse code modulation (PCM) of voice frequencies".
- [24] IETF RFC 3323: "A Privacy Mechanism for the Session Initiation Protocol (SIP)".
- [25] IETF RFC 3325: "Private Extensions to the Session Initiation Protocol (SIP) for Asserted Identity within Trusted Networks".
- [26] ETSI TS 183 006: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); PSTN/ISDN simulation services; Message Waiting Indication (MWI): Protocol specification".
- [27] ETSI TS 183 011: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); PSTN/ISDN simulation services: Anonymous Communication Rejection (ACR) and Communication Barring (CB); Protocol specification".
- [28] 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]".
- [29] IETF RFC 3311: "The Session Initiation Protocol (SIP) UPDATE Method".
- [30] ITU-T Recommendation Q.763: "Signalling System No. 7 - ISDN User Part formats and codes".
- [31] ITU-T Recommendation Q.764: "Signalling System No. 7 - ISDN User Part signalling procedures".
- [32] ITU-T Recommendation Q.1980.1: "The Narrowband Signalling Syntax (NSS) - Syntax definition".
- [33] ETSI ES 283 027: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Endorsement of the SIP-ISUP Interworking between the IP Multimedia (IM) Core Network (CN) subsystem and Circuit Switched (CS) networks [3GPP TS 29.163 (Release 7), modified]".
- [34] ETSI TS 183 023: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); PSTN/ISDN simulation services; Extensible Markup Language (XML) Configuration Access Protocol (XCAP) over the Ut interface for Manipulating NGN PSTN/ISDN Simulation Services".
- [35] ETSI EN 300 356 (all parts): "Integrated Services Digital Network (ISDN); Signalling System No.7 (SS7); ISDN User Part (ISUP) version 4 for the international interface".
- [36] ITU-T Recommendation Q.735.3: "Multi-level precedence and preemption".
- [37] ITU-T Recommendation Q.735.6: "Global Virtual Network Service (GVNS)".
- [38] ITU-T Recommendation Q.736.3: "Reverse charging (REV)".
- [39] IETF RFC 3261: "SIP: Session Initiation Protocol".
- [40] ETSI EN 301 798: "Services and Protocols for Advanced Networks (SPAN); Anonymous Call Rejection (ACR) Supplementary Service; Service description".

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.

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

access gateway: gateway that interworks a significant number of analogue lines to a packet network and is located at the operator's premises

media gateway: See ITU-T Recommendation H.248.1 [22].

NOTE: In the present document, Media Gateway refers both to Access Gateways and to Residential Gateways.

media gateway controller: See ITU-T Recommendation H.248.1 [22].

residential gateway: gateway that interworks a small number of analogue lines

NOTE: A residential gateway typically contains one or two analogue lines and is located at the customer premises.

Voice over IP gateway: gateway that implements both a media gateway function and a media gateway controller function as defined in RFC 2805 [21] and supports the provision of voice-based services to analog lines

3.2 Abbreviations

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

3PTY	Three-Party service
ACR	Automatic Communication Rejection
AGCF	Access Gateway Control Function
ANNC URL	Announcement URL
AS	Application Server
B2BUA	Back-to-Back User Agent
BGCF	Breakout Gateway Control Function
CCBS	Call Completion on Busy Subscriber
CCNR	Call Completion on No Reply
CD	Call Deflection
CFB	Call Forwarding on Busy
CFNR	Call Forwarding on No Reply
CFU	Call Forwarding Unconditional
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
CN	Core Network
COLP	COConnected Line identification Presentation
COLR	COConnected Line identification Restriction
CONF	Conference
CPG	Call ProGress
CSCF	Call Session Control Function
CUG	Closed User Group
CW	Call Waiting
DTMF	Distributed Management Task Force

ECT	Explicit Call Transfer
FM	Feature Manager
FQDN	Fully Qualified Domain Name
GPL	Generic Parameter List
GVNS	Global Virtual Network Service
HOLD	Call Hold
IBCF	Interconnection Border Control Function
I-CSCF	Interrogating CSCF
IFC	Initial Filter Criteria
IM	IP Multimedia
I-MGCF	Incoming - MGCF
IMS	IP Multimedia core network Subsystem
IP	Internet Protocol
ISDN	Integrated Services Digital Network
ISUP	ISDN User Part
MCID	Malicious Call Identification
MEGACO	Media Gateway Control Protocol
MG	Media Gateway
MGC	Media Gateway Controller
MGCF	Media Gateway Control Function
MGF	Media Gateway Function
MGW	Media Gateway
MIME	Multipurpose Internet Mail Extensions ?
MLPP	Multi-Level Precedence and Pre-emption
MRF	Multimedia Resource Function
MRFC	Multimedia Resource Function Controller
MRFP	Multimedia Resource Function Processor
MWI	Message Waiting Indicator
NASS	Network Attachment SubSystem
NGN	Next Generation Network
NSS	Narrowband Signalling Syntax
O-MGCF	Outgoing - MGCF
P-CSCF	Proxy - CSCF
PES	PSTN/ISDN Emulation Subsystem
PSTN	Public Switched Telephone Network
RACS	Resource and Admission Control Subsystem
RES	Resume
REV	REVerse Charging
RFC	Request For Comments
S-CSCF	Serving CSCF
SDP	Session Description Protocol
SIP	Session Initiation Protocol
SOC	Switch Order Command
SUB	Subaddressing
SUS	SUSpend
TAS	Terminal Alerting Signal
TP	Terminal Portability
UA	User Agent
UE	User Equipment
UPSF	User Profile Server Function
URI	Uniform Resource Identifier
UUS	User-to-User Signalling
VGW	Voice over IP GateWay
VMS	Voice Mail System
XCAP	XML Configuration Access Protocol
XML	eXtensible Markup Language

4 IMS-based PSTN Emulation Subsystem (PES) overview

4.1 General

The IMS-based PSTN/ISDN Emulation Subsystem (PES) supports the emulation of PSTN services for analogue terminals connected to the TISPN NGN, through residential gateways or access gateways. The IMS-based PES functional architecture is defined in [3].

ISDN terminals are out of scope.

Emulating PSTN/ISDN services using the IMS-based PES architecture assumes that the logic of the service to be emulated resides in one or more application servers playing the role of a PES application server.

Analogue terminals are connected to residential gateways or access gateways using standard analogue interfaces. The protocol running on interfaces between these gateways and the PES is either the gateway control protocol according to ITU-T Recommendation H.248.1 [22] (P1 reference point) or the session initiation protocol (SIP) according to RFC 3261 [39] (Gm reference point), depending on the type of gateway:

- call control agnostic H.248-based voice over IP media gateway (MGW); or
- call control aware SIP-based voice over IP gateway (VGW).

Call control agnostic means that the media gateway is relaying call control signalling between the PSTN terminal and the AGCF. The relay function has similarities with a signalling gateway function (as defined for common channel signalling systems), i.e. both are stateless from perspective of the call control protocol. Call control awareness implies a complete and stable function concerning call control or session control protocols.

Media gateways incorporates the Media Gateway Functional (MGF) entity identified in ES 282 001 [1] and are controlled by an Access Gateway Control Function (AGCF), at the P1 reference point.

Annex C illustrates the use of the PES for implementing usual PSTN services identified in EG 201 973-2 [11].

4.2 URI and address assignments

In case multiple subscribers are connected to the same gateway, there is no need to allocate a private user identity per subscriber. Whether a private user identity is allocated per gateway, group of subscribers or per subscriber is a matter for each operator to decide.

The AGCF stores private user identities and public user identities in a local data base.

5 Protocol using SIP and SIP events for PES

5.1 Introduction

This clause identifies the functional entities of the IMS-based PES architecture [3] that play a specific role in the implementation of PES services with regards to SIP processing.