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Technical Specification

Telecommunications and Internet converged Services and Protocols for Advanced Networks (TISPAN); Hosted Enterprise Services; Architecture, functional description and signalling

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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 architecture and functionality developed in the present document are in line with the capability requirements for hosted enterprise services developed in TS 181 019 [14].

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1 Scope

The present document describes the architecture and functionality required to support enterprise and corporate services as IMS applications hosted in the NGN operator's network on behalf of an enterprise (Hosted Enterprise Services).

The present document also specifies the protocol requirements for the UE to attach to the NGN (in particular the IMS) and also any protocol requirements related to application servers provided in support of hosted enterprise services.

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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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 ES 282 007: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); IP Multimedia Subsystem (IMS); Functional architecture".
- [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 ETS 300 738: "Human Factors (HF); Minimum Man-Machine Interface (MMI) to public network based supplementary services".
- [5] ETSI TS 123 228: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); IP Multimedia Subsystem (IMS); Stage 2".
- [6] ETSI TS 182 009: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Architecture to support emergency communication from citizen to authority".

- [7] ETSI TS 187 003: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Security; Security Architecture".
- [8] 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 Release 7, modified)".
- [9] IETF RFC 3323: "A Privacy Mechanism for the Session Initiation Protocol (SIP)".
- [10] IETF RFC 3325: "Private Extensions to the Session Initiation Protocol (SIP) for Asserted Identity within Trusted Networks".
- [11] ETSI TS 182 023: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Core and Enterprise NGN Interaction Scenarios and Architectural Requirements".
- [12] ETSI ES 282 002: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); PSTN/ISDN Emulation Subsystem (PES); Functional Architecture".
- [13] ETSI ES 282 010: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Charging management [Endorsement of 3GPP TS 32.240 Release 7, 3GPP TS 32.260 Release 7, 3GPP TS 32.297 Release 7, 3GPP TS 32.298 Release 7 and 3GPP TS 32.299 Release 7, modified]".
- [14] ETSI TS 181 019: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Business communication requirements".
- [15] 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]".
- [16] ETSI TS 183 043: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); IMS based PSTN/ISDN Emulation Stage 3 specification".
- [17] ETSI TS 183 028: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Common Basic Communication procedures; Protocol specification".
- [18] ETSI TS 124 229: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Internet Protocol (IP) multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3 (3GPP TS 24.229 version 8.2.0 Release 8)".
- [19] IETF RFC 5031: "A Uniform Resource Name (URN) for Emergency and Other Well-Known Services".
- [20] ETSI TS 183 011: "Technical Specification 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".
- [21] IETF RFC 3966: "The tel URI for Telephone Numbers".
- [22] IETF RFC 3261: "SIP: Session Initiation Protocol".
- [23] IETF RFC 4967: "Dial String Parameter for the Session Initiation Protocol Uniform Resource Identifier".
- [24] draft-vanelburg-sipping-private-network-indication-02.txt: "The Session Initiation Protocol (SIP) P-Private-Network-Indication Private-Header (P-Header)".

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 terms and definitions given in TS 181 019 [14], ES 283 003 [15] and TS 183 043 [16] apply:

3.2 Abbreviations

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

AGCF	Access Gateway Control Function
AGF	Access Gateway Function
AS	Application Server
BGCF	Breakout Gateway Control Function
BGF	Border Gateway Function
CNGCF	Customer Network Gateway Configuration Function
CS	Circuit Switched
CSCF	Call Session Control Function
HES	Hosted Enterprise Services
I-BGF	Interconnection Border Gateway Function
I-CSCF	Interrogating-Call Session Control Function
IFC	Initial filter Criteria
IMS	IP Multimedia Subsystem
IN	Intelligent Network
IP	Internet Protocol
IPCAN	IP Connectivity Access Network
ISC	IMS Service Control
ISDN	Integrated Services Digital Network
LDAP	Lightweight Directory Access Protocol
MGCF	Media Gateway Control Function
MGF	Media Gateway Function
MRFC	Multimedia Resource Function Controller
MRFP	Multimedia Resource Function Processor
NASS	Network Attachment SubSystem
NGCN	Next Generation Corporate Network
NGN	Next Generation Network
NGN	Next Generation Network
P-CSCF	Proxy-Call Session Control Function
PES	PSTN/ISDN Emulation Subsystem
PSTN	Public Switched Telephony Network
RACS	Resource and Admission Control Subsystem
RG	Residential Gateway
SCP	Service Control Function
S-CSCF	Serving-Call Session Control Function
SGF	Signalling Gateway Function
SIP	Session Initiation Protocol
SLF	Subscription Locator Function
SPDF	Service-based Policy Decision Function
T-MGF	Trunking-Media Gateway Function

UE	User Equipment
UEE	User Equipment Emulation
UPSF	User Profile Server Function
URI	Uniform Resource Identifier
URN	Uniform Resource Name
VGW	Voice over IP Gateway

4 Overview

Hosted Enterprise Services (HES) refers to a solution where an NGN hosts all business communication capabilities to a set of endpoints connected to a plurality of access points to this network. This type of network solution is also known as IP Centrex.

In the simplest configuration all endpoints are connected to a TISPAN NGN IP-CAN. Endpoints may be SIP phones or legacy phones (Analogue or ISDN) connected to a gateway. All services by HES are provided by application servers using standard IMS procedures. User may access services that are specific to the enterprise they belong to as well as services available to any other IMS users.

In more complex configurations some of the endpoints may be connected to a 3GPP IPCAN and/or a circuit-switched network, which is itself connected to the IMS via an MGCF. Endpoints connected to heterogeneous access networks may be served by the same HES.

Endpoints served by a HES shall have the ability to setup a session, identifying the communication target by:

- a SIP URI of the form user @domain;
- an E.164 telephone number;
- a number within a private numbering plan;
- local service numbers.

With regard to supplementary services, HES have strong similarities with the provision of PSTN/ISDN simulation services, although the actual set of services may be different. Examples of services that are enabled by the architecture described in the present document are:

- All commonly used PSTN/ISDN services.
- IMS Multimedia Messaging, Presence and Conferencing services.
- Personal and Corporate Directory.
- Unified Voice mail.
- Operator assisted communications.
- Hot Line Calling.
- Abbreviate dialling.
- Line Hunting.
- Attended Communication Transfer.
- Blind Communication Transfer.
- Communication Pickup.
- Manager/Secretary filtering.
- Click to Dial.
- Colour Ring Back Tone.

The sole purpose of the above list of services is to illustrate the type of services that are enabled by the architecture described in the present document. This list is not intended to be exhaustive nor is it expected that all implementations will support all of these services. The list actual of enterprise services hosted in a network is a matter for each operator to decide.

NOTE: The present document provides a number of examples where domain names are used. It should be noted that these are for information only and are not intended to place any constraint on the structure and management of domain names as long as they are globally routable.

5 Architecture

5.1 Functional Architecture

5.1.1 Overview

The functional architecture for supporting access to Hosted Enterprise Services is illustrated in figure 1. This functional architecture supports access from both SIP based endpoints and legacy endpoints.

The functional architecture for supporting access to Hosted Enterprise Services from both types of endpoints is obtained by a combination of the Core IMS Architecture defined in ES 282 007 [2] with the addition of an AGCF as defined in TS 182 012 [3] and ES 282 002 [12]. This should not be understood as an integration of an AGCF into the functional architecture defined in ES 282 007 [2]. The AGCF only applies to configurations where an H.248-controlled media gateway is required in support of legacy endpoints.

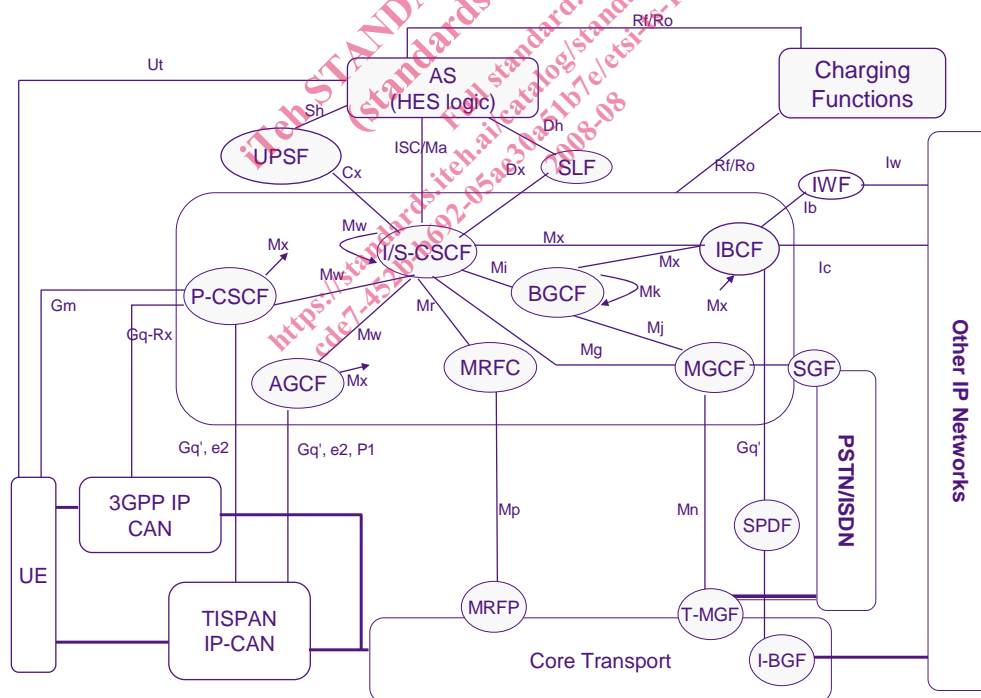


Figure 1: Functional architecture overview

All functional entities behave as defined in ES 282 007 [2], TS 182 012 [3] and/or ES 282 002 [12].

The service logic of the HES resides in one or more application servers. All sessions to/from a member of a HES shall be handled by at least one application server.

SIP-based endpoints may be connected to the IMS via any IP-CAN valid for the current specification release. A HES may serve endpoints connected through both types of IP-CANs.