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Technical Specification

Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Core and enterprise NGN interaction scenarios; Architecture and functional description

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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).

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1 Scope

The present document provides the possible scenarios for:

- the interconnection of an Next Generation Corporate Network (NGCN) with a Next Generation Network (NGN); and
- the support of NGCN capabilities within an NGN, either towards a User Equipment (UE) or to an NGCN.

Unless otherwise specified by reference to other documents, all requirements relating to architecture and functional requirements are contained within the present document.

2 References

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

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

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

- [1] ETSI TS 182 009: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Architecture to support emergency communication from citizen to authority".
- [2] ETSI TS 181 019: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Business Communication Requirements".
- [3] ETSI ES 282 001: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Functional Architecture".
- [4] ETSI TS 182 024: "Telecommunications and Internet Converged Services and Protocols for Advanced Networking (TISPAN); Hosted Enterprise Services; Architecture, functional description and signalling".
- [5] ETSI TS 182 025: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Business trunking; Architecture and functional description".
- [6] ETSI TS 183 021: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Endorsement of 3GPP TS 29.162 Interworking between IM CN Sub-system and IP networks".

- [7] ETSI TS 187 003: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Security; Security Architecture".

2.2 Informative references

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

- [i.1] ETSI TR 102 478: "Enterprise Communication in Next Generation Corporate Networks (NGCN) involving Public Next Generation Networks (NGN)" (also published as ECMA TR/91).
- [i.2] draft-ietf-sipping-sbc-funcs-05 (March 2008): "Requirements from SIP (Session Initiation Protocol) Session Border Control Deployments".

3 Definitions and abbreviations

3.1 Definitions

For the purpose of the present document, the terms and definitions given in TS 181 019 [2] apply:

business trunking
 business trunking application
 Corporate telecommunication Network (CN)
 Hosted Enterprise Services (HES)
 Next Generation CN (NGCN)
 NGCN site
 PNP number
 private network traffic
 Private Numbering Plan (PNP)
 public network traffic

3.2 Abbreviations

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

API	Application Programming Interface
AS	Application Server
ASP	Application Service Provider
BGCF	Breakout Gateway Control Function
CN	Core Network
CND	Customer Network Device
CNG	Customer Network Gateway
DHCP	Dynamic Host Configuration Protocol
FQDN	Fully Qualified Domain Name
HES	Hosted Enterprise Services
HSS	Home Subscriber Server
IBCF	Interconnection Border Control Function
I-CSCF	Interrogating CSCF
IM	IP Multimedia
IMCN	IP Multimedia Core Network
IMS	IP Multimedia Subsystem
IOI	Inter Operator Identifier
IP	Internet Protocol
IWF	InterWorking Function
MACF	Multiple Association Control Function
NASS	Network Attachment SubSystem
NAT	Network Address Translator

NGCN	Next Generation Corporate Network
NGN	Next Generation Network
P-CSCF	Proxy CSCF
PNP	Private Numbering Plan
PSAP	Public Safety Answering Point
RACS	Resource and Admission Control Subsystem
S-CSCF	Serving CSCF
SIP	Session Initiation Protocol
SSP	Session Service Provider
TE	Terminal Equipment
TSP	Transport Service Provider
UE	User Equipment
UPSF	User Profile Service Function
URI	Uniform Resource Identifier

4 Introduction

4.1 General modelling and relationship to NGN releases

A number of different scenarios will likely exist for enabling interactions between Next-Generation Corporate Networks (NGCN) and Next Generation (public) Networks (NGN). The present document describes a sub-set of these scenarios and the architectural and functional requirements that arise from the support of these scenarios. Future releases may document other scenarios as requirements emerge.

4.2 Levels of service provision

The development of different interaction scenarios based upon the distribution of the hosting of private network capabilities in the enterprise operator and/or in the public NGN operator leads to the concept of the public NGN operator being able to offer services to NGCNs and the NGCN users at a number of different levels. This concept is further described in TR 102 478 [i.1].

The most basic level of service provision is IP connectivity. Differentiation from the Internet can be in the form of improved or guaranteed quality of service or security. For the purposes of the present document an NGN that provides this level of service acts as a Transport Service Provider (TSP).

A second level of service provision is in session establishment and control of communication sessions, e.g. voice, multimedia, messaging. Here the NGN adds value by being involved in the signalling protocol used to establish and control media sessions. For the purposes of the present document the primary session control signalling protocol concerned is assumed to be the Session Initiation Protocol (SIP). Added value can include intelligent routing, provision of quality of service for media, provision of gateway services to legacy networks, assistance in NAT traversal, etc. For the purposes of the present document an NGN that provides this level of service is known as a Session Service Provider (SSP).

A third level of service provision is at the application level. Applications can be many and varied, but for the purposes of the present document an application is assumed to be applied on top of session level services. An application may be able to monitor or control multi-media sessions (either directly or through a protocol or API) and may or may not be involved in media as well. Examples of applications that involve media include conferencing services, transcoding and translation services and call distribution centres. Examples of applications that monitor or control sessions but do not involve media include presence services, call logging services and UA configuration services. In addition, an application may be accessed through a session control protocol such as SIP. For the purposes of the present document an NGN that provides this level of service is known as an Application Service Provider (ASP).

NOTE 1: An NGN acting as an ASP is not necessarily providing these capabilities on an IMS application server, it is providing any level of functionality above that of an SSP at any appropriate entity.

An NGN may provide services at one or more of these levels. Not all services offered will be of interest to enterprise customers and of relevance for interworking with NGCNs. Enterprise customers may use different NGNs for different levels of service provision and may have different contractual relationships with each of these NGNs. In addition, for a given communication and depending on the number of parties to be interconnected and/or the number of services to be accessed, multiple providers may be involved.

NOTE 2: Similarly an NGCN can provide services at these three levels to enterprise users. In particular, services at the session establishment and control level and/or application level can be provided by an NGCN site to enterprise users on other NGCN sites or supported by hosted enterprise services.

The scenarios provided in the present document are presented in accordance with this concept.

4.3 Introduction to the scenarios covered by the present document

The present document has been structured following the service level categories as introduced in clause 4.2 in mind, as follows:

- clause 6 presents scenarios that relate to provision of IP connectivity level services offered by an NGN;
- clause 7 presents scenarios that relate to provision of session establishment and control of communication session services offered by an NGN;
- clause 8 presents scenarios that relate to provision of application level services offered by an NGN; and
- clause 9 presents scenarios that relate to provision of session level roaming services offered by an NGN.

The scenarios presented in Clause 6 are IP level virtual leased line services between NGCN sites or between an NGCN site and a remote NGCN UE.

The scenario presented in clause 7 is a session level virtual leased line.

The application level service scenarios presented in clause 8 are hosted enterprise services (HES), subscription based business trunking and peering based business trunking.

Clause 9 presents a special class of session level service scenarios that are so distinct from other session level services that they are a service class of their own. Roaming scenario covered in this release is the ability for an NGCN user to be able to roam into an NGN with which the NGCN has a roaming agreement. Other scenarios are listed for completeness, however these scenarios are not in the scope of the current release or are already covered as part of normal roaming procedures.

5 General requirements

No additional general requirements are identified in the present document for this release.

6 Scenarios relating to a level of service of IP connectivity

6.1 Scenario 1: IP VPN providing a virtual leased line between NGCN sites

6.1.1 Introduction

This scenario describes the provision of capabilities of the NGN to provide a IP VPN providing a virtual leased line between two NGCN sites. The NGN provides no other functionality.

6.1.2 Involved functional entities – originating

Figure 6.1.1 shows the functional entities involved in the originating scenario in support of IP VPN interconnection.

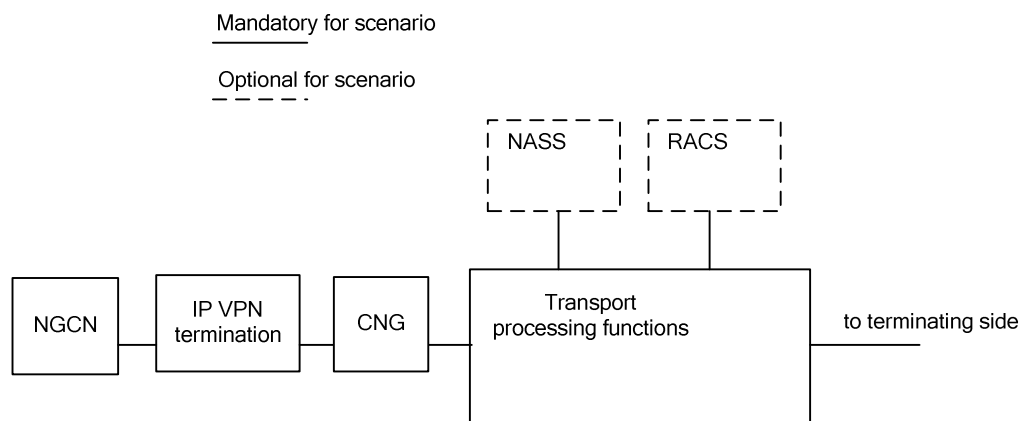


Figure 6.1.1: Originating scenario for IP VPN interconnection

6.1.3 Involved functional entities - terminating

Figure 6.1.1 shows the functional entities involved in the terminating scenario in support of IP VPN interconnection.

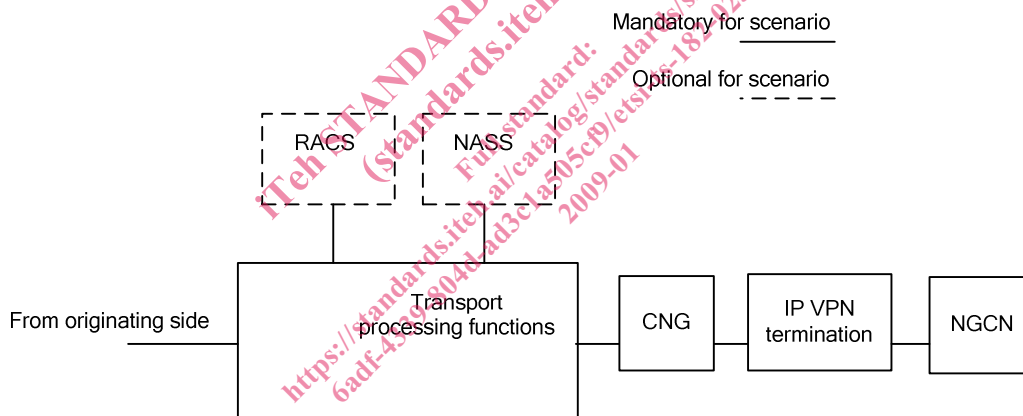


Figure 6.1.2: Terminating scenario for IP VPN interconnection

6.1.4 Interoperability with other scenarios

Clauses 6.1.2 and 6.1.3 can be combined together to provide an NGN transit scenario.

Clause 6.1.2 is also intended to interoperate with clause 6.2.3, and clause 6.1.3 to interoperate with clause 6.2.2, in order to allow similar functionality allowing a remote terminal to access an NGCN site.

Interoperability with other business communication scenarios is not possible.

NOTE: Interconnection with other scenarios is not possible, because there is no IP VPN termination in the NGN to support interworking the IP VPN.

6.1.5 Emergency calls

In this scenario, emergency calls have to be supported entirely within the NGCN, and some other scenario provided for delivery to the NGN if required.