

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

Y.2271

(09/2006)

SERIES Y: GLOBAL INFORMATION
INFRASTRUCTURE, INTERNET PROTOCOL ASPECTS
AND NEXT-GENERATION NETWORKS

Next Generation Networks – Service aspects:
Interoperability of services and networks in NGN

Call server-based PSTN/ISDN emulation

ITU-T Recommendation Y.2271

ITU-T Y-SERIES RECOMMENDATIONS

**GLOBAL INFORMATION INFRASTRUCTURE, INTERNET PROTOCOL ASPECTS AND NEXT-
GENERATION NETWORKS**

GLOBAL INFORMATION INFRASTRUCTURE

General	Y.100–Y.199
Services, applications and middleware	Y.200–Y.299
Network aspects	Y.300–Y.399
Interfaces and protocols	Y.400–Y.499
Numbering, addressing and naming	Y.500–Y.599
Operation, administration and maintenance	Y.600–Y.699
Security	Y.700–Y.799
Performances	Y.800–Y.899

INTERNET PROTOCOL ASPECTS

General	Y.1000–Y.1099
Services and applications	Y.1100–Y.1199
Architecture, access, network capabilities and resource management	Y.1200–Y.1299
Transport	Y.1300–Y.1399
Interworking	Y.1400–Y.1499
Quality of service and network performance	Y.1500–Y.1599
Signalling	Y.1600–Y.1699
Operation, administration and maintenance	Y.1700–Y.1799
Charging	Y.1800–Y.1899

NEXT GENERATION NETWORKS

Frameworks and functional architecture models	Y.2000–Y.2099
Quality of Service and performance	Y.2100–Y.2199
Service aspects: Service capabilities and service architecture	Y.2200–Y.2249
Service aspects: Interoperability of services and networks in NGN	Y.2250–Y.2299
Numbering, naming and addressing	Y.2300–Y.2399
Network management	Y.2400–Y.2499
Network control architectures and protocols	Y.2500–Y.2599
Security	Y.2700–Y.2799
Generalized mobility	Y.2800–Y.2899

For further details, please refer to the list of ITU-T Recommendations.

ITU-T Recommendation Y.2271

Call server-based PSTN/ISDN emulation

Summary

The NGN shall support PSTN/ISDN emulation. One mechanism for providing this functionality is the use of a Call Server-based architecture. This Recommendation identifies service and network capabilities for this call server-based solution.

Source

ITU-T Recommendation Y.2271 was approved on 13 September 2006 by ITU-T Study Group 13 (2005-2008) under the ITU-T Recommendation A.8 procedure.

Keywords

Call server, emulation, ISDN, PES, PSTN

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure e.g. interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at <http://www.itu.int/ITU-T/ipr/>.

© ITU 2007

All rights reserved. No part of this publication may be reproduced, by any means whatsoever, without the prior written permission of ITU.

CONTENTS

Page

1	Scope	1
2	References.....	1
3	Definitions	2
4	Abbreviations.....	2
5	Conventions	4
6	PSTN/ISDN emulation in NGN	4
7	Service and network capabilities	5
7.1	Service capabilities	5
7.2	Network capabilities	5
8	Relevant network elements.....	8
8.1	Application server	8
8.2	Application server gateway	8
8.3	User profile server	8
8.4	Call server.....	8
8.5	Gateways	11
8.6	Media server (MS).....	11
	Appendix I – Mapping functional entities to network elements	12
	Appendix II – Basic call control scenario in call server-based PES	13
II.1	Intra CS-PES call.....	13
II.2	Scenario 5: Call between CS-PES user and PSTN, ISDN or PLMN	15
II.3	Scenario 6: Inter CS-PES call.....	15
II.4	Scenario 7: Call between CS-PES user and user of other IP networks	16
II.5	Scenario 8: Call between two PSTN/ISDN/PLMN users via CS-PES	16
	Appendix III – Reference points and protocols	17
	BIBLIOGRAPHY	18

ITU-T Recommendation Y.2271

Call server-based PSTN/ISDN emulation

1 Scope

This Recommendation describes the service and network capability requirements for a call server-based (CS-based) PSTN/ISDN emulation component. It also provides a list of network elements used in conjunction with the CS-based PSTN/ISDN emulation component. Appendix II also provides a number of call control scenarios for CS-based PSTN/ISDN emulation component.

Administrations may require operators and service providers to take into account national regulatory and national policy requirements in implementing this Recommendation.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

- [E.360.1] ITU-T Recommendation E.360.1 (2002), *Framework for QoS routing and related traffic engineering methods for IP-, ATM-, and TDM-based multiservice networks*.
- [E.360.2] ITU-T Recommendation E.360.2 (2002), *QoS routing and related traffic engineering methods – Call routing and connection routing methods*.
- [E.600] ITU-T Recommendation E.600 (1993), *Terms and definitions of traffic engineering*.
- [G.711] ITU-T Recommendation G.711 (1988), *Pulse code modulation (PCM) of voice frequencies*.
- [G.723.1] ITU-T Recommendation G.723.1 (2006), *Dual rate speech coder for multimedia communications transmitting at 5.3 and 6.3 kbit/s*.
- [G.729] ITU-T Recommendation G.729 (2007), *Coding of speech at 8 kbit/s using conjugate-structure algebraic-code-excited linear prediction (CS-ACELP)*.
- [H.248.1] ITU-T Recommendation H.248.1 v3 (2005), *Gateway control protocol: Version 3 (and its specific capabilities defined in H.248.x-series of Recommendations)*.
- [Q.826] ITU-T Recommendation Q.826 (2000), *Routing management model*.
- [X.110] ITU-T Recommendation X.110 (2002), *International routing principles and routing plan for Public Data Networks*.
- [X.805] ITU-T Recommendation X.805 (2003), *Security architecture for systems providing end-to-end communications*.
- [Y.2031] ITU-T Recommendation Y.2031 (2006), *PSTN/ISDN emulation architecture*.
- [Y.2261] ITU-T Recommendation Y.2261 (2006), *PSTN/ISDN evolution to NGN*.
- [RFC 3261] IETF RFC 3261 (2002), *SIP: Session Initiation Protocol*.
- [EN 301 703] ETSI European Standard, EN 301 703 V7.0.2 (1999), *Digital cellular telecommunications system (Phase 2+) (GSM); Adaptive Multi-Rate (AMR); Speech processing functions; General description*.

3 Definitions

This Recommendation defines the following terms:

NOTE – In this clause the [aaa] notation after the title of a term indicates source of the definition for that term.

3.1 access border gateway (ABG): A packet gateway between an access network and a core network.

3.2 access gateway (AG) [Y.2261]: A unit that allows end users with various accesses (e.g., PSTN, ISDN, V5.x) connection to the packet node of NGN.

NOTE – The AG may be embedded in an access node, which serves also other access interfaces (e.g., xDSL, LAN). Such access nodes are also known as multi-service access nodes (MSAN).

3.3 application server (AS): A unit that interacts with the call server and the user profile server to support service execution.

3.4 application server gateway (ASG): A unit that interworks between application server and call server.

NOTE – In IMS, ASG interworks between the application server and the core IMS.

3.5 call server (CS): The core element of a CS-based PSTN/ISDN emulation component, which is responsible for call control, media resource control, call routing, user profile and subscriber authentication, authorization and accounting. Depending on its role, the behaviour of the call server may be different. In these cases, the role of the call server is identified, for example, as "Access call server", "Breakout call server", "IMS call server", "Routing call server" or "Gateway call server".

3.6 media server (MS): A network element providing the media resource processing function for telecommunication services in NGN.

3.7 PSTN/ISDN emulation: Provides PSTN/ISDN service capabilities and interfaces using adaptation to an IP infrastructure.

NOTE – Not all service capabilities and interfaces have to be present to provide an emulation.

3.8 interconnection border gateway (IBG): A unit responsible for packet interworking between two service provider's core networks.

3.9 residential gateway (RG): A unit that interworks PSTN/ISDN user equipments to a packet network. A residential gateway is located at the customer premises.

3.10 signalling gateway (SG) [Y.2261]: A unit that provides out-of-band call control signalling conversion between the NGN and other networks (e.g., between a Call server in NGN and a STP or SSP in SS7).

3.11 trunking media gateway (TMG) [Y.2261]: A unit that provides interfaces between the packet nodes of the NGN and the circuit-switched nodes (e.g., transit exchange, local exchange, international exchange) of PSTN/ISDN for bearer traffic. The TMG provides any needed conversion to the bearer traffic.

4 Abbreviations

This Recommendation uses the following abbreviations:

ABG	Access Border Gateway
ACS	Access Call Server
AG	Access Gateway
AGCF	Access Gateway Control Function