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SERIES Y: GLOBAL INFORMATION INFRASTRUCTURE
AND INTERNET PROTOCOL ASPECTS

Internet protocol aspects – Architecture, access, network
capabilities and resource management

Service requirements and architecture for voice services over Multi-Protocol Label Switching

ITU-T Recommendation Y.1261

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

ITU-T Recommendation Y.1261

Service requirements and architecture for voice services over Multi-Protocol Label Switching

Summary

This Recommendation describes service requirements and architecture for transport of Voice Services over MPLS networks.

Voice Services over MPLS networks include a family of protocols that may be supported over MPLS, including Voice over IP (as specified by IETF), Voice over MPLS (as specified by MPLS Forum) and I.366.2 Voice Trunking Format (based on ITU-T Rec. I.366.2 adapted for MPLS).

Possible approaches for transporting Voice Services over MPLS are provided in Appendix II.

Detailed protocol specifications are subject of other Recommendations.

Source

ITU-T Recommendation Y.1261 was prepared by ITU-T Study Group 13 (2001-2004) and approved under the WTSA Resolution 1 procedure on 14 December 2002.

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.

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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, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

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ITU-T Recommendation Y.1261

Service requirements and architecture for voice services over Multi-Protocol Label Switching

1 Scope

The scope of this Recommendation is to describe services requirements and architecture for transport of Voice Services over MPLS networks.

Voice Services over MPLS networks include a family of protocols that may be supported over MPLS, including Voice over IP (as specified by IETF), Voice over MPLS (as specified by MPLS Forum) and I.366.2 Voice Trunking Format (based on ITU-T Rec. I.366.2 adapted for MPLS).

An overview of several possible approaches that have been proposed as the basis for the family of protocols for transporting Voice services over MPLS is provided in Appendix II. Nothing in this Recommendation precludes the progression of all these protocols for the transport of Voice Services over MPLS.

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.

2.1 Normative references

- [1] ITU-T Recommendation G.711 (1988), *Pulse code modulation (PCM) of voice frequencies*.
- [2] ITU-T Recommendation G.723.1 (1996), *Speech coders: Dual rate speech coder for multimedia communications transmitting at 5.3 and 6.3 kbit/s*.
- [3] ITU-T Recommendation G.726 (1990), *40, 32, 24, 16 kbit/s Adaptive Differential Pulse Code Modulation (ADPCM)*.
- [4] ITU-T Recommendation G.729 (1996), *Coding of speech at 8 kbit/s using conjugate-structure-algebraic-code-excited linear prediction (CS-ACELP)*.
- [5] ITU-T Recommendation I.361 (1999), *B-ISDN ATM layer specification*.
- [6] ITU-T Recommendation I.363.1 (1996), *B-ISDN Adaptation Layer specification: Type 1 AAL*.
- [7] ITU-T Recommendation I.363.2 (2000), *B-ISDN Adaptation Layer specification: Type 2 AAL*.
- [8] ITU-T Recommendation I.363.5 (1996), *B-ISDN Adaptation Layer specification: Type 5 AAL*.
- [9] ITU-T Recommendation I.366.2 (2000), *AAL type 2 service specific convergence sublayer for narrow-band services*.
- [10] ITU-T Recommendation I.610 (1999), *B-ISDN operation and maintenance principles and functions*.

- [11] ITU-T Recommendation Q.922 (1992), *ISDN data link layer specification for frame mode bearer services*.
- [12] ETSI TS 126 071 V3.0.1 (2000-02), *Universal Mobile Telecommunications System (UMTS); AMR Speech Codec; General description*.
- [13] IETF RFC 3031 (2001), *Multiprotocol Label Switching Architecture*.
- [14] IETF RFC 3032 (2001), *MPLS Label Stack encoding*.
- [15] IETF RFC 3036 (2001), *LDP Specification*.
- [16] IETF RFC 3270 (2002) *Multi-Protocol Label Switching (MPLS). Support of Differentiated Services*.

2.2 Informative references

- [17] ITU-T Recommendation Q.1950 (2002), *Bearer independent call bearer control protocol*.
- [18] IETF RFC (1996), *RTP: A Transport Protocol For Real-Time applications*.
- [19] IETF RFC 1890 (1996), *RTP Profile for Audio and Video Conferences with Minimal Control*.
- [20] FRF.11.1 (1999), *Voice over Frame Relay Implementation Agreement*.
- [21] MPLS Forum 1.0 (2001), *Voice over MPLS – Bearer Transport Implementation Agreement*.

3 Definitions

This Recommendation defines the following terms:

3.1 voice services over MPLS: The term encompasses the set of technical approaches used to transport encoded voice over MPLS. This terminology is independent of the method by which MPLS frames are transported.

3.2 active voice: A sampled audio interval that has been determined to contain speech as opposed to silence. The classification is made by a Voice Activity Detection algorithm. It enables discontinuous transmission, whereby the bit rate of the signal is reduced during silent intervals.

3.3 audio: In the context of this Recommendation, audio is used as a general term for signals of the audible medium, including voice and voiceband data.

3.4 channel-associated signalling: Bits dedicated for connection control across a 1544 kbit/s or 2048 kbit/s interface that carries 64 kbit/s channels. Procedures are based on the state of up to four signalling bits (A, B, C, D) that are allocated per channel per multiframe.

3.5 circuit mode data: A continuous stream of digital information at 64 kbit/s or 2×64 kbit/s having an 8 kHz structure.

3.6 dialled digits: Multifrequency audio tones typically used for inter-register signalling of addresses during call set-up or for end-to-end device control during an established call. Depending on the system, codes are defined for the digits 0-9 of a telephone keypad and other auxiliary signals.

3.7 facsimile demodulation/remodulation: The process of detecting facsimile traffic, extracting digital information from the incoming analogue modulated signal, transporting this across a trunk in packet formats, and reproducing the facsimile control and image information by remodulation at the other end.

3.8 silence insertion descriptor: A compressed representation of the audio background noise that can be sent during silent intervals. SIDs may not be continuous and may only be sent when