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OF TELEVISION, SOUND PROGRAMME AND OTHER
MULTIMEDIA SIGNALS

Cable modems

Next generation set-top-box cable architecture

ITU-T Recommendation J.291



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ITU-T Recommendation J.291

Next generation set-top-box cable architecture

Summary

This Recommendation describes the cable network architecture component of the next-generation Set-Top-Box (STB). When combined with companion ITU-T Recs J.290 (J.stb-core-a) and J.292 (J.stb-mi-a), the architecture defines a cost-efficient platform with capacity and flexibility to support growth of on-demand video, high definition digital TV, managed in-home networks connecting a wide range of consumer-provided devices, and future IP multimedia services including IP voice, video telephony, and multiplayer gaming. This Recommendation reflects key functional aspects of the next generation cable set-top-box, such as a common application platform and MPEG transport including advanced codecs.

Source

ITU-T Recommendation J.291 was approved on 29 November 2006 by ITU-T Study Group 9 (2005-2008) under the ITU-T Recommendation A.8 procedure.

FOREWORD

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CONTENTS

Page

1	Scope	1
2	References.....	1
2.1	Normative references.....	1
2.2	Informative references.....	1
3	Terms and definitions	2
4	Abbreviations and Acronyms	3
5	Integrated multimedia architecture	4
5.1	Reference architecture description	4
5.2	Attributes of an integrated multimedia architecture	4
5.3	Video services architecture.....	6
5.4	DOCSIS signalling	7
5.5	Use of coax for in-home networking.....	8
5.6	Telemetry services.....	9
6	Customer premises.....	9
6.1	Subscriber Video Devices (SVDs)	10
7	Head-end network architecture.....	10
7.1	Evolution of the DOCSIS CMTS and QAM modulators.....	13
7.2	Session and resource management architecture	15
	Appendix I – Business requirements for the cable network architecture	18

11

ITU-T Recommendation J.291

Next generation set-top-box cable architecture

1 Scope

This Recommendation describes the cable network architecture component of the next-generation STB. When combined with companion ITU-T Recs J.290 and J.292, the architecture defines a cost-efficient platform with capacity and flexibility to support growth of on-demand video, high definition digital TV, managed in-home networks connecting a wide range of consumer-provided devices, and future IP multimedia services including IP voice, video telephony, and multiplayer gaming.

2 References

2.1 Normative references

None.

2.2 Informative references

- ITU-T Recommendation J.83 (1997), *Digital multi-programme systems for television, sound and data services for cable distribution.*
- ITU-T Recommendation J.94 (1998), *Service information for digital broadcasting in cable television systems.*
- ITU-T Recommendation J.112 (1998), *Transmission systems for interactive cable television services.*
- ITU-T Recommendation J.122 (2002), *Second-generation transmission systems for interactive cable television services – IP cable modems.*
- ITU-T Recommendation J.125 (2004), *Link privacy for cable modem implementations.*
- ITU-T Recommendation J.126 (2004), *Embedded Cable Modem device specification.*
- ITU-T Recommendation J.128 (2005), *Set-top gateway specification for transmission systems for interactive cable television services.*
- ITU-T Recommendation J.179 (2005), *IPCablecom support for multimedia.*
- ITU-T Recommendation J.197 (2005), *High level requirements for a Digital Rights Management (DRM) bridge from a cable access network to a home network.*
- ITU-T Recommendation J.200 (2001), *Worldwide common core – Application environment for digital interactive television services.*
- ITU-T Recommendation J.201 (2004), *Harmonization of declarative content format for interactive television applications.*
- ITU-T Recommendation J.202 (2005), *Harmonization of procedural content formats for interactive TV applications.*

3 Terms and definitions

This Recommendation defines the following terms:

3.1 asynchronous time division multiple access (A-TDMA): A variant on the protocol for wireless communication, used in DOCSIS 2.0.

3.2 cable modem termination system (CMTS): Located at the cable television system headend or distribution hub, which provides complementary functionality to the cable modems to enable data connectivity to a wide-area network.

3.3 downloadable conditional access system (DCAS): A technology for downloading conditional access into software on a set-top box; this is an effort under way at CableLabs and due for publication in 2006.

3.4 DOCSIS signalling: DOCSIS signalling as defined in ITU-T Recs J.125 and J.126. DOCSIS is the term for a system or device compliant with any one of the Cable Television Laboratories, Inc. ("CableLabs") series of specifications located at: <http://www.cablemodem.com/specifications/>.

3.5 DSG: The DOCSIS Set-top Gateway is an interface defining signalling to and from a DOCSIS modem embedded in a cable set-top device.

3.6 Digital storage media command and control (DSM-CC): DSM-CC is for developing control channels associated with MPEG-2 streams.

3.7 Edge QAM: A device that provides QAM modulation to increase capacity in existing legacy cable networks.

3.8 IPCable2Home: The domain in MediaHomeNet that is well bounded and specified based on Internet Protocol Layer 3 interoperability, as opposed to other domains that can be independently, arbitrarily, or privately designed to an individual manufacturer's specification.

3.9 IPCablecom: An ITU-T project that includes an architecture and a series of Recommendations that enable the delivery of real-time services over the cable television networks using cable modems.

3.10 J.200 series: ITU-T Recommendation for Worldwide common core – Application environment for digital interactive television services. J.200 is the common core underlying OpenCable Applications Platform (OCAP) in the United States.

3.11 media gateway control protocol (MGCP): A protocol used within a Voice over IP system.

3.12 multi program transport stream (MPTS): A transport stream with multiple programs.

3.13 OpenCable Applications Platform (OCAP): The middleware standard for United States cable set-tops; J.200 Worldwide common core is a part of OCAP.

3.14 packet identifier (PID): Unique integer value used to identify elementary streams of a program in a single- or multi-program MPEG-2 stream.

3.15 real time transport protocol (RTP): A transport protocol for real-time applications defined in ITU-T Rec. H.225.0. It is designed for real-time transmission of audio and video data.

3.16 Synchronous Code Division Multiple Access (S-CDMA): A variant of the protocol used for wireless communication, used in DOCSIS 2.0.

3.17 session initiation protocol (SIP): An application-layer control (signalling) protocol for creating, modifying, and terminating sessions with one or more participants. These sessions include Internet telephone calls, multimedia distribution, and multimedia conferences.

3.18 simple object access protocol (SOAP): A lightweight, XML-based protocol for exchange of information in a decentralized, distributed environment.

3.19 single program transport stream (SPTS): A transport stream in which there is a single program.

3.20 telemetry service: Remote monitoring of data for purposes such as energy management or security in the home.

3.21 universal plug and play (UPnP): Set of standards for device and content discovery on home networks, promulgated by the UPnP Forum.

4 Abbreviations and Acronyms

This Recommendation uses the following abbreviations:

CMTS	Cable Modem Termination System
CPE	Customer Premises Equipment
DRM	Digital Rights Management
DSG	DOCSIS Set-top Gateway
DSM-CC	Digital Storage Media Command and Control
GigE	Gigabit Ethernet
HD	High definition
HDTV	High definition TV
IP	Internet Protocol
IPCM	IP Cablecom Multimedia
MAC	Media Access Control
MGCP	Media Gateway Control Protocol
MPEG	Motion Picture Experts Group
MPTS	Multiple Program Transport Stream
NCS	Network Call Signalling
NGHE	Next Generation Headend
OCAP	OpenCable Applications Platform
PID	Packet Identifier
QAM	Quadrature Amplitude Modulation
QoS	Quality of service
RTP	Real Time Protocol
SCTE	Society of Cable Television Engineers
SD	Standard Definition
SOAP	Simple Object Access Protocol
SPTS	Single Program Transport Stream