ATIS-0800019

MULTICAST NETWORK SERVICE SPECIFICATION

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ATIS Standard on

MULTICAST NETWORK SERVICE SPECIFICATION

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Abstract

The multicast service must have a baseline set of requirements to ensure interoperability between the service provider IPTV multicast applications, the network provider domain, the home network, and the IPTV Terminal Function. This document describes an IP multicast service that the network provider can provide for use as a basis for a linear/broadcast TV service.

FOREWORD

The Alliance for Telecommunication Industry Solutions (ATIS) serves the public through improved understanding between carriers, customers, and manufacturers. The IPTV Interoperability Forum (IIF) develops requirements, standards, and specifications that will determine the industry's end-to-end solution for Internet Protocol Television (IPTV).

The mandatory requirements are designated by the word *shall* and recommendations by the word *should*. Where both a mandatory requirement and a recommendation are specified for the same criterion, the recommendation represents a goal currently identifiable as having distinct compatibility or performance advantages. The word *may* denotes an optional capability that could augment the standard. The standard is fully functional without the incorporation of this optional capability.

Suggestions for improvement of this document are welcome. They should be sent to the Alliance for Telecommunications Industry Solutions, IIF Staff, 1200 G Street NW, Suite 500, Washington, DC 20005.

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1 INTRODUCTION

Linear/Broadcast internet protocol television (IPTV) utilizes internet protocol (IP) multicast to efficiently deliver IP-encapsulated video content between video processing sites and ultimately to the IPTV Terminal Function (ITF). The network-level efficiencies are achieved through the creation of a multicast distribution tree for each multicast group (or aggregate trees where applicable). Each multicast group equates to a video stream. Instead of tuning to a specific stream with all channels being received, the ITF selectively "joins" a multicast group and becomes a leaf node for that group's distribution tree so that only the requested channels are sent into the consumer domain.

Because of these interactions between the ITF and the network to modify and attach to the multicast distribution tree, the multicast service must have a baseline set of requirements to ensure interoperability between the service provider IPTV multicast applications, the network provider domain, the home network, and the ITF. The baseline requirements should also encompass the resiliency, responsiveness, manageability, and security of the multicast service network.

> NOTE – For clarity this document refers to "video" in relation to multicast groups. In reality, the multicast groups may represent audio or informational content that may be bound by the same or a similar set of service requirements.

1.1 Purpose

This document describes an IP multicast service that the network provider can provide for use as a basis for a linear/broadcast TV service. The intent is to focus on the service requirements from the perspective of the IPTV service provider rather than detail specific implementation mechanisms within the network operator domain, although a minimum set of network specifications is provided in section 6.1.3.1.

This document satisfies the requirements for multicast defined in ATIS-0800002, *IPTV Architecture Requirements.* These requirements are delineated in section 5 of this document.

1.2 Scope

The scope of this document is multicast that is sourced in the service stratum, delivered over the Next Generation Network (NGN) transport network, and terminated in the service stratum at another level of network hierarchy or in the consumer domain.

This specification is primarily concerned with multicast as a service provided by the network provider. Multicast functions may occur in other domains (e.g., the consumer's home network) and must also adhere to the multicast service requirements, and are therefore considered within the scope of the multicast specification.

2 NORMATIVE REFERENCES

The following standards contain provisions which, through reference in this text, constitute provisions of this ATIS Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this ATIS Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

[1] ATIS-0800002, *IPTV Architecture Requirements*, September 12, 2006.[1]

[2] ATIS-0800005, *IPTV Packet Loss Issue Report,* January 11, 2007.[1]

[3] ATIS-0800013, *Media Formats and Protocols for IPTV Services,* January 30, 2009. [1]

[4] ATIS-0800018, *IPTV Linear TV Service*, January 30, 2009. [1]

[5] Broadband Forum TR-101, *Migration to Ethernet Based DSL Aggregation*, April 2006.[2]

[6] ETSI TISPAN 102 034: *Digital Video Broadcasting (DVB); Transport of MPEG-2 Based DVB Services over IP Based Networks,* Version 1.4.1.[3]

[7] ETSI TISPAN 182 019, *Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Content Delivery Network (CDN) architecture - Interconnection with TISPAN IPTV architectures;* Draft 2/25/09. [3]

[8] IETF RFC 1112, *Host Extensions for IP Multicasting,* August 1989.[4]

[9] IETF RFC 2236, *Internet Group Management Protocol, Version 2*, November 1997.[4]

[10] IETF RFC 2710, *Multicast Listener Discovery (MLD) for IPv6,* October 1999. [4]

[11] IETF RFC 3261, *SIP: Session Initiation Protocol,* June 2002. [4]

[12] IETF RFC 3376, *Internet Group Management Protocol* Version 3, October 2002. [4]

[13] IETF RFC 3810, *Multicast Listener Discovery Version 2 (MLDv2) for IPv6*, June 2004. [4]

[14] IETF RFC 4604, *Using Internet Group Management Protocol Version 3 (IGMPv3) and Multicast Listener Discovery Protocol Version 2 (MLDv2) for Source-Specific Multicast*, August 2006. [4]

[15] IETF RFC 4607, *Source-Specific Multicast for IP*, August 2006. [4]

[16] IETF RFC 4608, *Source-Specific Protocol Independent Multicast in 232/8*, August 2006. [4]

[17] ITU-T Y.2111, Resource and admission control functions in Next Generation Networks, November 2008.[5]

[1] This document is available from the Alliance for Telecommunications Industry Solutions, 1200 G Street N.W., Suite 500, Washington, DC 20005. <http://www.atis.org>

[2] This document is available from the Broadband Forum. < www.broadband-forum.org/technical >

[3] This document is available from ETSI TISPAN. < http://www.etsi.org/tispan/ >

[4] This document is available from the IETF. < http://tools.ietf.org/ >

[5] This document is available from the International Telecommunications Union. < http://www.itu.int/ITU-T/ >