

# IIF KEY DELIVERABLES



Since its establishment in July 2005, the ATIS IIF has produced a number of key requirements and framework documents that serve as the foundation for further development of IPTV specifications and standards. The following summarizes key activities and deliverables published to date:

## ARCHITECTURE FRAMEWORK

### *IPTV Architecture Requirements (ATIS-0800002)*

Focuses on services that may comprise IPTV; the functions necessary for content providers to deliver content to service providers; functions required by service providers and network providers to offer IPTV; and the home networking functions needed for the consumer to receive IPTV services.

### *IPTV Architecture Roadmap (ATIS-0800003)*

Defines the phases in which IPTV standards will be developed. Phase 1 includes specifications for network/service attachment; service discovery; basic navigation through services; and regulatory compliance, including emergency Alert Services (EAS), Closed Caption and Parental Advisory. Phase 2 addresses video-on-demand (VOD) and pay-per-view (PPV) transaction-based services. Phase 3 addresses Interactive TV, multiplayer games, network PVR and in-home peer-to-peer interaction. This document is being studied for revision.

### *IPTV Packet Loss Issue Report (ATIS-0800005)*

Reviews many of the factors that may cause packet loss in IPTV transmissions and addresses solutions to mitigate packet drop.

### *IPTV High Level Architecture (ATIS-0800007)*

Provides a high-level architectural framework and the supporting network design for the implementation of end-to-end IPTV systems.

### *Remote Management of Devices in the Consumer Domain for IPTV Services (ATIS-0800009)*

Addresses the remote management of devices in the consumer domain, focusing initially on the Delivery network Gateway (DNG) and IPTV Terminal Function (ITF) devices. It also addresses device attachment to the transport network; image download; provisioning of parameters; status monitoring; remote diagnostics; fault recovery; and security management.

### *Emergency Alert Service (EAS) Provisioning Specifications for IPTV (ATIS-0800010)*

Supports the offering of an emergency Alert System (EAS) for IPTV.

### *Media Formats and Protocols for IPTV Services (ATIS-0800013)*

Identifies the media formats and protocols, including reliability protocols, required for implementation of the ATIS IIF-defined IPTV services.

*Network Attachment and Initialization of Devices and Client Discovery of IPTV Services (ATIS-0800017)*

Addresses network attachment, service provider discovery, service provider attachment and services discovery procedures for IPTV.

*IPTV Linear TV Service (ATIS-0800018)*

Defines the basic linear TV service operation after initialization, configuration, service provider discovery, and services discovery.

*Multicast Network Service Specification (ATIS-0800019)*

Describes a simple IP multicast service the network provider can offer for use as a basis for a linear/broadcast TV service.

*Technical Report on IPTV Advertising (ATIS-0800030)*

Analyzes existing advertising standards and considers how they may be re-used for ATIS IPTV.

*IPTV Content on Demand Service (ATIS-0800042)*

Specifies the use of relevant functions for delivery of an IPTV Content on Demand (CoD) Service. An instance of an IPTV CoD Service may be configured to provide a consumer experience similar to that of traditional Video on Demand (VoD) television services, but additionally provides access to the potentially greater functionality also available through capabilities of the IPTV infrastructure.

## **METADATA AND SCHEMAS**

*IPTV Emergency Alert System Metadata Specification (ATIS-0800012)*

Defines metadata elements for an EAS announcement, interfaces across which metadata are exchanged, formats for elements of metadata, and protocols for metadata exchange.

*IPTV Electronic Program Guide Metadata Specification (ATIS-0800020)*

Establishes basic metadata requirements for an IPTV EPG to support functionality that meets the service selection and acquisition needs of consumers. This document was updated in April 2011 to provide support for Content on Demand.

*IPTV Consumer Domain Device Configuration Metadata (ATIS-0800022)*

Establishes requirements for metadata associated with configuration of consumer domain devices—specifically the Delivery network Gateway (DNG) and the IPTV Terminal Function (ITF)—during network attachment, initialization, configuration, and remote management. This document was updated in April 2011 to provide extensions to the System Information required to support service discovery for Content on Demand.

*IPTV Terminal Function Metadata Specification (ATIS-0800029)*

Specifies a logical data model to address the requirements related to IPTV services in the Consumer Domain. Specifically addressed are user preferences for content consumption and accessibility, services to which users are subscribed, recording of content consumption, and user interaction.

*Metadata for IPTV Fault Codes (ATIS-0800032)*

Provides the metadata for the fault codes defined in *ATIS-0800028* for the exchange between consumer domain devices and service provider and/or network provider systems.

*XML Schema for ITF Execution Environment (ATIS-0800036)*

Provides an XML schema for the Execution Environment profiles for use in services and functions within an IPTV Security Solution.

*Content on Demand Metadata Schema and Metadata Transactions (ATIS-0800043)*

Defines the metadata for use on interfaces related to the delivery of Content on Demand according to *ATIS-0800042*, *IPTV Content on Demand Service*.

*IPTV Media Bookmark Specification (ATIS-0800044)*

Specifies the logical data model for the creation and use of bookmarks for IPTV program or IPTV content. The logical data model is specified in the form of an XML schema.

*IPTV QoS Metrics Metadata (ATIS-0800045)*

Defines the metadata structures for the exchange of QoS metrics between metric points within the service provider and/or network provider systems and some element management systems.

*Electronic Program Guide Metadata for Light-Weight Devices (ATIS-0800046)*

Defines a subset of the Electronic Program Guide (EPG) metadata model in *ATIS-0800020*, *IPTV EPG Metadata Specification*, which includes the most important elements and attributes of the full EPG metadata model, but is small enough to be suitable for light-weight devices.

## **SECURITY SOLUTIONS**

*IPTV DRM Interoperability Requirements (ATIS-0800001)*

Defines the requirements for the interoperability of systems and components in the IPTV DRM/security environment.

*IIF Default Scrambling Algorithm (ATIS-0800006)*

Specifies a default scrambling/descrambling algorithm for MPEG-2 Transport Stream and scrambling algorithm signaling. Use of the specification provides network operators with a maximum choice of IPTV Receiving Device platforms.

*Secure Download Interoperability Specification for IPTV (ATIS-0800014)*

Provides a complete solution for messaging and secure download to IPTV Devices by providing authentication, integrity, and confidentiality through the IPTV Security Solution/Authentication (ISS/A) and the IPTV Security Solution/Encryption (ISS/E) functions. This document was updated in September 2009 to address confidentiality of server-to-client communications and to provide a method of rollback/replay prevention.

*Certificate Trust Management Hierarchy Interoperability Specification (ATIS-0800015)*

Provides the basis of trust for PKI operations by creating a PKI hierarchy that satisfies trust requirements of security solutions, identifying trust relationships affected by PKI

hierarchies, and establishing requirements for the generation, distribution, and revocation of ATIS IIF PKI certificates. This document was updated in May 2011 to supply test certificates.

*Standard PKI Certificate Format Interoperability Specification (ATIS-0800016)*

Standardizes the delivery, distribution and validation of encrypted keys in a trusted certificate format. The encrypted keys within a key certificate are a security component consisting of digital signatures used to authenticate data sources and content. This document was updated in June 2011 to expand the profile of the certificate format with extensions that address the use of RSA keys for both integrity protection and encryption.

*Managing the IIF Trust Hierarchy (ATIS-0800023)*

Defines the specifications for the interoperability of systems and components in the IPTV security environment with respect to managing the Certificate Trust Hierarchy, including methods and rules for publication of and access to certificate revocation information.

*Security Robustness Rules (ATIS-0800024)*

Facilitates interoperability and encourages product innovation while maintaining standardized procedures, interfaces and platforms with respect to secure transmission and storage of materials.

*APOD: An IPTV Separable Security Interface Specification (ATIS-0800033)*

Provides a physically separable security solution for IPTV that is harmonized with and backwards compatible to the existing unidirectional and multi-stream CableCARD™ standards.

*Secure Time Interoperability Specification (ATIS-0800034)*

Defines the specifications for the interoperability of systems and components in the IPTV Security Solutions environment with respect to secure time.

*Device Identity and Device and Subscriber Authentication Interoperability Specification (ATIS-0800037)*

Provides a format and syntax for IPTV device identities. It also profiles the IETF Extensible Authentication Protocol (EAP) to produce a new EAP method that enables interoperable device and subscriber authentication, including the binding of a subscriber to one or more devices.

*DRM Server-Side Application Programming Interfaces (ATIS-0800039)*

Supports the interoperable implementation by multiple vendors of Server-Side Middleware and Conditional Access System (CAS)/Digital Rights Management (DRM) systems. This document was updated in August 2010 to create an XML element for each XML type entity that represents an API message.

## **QUALITY OF SERVICE AND QUALITY OF EXPERIENCE**

### *Framework for QoS Metrics and Measurements Supporting IPTV Services (ATIS-0800004)*

Serves as a basis for definitions of Quality of Service (QoS)/Quality of Experience (QoE) related to different segments of the network, different service instances or invocations, network architectures/technologies utilized and modes of service. The document offers an overview and concepts related to the following: measurement model and measurement points; quality layers, protocol stack view and use cases; types, characteristics and definitions of metrics; a QoS/QoE Model; measurement practices and methodologies; and time and frequency synchronization requirements for ensuring QoS/QoE and enabling metrics measurement.

### *QoS Metrics for Linear Broadcast IPTV (ATIS-0800008)*

QoS metrics for linear broadcast IPTV, including video, audio and the synchronization between audio and video. Identifies measurement points, applicable measurements and measurement methodologies. This document was updated in April 2011 to provide an initial set of IPTV-related content quality metrics for both video and audio and define metrics' availability and reliability for different protocol stacks and encryption levels.

### *QoS Metrics and Measurements for Public Services for IPTV (ATIS-0800011)*

Provides QoS metrics, measurement points, applicable measurements and measurement methodologies for emergency Information (e.g. EAS), Closed Captioning, Content Advisories, and V-Chip Technology for IPTV.

### *Test Plan for Evaluation of Quality Models for IPTV Services (ATIS-0800025)*

Describes subjective and objective test plans appropriate for the formal evaluation of objective video quality prediction algorithms.

### *Fault Codes for IPTV (ATIS-0800028)*

Defines a standard set of fault codes that cause the improper functioning of an IPTV service or component. The type of fault is a vital input to service assurance, test, fault and performance operations and systems.

### *Technical Report on a Validation Process for IPTV Perceptual Quality Measurements (ATIS-0800035)*

Discusses a proposed test process for IPTV Perceptual Quality Measurements (PQMs). It describes the industry standards test process currently followed, indicates its shortcomings, and suggests solutions for the identified weaknesses. The proposed process is flexible and is believed to address market needs better than the current process.

### *IPTV MPEG Transport Stream Monitoring (ATIS-0800040)*

A recommended practice provides a common methodology for describing Transport Stream conformance criteria. It explicitly describes the elements and parameters that should be verified in an ATIS IIF-compliant Transport Stream for it to be considered a proper emission.

### *Implementer's Guide to QoS Metrics (ATIS-0800041)*

Provides guidance to network providers and service providers on how to use ATIS IIF standard Quality of Service metrics, Quality of Experience indicators, and fault codes in

testing and performance monitoring to run their IPTV services and bolster customer satisfaction. This version of the document focuses on Linear (broadcast) IPTV service.

### **TEST CASE SUITE**

Provides test cases to test the interoperability between key components of the ATIS IIF IPTV architecture. Interfaces for testing are specified in terms of references to the appropriate ATIS IIF specifications. This suite of tests cases cover the following areas: Network Attachment and Initialization of Devices (*ATIS-0800048*), *Linear TV Service (ATIS-0800049)*, *Content on Demand Service (ATIS-0800050)*, and *Remote Management of Devices (ATIS-0800051)*. An overview of all test cases is provided in *ATIS-0800047*.

### **ALL IIF COMMITTEES**

*IPTV Glossary (ATIS-0800027)*

Provides a collection of ATIS IIF acronyms, terms, and definitions.