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Digital transmission of television signals

Digital Program Insertion–Advertising Systems Interfaces: Part 7 – Message Transport

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Recommendation ITU-T J.380.7 (ex J.dpi-asi-7)

Digital Program Insertion–Advertising Systems Interfaces: Part 7 – Message Transport

Summary

This document describes the Digital Program Insertion Advertising Systems Interfaces' transport protocols required for the exchange of messages defined in the individual parts of the J.380 Sub-series of Recommendations.

NOTE - Security issues surrounding the transport protocols defined herein have been purposely omitted and are considered outside of the scope of this document.

Keywords

None

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Draft new Recommendation ITU-T J.380.7 (ex J.dpi-asi-7)

Digital Program Insertion—Advertising Systems Interfaces: Part 7 – Message Transport

Introduction

ITU-T J.380.7 describes implementation details for the Digital Program Insertion Advertising Systems Interfaces' message transport. Two transport mechanisms are described herein. Only one of the two transport mechanisms defined in this document is required for implementing J.380 compliant services. The second transport protocol defined herein is optional, but is a highly recommended second choice for all implementations.

ITU-T J.380.7 provides a detailed description of two separate transport mechanisms. Each subsequent Clause focuses on the description of a particular transport mechanism, and provides links to concrete implementation examples in the Appendices.

Clause 5 explains this document's notational conventions and identifies the processing conventions, and defines the XML namespace usage and the applicable XML semantics. Clause 6 introduces reliable network delivery and Clause 7 introduces the J.380 transport protocols followed by Appendix I, which contain non-normative information regarding the SOAP and TCP transport types.

1 Scope

This document describes the Digital Program Insertion Advertising Systems Interfaces' transport protocols required for the exchange of messages defined in the individual parts of the J.380 specification.

NOTE - Security issues surrounding the transport protocols defined herein have been purposely omitted and are considered outside of the scope of this document.

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.

- | | |
|-----------------|---|
| [ITU-T J.380.2] | ITU-T J.380.2 (2011), <i>Digital Program Insertion—Advertising Systems Interfaces: Part 2 - Core Data Elements</i> . |
| [ITU-T J.380.3] | ITU-T J.380.3 (2011), <i>Digital Program Insertion—Advertising Systems Interfaces: Part 3 – Ad Management Service (ADM) Interface</i> . |
| [ITU-T J.380.4] | ITU-T J.380.4 (2011), <i>Digital Program Insertion – Advertising Systems Interfaces: Part 4 – Content Information Service (CIS) Interface</i> . |

[W3C – SOAP1.1]	W3C Recommendation (2000), <i>Simple Object Access protocol (SOAP) 1.1</i> .
[W3C – SOAP1.2]	W3C Recommendation (2007), <i>SOAP Version 1.2 Part 1: Messaging Framework (Second Edition)</i> .
[IETF STD 5]	(Originally RFC791) <i>Internet Protocol</i> . September 1981. DARPA Internet Program Protocol Specification.
[IETF STD 7]	(Originally RFC793) <i>Transmission Control Protocol</i> . September 1981. DARPA Internet Program Protocol Specification.
[SCTE 130-7 Schema]	SCTE 130-7 Schema file

3 Definitions

Throughout this standard the terms below have specific meanings. Because some of the terms are defined in other J.380 documents having very specific technical meanings, the reader is referred to the original source for their definition. For terms defined by this standard, brief definitions are given below.

All [ITU-T J.380.2] definitions are included herein. See [ITU-T J.380.2] for additional information.

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere: none.

3.2 Terms defined in this Recommendation

This Recommendation defines the following terms:

3.2.1 Character DATA (CDATA): XML data that is not parsed. CDATA carries markup examples that would otherwise be interpreted as XML because of the tags.

3.2.2 Document Object Model (DOM): A specification for a programming interface (API) from the W3C that allows programs and scripts to update the content, structure and style of HTML and XML documents.

3.2.3 Dynamic Invocation Interface (DII): A method of accessing web service resources through low level application programming interface (API) functions.

3.2.4 Hypertext Transfer Protocol (HTTP): The underlying protocol used by the World Wide Web. HTTP defines how messages are formatted and transmitted, and what actions Web Servers and browsers should take in response to various commands.

3.2.5 HTTP over SSL or HTTP Secure (HTTPS): is the use of Secure Socket Layer (SSL) or Transport Layer Security (TLS) as a sub-layer under regular HTTP application layering.

3.2.6 Internet Protocol (IP): A protocol by which data is sent from one computer to another computer over a network.

3.2.7 Remote Procedure Call (RPC): A protocol that one program can use to request a service from a program located in another computer in a network without having to understand network details.

3.2.8 Simple Object Access Protocol / Service Oriented Architecture Protocol (SOAP): A way for a program executing in one kind of operating system to communicate with a program executing in the same or another kind of operating system by using the World Wide Web's

Hypertext Transfer Protocol (HTTP) and its Extensible Markup Language (XML) as the mechanisms for information exchange.

3.2.9 Transmission Control Protocol (TCP): A set of rules used along with IP to send data in the form of message units between computers over the Internet.

3.2.10 Web Services Description Language (WSDL): A XML based general purpose language for describing interfaces, protocol bindings, and deployment details of network services.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

All [ITU-T J.380-2] abbreviations are included herein. See [ITU-T J.380.2] for additional information. Further to those:

CDATA	Character DATA
DII	Dynamic Invocation Interface
DOM	Document Object Model
HTTP	Hypertext Transfer Protocol
HTTPS	HTTP over SSL or HTTP Secure
IP	Internet Protocol
RPC	Remote Procedure Call
SOAP	Simple Object Access Protocol / Service Oriented Architecture Protocol
SSL	Secure Socket Layer
TCP	Transmission Control Protocol
TLS	Transport Layer Security
WSDL	Web Services Description Language

5 Conventions

5.1 Notational conventions

5.1.1 Normative XML schema

See [ITU-T J.380.2] for information.

5.1.2 Document conventions

This specification utilizes the same document conventions as [ITU-T J.380.2]. See [ITU-T J.380.2] for conventions and XML schema illustrations nomenclature explanations.

5.2 Processing conventions

Unknown/Unrecognized/Unsupported XML Elements and Attributes. See [ITU-T J.380-2] for information.

5.3 XML namespaces

This specification uses the 'trans' prefix, as described in Table 1, for the interface associated with the specific XML namespace URI that shall be used by all implementations. Table 1 lists the prefix, the corresponding namespace, and a description of the defining specification used herein.

Table 1 - XML Namespace Declarations

Prefix	Namespace	Description
core	http://www.scte.org/schemas/130-2/2008a/core	See [ITU-T J.380.2]
trans	http://www.scte.org/schemas/629-7/2008/trans	ITU-T J.380.7 (this Recommendation)
env	http://schemas.xmlsoap.org/soap/envelope	See [W3C – SOAP1.1]
soap-env	http://www.w3.org/2003/05/soap-envelope	See [W3C – SOAP1.2]
xsd	http://www.w3.org/2001/XMLSchema	See [XMLSchemaP1] and [XMLSchemaP2] from [ITU-T J.380.2]

Unless otherwise stated, all references to XML elements illustrated in this document are from the 'trans' namespace. Elements from other namespaces will be prefixed with the name of the external namespace, e.g. <core:XXXX>.

6 Reliable message delivery

Message delivery, as defined in [ITU-T J.380.2], describes the concept of reliable message acquisition through the use of positive message acknowledgement with the possibility of message retransmission. Each ITU-T J.380.x top level request and/or notification message has a corresponding response and/or acknowledgement message. In addition, the specification allows for the concept of message retransmission via the @resend attribute.

When combined with a communication protocol such as TCP, truly reliable message delivery between cooperating services can be achieved. Figure 1 illustrates the conceptual layering of services involved in reliable message delivery using TCP, with an additional layer for packet definition and routing.

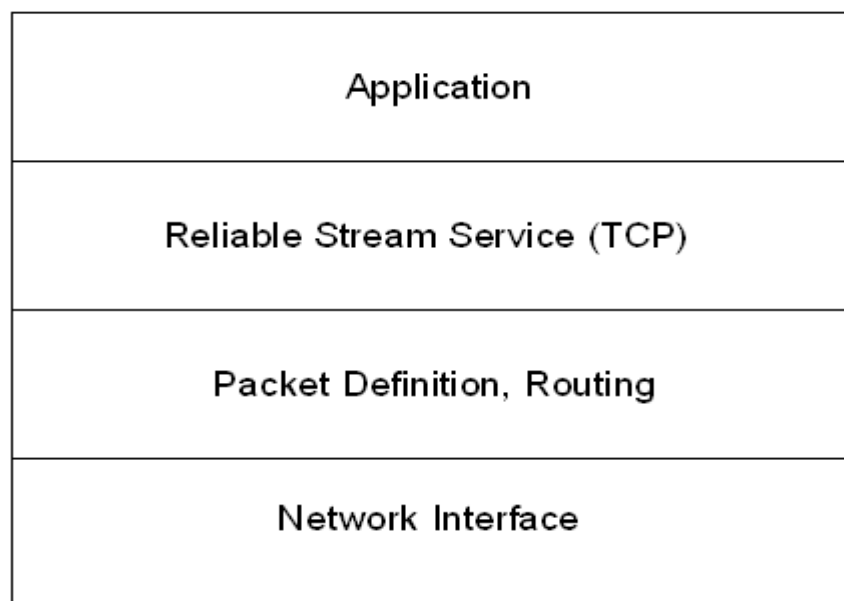


Figure 1 - Network Layering

Each of the transport mechanisms described herein depend on the use of the reliable stream service (TCP) at some layer within their transport implementation. Thus, the use of TCP, or more specifically, TCP along with IP for packet definition and routing, becomes the de facto standard for message delivery within this specification.

7 ITU-T J.380.7 message transport types

The following Clauses describe three J.380.7 specified transport types for message delivery between cooperating J.380 services.

J.380 service implementations shall implement the SOAP protocol, described in Clause 7.2, and should implement the TCP protocol described in Clause 7.3.

7.1 Transport types

The core:Address element described in [ITU-T J.380.2] may contain an @type attribute that identifies the transport type associated with the specified address. The @type attribute shall be used and shall appear exactly as it does in Table 2 for the application selected transport protocol.

Table 2 - Address Types

Transport Type	Description
SOAP1.1	SOAP transport protocol identifier for [W3C – SOAP1.1]
SOAP1.2	SOAP transport protocol identifier for [W3C – SOAP1.2]
TCP	TCP transport protocol identifier
...	User defined and outside the scope of this specification. The string shall be prefixed with the text "private:".