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SERIES H: AUDIOVISUAL AND MULTIMEDIA SYSTEMS

IPTV multimedia services and applications for IPTV –
IPTV multimedia application frameworks

Packaged IPTV application (widget) service

Recommendation ITU-T H.765

ITU-T

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Recommendation ITU-T H.765

Packaged IPTV application (widget) service

Summary

Packaged internet protocol television (IPTV) applications (IPTV widgets) are lightweight applications, provided with a simple and easily accessible graphical user interface (GUI), that commonly provide a single functionality (e.g., calendars, feed aggregators, etc.) and might stay persistently exhibited.

IPTV widgets may run on different types of IPTV terminal devices and therefore standardized technologies must be supported by the widget engine in the terminal device. Recommendation ITU-T H.765 describes IPTV widget services that are developed using the technologies defined in the ITU-T H.760 multimedia application framework (MAFR) series, such as nested context language (NCL) (Recommendation ITU-T H.761), LIME (Recommendation ITU-T H.762), HTML (new MAFR ITU-T Recommendation under study), cascading style sheets (CSS) (Recommendation ITU-T H.763.1), Services enhanced scripting language (SESL) (Recommendation ITU-T H.764) and Lua (new MAFR ITU-T Recommendation under study). The widget service also takes advantage of functionalities described in the ITU-T H.721 IPTV terminal device basic model, as well as service discovery protocols and services specified in Recommendation ITU-T H.770.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
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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.

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Recommendation ITU-T H.765

Packaged IPTV application (widget) service

1 Scope

This Recommendation specifies the architecture and functional components needed for the provisioning of packaged IPTV application (widget) service. Widgets are lightweight applications, provided with a simple and easily accessible GUI, which commonly provide a single functionality (e.g., calendars, feed aggregators, etc.) and might stay persistently exhibited. The widget service definition relies on the interoperability and harmonization provided by IPTV multimedia application frameworks (MAFRs) [ITU-T H.760]. The scope of the recommendation comprises the definition of the IPTV packaged application model and the definition of essential service components such as service discovery, packaging, metadata and security.

The target terminal device types range from the basic model as specified in [ITU-T H.721] to full-fledged terminal devices, which are defined in [ITU-T H.722].

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.

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|-----------------|--|
| [ITU-T H.721] | Recommendation ITU-T H.721 (2015), <i>IPTV terminal devices: Basic model</i> . |
| [ITU-T H.722] | Recommendation ITU-T H.722 (2014), <i>IPTV terminal devices: Full-fledged model</i> . |
| [ITU-T H.760] | Recommendation ITU-T H.760 (2009), <i>Overview of multimedia application frameworks for IPTV services</i> . |
| [ITU-T H.761] | Recommendation ITU-T H.761 (2014), <i>Nested context language (NCL) and Ginga-NCL</i> . |
| [ITU-T H.762] | Recommendation ITU-T H.762 (2011), <i>Lightweight interactive multimedia framework for IPTV services</i> . |
| [ITU-T H.763.1] | Recommendation ITU-T H.763.1 (2010), <i>Cascading style sheets for IPTV services</i> . |
| [ITU-T H.764] | Recommendation ITU-T H.764 (2012), <i>IPTV services enhanced script language</i> . |
| [ITU-T H.770] | Recommendation ITU-T H.770 (2015), <i>Mechanisms for service discovery and selection for IPTV services</i> . |
| [ITU-T X.509] | Recommendation ITU-T X.509 (2012), <i>Information technology – Open Systems Interconnection – The Directory: Public-key and attribute certificate frameworks</i> . |
| [IETF RFC 5246] | IETF RFC 5246 (2008), <i>The Transport Layer Security (TLS) Protocol Version 1.2</i> . |

- [IETF RFC 7230] IETF RFC 7230 (2014), *Hypertext Transfer Protocol (HTTP/1.1): Message Syntax and Routing*.
- [W3C Widgets] W3C Recommendation (2012), *Packaged Web Apps (Widgets) – Packaging and XML Configuration (Second Edition)*.
- [W3C WidgetsDigSig] W3C Recommendation (2013), *XML Digital Signatures for Widgets*.

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

3.1.1 content delivery network (CDN) [b-ITU-T F.750]: A network optimized for delivering digital content.

3.1.2 content provider [b-ITU-T Y.1910]: The entity that owns or is licensed to sell content or content assets.

3.1.3 end-user [b-ITU-T Y.1910]: The actual user of the products or services.

NOTE – An end-user consumes the product or service. An end-user can optionally be a subscriber.

3.1.4 key [b-ITU-T X.800]: A sequence of symbols that controls the operations of encipherment and decipherment.

3.1.5 IPTV terminal device [b-ITU-T Y.1901]: A terminal device which has ITF functionality, e.g., a set top box (STB).

3.1.6 metadata [b-ITU-T Y.1901]: Structured, encoded data that describe characteristics of information-bearing entities to aid in the identification, discovery, assessment, and management of the described entities.

3.1.7 multimedia [b-ITU-T J.148]: The combination of multiple forms of media such as audio, video, text, graphics, fax, and telephony in the communication of information.

3.1.8 network provider [b-ITU-T Y.1910]: The organization that maintains and operates the network components required for IPTV functionality.

NOTE 1 – A network provider can optionally also act as service provider.

NOTE 2 – Although considered as two separate entities, the service provider and the network provider can optionally be one organizational entity.

3.1.9 service [b-ITU-T Y.1901]: A set of functionalities enabled by a provider for end-users.

3.1.10 service provider [b-ITU-T M.1400]: A general reference to an operator that provides telecommunication services to customers and other users either on a tariff or contract basis. A service provider may or may not operate a network. A service provider may or may not be a customer of another service provider.

NOTE – In the context of IPTV systems, typically, the service provider acquires or licenses content from content providers and packages this into a service that is consumed by the end-user.

3.1.11 terminal device (TD) [b-ITU-T Y.1901]: An end-user device which typically presents and/or processes the content, such as a personal computer, a computer peripheral, a mobile device, a TV set, a monitor, a VoIP terminal or an audio-visual media player.

3.1.12 user interface (UI) [b-ITU-T F.902]: Software and hardware components through which a user can interact with a system.

3.2 Terms defined in this Recommendation

This Recommendation defines the following terms:

3.2.1 IPTV widget: See packaged IPTV application.

3.2.2 packaged IPTV application: Lightweight application that is intended to be used frequently, such as calendars and news aggregators, with an easily accessible graphical user interface (GUI), often staying on the terminal device display.

3.2.3 widget engine: Software layer that provides features so that widgets can run on a certain user platform (i.e., an IPTV terminal device).

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

AES	Advanced Encryption Standard
CSS	Cascading Style Sheets
EPG	Electronic Program Guide
GUI	Graphical User Interface
HTTP	Hypertext Transfer Protocol
HTTPS	Hypertext Transfer Protocol Secure
IPTV	Internet Protocol Television
LIME	Lightweight Interactive Multimedia Framework
MAFR	Multimedia Application Framework
NCL	Nested Context Language
RSA	Rivest-Shamir-Adleman
SESL	Services Enhanced Script Language
SHA	Secure Hash Algorithm
SSL	Secure Sockets Layer
TLS	Transport Layer Security

5 Conventions

None.

6 Introduction

Widget is the definition used for an interactive element of a GUI that displays an information arrangement. The origin of the term "widget" comes from the short for "window gadget", and it was first applied to user interface elements on documents from Project Athena in 1988 [b-Athena]. The term widget is also commonly used to specify an element different from basic GUI components because it provides a single interaction point for the direct manipulation of data in a particular context, but as visual components, widgets can be combined to form an application, or may be used separately, as individual applications. Interactive buttons, sliders, boxes, menus, and other components may be called widgets [b-WidgetsIntro]. However, recently the term is more often used to name a *lightweight application* (e.g., stock market monitor, weather forecast, calculator, news aggregator, etc.) that is usually packaged into a single file to facilitate its provision, transport, and installation.

Web widget, as a "packaged web app" [b-W3C WidgetsReqs], is an interactive single-purpose application for displaying and/or updating local data or data on the Web, packaged in a way to allow a single download and installation on a user's system. However, widgets are used on many