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SERIES H: AUDIOVISUAL AND MULTIMEDIA SYSTEMS

IPTV multimedia services and applications for IPTV –
IPTV terminal devices

IPTV terminal device: Full-fledged model

Recommendation ITU-T H.722



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Recommendation ITU-T H.722

IPTV terminal device: Full-fledged model

Summary

Recommendation ITU-T H.722 describes the services and key features of the full-fledged Internet Protocol TV terminal device (IPTV TD) defined in Recommendation ITU-T H.720. In comparison with the IPTV TD-basic model defined in Recommendation ITU-T H.721, the full-fledged IPTV TD supports not only such basic services as linear TV and video-on-demand (VoD), but also advanced services such as Internet, medical applications, communications, etc. Based on these services and key features, this Recommendation specifies the architecture of the full-fledged IPTV TD, functional components within its architecture, software architecture for implementation reference and physical interfaces.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
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FOREWORD

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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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As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at <http://www.itu.int/ITU-T/ipr/>.

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Recommendation ITU-T H.722

IPTV terminal device: Full-fledged model

1 Scope

This Recommendation describes and specifies the functionalities of the IPTV terminal device (IPTV TD) for the IPTV full-fledged services defined in [ITU-T H.720]. This Recommendation is targeted at IPTV TDs that support more than the basic services supported by the IPTV TD-basic model defined in [ITU-T H.721]. The basic services include receiving linear TV services and video-on-demand services, with additional data content (such as text) using a managed content delivery network. The IPTV TD full-fledged model supports advanced services such as Internet services, medical applications, communication services, etc.

The expected types of IPTV terminal devices are set-top boxes and digital TV sets with embedded IPTV capabilities.

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 H.622.1] Recommendation ITU-T H.622.1 (2008), *Architecture and functional requirements for home networks supporting IPTV services*.
- [ITU-T H.720] Recommendation ITU-T H.720 (2008), *Overview of IPTV terminal devices and end systems*.
- [ITU-T H.721] Recommendation ITU-T H.721 (2009), *IPTV terminal devices: Basic model*.
- [ITU-T H.730] Recommendation ITU-T H.730 (2012), *Web-based terminal middleware for IPTV services*.
- [ITU-T H.741.0] Recommendation ITU-T H.741.0 (2012), *IPTV application event handling: Overall aspects of audience measurement for IPTV services*.
- [ITU-T H.741.1] Recommendation ITU-T H. 741.1 (2012), *IPTV application event handling: Audience measurement operations for IPTV services*.
- [ITU-T H.741.2] Recommendation ITU-T H. 741.2 (2012), *IPTV application event handling: Data structures of audience measurement for IPTV services*.
- [ITU-T H.741.3] Recommendation ITU-T H. 741.3 (2012), *IPTV application event handling: Audience measurement for IPTV distributed content services*.
- [ITU-T H.741.4] Recommendation ITU-T H. 741.4 (2012), *IPTV application event handling: Transport mechanisms for audience measurement*.
- [ITU-T H.750] Recommendation ITU-T H.750 (2008), *High-level specification of metadata for IPTV services*.
- [ITU-T H.760] Recommendation ITU-T H.760 (2009), *Overview of multimedia application frameworks for IPTV services*.

- [ITU-T H.761] Recommendation ITU-T H.761 (2011), *Nested context language (NCL) and Ginga-NCL*.
- [ITU-T H.762] Recommendation ITU-T H.762 (2011), *Lightweight interactive multimedia environment (LIME) for IPTV services*.
- [ITU-T H.763.1] Recommendation ITU-T H.763.1 (2010), *Cascading style sheets for IPTV services*.
- [ITU-T H.764] Recommendation ITU-T H.764 (2012), *IPTV services enhanced script language*.
- [ITU-T H.770] Recommendation ITU-T H.770 (2009), *Mechanisms for service discovery and selection for IPTV services*.
- [ITU-T X.1191] Recommendation ITU-T X.1191 (2009), *Functional requirements and architecture for IPTV security aspects*.
- [ITU-T Y.1901] Recommendation ITU-T Y.1901 (2009), *Requirements for the support of IPTV services*.
- [ITU-R BT.2052] Recommendation ITU-R BT.2052 (2005), *Protection of end-users privacy in interactive broadcasting systems*.

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

3.1.1 client personal video recorder (cPVR) [ITU-T Y.1901]: Same as PVR except that the recording device is located at the end-user's premises.

3.1.2 distributed PVR (dPVR) [ITU-T H.720]: Multiple instances of PVR, where a combination of cPVRs and nPVRs can be used to record and store video, audio, and other associated data for subsequent playback. For example, this usually occurs within a home network containing multiple cPVRs in order to distribute storage of video, audio, and other data.

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

NOTE 1 – The end user consumes the product or service. An end user can optionally be a subscriber.

3.1.4 Internet Protocol television (IPTV) [ITU-T Y.1901]: Multimedia services such as television/video/audio/text/graphics/data delivered over IP-based networks managed to support the required level of QoS/QoE, security, interactivity and reliability.

3.1.5 IPTV terminal device [ITU-T Y.1901]: A terminal device which has ITF functionality, e.g., an STB.

3.1.6 IPTV terminal function (ITF) [ITU-T Y.1901]: The end user function(s) associated with a) receiving and responding to network control channel messages regarding session set-up, maintenance, and teardown, and b) receiving the content of an IP transport from the network and rendering.

3.1.7 linear TV [ITU-T Y.1901]: A television service in which a continuous stream flows in real time from the service provider to the terminal device and where the user cannot control the temporal order in which contents are viewed.

3.1.8 middleware [ITU-T Y.1901]: A layer of software between applications and resources, which consists of a set of service enablers that allow multiple functionalities running on one or more devices in an IPTV system to interact across a network.

3.1.9 network personal video recorder (nPVR) [ITU-T Y.1901]: Same as PVR except that the recording device is located at the service provider premises.

3.1.10 personal video recorder (PVR) [ITU-T Y.1901]: An end-user controlled device that records, stores and plays back multimedia content. PVR is also known as personal digital recorder (PDR).

3.1.11 picture-in-picture (PIP) [ITU-T Y.1901]: One programme is displayed on the full-sized IPTV TD screen, one or more other programmes are simultaneously displayed in inset windows.

3.1.12 push VoD [ITU-T Y.1901]: A TV service where multimedia content is packaged and delivered at the discretion of the service provider to the end user's storage system.

3.1.13 service and content protection (SCP) [ITU-T Y.1901]: A combination of service protection and content protection.

3.1.14 terminal device (TD) [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.

3.1.15 time shifting [ITU-T Y.1901]: A function which allows playback of content after its initial transmission.

3.1.16 trick mode functionality [ITU-T Y.1901]: The ability to pause, rewind or forward stored content.

3.1.17 TV with trick mode [ITU-T Y.1901]: TV service with trick mode functionality.

3.2 Terms defined in this Recommendation

This Recommendation defines the following terms:

3.2.1 full-fledged IPTV terminal device: A full-fledged IPTV terminal device (IPTV TD) has the capabilities to support advanced IPTV services as well as the basic IPTV services.

3.2.2 full-screen display mode: In this mode, the whole display area of the display device is occupied by the output content of the IPTV terminal function (ITF) inside the full-fledged IPTV terminal device. The output content of other non-IPTV applications is not displayed in the display device of the full-screen display mode. The input devices are all operating instructions delivered to the IPTV software application.

3.2.3 supplementary IPTV service: An enhanced IPTV service (e.g., gaming, medical services, video telephony, etc.) which needs more capabilities than provided by the basic service components, including metadata, media management, etc. A supplementary IPTV service may be based on a combination of basic service components, additional service components (e.g., text-to-speech and voice recognition), or even directly OS-based resources.

3.2.4 window display mode: In this mode, the output content of the IPTV terminal function (ITF) inside the full-fledged IPTV terminal device occupies a given display area (which is normally a rectangular area) of the display device. The remaining area is used to display the output content of other non-IPTV software applications based on the operating system (OS).

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

A/V	Audio/Visual
ARQ	Automatic Repeat Query
CPU	Central Processing Unit