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International Telecommunication Union
Standardization Sector

Recommendation

ITU-T J.1112 (07/2023)

SERIES J: Cable networks and transmission of television, sound programme and other multimedia signals

Switched digital video over cable networks

Functional requirements for IP-based digital video convergence service

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Recommendation ITU-T J.1112

Functional requirements for an IP-based digital video convergence service

Summary

Recommendation ITU-T J.1112 specifies functional requirements of a digital video convergence service (DVCS) based on the Internet protocol (IP) including IP-based switched digital video technologies taking into consideration a convergence environment.

As digital broadcasting services have been rapidly deployed, many service operators are considering more effective transmission of digital broadcasting services. Recently, digital broadcasting services have been changed to use resources efficiently and transmit them to easily accommodate the varying needs and environments of subscribers. Therefore, it is necessary to redefine the advanced IP-based DVCS to maintain quality of service (QoS) and using bandwidth effectively for transmission on broadband network environment.

The IP-based DVCS is a service mechanism for distributing digital video via IP-based broadband networks. It is the service mechanism for providing interfaces and functionalities to enable the service operators to offer QoS-guaranteed broadcasting to subscribers via IP-based converged broadband networks.

History *

Edition	Recommendation	Approval	Study Group	Unique ID
1.0	ITU-T J.1112	2023-07-14	9	11.1002/1000/15582

Keywords

Digital broadcasting, digital video convergence service, IP.

* To access the Recommendation, type the URL https://handle.itu.int/ in the address field of your web browser, followed by the Recommendation's unique ID.

FOREWORD

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

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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In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure, e.g., interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

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Functional requirements for IP-based digital video convergence service

1 Scope

This Recommendation specifies functional requirements of a digital video convergence service (DVCS) based on the Internet protocol (IP) taking into consideration a converged broadband environment. The functionalities described in this Recommendation are specified according to [ITU-T J.1111]. The IP-based DVCS takes into consideration a converged environment as the service mechanism for providing interfaces and functionalities to enable service operators to offer quality of service-guaranteed broadcasting. It is a service mechanism for distributing digital video via IP-based broadband networks considering convergence service.

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.1111] Recommendation ITU-T J.1111 (2022), *Requirements for the advanced IP-based digital video convergence service*.

3 Definitions

None.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

DVCS Digital Video Convergence Service

IP Internet Protocol

5 Conventions

In this Recommendation:

The phrase "**is required**" indicates a requirement that must be strictly followed and from which no deviation is permitted if conformance to this Recommendation is to be claimed.

The phrase "**is recommended**" indicates a requirement that is recommended but which is not absolutely required. Thus, this requirement need not be present to claim conformance.

The phrase "**is prohibited**" indicates a requirement that must be strictly followed and from which no deviation is permitted if conformance to this Recommendation is to be claimed.

The phrase "**can optionally**" indicates an optional requirement that is permissible, without implying any sense of being recommended. This term is not intended to imply that the vendor's implementation must provide the option and the feature can be optionally enabled by the network operator or service provider. Rather, it means the vendor may optionally provide the feature and still claim conformance with the specification.

In this Recommendation, the words *shall*, *shall not*, *should* and *may* sometimes appear, in which case they are to be interpreted, respectively, as *is required*, *is prohibited*, *is recommended*, and *can optionally*. The appearance of such phrases or verbal forms in an appendix or in material explicitly marked as informative are to be interpreted as having no normative intent.

6 Overview

A DVCS should be able to incorporate functions for transmission and its control. The DVCS transmission function should be able to generate transmission information for the convergence service and generate configuration information of a service delivered to a transmission network such as a broadcasting or communication network according to the transmission information. The DVCS transmission function should be able to receive the content for the DVCS conforming to the media storage standard format. In addition, it should be possible to create a segment suitable for convergence transmission based on the received content, packetize it into a form suitable for convergence transmission protocol, and generate related metadata. The DVCS transmission control function should be able to determine the operation policy so that the convergence service can be transmitted based on information about service use and information related to service operation. In addition, it should be possible to coordinate system parameters related to interworking relationships between convergence services and efficient service transmission. The DVCS transmission control function should be able to receive service usage information from the convergence transmission receiver and determine the service transmission method by reflecting the transmission network usage status of the receiver, network load and characteristics of the service to be transmitted.

7 DVCS transmission function

7.1 [DVCS-TR-FSPEC-001] The DVCS transmission function is recommended to receive convergence service contents in the form of standard media file formats from the file system.

7.2 [DVCS-TR-FSPEC-002] The DVCS transmission function is recommended to receive convergence service configuration information and metadata from the convergence transmission control function.

7.3 [DVCS-TR-FSPEC-003] The DVCS transmission function is recommended to receive parameters for signalling and multiplexing from the convergence transmission control function.

7.4 [DVCS-TR-FSPEC-004] The DVCS transmission function is recommended to transmit the packetized media transport stream.

7.5 [DVCS-TR-FSPEC-005] The DVCS transmission function is recommended to transmit the signalling data.

8 DVCS transmission control function

8.1 [DVCS-TC-FSPEC-001] The DVCS transmission control function is recommended to efficiently operate network and control services.

8.2 [DVCS-TC-FSPEC-002] The DVCS transmission control function is recommended to generate data and control information required for service signalling related to transmission.

8.3 [DVCS-TC-FSPEC-003] The DVCS transmission control function is recommended to coordinate system parameters related to efficient service delivery.

8.4 [DVCS-TC-FSPEC-004] The DVCS transmission control function is recommended to determine a service transmission method by receiving service use information from the receiver and reflecting the receiver's transmission network usage status, network load, and characteristics of the service to be transmitted.

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