

Recommendation

ITU-T J.153 (06/2024)

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

Digital television distribution through local subscriber networks

System architecture for cable television services to use IMT-2020 radio system

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For further details, please refer to the list of ITU-T Recommendations.

Recommendation ITU-T J.153

System architecture for cable television services to use IMT-2020 radio system

Summary

In Recommendation ITU-T J.153, four functional components of adaptive multicast-broadcast services (MBS) are described and the system architecture is defined to meet the four system requirements specified in Recommendation ITU-T J.152 *Requirements for cable television services to use IMT-2020 radio systems*, namely efficiency, reliability, robustness, and latency.

History*

Edition	Recommendation	Approval	Study Group	Unique ID
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5G, cable television network, cable television system, IMT-2020.

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Introduction (informative)

This Recommendation is Part 2 of a multi-part deliverable covering the system architecture for cable television services to use IMT-2020 radio systems, as identified below:

Part 1: Requirements

Part 2: System architecture

In recent years there have been issues in the environment surrounding cable television. In the case of older apartment complexes, it is necessary to improve the facilities and cables inside the buildings to become more broadband capable. In addition, the community broadcasting facilities in suburbs require high levels of equipment renewal costs due to aging, and even more costs would be required to extend them to remote areas.

To overcome these issues, it is realistic to use radio technologies being developed in ITU-R and elsewhere. In fact, 3GPP, an international standardization body for mobile radio technology, is developing technologies called multimedia broadcast and multicast service (MBMS) for 4G and multicast and broadcast services (MBS) for 5G for use with mobile as well as fixed reception of broadcasting services.

This Recommendation specifies the system architecture in response to a companion Recommendation ITU-T J.152, which defines the requirements for cable television services that use 5G radio systems. This architecture is fully compliant with the technical specifications of MBS (mainly release 17) specified by 3GPP, and is intended to establish 5G multi-channel video distribution services by cable television operators.

Recommendation ITU-T J.153

System architecture for cable television services to use IMT-2020 radio system

1 Scope

This Recommendation defines system architecture for cable television services to use the IMT-2020 radio system, based on the requirements as described in [ITU-T J.152].

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.265] Recommendation ITU-T H.265 (V10) (2024), *High efficiency video coding*.
- [ITU-T H.266] Recommendation ITU-T H.266 (V3) (2023), *Versatile video coding*.
- [ITU-T J.152] Recommendation ITU-T J.152 (2023), *Requirements for cable television services to use IMT-2020 radio systems*.
- [3GPP TS 23.247] 3GPP TS 23.247 V17.10.0 (2024), *Architectural enhancements for 5G multicast-broadcast services; Stage 2 (Release 17)*.
- [ATSC A/331] Advanced Television Systems Committee, ATSC Standard A/331:2024-04, *Signaling, Delivery, Synchronization, and Error Protection (3 April 2024)*.
- [IETF RFC 3926] IETF RFC 3926 (2004), *FLUTE – File Delivery over Unidirectional Transport (obsolete)*.
- [IETF RFC 6726] IETF RFC 6726 (2012), *FLUTE – File Delivery over Unidirectional Transport*.

3 Definitions

3.1 Terms defined elsewhere

None.

3.2 Terms defined in this Recommendation

None.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

3GPP	3 rd Generation Partnership Project
AF	Application Function
API	Application Programming Interface
APL	Application

BC	Broadcast
CTE	Chunk Transfer Encoding
ECG	Electronic Content Guide
EPG	Electronic Programme Guide
FEC	Forward Error Correction
FLUTE	File Delivery over Unidirectional Transport
fMP4	Fragmented MP4
FWA	Fixed Wireless Access
HEVC	High Efficiency Video Coding
HTTP	Hypertext Transfer Protocol
IEC	International Electrotechnical Commission
ISO	International Standardization Organization
ITU-T	International Telecommunication Union-Telecommunication Standardization Sector
LOS	Line Of Sight
MBMS	Multimedia Broadcast and Multicast Service
MBS	Multicast-Broadcast Services
MC	Multicast
MCS	Modulation and Coding Scheme
MPD	Media Presentation Description
MPEG	Moving Picture Experts Group
MPEG-DASH	MPEG Dynamic Adaptive Streaming over HTTP
NG-RAN	Next Generation-Radio Access Network
NTP	Network Time Protocol
O-RAN	Open Radio Access Network
QAM	Quadrature Amplitude Modulation
OTT	Over The Top
PSK	Phase Shift Keying
QoE	Quality of Experience
RF	Radio Frequency
RFC	Request for Comments
ROUTE	Real-time Object delivery over Unidirectional Transport)
RTP	Real-time Transport Protocol
RTSP	Real Time Streaming Protocol
TDD	Time Division Duplex
UC	Unicast
UDP	Uni-Directional Packet
UE	User Equipment