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**Keywords:** IPTV, multicast, open multicast network capability, requirements, architecture

**Abstract:** This TD contains the initial text of draft new Recommendation ITU-T H.IPTV-OpMcast "Requirements architecture for open IPTV multicast service" discussed at Q13/16 sessions of this SG16 meeting, held online from 17 to 28 January 2022.

This initial new draft Recommendation is based on the discussions of contribution SG16-C849 at this SG16 meeting, held online, 17-28 January 2022.

Document	Source	Title	Agreements
<a href="#">SG16-C849</a>	China Telecom, MIIT (China), ZTE	New: propose to initiate a work item H.IPTV-op-mcast for studying the requirements and service architecture for exposing IPTV multicast network capability	Proposal for new WI agreed.

**NOTE – Editorial adjustments performed by TSB.**

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# Draft New Recommendation ITU-T H.IPTV-OpMcast

## Requirements and architecture for open IPTV multicast service

### Summary

This Recommendation specifies the requirements and the referenced architecture of the open IPTV multicast service. In this Recommendation, two solutions are introduced for the different scenarios: a dedicated open IPTV multicast service system and an open interface of network capability expose for IPTV multicast network. The related functional component, requirements and the reference points are also defined accordingly.

With this Recommendation, IPTV service providers are able to expose their dedicated multicast network capability to the 3rd parties so that the OTT live broadcast service deployed on the public Internet could improve its QoE by taking advantage of the dedicated multicast network. Furthermore, new "live +" service may be developed based on the open multicast service defined in this Recommendation.

### Keywords

IPTV, Multicast, CDN, open multicast service, multicast network capability expose,

## 1 Scope

This Recommendation specifies the requirements and the architecture of the open IPTV multicast service, which includes:

- 1) The requirement and architecture of the dedicated open IPTV multicast service system.
- 2) The requirement and scenarios for IPTV multicast network capability exposing.
- 3) The related reference points and procedure flow.

## 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.

[ITU-T Y.1902] Recommendation ITU-T Y.1902 (2011), *Framework for multicast-based IPTV content delivery*.

[ITU-T Y.1910] Recommendation ITU-T Y.1910 (2008), *IPTV functional architecture*.

[ITU-T Y.2019] Recommendation ITU-T Y.2019 (2008), *Content delivery functional architecture in NGN*.

**TBD**

## 3 Definitions

### 3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

**TBD**

### 3.2 Terms defined in this Recommendation

This Recommendation defines the following terms:

**TBD**

### 4 Abbreviations and acronyms

This Recommendation uses the following abbreviations:

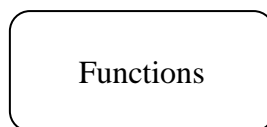
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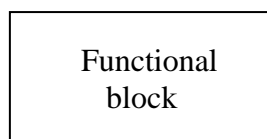
### 5 Conventions

The following conventions are used in this Recommendation:

- The keywords "is required to" indicate a requirement which must be strictly followed and from which no deviation is permitted, if conformance to this Recommendation is to be claimed.
- The keywords "is prohibited from" indicate a requirement which must be strictly followed and from which no deviation is permitted, if conformance to this Recommendation is to be claimed.
- The keywords "is recommended" indicate a requirement which is recommended but which is not absolutely required. Thus, this requirement need not be present to claim conformance.
- The keywords "is not recommended" indicate a requirement which is not recommended but which is not specifically prohibited. Thus, conformance with this Recommendation can still be claimed even if this requirement is present.
- The keywords "can optionally" indicate an optional requirement which 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/service provider. Rather, it means the vendor may optionally provide the feature and still claim conformance with this Recommendation.
- The keyword "functions" is defined as a collection of functionalities. It is represented by the following symbol in the context of IPTV architecture:



- The keyword "functional block" is defined as a group of functionalities that have not been further subdivided at the level of detail described in this Recommendation. It is represented by the following symbol in the context of IPTV architecture:



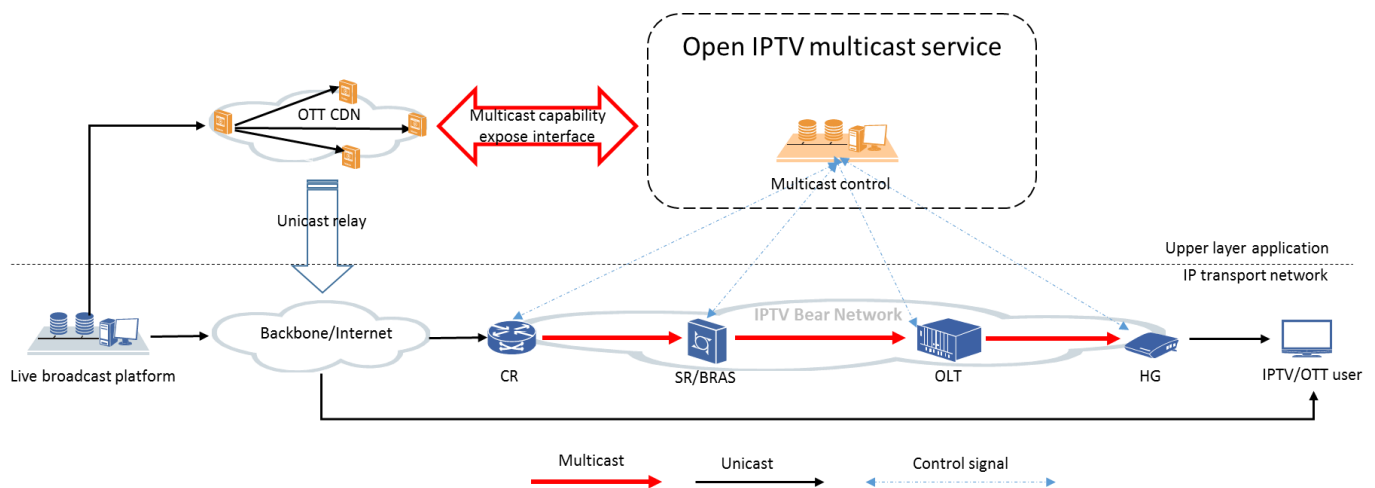
### 6 Overview

IPTV is a quality-guaranteed video/audio transmission service by taking advantage of an enclosed managed network. Usually, IP-multicast technology can be adopted in the IPTV dedicated network,

which is a managed network, to support the live broadcast service, such as linear TV or real-time communication service. A multicast dedicated network can reduce the broadband resource consumption and the number of back-to-source requests efficiently. But most of OTT live broadcast service cannot adopt the IP-multicast solution directly due to the problem such as multicast storm. Instead, CDN is an alternative solution to distribute the living stream to end-user by unicast relaying. However, OTT CDN can only deploy its edge nodes approximately close to the public network edge and OTT end-user still needs to connect to the CDN edge node by unicast. The traffic on the aggregation network and access network will increase gradually as the number of audience increases.

Currently, as the developing of the live broadcast service, many new features are involved in this service, such as VR, AR, interactive online promotion, influencer broadcasting, etc. These feature bring a strict requirement of the ultra-low latency for the end-to-end content delivery. Thus, this Recommendation introduces a reference architecture of an open multicast service which intends to expose the IPTV multicast network capability to the 3rd party live broadcast services.

Figure 6-1 shows an overview scenario of an open IPTV multicast service:



**Figure 6-1 – Scenario of open IPTV multicast service**

The open IPTV multicast service is responsible for allocating and reserving the multicast network resource for the OTT live broadcast service providers, according to their service features and requirements. It provides a content ingest interface for the live streaming and then deliver the live content package to the end-user device by multicast mode.

In this Recommendation, different solutions are introduced and the requirement, functional components and the reference points are specified accordingly.

*TBD(contributor note: more content in future contributions.)*

*Editor's note: regulatory aspects should be brought to attention somewhere in the overview. Clearly this is not the scope of this draft recommendation (SG16 Plen, 17-28, Jan, 2022)*

## 7 Requirements of open IPTV multicast service

### 7.1 The requirements of functional components

**TBD**

## 7.2 The requirements of capability expose interface

TBD

## 8 Dedicated open IPTV multicast system

### 8.1 System overview

Figure 8-1 shows the reference architecture of a dedicated open IPTV multicast system:

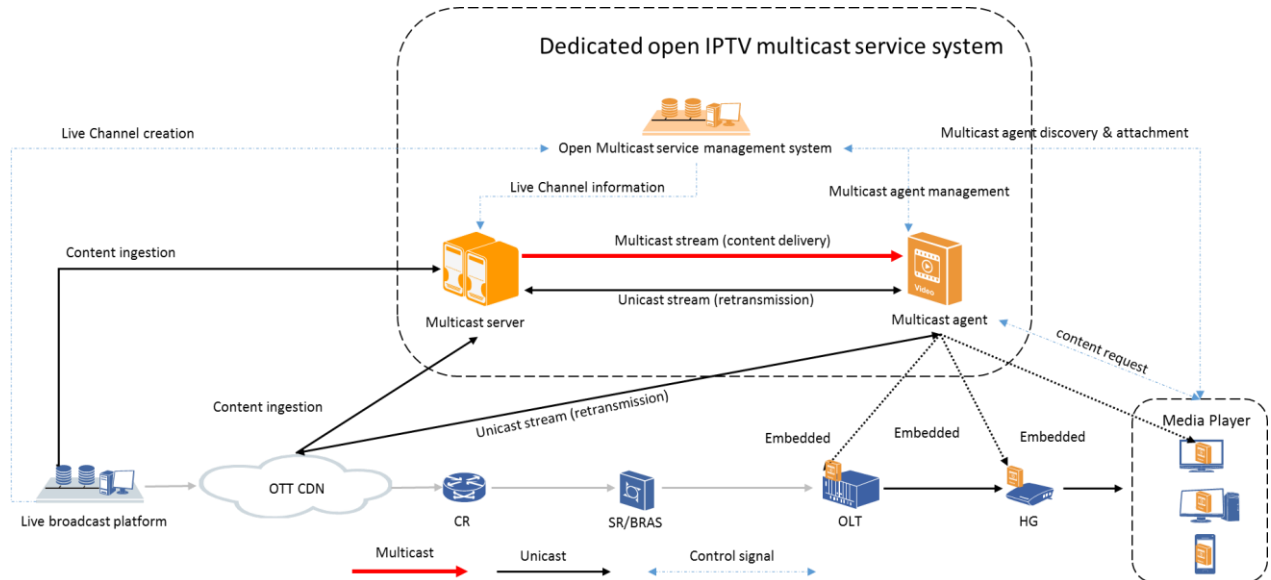


Figure 8-1 – An implementation example of dedicated open IPTV multicast system

TBD (contributor note: more content in future contributions.)

### 8.2 Functional architecture

TBD

## 9 Open interface for IPTV Multicast network capability expose

TBD

### 9.1 System overview

TBD

## 10 Reference points and procedure flow

TBD

## **Appendix I**

### **Scenarios**

(This Appendix does not form an integral part of this Recommendation.)

**TBD**

### **Bibliography**

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