



Recommendation ITU-R BT.2056-0
(02/2014)

**High-level guidelines for the international
exchange of HDTV programmes over IP
connections for contribution purposes**

BT Series
Broadcasting service
(television)

Foreword

The role of the Radiocommunication Sector is to ensure the rational, equitable, efficient and economical use of the radio-frequency spectrum by all radiocommunication services, including satellite services, and carry out studies without limit of frequency range on the basis of which Recommendations are adopted.

The regulatory and policy functions of the Radiocommunication Sector are performed by World and Regional Radiocommunication Conferences and Radiocommunication Assemblies supported by Study Groups.

Policy on Intellectual Property Right (IPR)

ITU-R policy on IPR is described in the Common Patent Policy for ITU-T/ITU-R/ISO/IEC referenced in Annex 1 of Resolution ITU-R 1. Forms to be used for the submission of patent statements and licensing declarations by patent holders are available from <http://www.itu.int/ITU-R/go/patents/en> where the Guidelines for Implementation of the Common Patent Policy for ITU-T/ITU-R/ISO/IEC and the ITU-R patent information database can also be found.

Series of ITU-R Recommendations

(Also available online at <http://www.itu.int/publ/R-REC/en>)

Series	Title
BO	Satellite delivery
BR	Recording for production, archival and play-out; film for television
BS	Broadcasting service (sound)
BT	Broadcasting service (television)
F	Fixed service
M	Mobile, radiodetermination, amateur and related satellite services
P	Radiowave propagation
RA	Radio astronomy
RS	Remote sensing systems
S	Fixed-satellite service
SA	Space applications and meteorology
SF	Frequency sharing and coordination between fixed-satellite and fixed service systems
SM	Spectrum management
SNG	Satellite news gathering
TF	Time signals and frequency standards emissions
V	Vocabulary and related subjects

Note: This ITU-R Recommendation was approved in English under the procedure detailed in Resolution ITU-R 1.

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RECOMMENDATION ITU-R BT.2056-0

High-level guidelines for the international exchange of HDTV programmes over IP connections for contribution purposes¹

(2014)

Scope

This Recommendation specifies some high-level guidelines applicable to IP-based connections used for the international exchange of sound and television programmes for contribution purposes. It is expected when dealing with IP service providers, the specified requirements will help in selecting source-coding, multiplexing and IP-based transport methods to be used for such programme exchanges, and to standardization of appropriate metadata, used to describe the programme content and the IP-based transport parameters.

The ITU Radiocommunication Assembly,

considering

- a) that broadcasters and companies involved in television programme production and postproduction are beginning to use IP-based connections to transport HDTV programmes among studios and for international programme exchange;
- b) that such transports would be facilitated if a single method or a small number of alternative methods were specified to implement them;
- c) that the choice of the encoding, multiplexing and transport methods to be used for such exchanges should be based on the knowledge of the performance requirements that they should meet in order to respond to the needs of IP-based international sound and television programme exchange,

recognizing

that the specifications of performance requirements for the transport of sound and television programmes for international programme exchange are in the purview of ITU-R Study Group 6,

noting

that the guidelines outlined in this Recommendation are intended to assist those considering the use of IP-based networks for programme contribution,

further noting

that ITU-R Recommendations will be developed providing more detail on parameters such as the use of data rate conversion, multiplexing, the “wrapper” and any necessary programme related data,

¹ The ITU Terminology Database defines a contribution link as “a link for the transmission of sound or television broadcasting signals to a programme production centre”.

recommends

that in the choice of methods to encode, multiplex and transport HDTV programmes over IP-based networks for international exchange, the guidelines listed in the Annex to this Recommendation should be considered, together with any further requirements that may apply due to programme-specific circumstances (e.g. contractual requirements specific to the transport of a particular programme), in order that the IP network service provider clearly understands the requirements of the broadcaster.

Annex (normative)

High-level guidelines for the international exchange of HDTV programmes over IP-based networks for contribution purposes

It is common practice in international programme exchange that the programme provider (e.g. the programme producer or the distributor) and the programme recipient (e.g. the broadcaster) mutually agree on the choice of the source-coding, wrapper and transport method within a reasonably small range of options. Typically, the programme recipient will indicate the performance requirements for the programme's delivery, and the programme provider will indicate the cost to abide by those performance requirements.

Within this framework, this Annex specifies some guidance applicable to the international exchange of HDTV programmes over IP-based networks for contribution purposes where the programme provider may be negotiating with IP network service providers unfamiliar with traditional broadcast infrastructure parameters.

1 The baseband specifications of each individual component (video, audio, ancillary data) of an internationally exchanged HDTV programme should always comply with the relevant ITU Recommendations.

2 Each individual baseband component of the programme should normally be internationally exchanged after transparent or quasi transparent² source-coding, unless there is a requirement to transfer it in an uncompressed form, e.g. when it is envisaged that it will undergo very complex post-processing at the receiving facility.

3 All the source-coded components of the programme should be internationally exchanged after they have been multiplexed into a "wrapper" designed to transport them all in a single data stream, keeping them synchronized with each other.

4 Since sound and television programmes represent a valuable intellectual property, they should be protected against piracy or unauthorized access during their transport³.

² A "transparent" bit rate reduction method is one that does not affect the subjective quality of sound or picture sequences.

³ This can be accomplished, for instance, through provisions such as password access with frequent password changes, certification of IP source and destination addresses, and content watermarking to ease identification of illegal copies.

5 The IP-based transport mechanism should transparently transport the programme data stream, including the programme-related metadata that accompanies the programme, without applying transcoding or new source coding.

6 The metadata that accompanies the programme should convey encoded information that allows decoding at least the following information:

- the programme content (e.g. the title, subtitle, and episode of the programme and its playing time);
- the video and the audio baseband system;
- the source-coding;
- the wrapper;
- the data required to securely protect the intellectual property rights to the programme, etc.

7 The IP operator charged with the transport of an internationally exchanged programme should engage to comply with the modalities for the IP-based transport of the programme, as agreed between the programme provider and the programme recipient; those modalities typically include the required transfer data rate, the maximum permitted data-error rate, the availability ratio of the connection⁴ and other performance aspects such as the maximum permitted latency of the connection in the case of real-time programme streaming.

⁴ The ITU Terminology Database defines the availability ratio of a connection as the proportion of time that the connection is in the available state during a given observation period; it is calculated by dividing the total available time during the observation period by the duration of the observation period.