

SMPTE STANDARD

Unidirectional Transport of Non-Piecewise Constant Variable Bit Rate MPEG-2 Streams on IP Networks



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Foreword

SMPTE (the Society of Motion Picture and Television Engineers) is an internationally-recognized standards developing organization. Headquartered and incorporated in the United States of America, SMPTE has members in over 80 countries on six continents. SMPTE's Engineering Documents, including Standards, Recommended Practices, and Engineering Guidelines, are prepared by SMPTE's Technology Committees. Participation in these Committees is open to all with a bona fide interest in their work. SMPTE cooperates closely with other standards-developing organizations, including ISO, IEC and ITU.

SMPTE Engineering Documents are drafted in accordance with the rules given in Part XIII of its Administrative Practices. This SMPTE Engineering Document was prepared by Technology Committee 32NF.

Intellectual Property

At the time of publication no notice had been received by SMPTE claiming patent rights essential to the implementation of this Standard. However, attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. SMPTE shall not be held responsible for identifying any or all such patent rights.

Introduction

IP-based networks have become increasingly important for delivery of compressed content contained within MPEG-2 Transport Streams. However, existing transport protocols do not fully meet all user requirements. This standard describes modifications to existing transport protocols which can be used for the unidirectional carriage of non-piecewise constant variable bit rate MPEG-2 Transport Streams over IP networks.

This standard is intended for real-time audio/video transport applications used for contribution and distribution services between professional broadcast equipment over an IP network. The applications addressed by this standard may employ any compression scheme that is supported by the MPEG-2 Transport Stream.

This standard also provides for signal recovery from limited network errors through a forward error correction scheme.

1 Scope

This standard defines a transport protocol for the carriage of real-time non-piecewise constant variable bit rate (VBR) MPEG-2 Transport Streams over IP networks, either with or without Forward Error Correction for recovery from network transmission errors. A non-piecewise constant VBR transport stream has no predictable time base to reconstruct the signal if the inter-packet timing is altered in transit through the network. This standard defines two methods to maintain the inter-packet timing through the non-synchronous IP network transport.

This standard covers the encapsulation and transmission of MPEG-2 transport streams but does not cover other processes such as MPEG-2 encoding or multiplexing. The scope of this standard is shown in Figure 1.

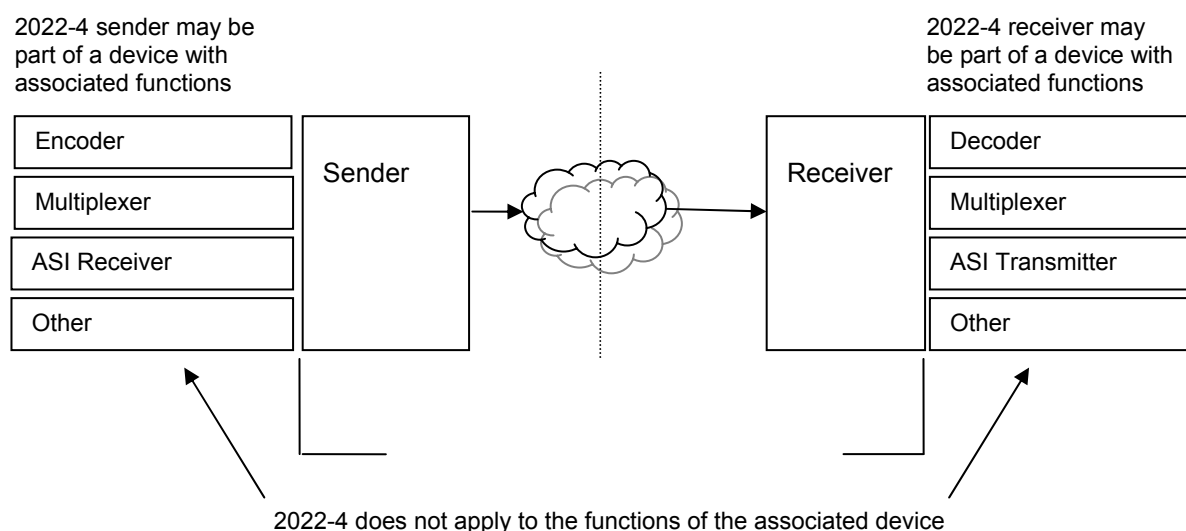


Figure 1 – SMPTE ST 2022-4 Scope Boundaries

2 Conformance Notation

Normative text is text that describes elements of the design that are indispensable or contains the conformance language keywords: "shall", "should", or "may". Informative text is text that is potentially helpful to the user, but not indispensable, and can be removed, changed, or added editorially without affecting interoperability. Informative text does not contain any conformance keywords.

All text in this document is, by default, normative, except: the Introduction, any section explicitly labeled as "Informative" or individual paragraphs that start with "Note:"

The keywords "shall" and "shall not" indicate requirements strictly to be followed in order to conform to the document and from which no deviation is permitted.

The keywords, "should" and "should not" indicate that, among several possibilities, one is recommended as particularly suitable, without mentioning or excluding others; or that a certain course of action is preferred but not necessarily required; or that (in the negative form) a certain possibility or course of action is deprecated but not prohibited.