SMPTE ST 2021-2:2017

SMPTE STANDARD

Broadcast Exchange Format (BXF) — Protocol

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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. SMPTE ST 2021-2 was prepared by Technology Committee 34CS.

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

This section is entirely informative and does not form an integral part of this Engineering Document.

Broadcast Exchange Format (BXF) is a protocol for exchange of data among broadcast systems such as Traffic, Program Management, Automation, and Content Distribution. It is intended to facilitate the movement of content and its associated metadata for better management, coordination and reporting between these broadcast systems. The BXF Protocol serves as a replacement for the many proprietary interfaces in place today between vendors in these areas.

Unless otherwise specified the order of precedence of the types of normative information in this document shall be as follows. Normative prose shall be the authoritative definition. Tables shall be next, followed by formal languages, then figures, and then any other language forms. In the event of a conflict between the schema and other information in this document, the schema is authoritative.

SMPTE ST 2021 (BXF) is broken into several parts. A brief outline of the parts can be found in SMPTE 2021-0, the Document Roadmap to this suite of documents.

1. Scope

Generally, the Broadcast eXchange Format (BXF) defines the format and content of XML Messages for the interchange of data and metadata among professional systems, as follows:

1. Broadcast schedules, including playout and record schedules
2. As run information
3. Content metadata, such as Content ID, Title, Duration, etc.
4. Content management requests such as dub and purge requests
5. Requests for transfer of content some of which will result in the transfer of Content essence between professional systems.
6. Ports as used by TCP/IP for the exchange of messages

The primary systems envisioned as users of this standard are:

Program Management Systems
Broadcast Traffic Systems
Master Control Automation Systems
Content Distribution Systems

This particular document is focused on Protocol-related topics as they relate to BXF. The main BXF document (ST 2021-1) should be read first, and this part (ST 2021-2) should be considered as a companion to ST 2021-1 for those interested in all things Protocol.

2. Conformance Notation

Documents consist of normative text and, optionally, informative text. Normative text is 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 a Standard, Recommended Practice, Amendment, Addendum, or Corrigendum, is, by default, normative, except: the Introduction, any section explicitly labeled as "Informative" or individual paragraphs that start with "Note:"

Normative references are external documents referenced in normative text that are indispensable to the user. Bibliographic references are references made in informative text or are those otherwise not indispensable to the user. Normative references shall conform to the types and procedures specified in the Engineering Administrative Practices.

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.

The keywords "may" and "need not" indicate courses of action permissible within the limits of the document.

The keyword “reserved” indicates a provision that is not defined at this time, shall not be used, and may be defined in the future. The keyword “forbidden” indicates “reserved” and in addition indicates that the provision will never be defined in the future.

A conformant implementation according to an Engineering Document is one that includes all mandatory provisions ("shall") and, if implemented, all recommended provisions ("should") as described. A conformant implementation need not implement optional provisions ("may") and need not implement them as described.

3. Document Elements

The SMPTE ST 2021 suite is comprised of the following elements, which form an integral piece of this Standard. Additionally, the schema files may be found at http://smpte-ra.org/schemas/2021/2015/BXF. (Accessible only by appropriately-designed software applications, for schema validation. Not intended to be human-accessible.)

a) Prose document ST 2021-2-20xx.pdf (this file) [Normative]

b) XML schema s2021-20xx.xml [Normative]

c) HTML schema guide s2021-20xx.html [Informative]

4. Normative References

The following standards contain provisions, which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of the standards indicated below.

SMPTE ST 2021-1, Broadcast Exchange Format (BXF) — General Information and Informative Notes, 20xx

5. Protocol

The BXF protocol may be implemented using a variety of transport mechanisms. The protocol supports both connection-oriented and connectionless approaches, two of which are described below: A connection-based transport for asynchronous communication and a connectionless file transport, for off-line and/or large sets of data that need to be communicated. It is important to note that vendors may choose the appropriate transport mechanism for their applications.

As a minimum, a BXF compliant system shall support a connectionless file transport.

5.1 Connectionless Transport

Connectionless transport of BXF involves the exchange of files between systems. This is most commonly used by systems unable to support connection-oriented transport, or those needing to exchange very large datasets (e.g. exchange of a large collection of content metadata). This method involves one system placing the BXF file to be exchanged in a location from which that file is then retrieved by the receiving system(s).

5.2 Connection-Oriented Transport

Connection-oriented transport of BXF requires a connection between the sending and receiving devices. BXF supports asynchronous messaging approaches, as described below.

5.2.1 TCP/IP

TCP/IP protocol may be used for communication. The BXF application shall use a port number that is configurable by installation. BXF standard shall use 14544 and 14545 as default ports.