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SMPTE RECOMMENDED PRACTICE

Opportunistic Data Flow Control Using Ethernet as a Control Channel in an MPEG-2 Transport Emissions Multiplex



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NOTE: This practice, if implemented according to this document, may not provide interoperability due to an incomplete description of the Ethernet interface

1 Scope

This practice proposes a means of implementing opportunistic data flow control in a DTV MPEG-2 transport broadcast using the flow control messages defined in SMPTE 325M. This practice defines an implementation that uses ethernet as the control channel from the emissions multiplexer to the data server. The data server's data are delivered to the emissions multiplexer via either an ASI, SDTI, or ethernet point-to-point connection.

An emissions multiplexer requests opportunistic data packets as the need for them arises. The data server responds by forwarding data already encapsulated in MPEG-2 transport stream packets. Emissions multiplexer control messages are transmitted to the data server over ethernet with the SMPTE 325M opportunistic flow control messages encapsulated in the network protocol of choice. The data server's information is delivered via a dedicated data link of sufficient quality to ensure reliable interaction between the hardware/software entities in the multiplexer and data server. There is no guarantee of real time response in this system.

2 Normative reference

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

SMPTE 325M-1999, Digital Television — Opportunistic Data Broadcast Flow Control

3 Definition of terms

3.1 control channel: The logically unidirectional connection from the emissions multiplexer to the data server where the SMPTE 325M opportunistic flow control messages are carried.

3.2 data channel: The logically unidirectional connection from the data server to the emissions multiplexer where the MPEG-2 transport stream packets are delivered for output by the emissions multiplexer.

3.3 data server: A computing device that emits data encapsulated within MPEG-2 transport stream packets intended for broadcast at the correct data rates specified for the particular services. In the case of opportunistic data, there is no defined fixed data rate. The transport stream packets are delivered to the emissions multiplexer via the data channel.

3.4 opportunistic data: A data stream whose bit rate is unspecified and, over any time interval, may range from zero to the full bandwidth of the emissions channel.

3.5 opportunistic data flow control: The mechanism by which a multiplexer requests additional MPEG-2 transport stream packets from a data server.

3.6 opportunistic data session: The interconnection of a data server containing opportunistic data and an emissions multiplexer that is able to insert the data into the transport multiplex whenever there is unused available bandwidth. There may exist multiple sessions between the same physical multiplexer and the data server.