

An IEC 61883-based Transport Protocol for Time- Sensitive Audio/Video Streams over IEEE 802 Networks

Draft PAR version 0.10

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Title (2.1)

Draft: IEEE Standard Transport Protocol for time-sensitive audio/video streams over IEEE 802 networks.

Misc.

- Number of people expected to work on standard (5.1)
 - 30
- Stakeholders (5.6)
 - Developers and users of bridged LAN and end-point systems supporting audio/video applications.

PAR Scope (5.2)

- This standard specifies the protocol, data encapsulations and procedures used to ensure that audio and video based end stations can communicate and interoperate using standard networking services that meet the requirements for time-sensitive applications.
- This standard will leverage concepts of IEC 61883 streams as currently defined for IEEE 1394 networks.
- This standard is intended to work across all IEEE 802 networks that can meet QoS requirements for time-sensitive data.
- For operation using Ethernet Layer 2 services, it specifies the use of 802.1AS, 802.1Qat, 802.1Qav.
- The services defined by this standard will not preclude operation using Internet Protocols such as RTP, UDP and IP.

PAR Scope (5.3)

Is the completion of this document contingent upon the completion of another document?

- Yes this standard uses
 - IEEE standard for Local and Metropolitan Area Networks: Timing and Synchronization for Time-Sensitive Applications in Bridged Local Area Networks (802.1AS)
 - IEEE standard for Local and Metropolitan Area Networks: Virtual Bridged Local Area Networks - Amendment 9: Stream Reservation Protocol (SRP) (P802.1Qat)
- Yes this standard refers to
 - IEEE standard for Local and Metropolitan Area Networks: Virtual Bridged Local Area Networks - Amendment 11: Forwarding and Queuing for Time-Sensitive Streams (P802.1Qav)

PAR Purpose (14)

- This standard defines the packet format and stream setup, control, and teardown protocols that enable stations to stream time-sensitive audio and/or video across LANs that provide the time synchronization and the latency/bandwidth services necessary for time-sensitive applications.

PAR Reason (5.4)

- A great deal of work and effort of late has been applied to the development and specification of IEEE 802 based networks that provide networking services for real time applications. To further the work and to provide maximum interoperability of real-time audio and video streaming applications, we must define common media packet formats and how they are structured within IEEE 802 frames. Additionally, there must be standardized approaches for the use of synchronization/presentation time stamps and connection management procedures.
- Unfortunately, some of the protocol mechanisms and formats utilized by applications providing streaming audio and video are entangled with low level network layers. This makes them unsuitable for adoption in a layered networking application.
- For IEEE 1394 bus based networks, a working implementation exists today that meets most of the needs for real-time audio and video streams and that is embodied in the IEC 61883 series standards.
- Unfortunately for IEEE 802, the IEC 61883 series of standards uses mechanisms, formats, specific low level services and functions provided by IEEE 1394 that are not provided by IEEE 802.
- For the reasons stated above, a new standard is needed to provide a common set of protocol encapsulations and mechanisms by starting with IEC 61883 protocol encapsulations and mechanisms, and modifying them to accommodate alternate lower layer protocols suitable for IEEE 802 networks.

5.5 Need for the Project

- Most, if not all entertainment media going forward is in digital form. Audio and video streaming and interactive applications over bridged LANs need to be enhanced to have comparable real-time performance of legacy out-of-band analog media distribution.
- There is significant vendor and end-user interest and market opportunity to simplify and come up with a more common method for handling real-time audio video services (e.g. home consumer electronics, professional A/V applications, etc). The use of more common audio video transport over multiple network types will realize operational and equipment cost benefits.
- Technologies exist today such as IEEE 1394, Bluetooth and USB, but each have their own unique encapsulation, protocols, timing control, etc. such that building interworking functions is difficult. In making sure that all IEEE 802 wired and wireless devices share a common set of transport mechanisms for time-sensitive audio/video streams, it should also make it easier to make build better interworking units between IEEE 802 networks and other digital networks for these streams.