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IEEE Standard for Layer 3 Transport Protocol for Time-Sensitive Applications in Local Area Networks

IEEE Computer Society

Sponsored by the
Microprocessor Standards Committee

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IEEE Standard for Layer 3 Transport Protocol for Time-Sensitive Applications in Local Area Networks

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Abstract: Protocol, data encapsulations, connection management, and presentation time procedures used to ensure interoperability between audio and video-based end stations that use standard networking services provided by all IEEE 802 networks meeting QoS requirements for time-sensitive applications by leveraging the Real-time Transport Protocol (RTP) family of protocols and IEEE 802.1 Audio/Video Bridging (AVB) protocols is specified in this standard.
Keywords: bridged LAN, IEEE 802.1AS, IEEE 802.1 AVB protocols, IEEE 802.1Qat, IEEE 802.1Qav, IEEE 1733, LAN, QoS, RTCP, RTP, time-sensitive media streaming, time synchronization

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Introduction

This introduction is not part of IEEE Std 1733-2011, IEEE Standard for Layer 3 Transport Protocol for Time-Sensitive Applications in Local Area Networks.

This standard specifies the protocol, data encapsulations, connection management and presentation time procedures used to ensure interoperability between audio and video based end stations that use standard networking services provided by all IEEE 802 networks meeting quality of service (QoS) requirements for time-sensitive applications by leveraging the Real-time Transport Protocol (RTP) family of protocols and family of IEEE 802.1 Audio/Video Bridging (AVB) protocols.

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Contents

IEEE Standard for Layer 3 Transport Protocol for Time-Sensitive Applications in Local Area Networks

1. Overview

The Real-time Transport Protocol (RTP) family of protocols is one of the most commonly used protocols for streaming real-time media across packet networks. While RTP is widely used for media streaming, as originally defined it did not take advantage of recent layer-2 standards created by the IEEE 802.1 Audio Video Bridging (AVB) task group for time-sensitive media streaming. These standards, collectively referred to as the AVB standards, include accurate timing (IEEE Std 802.1AS™-2011),[1] a reservation protocol (added to IEEE Std 802.1Q™-2005 as amended by IEEE Std 802.1Qat™-2010) and forwarding rules for traffic shaping (added to IEEE Std 802.1Q-2005 as amended by amendment 802.1Qav™-2009). This standard builds on and depends on the AVB standards.

This standard is relevant in today's entertainment world as more and more entertainment media is being digitally transported. Streaming audio/video and interactive applications over bridged LANs need to have real-time performance comparable with legacy analog distribution. There is significant end-user and vendor interest in defining a simple yet common IP-based method for handling real-time audio/video suitable for consumer electronics, professional A/V applications, etc.

Although RTP's use of UDP/IP implies that it can be routed between IP subnets, for reasons of simplicity this standard limits its scope to a single IP subnet.

[1] Information on references can be found in Clause 2.