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IEEE Standard for Device Discovery, Connection Management, and Control Protocol for IEEE 1722™ Based Devices

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IEEE Std 1722.1™-2013

IEEE Standard for Device Discovery, Connection Management, and Control Protocol for IEEE 1722™ Based Devices

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Microprocessor Standards Committee
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Abstract: This standard specifies the protocol, device discovery, connection management and device control procedures used to facilitate interoperability between audio and video based End Stations that use IEEE 1722 based Streams on IEEE 802® based networks.
Keywords: AVDECC, bridged LAN, IEC 61883, IEEE 802.1™ AVB protocols, IEEE 802.1BA™, IEEE 1722.1™, IEEE Std 802.1AS™-2011, IEEE Std 802.1Q™-2011, IEEE Std 1722™-2011, LAN, QoS, time sensitive media streaming, time synchronization

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Introduction

This introduction is not part of IEEE Std 1722.1™-2013, IEEE Standard for Device Discovery, Connection Management, and Control Protocol for IEEE 1722™ Based Devices.

Increasingly, entertainment media are digitally transported. Streaming audio/video and interactive applications over local area networks is becoming more common.

This standard builds on the work done by the IEEE 802.1™ AVB task group by providing a common audio/video transport protocol capable of supporting the needs of both consumer and professional audio/video applications.

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IEEE Standard for Device Discovery, Connection Management, and Control Protocol for IEEE 1722™ Based Devices

1. Overview

A number of proprietary protocols exist for allowing End Stations on a local area network (LAN) to connect to each other and stream media over the network. There has been a need in the industry to come up with an industry standard way to connect and interoperate media based devices on a network. IEEE Std 1722™-2011 has defined an industry standard way to transport media Streams over a LAN and this standard will be the industry standard for connecting IEEE Std 1722-2011 streaming End Stations.

This standard, for audio/video discovery, enumeration, connection management and control (AVDECC), defines four independent steps that can be used to connect End Stations that use 1722-2011 transport Streams to transport media Streams across a LAN. The steps are as follows:

a) Discovery
b) Enumeration
c) Connection management
d) Control

These steps can be used together to form a system of End Stations that interoperate with each other in a standards compliant way. The application that will use these individual steps is called an AVDECC Controller and is the third actor in the AVDECC Talker, AVDECC Listener, and AVDECC Controller device relationship.

An AVDECC Controller may exist within an AVDECC Talker or an AVDECC Listener, or exist remotely within the network in a separate End Station. The AVDECC Controller can use the individual steps to find, connect, and control entities on the network, but it may choose to not use all of the steps if the AVDECC Controller already knows some of the information (e.g., hard coded values assigned by user/hardware switch or values from previous session establishment) that can be gained in using the steps. The only required step is connection management, because this is the step that establishes the bandwidth usage and reservations across the audio video bridging (AVB) domain.

The four steps are described as follows:

— **Discovery** is the process of finding AVDECC Entities on the LAN that have services that are useful to the other AVDECC Entities on the network. The discovery process also covers the termination of the publication of those services on the network.

— **Enumeration** is the process of collecting information from the AVDECC Entity that could help an AVDECC Controller to use the capabilities of the AVDECC Entity. This information can be used for connection management.

— **Connection management** is the process of connecting or disconnecting one or more Streams between two or more AVDECC Entities.

— **Control** is the process of adjusting a parameter on the AVDECC Entity from an AVDECC Controller. There are a number of standard types of controls used in media devices like volume control, mute control, etc. A framework of basic commands allows the control process to be extended by AVDECC Entities.

These four steps are the basis of this standard and will be described in detail in the following sections.

1.1 Scope

This standard specifies the protocol, device discovery, connection management, and device control procedures used to facilitate interoperability between audio and video based End Stations that use IEEE 1722 based Streams on IEEE 802® based networks.

1.2 Purpose

This standard will facilitate interoperability between End Stations that stream time-sensitive media and data across local area networks providing time synchronization and latency/bandwidth services. This standard defines the device discovery, connection management, Stream setup, control, and teardown protocols.