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Entertainment Technology
Lightweight streaming protocol for transport
of DMX512 using ACN

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Published by:

Entertainment Services and Technology Association
630 Ninth Avenue, Suite 609
New York, NY 10036, USA.
Phone: 1-212-244-1505
Fax: 1-212-244-1502
standards@esta.org
<http://www.esta.org/>

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John Huntington
Beverly and Tom Inglesby
Eddie Kramer
Jason Kyle

Michael Lay
Lizz Pittsley
Michael Skinner
Skjonberg Controls Inc.
Stage Labor of the Ozarks
Tracy Underhill
Charlie Weiner

Planned Giving donor: Ken Vannice

Contact Information

The Entertainment Services and Technology Association

Karl G. Ruling

Technical Standards Manager
ESTA
630 Ninth Avenue, Suite 609
New York, NY 10036, USA.
Phone: 1-212-244-1505 x703
FAX: 1-212-244-1502
karl.ruling@esta.org

Richard Nix

Assistant Technical Standards Manager
ESTA
630 Ninth Avenue, Suite 609
New York, NY 10036, USA.
Phone: 1-212-244-1505 x649
FAX: 1-212-244-1502
richard.nix@esta.org

Technical Standards Council Chairpersons

Mike Garl

Mike Garl Consulting LLC
1-865-389-4371
mike@mikegarlconsulting.com

Mike Wood

Mike Wood Consulting LLC
1-512-288-4916
mike@mikewoodconsulting.com

Control Protocols Working Group Chairpersons

Michael Lay

Signify
Phone: 1 781-418-9145
michael.lay@signify.com

Milton Davis

Doug Fleenor Design, Inc
1-805-481-9599
milton@dfd.com

Acknowledgments

The Control Protocols Working Group was the consensus body for the development of this standard. The working group's membership at the time the working group vote closed on 30 January 2018 is listed below.

Voting members:

Andrew Atienza; Full Throttle Films/ VER; DR
Paul Beasley; Walt Disney Company; U
Robert Bell; Acuity Brands Inc.; MP
Marcus Bengtsson; disguise; MP
Scott M. Blair; Full Throttle Films/ VER; DR
Eric Bloom; Westview Productions; DR
Brent Boulnois; Candela Controls, Inc.; DE
Ian Campbell; Doug Fleenor Design, Inc.; MP
Fraser Connolly; Obsidian Controls Ltd.; DE
Milton Davis; Doug Fleenor Design, Inc.; MP
Gary Douglas; Acuity Brands Inc.; MP
Bill Ellis; Candela Controls, Inc.; DE
Andrew Frazer; Stellascapes.com; MP
Robert Goddard; Goddard Design Co.; MP
Nick Harper; Nick Harper; G
Mitch Hefter; USITT; U
Julian Hoare; Tait Towers Manufacturing LLC; MP
Jeremy Hochman; Full Throttle Films/ VER; DR
Jon Hole; Eaton; MP
Maurits van der Hoorn; Acuity Brands Inc.; MP
Wayne David Howell; Artistic Licence Holdings; DE
John Huntington; I.A.T.S.E. Local 1; U
Michael Karlsson; LumenRadio AB; MP
David Kane; I.A.T.S.E. Local 728; U
Sam Kearney; Electronic Theatre Controls, Inc.; MP
Paul Kleissler; City Theatrical, Inc.; MP
Edwin S. Kramer; I.A.T.S.E. Local 1; U
Ulrich Kunkel; E3 Engineering & Education for Entertainment GmbH; U
Roger Lattin; I.A.T.S.E. Local 728; U
Michael Lay; Philips Lighting; MP
Dan Lisowski; University of Wisconsin - Madison; DE
Kevin Loewen; Acuity Brands Inc.; MP
Jim Love; Tait Towers Manufacturing LLC; MP
Daniel Murfin; Royal National Theatre; U
Simon Newton; Open Lighting Project; G
Maya Nigrosh; Sonos; MP
Jim Ohrberg; Candela Controls, Inc.; DE
Claude Ostin; Full Throttle Films/ VER; DR
Mit Patel; disguise; MP
Jason Potterf; Cisco; MP
Eric Rasmussen; Electronic Theatre Controls, Inc.; MP
Alan M. Rowe; I.A.T.S.E. Local 728; U
Larry Schoeneman; DesignLab Chicago, Inc.; DR
Steve Terry; Electronic Theatre Controls, Inc.; MP

John Valus Jr.; Lex TM3; CP
Peter Willis; Howard Eaton Lighting Ltd.; CP

Observer members:

Christian Allabauer; G
Matthew Ardine; IATSE Local 728; U
Nick Ballhorn-Wagner; Electronic Theatre Controls, Inc.; MP
Robert Barbagallo; Solotech Inc.; U
Javid Butler; Integrated Theatre, Inc.; CP
Justyn Butler; JBOTS; CP
Jean-Francois Canuel; A.C. Lighting Ltd.; CP
Steve Carlson; High Speed Design, Inc.; MP
Anthony Chiappone; Chauvet Lighting; MP
Jon Chuchla; Audio Visual Systems, Inc.; G
Edward R. Condit; OSRAM Licht AG; G
Gareth Conner; Creative Conners, Inc.; MP
Jeremy Day; Lumenpulse Lighting Inc.; MP
Larry Dew; W.A. Benjamin Electric Co.; DE
Rich Dionne; Purdue University; DE
Tucker Downs; Tucker Downs; U
Hamish Dumbreck; James Embedded Systems Engineering; MP
James Eade; ABTT; G
Paul K. Ericson; Stantec; DE
Trevor Forrest; Helvar Lighting Control; MP
Sarah Gascoine; PSAV Presentation Services; DR
George Gong; Philips Lighting; MP
Jerry Gorrell; Theatre Safety Programs; G
Sean Harding; Port Lighting Systems; G
Bill Hewlett; ImageCue LLC; MP
Jim Holladay; Luxence; G
Eric Johnson; Eric Johnson; G
Rob Johnston; Interactive Technologies, Inc.; MP
Jonathan Kemble; ETC; MP
Jason Kyle; JPK Systems Ltd.; MP
Hans Leiter; Electronic Theatre Controls, Inc.; MP
Jon Lenard; Applied Electronics; MP
Royal Marty; ZFX, Inc.; MP
John Mehlretter; Lehigh Electric Products Co.; MP
John Musarra; John Musarra; U
Danilo Oliveira; Chauvet Lighting; MP
Gary Pritchard; LSC Lighting Systems PTY Ltd; MP
Charles Reese; Production Resource Group; DR
Yngve Sandboe; Sand Network Systems, Inc.; MP
Nicolai Gubi Schmidt; Gobo & Highlight A/S; DR
Ford Sellers; Chauvet Lighting; MP
Sean Sill; Sean Sill; CP
Ralph Stillinger; Philips Lighting; MP
Christopher B. Tilton; About the Stage, LLC; DE
Robert Timmerman; Philips Lighting; MP
James Tomlinson; Team Tomlinson; G

Tracy Underhill; Triple C Lighting & Controls; G
Carlo Venturati; Clay Paky S.P.A.; MP
Will Wagner; Carallon Ltd.; MP
Colin Waters; TMB; DR
Ralph Weber; ENDL Texas; G
Loren Wilton; Showman Systems; CP
David Yellin; Sumolight GmbH; MP
Jeong Sik Yoo; Ghost LX; DE

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1 Introduction

1.1 Scope

This standard describes a mechanism to transfer DMX512-A [DMX] packets over an IP network using a subset of the ACN protocol suite. It covers data format, data protocol, data addressing, and network management. It also outlines a synchronization method to help ensure that multiple receivers can process this data concurrently when supervised by the same source. Sources transporting either data or synchronization packets must also advertise, via the Universe Discovery mechanism, what universes they are actively transmitting on.

1.2 Overview and Architecture

This standard can be used to transfer DMX512-A [DMX] packets of all START Codes via an ANSI E1.17 [ACN] supported network. It also defines a method by which this [DMX] data may be synchronized across multiple receivers. A simple packet wrapper approach is used whereby the data is encapsulated in a wrapper following the ACN packet structure. For the use of this standard, the ACN wrapper is carried in UDP [UDP] packets.

The wrapper is structured such that it is both compatible and meaningful to the ANSI E1.17 [ACN] standard. Readers are referred to the ANSI E1.17 [ACN] standard, particularly the “ACN Architecture” and “Device Management Protocol” documents for more information. The “Root Layer Protocol” used in this standard is described in the “ACN Architecture” document.

This standard uses multicast addressing to provide a mechanism to partition traffic for distinct universes of DMX512-A [DMX] and synchronization data. Direct unicast of DMX512-A [DMX] data is also supported.

1.3 Appropriate Use of This Standard

This standard uses a non-reliable IP transport mechanism to stream packets of data from multiple sources to multiple receivers over the ACN network. There is no acknowledgement and therefore no assurance that all packets have been received.

1.4 Classes of Data Appropriate for Transmission

This standard, E1.31, is intended to define a method to carry DMX512-A [DMX] style data and metadata over IP Networks. It is designed to carry repetitive control data from one or more sources to one or more receivers. This protocol is intended to be used to control dimmers, other lighting devices, and related non-hazardous effects equipment.

1.5 Universe Synchronization

This standard defines a mechanism by which data streamed by a single source to many receivers may be synchronized across a network. Through the use of synchronization packets, which are distinct in format from data packets, a source can declare when all of its E1.31 data has been sent and can then be acted upon synchronously.

This methodology may find most of its use in media applications, but can be expanded to a variety of environments.

1.6 Universe Discovery

This standard includes a Universe Discovery packet that sources must provide in order to enumerate the universes upon which they are transmitting. This allows other devices interested in network traffic to monitor which universes are currently active, without the need to join every multicast group to examine their individual transmissions.