

# **ANSI E1.17-2015 (R2020) Architecture for Control Networks – EPI 12. ACN on Homogeneous Ethernet Networks**

## **E1.17 Profile for Interoperability**

Part of ANSI E1.17 – 2015 (R2020) approved by the ANSI Board of Standards Review  
on 23 March 2020.

This part has no substantive changes from the 2010 edition.

TSP document ref. CP/2004-1023-R2-draft-439:454M

# **ANSI E1.17-2010 (R2050), Architecture for Control Networks – EPI 12. ACN on Homogeneous Ethernet Networks**

E1.17 Profile for Interoperability

Copyright © 2020 the Entertainment Services and Technology Association. All rights reserved.

TSP document ref. CP/2004-1023-R2-draft-439:454M

Revision History	
Revision R2-draft-439:454M	2011-04-29
Revision R2pre1	2005-10-13
Revision R1	2004-11-09

## **Abstract**

This profile specifies various requirements to be met when operating ACN components on homogeneous Ethernet networks.

## Table of Contents

1. Ethernet implementation.....	3
2. Switches, Hubs, Routers.....	3
3. Cables and connectors.....	4
References.....	4

### ACN EPIs

ANSI E1.17-2010 is the “Architecture for Control Networks” standard [\[ACN\]](#). It specifies an architecture – including a suite of protocols and languages which may be configured and combined with other standard protocols in a number of ways to form flexible networked control systems.

E1.17 Profiles for Interoperability (EPIs) are standards documents which specify how conforming implementations are to operate in a particular environment or situation in order to guarantee interoperability. They may specify a single technique, set of parameters or requirement for the various ACN components. They may also specify how other standards (including other EPIs) either defined within ACN or externally are to be used to ensure interoperability.

### Note

Within this document, the term “Ethernet” is taken to include IEEE802.3 networks

## 1. Ethernet implementation

The network infrastructure is made up of a set of links and nodes. Nodes may be ACN nodes (devices, controllers etc.), infrastructure nodes (hubs, switches, routers) or foreign nodes which use the physical network but are not using or transporting ACN protocols.

All links connecting ACN nodes to the network shall be via Ethernet and shall conform to [\[Cabling\]](#).

Ethernet links which are not directly connected to ACN nodes should conform to [\[Cabling\]](#).

Any links within the network using technologies which are not Ethernet (e.g. via bridges) shall not present discontinuities in speed, latency or MTU outside the normal Ethernet variations.

## 2. Switches, Hubs, Routers

No special requirements are made with regards to switches, hubs and routers other than as specified in [\[Cabling\]](#).

### Caution

System managers and implementers should be aware of ACN's extensive use of multicast addressing and the issues this can raise with regards to switches or routers operating at either layer 2 or layer 3. These are mentioned here but detailed discussion is beyond the scope of this EPI.

Layer 2 switches usually treat multicast traffic in the same way as broadcast which has implications for efficiency and network saturation.

Layer 3 switches can handle multicast traffic more elegantly but may require configuration and management to do so. Furthermore, such switches may not be designed for heavy multicast traffic and may not behave as predicted (e.g. they have been known to treat high multicast traffic as a denial of service attack and drop these packets!)

### 3. Cables and connectors

Network cabling shall conform to [\[Cabling\]](#).

## References

### Normative

- [ACN] Entertainment Services and Technology Association [\[http://tsp.esta.org\]](http://tsp.esta.org). ANSI E1.17 - 2010, *Entertainment Technology - Architecture for Control Networks*.
- [Arch] Entertainment Services and Technology Association [\[http://tsp.esta.org\]](http://tsp.esta.org). ANSI E1.17 - 2010, *Entertainment Technology – Architecture for Control Networks*. “ACN” Architecture.
- [Cabling] Entertainment Services and Technology Association [\[http://tsp.esta.org\]](http://tsp.esta.org). TSP CP/1998-1005r3. *Supplement to the Recommended Practice for Ethernet Cabling Systems in Entertainment Lighting Applications*. 1999.