# ANSI E1.17 - 2015 (R2020) Architecture for Control Networks – EPI 15. ACN Allocation of Multicast Addresses on IPv4 Networks

## E1.17 Profile for Interoperability

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This part has no substantive changes from the 2010 edition.

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| Revision History | |
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| Revision R2-draft-439:454M | 2011-04-29 |
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# Table of Contents



## 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.

# 1. Introduction

SDT [SDT] uses multicasting extensively and any component creating multicast sessions must have access to multicast addresses. It is strongly recommended that different addresses are used for each session because of the considerable performance gain from having packets filtered by hardware or very low levels of software. However, the protocol does not require that separate addresses are used because SDT places the session identifier in all relevant PDUs and filters them on reception.

The provisions of this EPI apply to ACN implementations using IPv4 (Internet Protocol version 4).

# 2. Multicast Allocation Methods

EPI10 [AutoMalloc] provides an ACN specific de-centralized method whereby components can generate multicast addresses which are spread through the address space and have a reasonably low rate of duplication with addresses generated in the same way. If other protocols are using multicasting on the same networks then there is no attempt to detect and resolve conflicts because the ACN protocols will still work in their presence – albeit with slightly reduced efficiency.

[MADCAP] is an IETF standard for centralized allocation of multicast addresses derived from DHCP [DHCP] which should be scalable to very large systems and managable across complex inter-networks. Unfortunately, there has been no real interest in MADCAP in the wider networking community and no implementations are known. Therefore it is not possible to specify MADCAP at this time.

Static configuration of pools of multicast addresses is the “last resort” method which can be applied in any network and will work but at the expense of much work and potential for manual errors.

Further discussion of allocation methods across inter-networks can be found in [MALLOC].

# 3. Management of Multicast Scopes and Zones

Multicast scopes allow creation of multicast zones and boundaries in an inter-network by configuration of scope-aware routers. Network administrators should be familiar with multicast address scoping [AdminScope].

As a last resort, TTL values in IP packets can also provide a means to manage the parts of a network over which a multicast address is seen and does not require any special capabilities on the part of routers. However, TTL has severe limitations as a method for zone management and should not be used unless no other method is available.

# 4. Rules

In order to comply with this EPI:

- SDT components shall implement the E1.17 multicast address auto-allocation mechanism [AutoMalloc] and shall use it for generating all addresses required for their own channels.
- SDT components shall be capable of correctly receiving and responding to SDT traffic from other components which uses any valid multicast address.
- Any component that supports SDT channel membership shall support multicasting where that is requested.
- Channel members and other components receiving multicast packets should advertise their multicast use with [IGMPv3]. If this is not available they shall advertise their multicast use with [IGMPv2].
- It is strongly recommended that components provide a means to configure the scope of multicast addresses they self assign under [AutoMalloc].
- SDT components should provide a means to configure the TTL value used for multicast packets.

# References

## Normative

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[SDT] Entertainment Services and Technology Association [https://tsp.esta.org]. ANSI E1.17-2010, *Entertainment Technology - Architecture for Control Networks*. Session Data Transport Protocol.

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[AdminScope] Internet Engineering Task Force (IETF) [http://ietf.org/]. RFC 2365 [http://ietf.org/rfc/rfc2365.txt]. Mayer. *Administratively Scoped IP Multicast*. 1998.

## Informative

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[MALLOC] Internet Engineering Task Force (IETF) [http://ietf.org/]. RFC 2908 [http://ietf.org/rfc/rfc2908.txt]. Thaler, Handley, and Estrin. *The Internet Multicast Address Allocation Architecture*. 2000.