

ANSI E1.17 - 2015 (R2020)

Architecture for Control Networks – EPI 17. ACN Root Layer Protocol Operation on UDP

E1.17 Profile for Interoperability

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This part has no substantive changes from the 2010 edition.

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Architecture for Control Networks –

EPI 17. ACN Root Layer Protocol

Operation on UDP

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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. Applicability

This interoperability profile specifies the operation and formats for the ACN Root Layer Protocol [\[Arch\]](#) operating on [\[UDP\]](#).

The current version assumes that the underlying transport (e.g. IEEE 802.3) provides adequate error checking for example by use of a CRC. If the need arises a future interoperability profile may be defined to apply where this is not the case.

The specification of sizes in the preamble provides some forward compatibility with future versions and variations.

2. Preamble Format

The Root Layer Protocol preamble for all UDP datagrams shall be as follows:

```

+-----+
|      Size of preamble (2 octets)      |
+-----+
|      Size of postamble (2 octets)      |
+-----+
|  ACN Packet Identifier (12 octets)  |
+-----+
```

The ACN Packet Identifier shall be the text string “ASC-E1.17\0\0\0” encoded in [\[ASCII\]](#). In hexadecimal this is the octet sequence:

```
41 53 43 2d 45 31 2e 31 37 00 00 00
```

Both preamble size and postamble size shall be transmitted in network byte order. The preamble size includes both size fields so the minimum value for preamble size is 16 (octets).

3. Postamble Format

The postamble field shall be empty.

4. Root Layer Protocol Operation

4.1. Transmission

Implementations shall place the correct preamble sequence in the first 16 data octets of each outgoing UDP datagram followed by PDUs from higher level protocols packed according to the rules of [Arch]. No postamble shall be added. Preamble size shall be 16 and postamble size shall be 0.

4.2. Reception

Implementations shall check the ACN Packet Identifier and preamble size. If the preamble size is less than 16 or the ACN Packet Identifier is not correct the packet shall be discarded and no PDUs within it shall be processed.

Having accepted a packet, implementations shall compute the size and position of the PDU block from the preamble size and postamble size provided. They shall then proceed to process the PDU block as specified in [Arch] ignoring any extra octets in the preamble or postamble.

References

Normative

[ACN] Entertainment Services and Technology Association [<https://tsp.esta.org>]. ANSI E1.17-20010, *Entertainment Technology - Architecture for Control Networks*.

[Arch] Entertainment Services and Technology Association [<https://tsp.esta.org>]. ANSI E1.17 - 2010, *Entertainment Technology – Architecture for Control Networks*. “ACN” Architecture.

[UDP] [Internet Engineering Task Force \(IETF\)](http://www.ietf.org/) [<http://www.ietf.org/>]. RFC 768 [<http://www.ietf.org/rfc/rfc0768.txt>]. Postel. *User Datagram Protocol*. 1980.

[ASCII] [International Electrotechnical Commission \(IEC\)](http://www.iec.ch/) [<http://www.iec.ch/>]. ISO/IEC 646 Ed.3. *Information technology - ISO 7-bit coded character set for information interchange*. 1991.