ANSI E1.17 - 2015 (R2020) Architecture for Control Networks – EPI 16. ESTA Registered Names and Identifiers – Format and Procedure for Registration

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/2004-1027-R3-draft-439:454M

ANSI E1.17
Architecture for Control Networks – EPI 16. ESTA Registered Names and Identifiers – Format and Procedure for Registration

E1.17 Profile for Interoperability

TSP document ref. CP/2004-1027-R3-draft-439:454M

Revision History	
Revision R3-draft-439:454M	2011-04-29
Revision R2	2005-10-14
Revision R1	2004-11-09

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

Names and numbers for identification are used in many places and applications and it is beneficial to have a harmonized approach to their assignment within the scope of ESTA's Control Protocols activities.

(Note: Effective 1 January 2011 ESTA merged with PLASA and became PLASA. PLASA North America, the corporate entity based in the United States, will provide all the services specified in this document as being done by ESTA.)

Organization Identifiers or manufacturer IDs are already used in a number of ESTA standards including DMX512A [DMX512] and RDM [RDM]. They are also used within ACN and have potential for extension to many other standards.

Protocol names are used in Device Description Language [DDL] and in ACN discovery [Discovery-IP]. They have potential for use anywhere a protocol requires a formal identifier which is both human and machine readable.

Numeric protocol identifiers follow a similar general process but are fixed length numeric identifiers suitable for use in binary applications and messages. They are used in ACN in both the Root Layer Protocol [Arch] and in SDT [SDT].

2. Procedure for Name and Identifier registration

Wherever unique or registered names or identifiers are required within the ACN architecture, ESTA Technical Standards Office shall be the root authority for assigning such identifiers and shall maintain records of those assignments as necessary. Where names or identifiers are hierarchical, ESTA may delegate assignment of parts of the namespace to other organizations as it sees fit. Any such delegation shall be recorded in writing.

3. Organization Identifiers

The primary means for delegation of assignment is the Organization Identifiers. By dividing an application specific identifier into an Organization Identifier part and an Organization Assigned part, ESTA need only maintain the database of Organization Identifiers and can delegate assignment of the rest of the identifier to the organization concerned who must follow the rules for that application in the understanding that any breach is clearly their responsibility.

Any organization having obtained an identifier in accordance with this specification shall use the same identifier in any place where an ESTA organization Identifier is specified.

Two forms of Organization Identifier are defined. binary and textual. ESTA are required to register and maintain both and make lists of currently assigned identifiers available on request.

3.1. Binary Organization Identifier (Manufacturer ID)

A binary identifier is intended for machine use and not for direct human use. It should be fixed length and concise.

This shall be the 16 bit “Manufacturer ID” assigned to an organization in accordance with the provisions of [DMX512] Annex E.

The Organization ID (Manufacturer ID) for ESTA shall be 0 (zero).

3.2. Textual Organization Identifier (Organization Name)

The requirements for a textual identifier are more complex. It should be easily read by both humans and machines. It should be compatible with a wide variety of standards so that it can be embedded in URIs, URLs, XML (as an identifier) and so forth. It should be concise enough for easy transmission and manipulation by resource constrained processors, yet transparent enough that a human reader can transcribe it without error and that a reader familiar with the application has a good chance of recognizing the organization from the name.

The character set of an Organization Name is very restricted and the name shall match the following ABNF production using the notation of [ABNF] (expressed in US-ASCII encoding [ASCII]).

```
OrgName         =  nameStartChar *NameChar
nameStartChar   =  ALPHA / "_"
NameChar        =  nameStartChar / DIGIT / ":" / "-"
ALPHA           =  %x41-5A / %x61-7A                    ; A-Z / a-z
DIGIT           =  %x30-39                              ; 0-9
```

An organization name shall be case insensitive. The *canonical form* shall be all upper case. Some applications may impose other case rules or may change the case (e.g. URLs are frequently translated to lower case).

Each registered Organization Name shall not match any other registered Organization Name (case insensitive comparison).

The Organization Name for ESTA defined identifiers shall be “ESTA”.

4. Protocol Identifiers

The following rules apply to protocol identifiers within the ACN architecture[ACN].

It is strongly recommended that they apply to all other protocols requiring identifiers within the ESTA Standards process.

4.1. Binary Identifiers – ProtocolIDs

All ProtoclIDs shall be 32-bit numbers as follows:

The high order 16 bits of the ProtocolID shall be a Manufacturer ID in accordance with Section 3.1, “Binary Organization Identifier (Manufacturer ID)”.

The low order 16-bits of the ProtocolID shall be unique within the domain of the organization whose Manufacturer ID forms the high order 16 bits. It is the responsibility of organizations who are assigned Manufacturer IDs to ensure that all ProtocolIDs they define are unique.

The representation of a ProtocolID in memory is implementation dependant. When transmitted they are subject to the rules of the protocol used.

4.2. Textual Identifiers – Protocol Names

Protocol Names shall consist of two fields separated by a period “.”. Each field should be short but sufficiently clear.

The first field is OrgName (organization name) in accordance with Section 3.2, “Textual Organization Identifier (Organization Name)”.

The second field is OAPN (organization assigned protocol name).

In the case of ESTA protocols (OrgName == “ESTA”) the OAPN shall also be registered with the standards officer at ESTA who shall make the list of assigned OAPNs available on request.

Period characters are not permitted in OrgName but are permitted in OAPN, therefore these two fields are separated by the *first* period.

ProtocolName shall match the following ABNF [ABNF] production which extends the production for OrgName above. OAPNs shall be case insensitive.

```
ProtocolName    =  OrgName "." OAPN
OAPN            =  nameStartChar *(NameChar / ".")
```

Each OAPN shall not match any other OAPN assigned by the same organization (case insensitive comparison). Organizations shall enforce this rule within their own range of OAPNs.

Examples: ESTA.DMP ISOC.IPv4 ESTA.USITT.DMX512A (these are examples only and are not definitive).

Because names are not case sensitive “ESTA.USITT.DMX512A”, “Esta.USITT.DMX512a” and

"esta.usitt.dmx512a" are all equivalent.

4.3. Versioning

No attempt is made to relate one Protocol Name or ProtocolID to another (e.g. by versioning) since the differences between versions may be minor or huge. A new identifier needs to be registered if a new version will not fully interoperate with the old version. Thus if a protocol carries it's own dynamic version or feature negotiation which is fully backward and forward compatible then different versions can interoperate without needing to know ahead of time which version is in use. Conversely if a new version has any incompatibility at all, then a new protocol name must be assigned.

Taking DMX512 [DMX512] as an example. There are three versions DMX512-1986, DMX512-1990 and DMX512A.

DMX512A is substantially backward compatible but is certainly not fully interoperable at the software layer with earlier versions because it includes packet definitions for a number of alternate start codes which are part of the newer standard but not the older ones.

The hardware and timing requirements also differ slightly between the three versions and since software could conceivably respond to an identifier by switching the hardware or changing timing parameters it would be necessary to assign separate identifiers. (of course DMX512 is an existing protocol which does not transmit any identifier so this example is purely hypothetical).

Definitions

canonical form

Many specifications allow a variety of forms or methods for some items. This is usually useful in the interests of flexibility or ease of processing (for instance by removing the need for extensive checking). However, there may be times when it is required to have exactly one way of representing each case and in this situation a canonical form specifies which of a set of choices must be used such that each possible case has exactly one unambiguous representation.

For example, the floating point numbers 12E5 and 1.2E6 are identical. Many specifications dictate that the normalized form with exactly one non-zero digit before the decimal point (1.2E6) be used as the canonical form.

References

Normative

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

[ABNF] Internet Engineering Task Force (IETF) [http://ietf.org/]. RFC 2234 [http://ietf.org/rfc/rfc2234.txt]. D. Crocker and P. Overell. *Augmented BNF for Syntax Specifications: ABNF*. November 1997.

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

[DMX512] Entertainment Services and Technology Association [https://tsp.esta.org]. . ANSI E1.11-2004. *USITT DMX512-A - Asynchronous Serial Digital Data Transmission Standard for Controlling Lighting Equipment and Accessories*. 2004.

Informative

[RDM] Entertainment Services and Technology Association [https://tsp.esta.org]. ANSI E1.20-2006. *Entertainment Technology - Remote Device Management over DMX512 Networks*.

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

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

[Discovery-IP] Entertainment Services and Technology Association [https://tsp.esta.org]. ANSI E1.17 - 2010,*Entertainment Technology - Architecture for Control Networks*. EPI 19. Discovery on IP networks.

[DDL] Entertainment Services and Technology Association [https://tsp.esta.org]. ANSI E1.17 - 2010, *Entertainment Technology - Architecture for Control Networks*. Device Description Language.