CCSDS SLP WG

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RID against IP over CCSDS (702.1-B-1) and Encapsulation Service (133.1-B-2)

Overview:

The crux of the problem is that both books use “protocol identifier”, and this term is overloaded in both books. Contrary to likely most readers’ interpretation they don’t mean the same thing. The *IP Over CCSDS* book alludes to these different meanings in the third paragraph of section 2.4.1: “[The IPE convention] offers a sizable protocol identifier space while not impacting the protocol ID space used by the Encapsulation Service itself.”

The Protocol Identifiers for the Encapsulation Packet Header are defined in the SANA “Protocol Identifier” registry, which includes the ID ‘010’ for “Internet Protocol Extension (IPE)”. This is the “protocol ID” value that should go into the Encapsulation Packet Header. That the Protocol Identifiers registry is the proper source of this ID is obfuscated in CCSDS 133.1-B-2 by the reference being merely to “Registries” in the References section (1.7) of 133.1-B-2. My guess  is that 133.1-B-2 uses multiple registries and so this omnibus reference was intended to cover them all. But that’s very confusing, and will only get worse as more and more things get registered in SANA.

Recommended Change - Strongly suggest that the next version of 133.1 call out the specific registries in the References.

There would be 6 new references added to 1.7 to replace the current reference 8 which is too general a reference and therefore not useful to the user.

In Section 2.1, add the SANA registry reference for PVNs.

In Section 2.3, add the SANA registry ref. for APIDS.

In Sec 2.3, add it for Encapsulation Packet Protocol IDs.

In Sec 3.3.2.2., add it for SDLP\_Channel.

In Sec 3.3.2.2., state the already defined reference for PVN.

In Sec. 3.2.2.2, add it for EPI (extended protocol ID)

In Sec. 4.1, state the reference for APID.

In Sec. 4.2.2.3, state the reference for ENCAP Packet Protocol ID.

In Sec. 4.2.2.6, state the reference for EPI.

In Table 5-1, state the reference for PVNs.

In Table 5-1, state the ref. for APIDs.

In Table 5-2, state the ref. for PVNs.

In Table 5-2, state the ref. for ENCAP Packet Protocol IDs.

*IP Over CCSDS*, on the other hand, explicitly points to the “Internet Protocol Extension Header” SANA registry in its References, which leaves no doubt as to where to look in the SANA registry. In that IPE Header registry are found the actual IP protocol IDs –IPv4 datagram, IPv6 datagram, etc. However, I think that it’s a burden on the reader to have to access the SANA registries to understand that the Encapsulation Header “protocol ID” and IPE Header “protocol ID”  aren’t the same things. I suggest that a more-explicit explanation of the difference between “protocol IDs” be included in the next version of *IP over CCSDS*.

Recommended Changes – to IP over CCSDS (702.1-B-1)

2.4.1 From: “[The IPE convention] offers offers a sizable protocol identifier space while not impacting the protocol ID space used by the Encapsulation Service itself.”

To: “[The IPE convention] provides a unique protocol ID space from that used by the Encapsulation Service itself. “

Add a new requirement 3.4.2.6 to Section 3.4.2 Encapsulation Service

3.4.2.6 For transferring IP datagrams over the CCSDS Space Link, the Encapsulation Packet Protocol ID shall be set to the value for the “Internet Protocol Extension (IPE) ID” i.e., ‘010’.

NOTE: The Encapsulation Packet Protocol ID space is distinct (see reference [X]) from that of the IPE Header Protocol ID space (see reference [8]).

Add the new reference [9] for the SANA registry of the Encapsulation Packet Protocol ID. The formulation for this is: “Encapsulation Packet Protocol ID.” Space Assigned Number Authority. http://sanaregistry.org/r/protocol\_id/protocol\_id.html

We also need to fix the broken web address to the SANA registry for IPE Header Protocol ID.