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To: T10 Committee (SCSI)

From: George Penokie (IBM)

Subject: World Wide IDs

1 Organizationally Unique Identifier (OUI)

The OUI is a 3 byte value that IEEE assigns to companies on request. This is fine except there are two forms of OUI hex data that are defined by various IEEE 802 standards; the MSB hex form and the Canonical form. The difference between the two is in the order the bits in a byte are sent over a serial link (e.g., token ring, ethernet). The MSB hex form transmits the most significant bit of a byte first and least significant bit of a byte last. The Canonical form transmits the least significant bit of a byte first and the most significant bit of a byte last. That means 00h 06h 29h is equivalent to 00h 60h 94h. Both forms however transmit bytes most significant byte first. IEEE always assigns the numbers using the canonical form and only lists the canonical form on their web site that lists the assigned OUIs. (Note: The Web site does not state that the OUIs are in canonical form but they are.)

All standards that use the OUI are supposed to indicate which from of OUI is to be used. For example IEEE 802.3 and IEEE 802.4 use the canonical form. Where IEEE 802.5, IEEE 802.6, MAN media, and FDDI MAC use the MSB form. However, the T10 and T11 FC standards that require using OUIs do not indicate which form to use. The standards that should have this information are; from T10 the SPC, SPC-2, SSA-TL2 and from T11 FC-PH. There may be more but those are the standards I am aware of. So we have to decide which form to use in all those standards.

1.1 Bit order transmission

The form that is used is supposed to depend on how the serial bus transmits the bits of a byte. If we go by this definition then SSA-TL2 and FC-PH should call out the MSB form because both those interface transmit the most significant bit of a byte first. SPC and SCP-2, however, do not care about how the information is transferred (i.e., it is protocol independent) as long as it gets the to other side with no changes.

1.2 MSB or Canonical for FC

It would seem the MSB form would be the logical solution for the OUI for the FC-PH standard. But there are two problems with that. One is the confusion factor of IEEE assigning values in Canonical form. We would be forever trying to explain why the OUI being read is not the same as the OUI assigned to our company on the IEEE site. Two is that FC-PH implies the usage of the Canonical form for NAA values 0001b and 0010b. It does this by defining the least significant bit of byte 0 to be the Individual/Group Address (I/G) bit and the next least significant bit shall be the Universally or Locally Administered Address (U/L) bit. Those two bit are supposed to be transmitted as the first two bits of the OUI which is what happens in the Canonical form. If FC-PH was using the MSB form it would define those bits as being located in the most significant bit and next most significant bit.

Recommend Canonical be defined as the OUI form to be used in FC-PH.

1.3 MSB or Canonical for SSA

It would seem the MSB form would be the logical solution for the OUI for the SSA-TL2 standard. But there is a problem with that. It is the confusion factor of IEEE assigning values in Canonical form. We would be forever trying to explain why the OUI being read is not the same as the OUI assigned to our company on the IEEE site. On the other hand most (or possibly all) the SSA product that has shipped is using the MSB

form.

Rcommend MSB be deifined as the OUI form to be used in SSA-TL2.

1.4 MSB or Canonical for SPC-2

It makes no difference which form SPC-2 uses but one needs to be selected. But defining the Canonical form would be less confusing because of IEEE assigning values in Canonical form.

Recommend Canonical form be used in SPC-2.