

Implementation of IEEE P802.1p/Q on IEEE 802.5 Media

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This memo is being written to confirm that the general consensus within the 802.5 working group is that no changes are required by 802.5 MACs to support the proposed 802.1 standards (P802.1p and P802.1Q). Changes required to the MAC layer, if any, are especially significant because of the interest in developing high speed token ring technology. If it is determined that changes to the 802.5 standard are required, a PAR needs to be initiated for this activity immediately. The IEEE 802.3 working group has initiated a PAR to enable 802.3 MAC to accommodate P802.1p/Q frames.

P802.1p deals with *expedited traffic classes and dynamic multicast filtering*. P802.1p does not affect frame content. Rather, it makes a forward reference to P802.1Q which discusses the format and location of a tag. On Token ring media, the proposed standard requires that the User Priority in the frame be encoded in the priority bits in the Frame Control field.

P802.1Q deals with *virtual bridged local area networks*. The standard defines the format of a 4 byte *VLAN tag* which comprises a 2 byte tag protocol identifier (TPID) and a 2 bytes of tag control information (TCI). In the case of 802.5 media, the tag is SNAP encapsulated adding 10 bytes to the frame. The 802.5 standard does not explicitly specify a maximum frame size. The maximum frame size is determined by the maximum token holding time (THT), the recommended value for which is on the order of 10 ms. This yields a maximum frame size of approximately 4Kbytes on 4 Mbps media and 16 Kbytes on 16 Mbps media. Therefore, while the standard will not require any modification for frame size, implementors of bridges/switches must bear in mind that adding a tag to a frame does increase the frame size by 10 bytes. The priority bits in the TCI field must match the priority bits in the FC field. If end stations are required to perform VLAN classification for tagging the frame, this will be a part of the software function above the device driver interface (e.g. NDIS). In adapters which support multiple queues (or traffic classes), drivers must be capable of using the priority bits in the FC field to select the appropriate traffic class.

In summary, support for the functionality defined by P802.1p/Q does not require any modification to the existing 802.5 MAC standard and its conformant implementations.