

VLAN Tag Formats

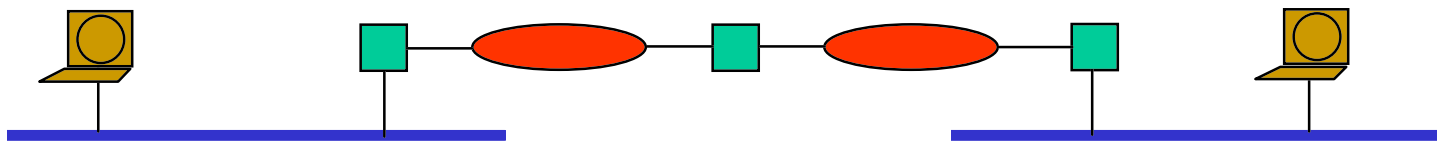
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P802.1Q Editor

Tagging to support:

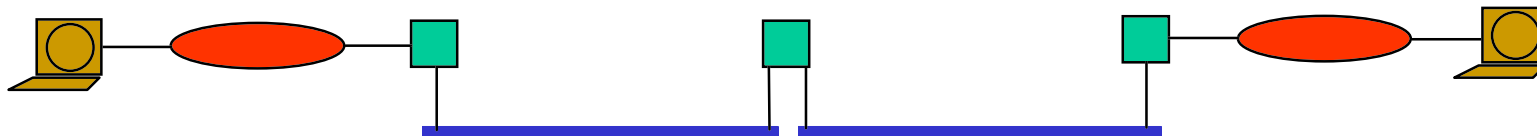
- VLAN Identification (12 bits)
- Priority (3 bits)
- In VLANs spanning different media types.

VLANs across different media

Ethernet transported by FDDI backbone



FDDI/TR transported by Ethernet backbone



Transport, not Translation

- Backbone devices not required to translate
- 802.1H translation and tag translation appears only in translating devices (FDDI/TR <-> Ethernet/802/3).
- 802.1Q Bridges over a single media type operate on DA, SA, VID and Priority only (Q Bridges are transparent Bridges)

Frame Tagging

- Ethernet frames on Ethernet and FDDI/TR media
- FDDI/TR frames on Ethernet media

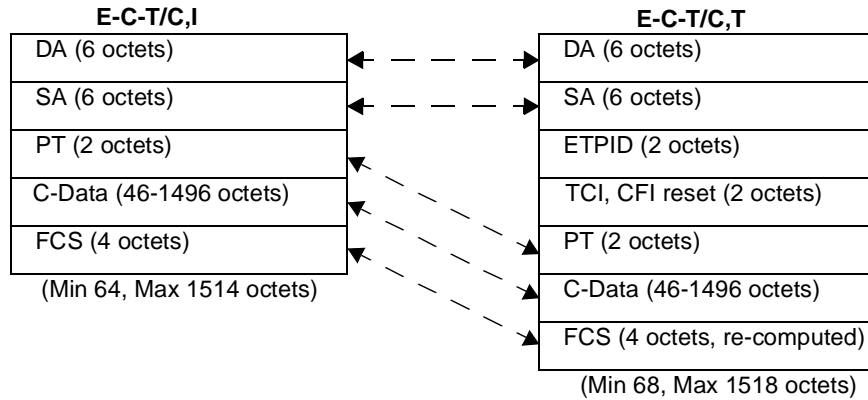


Figure B-5—Translation between E-C-T/C,I and E-C-T/C,T

Removal of the tag involves the reverse of this process.

This form of Tagging causes the original frame size to be increased by 4 octets.

Figure B-6 illustrates the translation between an Untagged Ethernet frame on 802.3/Ethernet (E-C-T/C,I) and a Tagged Frame on Token Ring/FDDI (E-C-T/R,T).

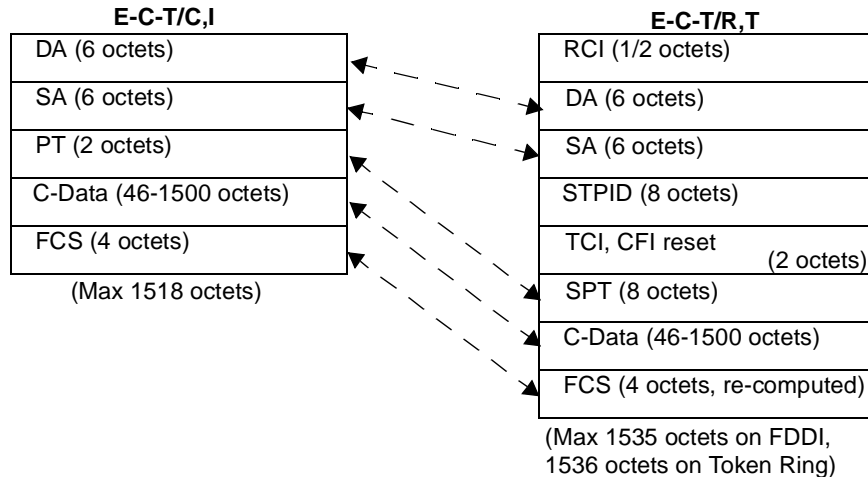


Figure B-6—Translation between E-C-T/C,I and E-C-T/R,T

The following translations are required in order to tag an E-C-T/C,I frame on Token Ring/FDDI media:

- e) The appropriate variant of the RCI field is added;
- f) The DA and SA fields carry the same MAC addresses as in the original frame;

Note: the meaning of the wording used in f) (and in other instances in this Annex where this form of words is used) is that the MAC addresses in the original and translated frames, when represented using the hexadecimal notation defined in Clause 5 of IEEE Standard 802, are the same.

- g) The STPID and TCI are inserted, with CFI reset;
- h) The PT is translated into the ISO/IEC 11802-5/RFC 1042-encoded form (SPT);
- i) The C-Data field is copied unchanged;
- j) The FCS is recomputed.

Removal of the tag involves the reverse of this process.

This form of Tagging causes the original frame size to be increased by 4 octets.

Figure B-8 illustrates the translation between an Untagged LLC frame on 802.3/Ethernet (L-C-T/C,I) and a Tagged Frame on Token Ring/FDDI (L-C-T/R,T).

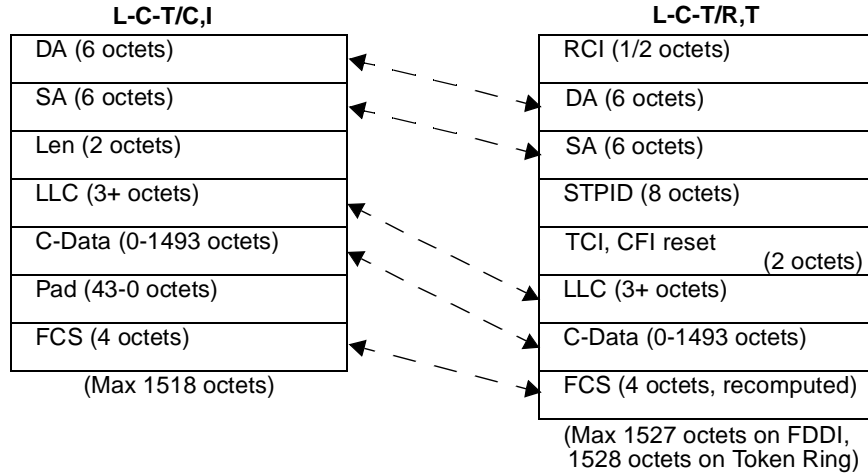


Figure B-8—Translation between L-C-T/C,I and L-C-T/R,T

Tagging in LLC format consists of the following frame translations:

- f) The appropriate RCI field for the Ring media concerned is added;
- g) The DA and SA fields carry the same MAC addresses as in the original frame;
- h) Insert STPID and TCI fields, with CFI reset;
- i) The Len field is removed;
- j) Copy the LLC field unchanged;
- k) The C-Data field is copied unchanged;
- l) The Pad field is removed;
- m) Re-compute the FCS.

Removal of the tag (Tagged Frame to native 802.3/Ethernet frame) involves the reverse of this process.

This form of Tagging causes the original frame size to be increased by 9 octets for FDDI or 10 octets for Token Ring.

Note: In translational (VLAN-unaware) bridging between 802.3/Ethernet and Ring media, an LLC frame reduces in size by 1 octet on FDDI, and does not change in length on Token Ring.

Translations for L-C-R/C,I, L-N-T/C,I and L-N-R/C,I to their equivalent Tagged Frame formats (L-C-R/C,T, L-N-T/C,T and L-N-R/C,T on 802.3/Ethernet and L-C-R/R,T, L-N-T/R,T and L-N-R/R,T on Token Ring/FDDI) cannot be shown, as there is no representation for such Untagged Frames on 802.3/Ethernet media. However, translation of L-C-R/C,T and L-C-R/R,T to L-C-T/C,I is possible with loss of the Source Routing information, and translation of any of the remaining four Tagged Frame formats into L-C-T/C,I is possible, if the Bridge is capable of translating Non-canonical data to its Canonical form, again with the loss of any Source Routing information.

B.5.2.2 LLC on Token Ring/FDDI to Tagged Frame format

Figure B-11 illustrates the translation between an Untagged LLC frame on Token Ring/FDDI (L-C-T/R,I, L-N-T/R,I, L-C-R/R,I or L-N-R/R,I) and a Tagged Frame on 802.3/Ethernet (L-C-T/C,T, L-N-T/C,T, L-C-R/C,T or L-N-R/C,T).

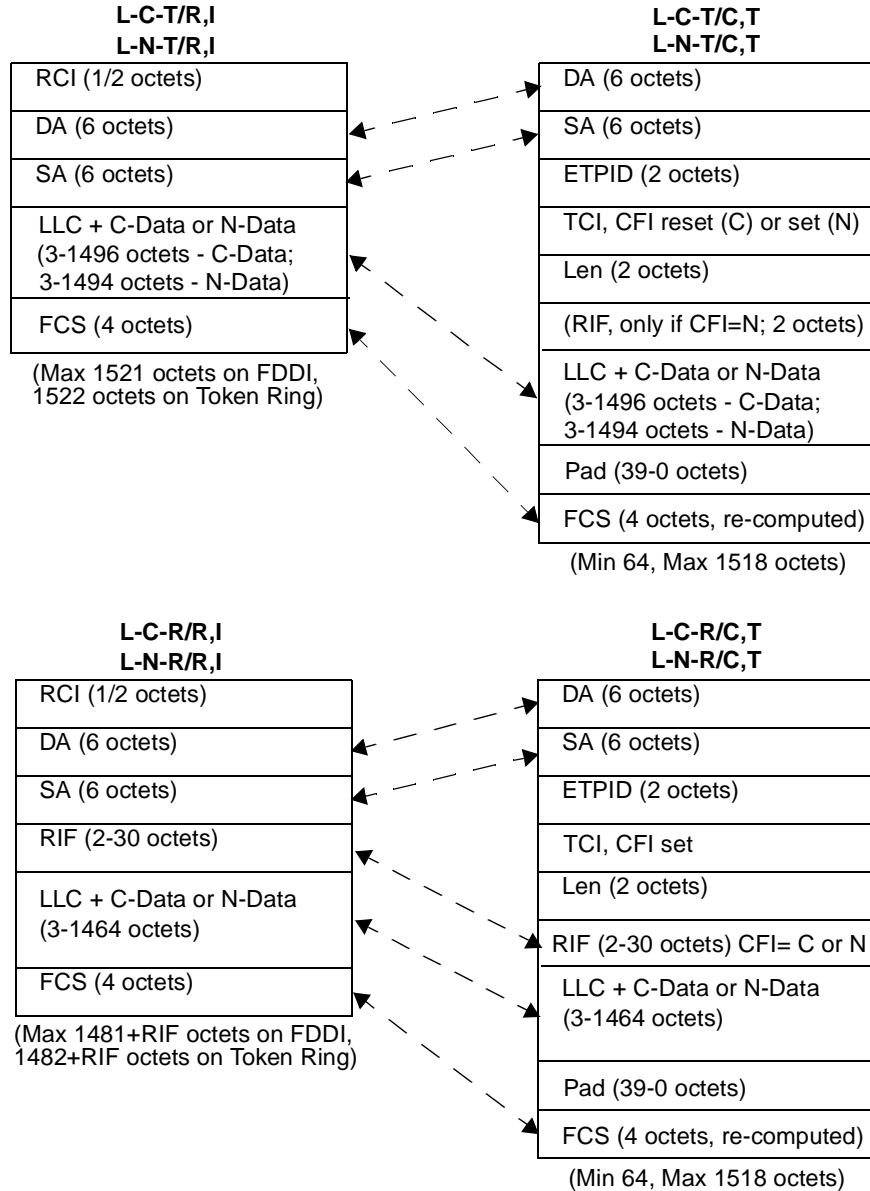


Figure B-11—Translation between L-X-X/R,I and L-X-X/C,T

Tagging requires the following frame translations:

- Remove the RCI field;
- The DA and SA fields carry the same MAC addresses as in the original frame, with the RII bit reset;
- Insert ETPID and TCI, with CFI reset (L-C-T/R,I) or set (all other frame types);
- If the RII bit was set in the original frame, copy the RIF into the Tag Header RIF. For L-N-T/R,I, create a RIF with frame type = Transparent. Set the RIF CFI to C or N appropriately;
- Insert the Len field, with value equal to the number of LLC+Data octets;

Untagging frames

- Frame type must match the media, otherwise discard