Considering Wider Implications of the Frame Format Choice

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Special Case of a More General Choice

• Formats A and B are special cases of a more general choice.

• We’ve been concentrating on a special case:
  
  on FDDI, the “inside” frame is:
  
  Choice A: in Ethernet format
  
  Choice B: in FDDI format.

• The more general choice is:
  
  —one (or more) canonical formats, or
  
  —the frame format always matches underlying media type.
Wider Context (i)

• Two-level tagging
  — we should make the same choice for one-level tagging and two-level tagging
  — a benefit of two-level tagging is allowing 802.5 Source Routing to be carried over other media
Wider Context (ii)

• Token Ring
  —every time we say FDDI, also need to remember Token Ring
  —how practical is Token-Ring <-> Ethernet at line-speed ??
  —when Fast-Ethernet used to interconnect two token-rings, translational bridging at both ends is bad.
  —requiring Token-Ring hosts to generate Ethernet format frames when end-system tags a frame is bad.
  —requiring Token-Ring switches to have to translate to Ethernet format when tagging a frame is bad.
Wider Context (iii)

Self-defining format

• if we allow two formats on the same media, then:
  —because of RMON probes, mis-configurations, and etc.,
  —useful to have indication, in each frame, of which format is in use
Wider Context (iv)

LAN Emulation is relevant in two ways:

- LANE faced the analogous choice,
- Compatibility with the choice LANE made
The Debate in LANE

• There were two competing proposals:
  —a single canonical format, or
  —separate formats for each of: Ethernet, Token-Ring, FDDI, ...

• The compromise:
  —just two formats: a) Ethernet, b) Token-Ring
  —each ELAN uses only one of these formats (cf. ELAN type)
  —this avoids hardest type of translational-bridging
  —also avoids open-ended set of formats
  —FDDI can be matched to either format
  —adding FDDI as an additional type was later re-considered, but still rejected
  —effectively, two canonical formats.
So, what about A versus B?

• The LANE-compatible choice is:

  on FDDI, the “inside” frame is:

    Choice A: in Ethernet format

  on Token-Ring, the “inside” frame is:

    Choice B: in Token-Ring format.
Does this Require a VLAN Type?

It depends, on choice of:

- **No, if separate bit for format-type outside VLAN-id:**

  ![Diagram](image1)

- **Yes, if explicit bit for format-type inside VLAN-id:**

  ![Diagram](image2)

- **Yes, if each VLAN-id uses one format, but no explicit bit:**

  ![Diagram](image3)