IEEE 802.1aq

migration control for Mac-in-Mac Hash/TTL

B-VID

Dec 2010

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Background

- 802.1aq defines a new VLAN behavior.
  - Traffic on an SPB BVLAN within a domain takes shortest path.
- Other behaviors also exist, e.g., STP, PBB-TE.
- 802.1Q has mechanisms to ensure B-VID behavior is consistent within a domain (Configuration Digest).
- To change the algorithm for an SPB B-VID 802.1aq has mechanisms to advertise and verify consistency.

Background

- The ECT algorithm for a SPB B-VID is defined with a tuple:

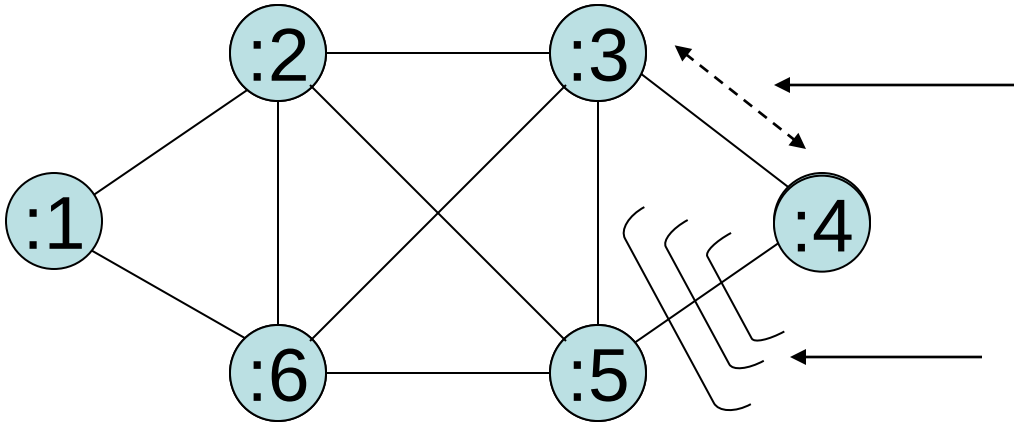
  { B-VID,ECT-ALGORITHM}

- The ECT-ALGORITHM identifier is further broken down into a world wide unique OUI and local ‘index’.

- 802.1aq currently defines 17 identifier values, all with the 802.1 OUI. These use indexes 0..17.

- Index 0 is for the CIST while indexes 1..17 are for algorithms with different ECT tie breakers.

Tuples are exchange/verified



{B-VID,ECT-ALGORITHM} tuples Are exchanged in hellos and checked for consistency.

{B-VID,ECT-ALGORITHM} tuples are also advertised in LSPs.

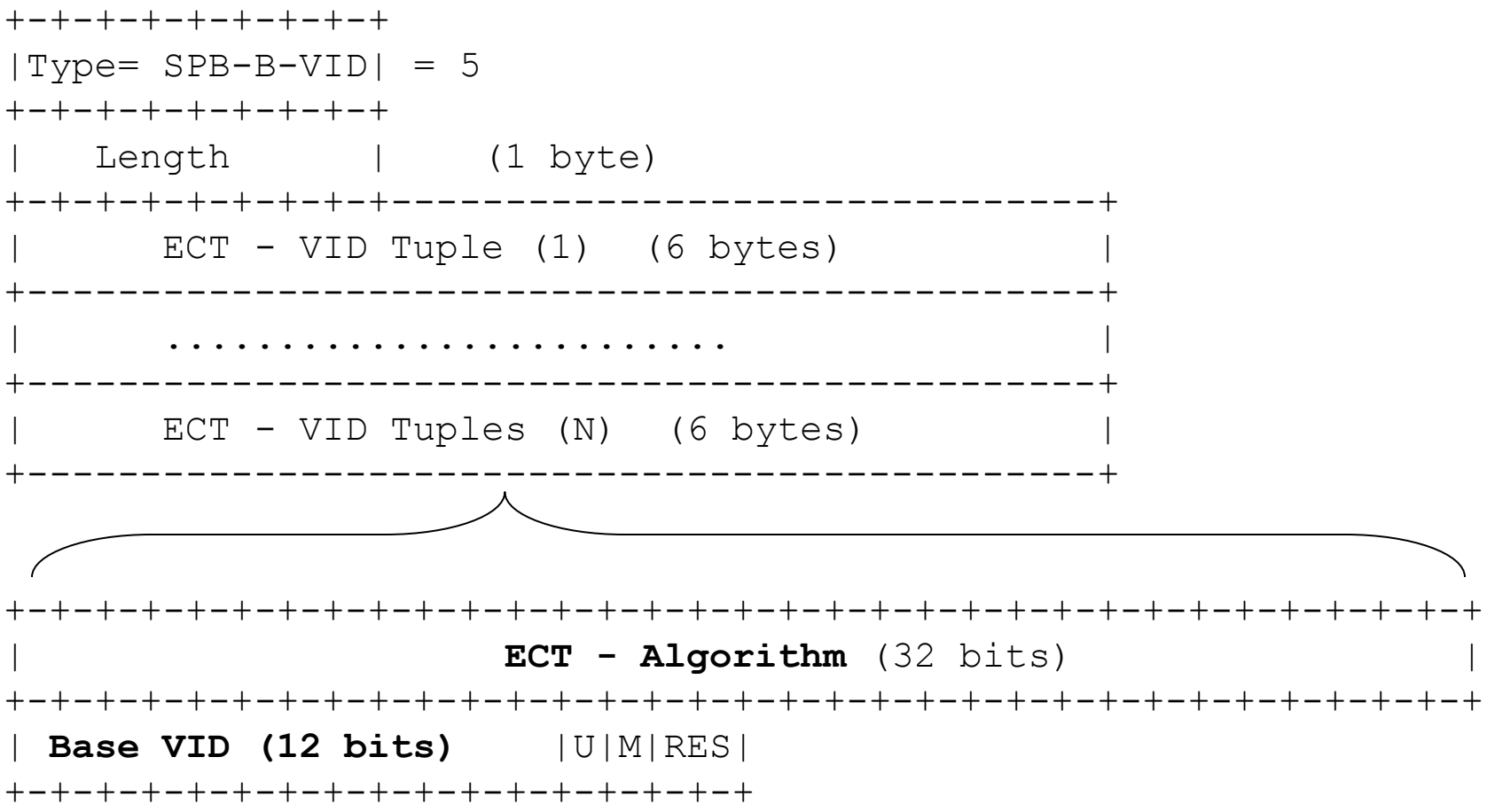
Inconsistency is only permitted if a tuple (B-VID) is **not in use.**

We can therefore introduce a new {B-VID,ECT-ALGORITHM} and temporary inconsistency is allowed until we start using it.

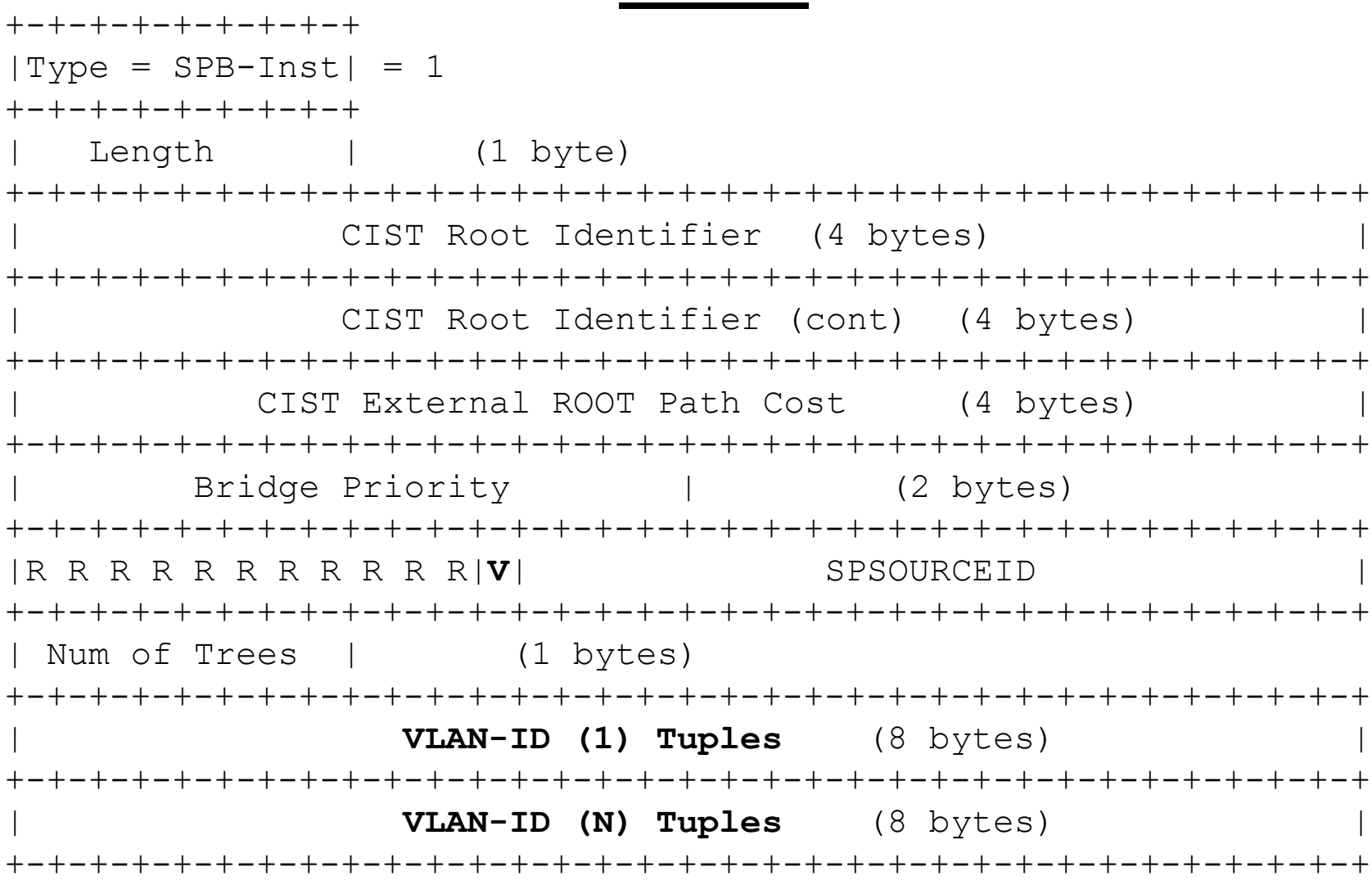
We can therefore remove all services from a B-VID and then start to delete the associated {B-VID,ECT-ALGORITHM} and inconsistency is allowed while I delete it.

Service migration to/from a new {B-VID,ECT-ALGORITHM} only requires edge re-provisioning, can be done over days/weeks.

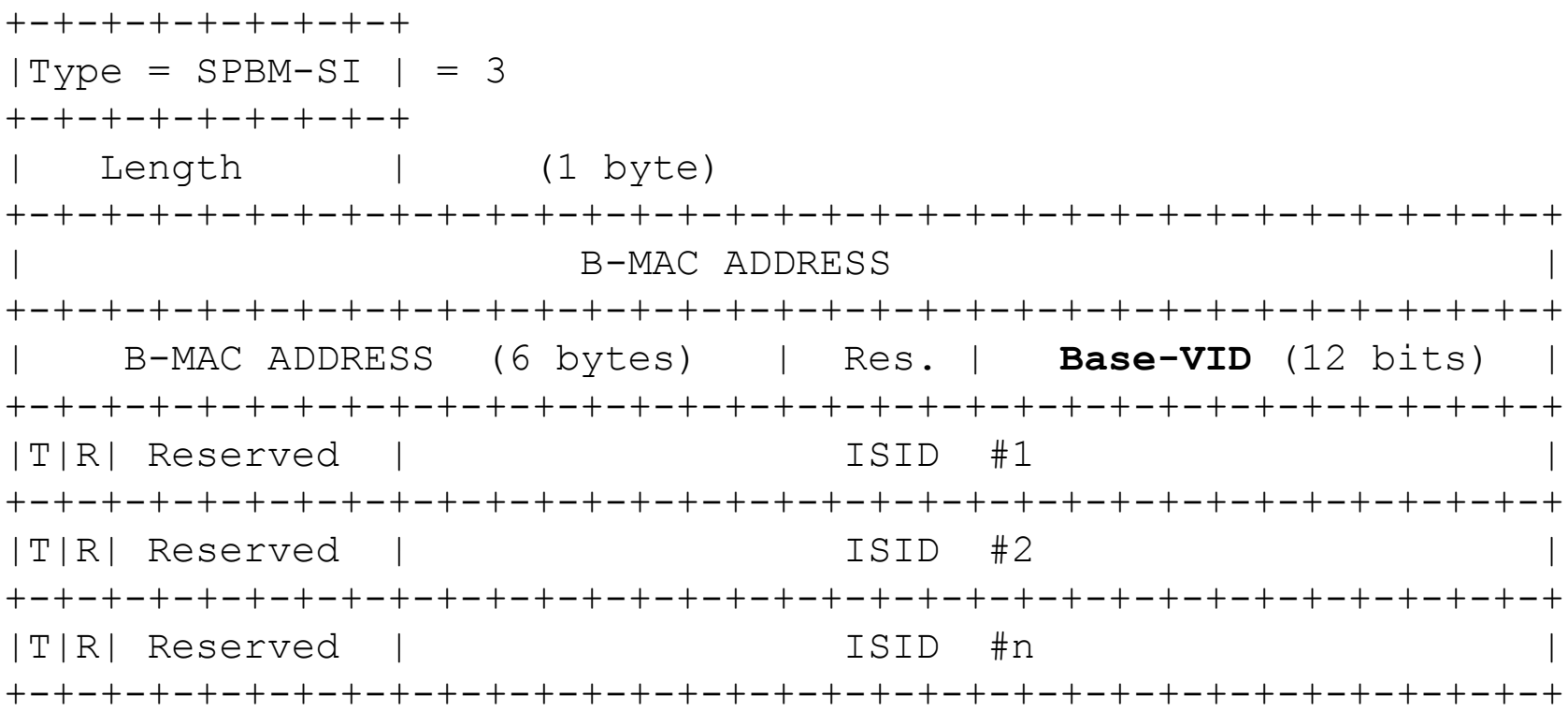
Algorithm to B-VID association in Hello



Algorithm to B-VID assocation in LSP.



TLV – SPB-Service Instance



A service is assigned to an ALGORITHM indirectly through association with a Base-VID. The Base-VID is part of an {B-VID, ECT-ALGORITHM} tuple.

Suggested approach for ECMP

- Assuming an 802.1aq network running some number of ECT-ALGORITHMS.
- A new {B-VID,ECT-ALGORITHM} tuple is assigned and advertised normally.
- The new {B-VID,ECT-ALGORITHM} would use hash-based forwarding/TTL decrement for UNICAST traffic only.
- Migration of services to/from this B-VID would be identical to any other B-VID running an AQ ECT algorithm.