

Use of Ethernet Control Word **RECOMMENDED**

draft-ietf-pals-ethernet-cw-00

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The Story So Far

- A number of operators have experienced operational problems with PW packets being misordered and reported their concerns.
- This was attributed to some PEs not using the PW CW with Ethernet PWs, the IEEE now issuing MAC addresses starting with 0x4 and 0x6, and LSRs mistakenly doing DPI based ECMP on PW packets.
- draft-ietf-pals-ethernet-cw-00 was adopted as a PALS WG with the caveat that we needed to agree on the recommendation text.
- It now transpires that some vendors are using the 0x0 in the control word as an indication that an Ethernet PW is being carried, doing even deeper DPI ECMP ... and getting it wrong.

The Problems For This Meeting

- Text recommending use of CW.
- Additional text to address the issues arising as a result of DPI past the PW CW.

The authors propose that we agree the text concerning these two recommendations and then the authors align the explanatory text around these recommendations.

Use of CW (let's do discussion at the end)

- Section 4 (Recommendation)

This document updates RFC4448 [RFC4448] to state that where both the ingress PE and the egress PE support the Ethernet pseudowire control word, then the CW **MUST** be used.

- Section 7 (Operational Considerations)

To remove this problem in the long term, and hence to reduce the operational cost of investigating problems associated with the incorrect forwarding of Ethernet packets over PWs not using the CW, it is **RECOMMENDED** that equipment that does not support the CW be phased out of operational use.

DPI Past the CW

- Section 5 explains two methods that “ought” to provide safe methods of doing PW ECMP –
 - RFC6391 (Flow-Aware PW over MPLS)
 - RFC6790 (LSP Entropy Labels)
- Caveat: RFC6790 is soft on how ECMP is carried out when the ELI is present:
If a transit LSR recognizes the ELI, it MAY choose to load balance solely on the following label (the EL);
- The implication is that an LSR that recognises the EL cannot be assumed to base its ECMP decision solely on the EL. This presents other problems in MPLS, for example impacting Synonymous Label behaviour.

“Soft” RFC6790

- RFC6790 is outside the scope of the PALS WG.
- We need to assume that the problem will be addressed in MPLS WG.

DPI Past the CW for ECMP

- Addressing this is outside the scope of the PALS WG.
- Put test in this draft minimising the need for DPI past the CW.
- Write a draft for MPLS WG explaining the operational issues that arise and pointing to recommendations made in this draft.

Use of RFC6391 – Proposed Text (discuss in a minute)

- Section 4 (Recommendation)

Where the ingress PE supports RFC6790 (ELI) and both ingress and egress PEs support RFC6391 (FAT) and ECMP of Ethernet PW traffic is required then one of these methods (SHOULD/MUST) be used.

- Section 7 (Operational Considerations)

To remove any need for ECMP based on DPI beyond the PW CW it is RECOMMENDED that PEs supporting Ethernet PWs implement RFC6391 and RFC6790. It is further RECOMMENDED that the use of DPI based ECMP that looks beyond PW CW is disabled by default and only enabled if both RFC6391 and RFC6790 are unavailable and a risk assessment of the long term operational costs and other implications such as possible out-of-order Ethernet frame delivery has been carried out.

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The End