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VCCV MPLS-TP Connectivity Verification (CV) Capability Advertisement
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Abstract

This document specifies how use of proactive Connectivity Verification, Continuity Check, and Remote Defect Indication for the MPLS Transport Profile [RFC6428] affects operation and management function election for PW VCCV [RFC5085], [RFC5885].

Status of this Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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This Internet-Draft will expire on August 25, 2012.

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1. Introduction

Proactive Connectivity Verification (CV), Continuity Check (CC), and Remote Defect Indication (RDI) for the MPLS Transport Profile [RFC6428] is applicable to all constructs of the MPLS-TP, including pseudowires (PWs). If Control Plane is used to operate and manage PW then procedure defined in [RFC5085] and [RFC5885] should be used to select proper type of Control Channel and corresponding type of Connectivity Verification. This document specifies how signaling and selection process modified to ensure backward compatibility and allow use of proactive CV-CC-RDI over MPLS-TP PWs.

1.1. Conventions used in this document

1.1.1. Terminology

BFD: Bidirectional Forwarding Detection

CC: Continuity Check

CV: Connectivity Verification

PE: Provider Edge

VCCV: Virtual Circuit Connectivity Verification

VCCV CC: VCCV Control Channel

1.1.2. Requirements Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119].

2. MPLS-TP CC-CV on Pseudowires

PW VCCV can support several CV Types. Ability to support arbitrary combination of CV modes advertised in CV Types field of VCCV Interface Parameter sub-TLV [RFC4446], [RFC4447]. Currently six types of CV been defined for PW VCCV out of eight bit long field. This document introduces four new CV types and to accommodate them a new VCCV Extended CV parameter for PW Interface Parameters Sub-TLV is defined.

2.1. VCCV Extended CV Advertisement sub-TLV

The format of VCCV Extended CV Advertisement is a TLV where:

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
| Type = 0x19 | Length = 0x04 |    Reserved     |    CV Type     |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

Figure 1: VCCV Extended CV parameter format

Reserved field must be set to zeroes on transmit and ignored on receive.

CV Type field is a bitmask that lists types of CV monitoring that a PE is capable to support. VCCV Extended CV parameter sub-TLV must appear in combination with VCCV parameter sub-TLV. If VCCV parameter sub-TLV is missing then VCCV Extended CV parameter sub-TLV should be ignored.

2.2. MPLS-TP CC-CV Types

The [RFC6428] defines coordinated and independent modes of monitoring point-to-point bi-directional connection that can be applied to monitoring PWs. At the same time [RFC6310] defines how BFD-based OAM can map and be mapped to status of an Attachment Circuit. Thus there could be four MPLS-TP CV types as combination of modes and functionality:

Modes	Fault Detection Only	Fault Detection and Status Signalling
Independent Mode	0x01	0x02
Coordinated Mode	0x04	0x08

Table 1: Bitmask Values for MPLS-TP CV Types

2.3. MPLS-TP CC-CV Type Operation

Connectivity verification according to [RFC6428] is part of MPLS-TP CC/CV operation that can be used with VCCV Control Channel Types 1 [RFC5085] or Type 4 [I-D.ietf-pwe3-vccv-for-gal]. If VCCV CC Type 1 or Type 4 selected, then PEs might select one of MPLS-TP CC-CV types

as VCCV CV mechanism to be used for this PW.

2.4. CV Type Selection

CV selection rules that have been defined in Section 7 of [RFC5085] and updated Section 4 of [RFC5885] are augmented in this document.

If VCCV Control Channel Type 1 or Type 4 is chosen according to Section 7 [RFC5085] or Section 4 [I-D.ietf-pwe3-vccv-for-gal] and common set of proactive CV types advertized by both PEs includes MPLS-TP CC-CV types and some BFD CV types, then MPLS-TP CC-CV takes precedence over any type of BFD CV. If multiple MPLS-TP CV types advertised by both PEs, then following list sorted in descending priority order is used:

1. 0x08 - coordinated mode for PW Fault Detection and AC/PW Fault Status Signaling

2. 0x04 - coordinated mode for PW Fault Detection only

3. 0x02 - independent mode for PW Fault Detection and AC/PW Fault Status Signaling

4. 0x01 - independent mode for PW Fault Detection only

3. IANA Considerations

The PW Interface Parameters Sub-TLV registry defined in [RFC4446].

IANA is requested to reserve a new PW Interface Parameters Sub-TLV type as follows:

Parameter ID	Length	Description	Reference
0x19	4	VCCV Extended CV Parameter	This document

Table 2: New PW Interface Parameters Sub-TLV

Parameter ID Length Description Reference

0x19 4 VCCV Extended CV parameter This document

3.1. VCCV Extended CV Types

IANA is requested to set up a registry of ?VCCV Extended CV Types?. These are 8 bitfield values. Extended CV Type values 0x01, 0x02, 0x04 and 0x08 are specified in Section 2.2 of this document. The remaining bitfield values (0x10 through 0x80) are to be assigned by IANA using the "IETF Consensus" policy defined in [RFC2434]. A VCCV Extended Control Verification Type description and a reference to an RFC approved by the IESG are required for any assignment from this registry.

Bit(Value)	Description
Bit 0 (0x01)	Independent mode for PW Fault Detection only
Bit 1 (0x02)	Independent mode for PW Fault Detection and AC/PW Fault Status Signaling
Bit 2 (0x04)	Coordinated mode for PW Fault Detection only
Bit 3 (0x08)	Coordinated mode for PW Fault Detection and AC/PW Fault Status Signaling
Bit 4 (0x10)	Reserved
Bit 5 (0x20)	Reserved
Bit 6 (0x40)	Reserved
Bit 7 (0x80)	Reserved

Table 3: MPLS Connectivity Verification (CV) Types

4. Security Considerations

Routers that implement the additional CV Type defined herein are subject to the same security considerations as defined in [RFC5085], [RFC5880], [RFC5881], and [RFC6428]. This specification does not raise any additional security issues beyond these.

5. Acknowledgements

The author gratefully acknowledges the thoughtful review, comments, and explanations provided by Dave Allan.

6. References

6.1. Normative References

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6.2. Informative References

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