

# Extensions to RSVP-TE for P2MP LSP Ingress/Egress Local Protection

draft-chen-mpls-p2mp-ingress-protection  
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# Contents

- **Ingress/Egress Local Protection with FRR**
- **Backup LSP Depends on Primary LSP**
- **Backup LSP Is Solid When Failure Happens**
- **MVPN over P2MP LSP with Protection**

# Ingress/Egress Local Protection with FRR

- Ingress of P2MP LSP is locally protected (**New**)
- Every egress of P2MP LSP is locally protected (**New**)
- Every link and intermediate node of P2MP LSP is locally protected using FRR (**Existing**)

Thus

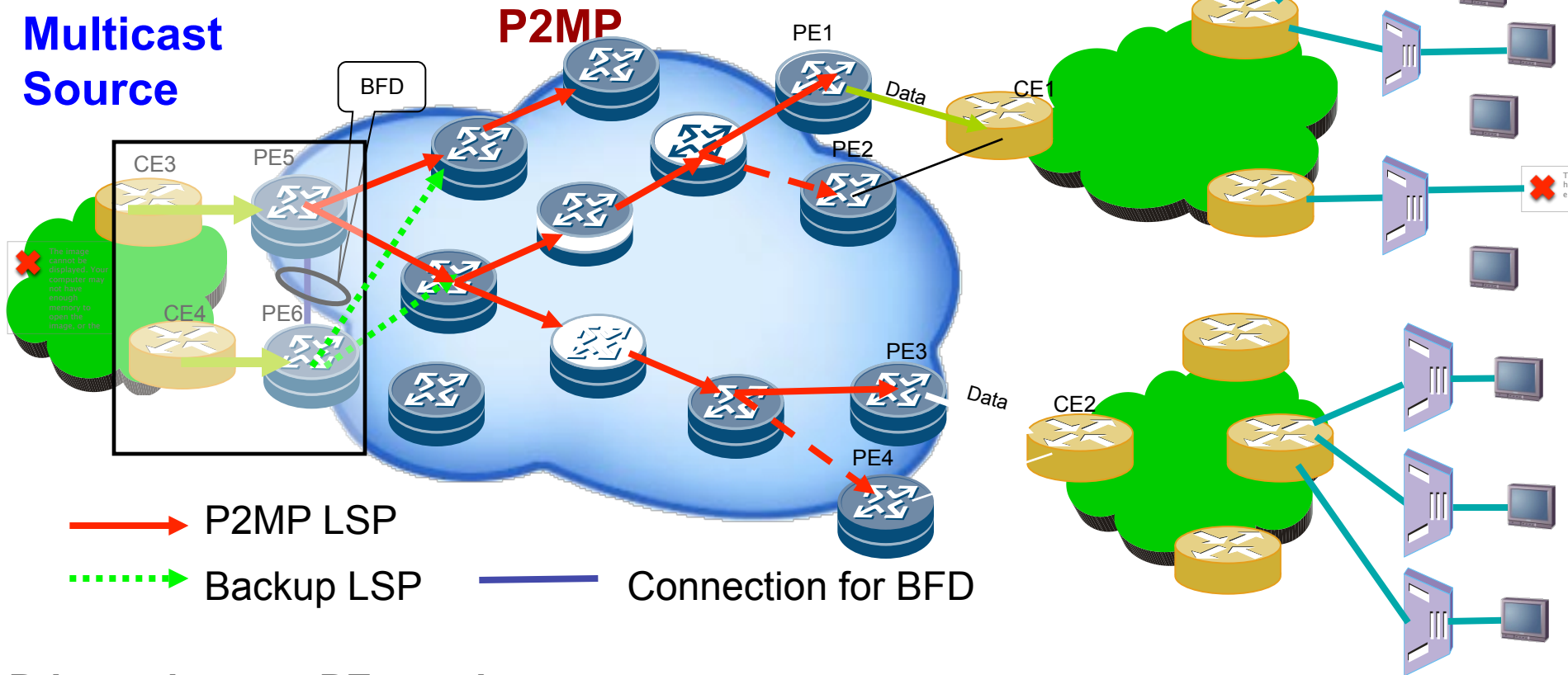
- All parts of P2MP LSP are locally protected

# P2MP LSP Ingress Local Protection

- ◆ PE6 updates Backup LSP when PE5 works and P2MP LSP changes

**Multicast Source**

(Animated) **Multicast Receiver**



**Primary ingress PE5 works:**

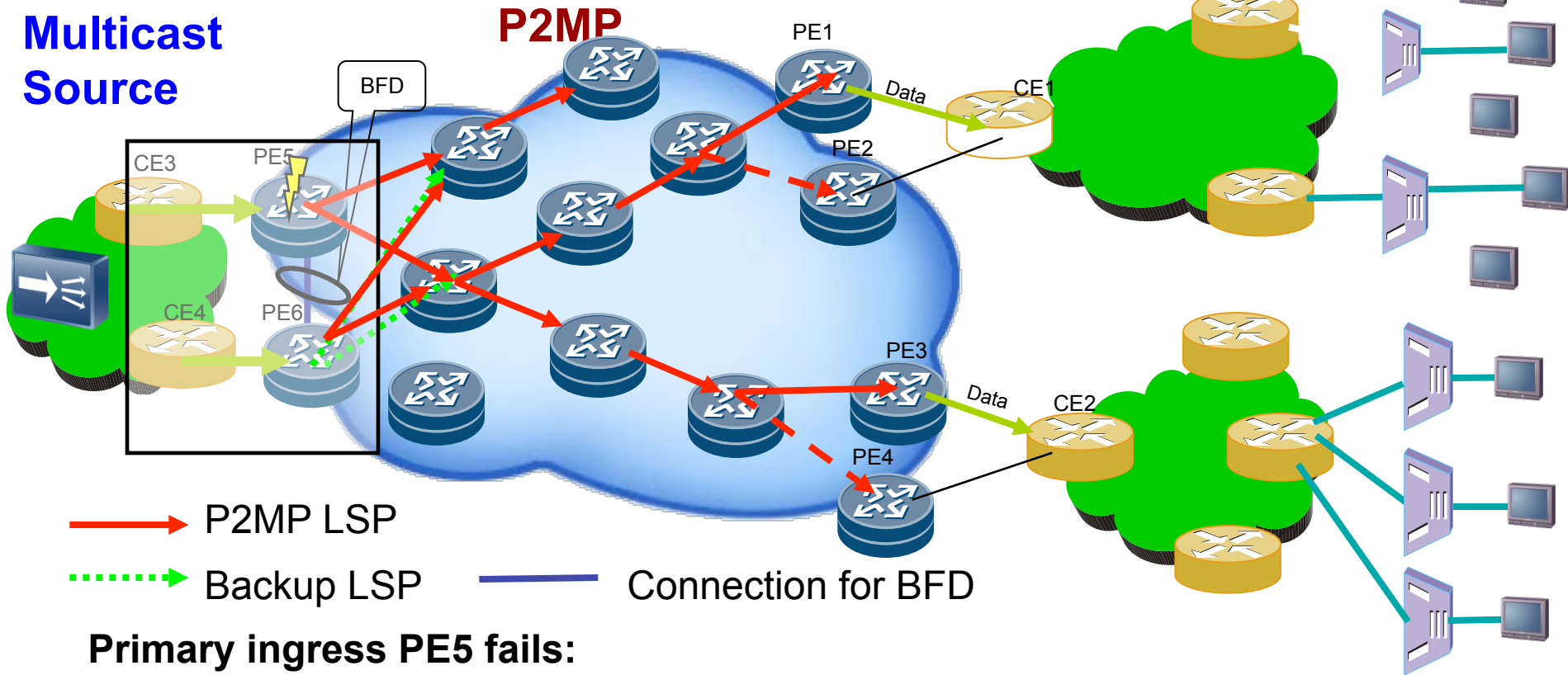
- **New branch added to P2MP LSP**
- **PE6 adds a branch to Backup LSP**

# P2MP LSP Ingress

◆ PE6 keeps Backup LSP when PE5 fails

Multicast Source

(Animated) Multicast Receiver

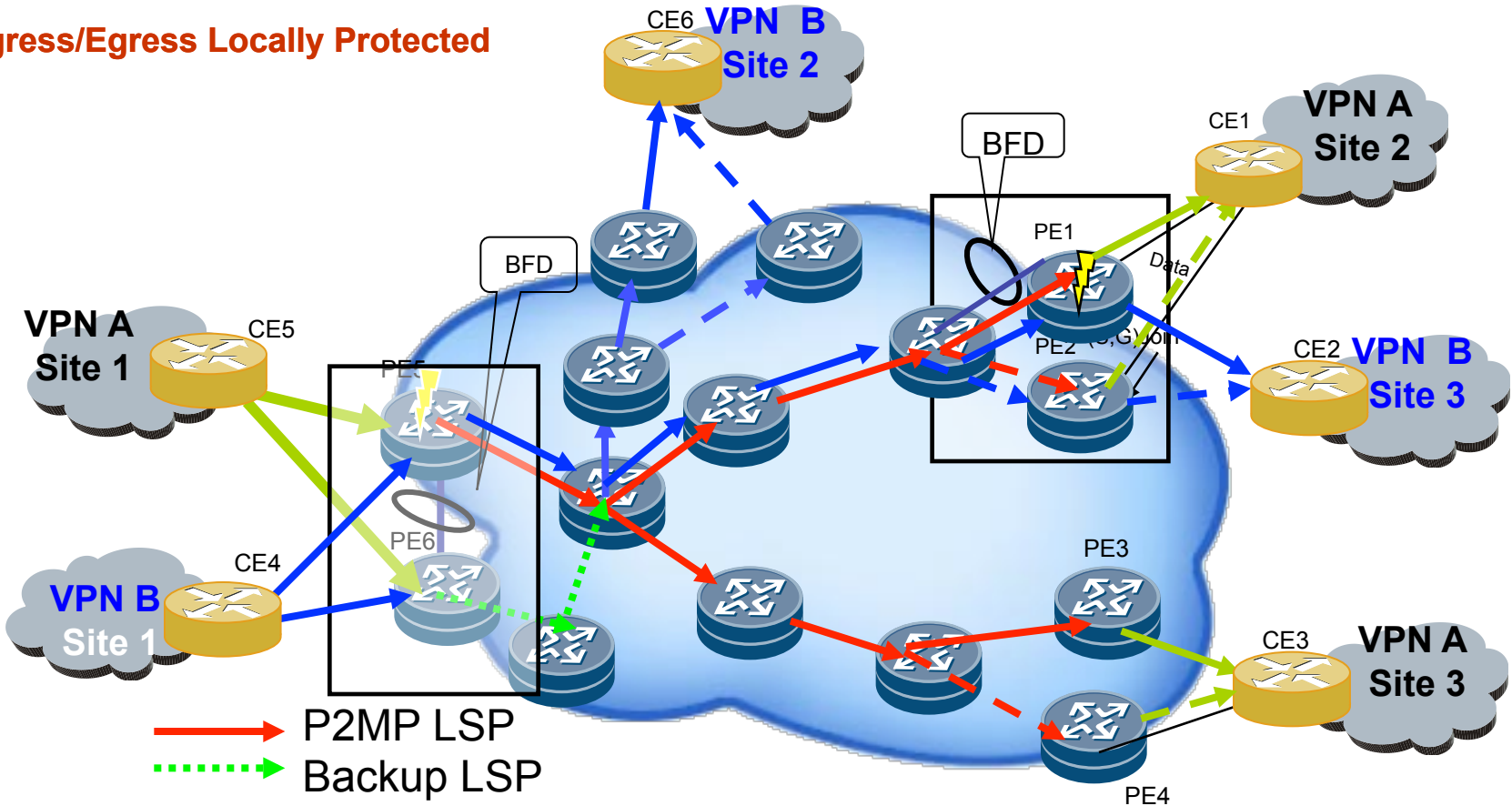


**Primary ingress PE5 fails:**

- Traffic to backup tunnel
- Traffic merged into P2MP LSP
- PE6 keeps Backup LSP

# MVPN over P2MP LSP with Protection

Ingress/Egress Locally Protected



## VNP related behavior:

- VPN Label put inside label stack in (backup) ingress (PE5/PE6)
- VPN Label used for forwarding in (backup) egress (PE1/PE2)

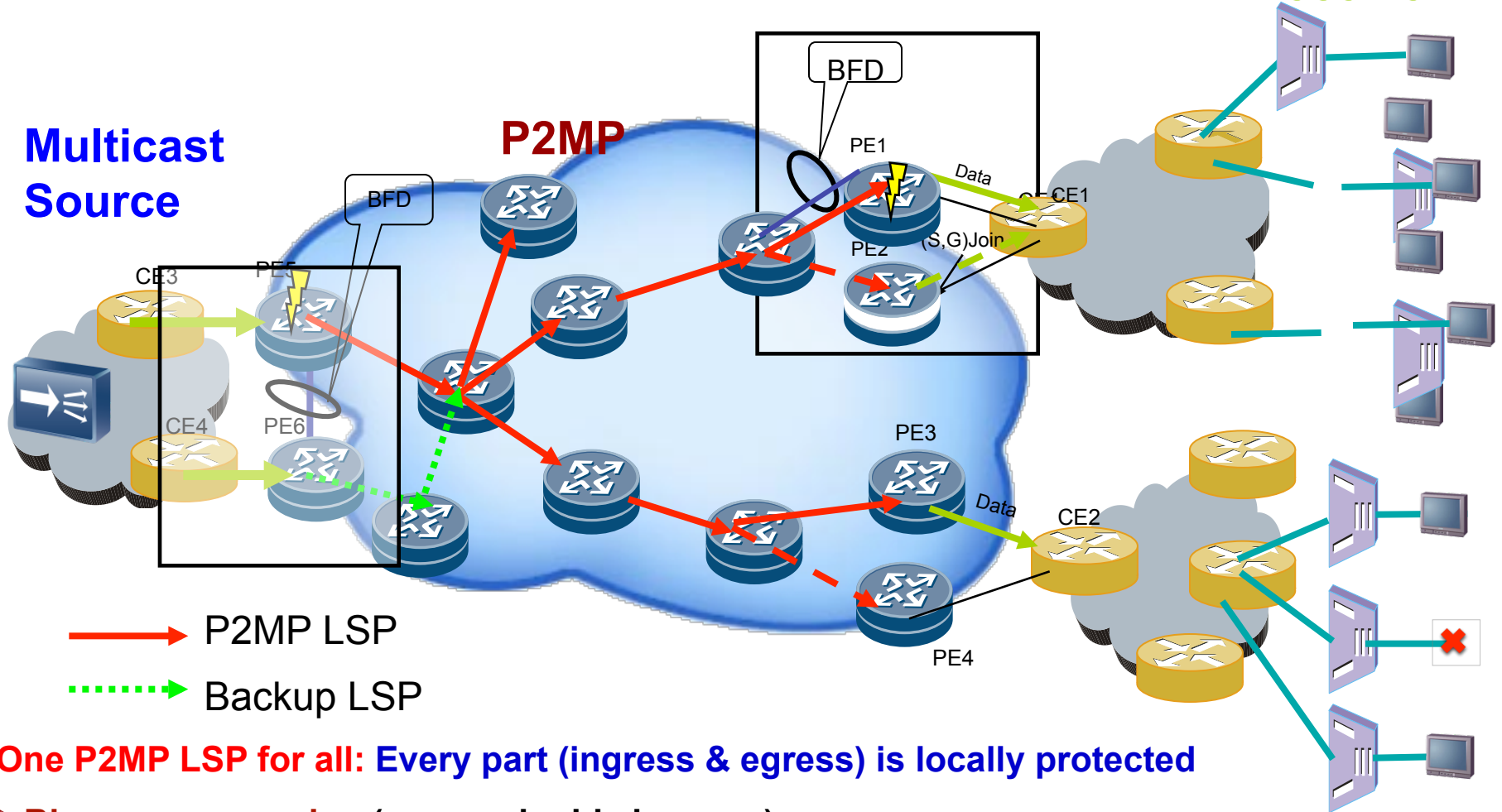
# Next Step

- Welcome comments
- Request to make it into a working group document

# P2MP LSP Ingress & Egress Local Protection (Animated)

Existing scenario: double root and every leaf

Create two global P2MP LSP from each root to leaves, carrying data at same time



➤ Big resource saving (e.g, no double bw resv)

➤ Faster failure recovery



# Advantages of P2MP LSP Ingress and Egress Local Protection

- All parts of P2MP LSP are locally protected
- Only one P2MP LSP is used to implement an E2E protection
  - ◆ Normally two P2MP LSPs are used
- Big saving on resource : 50% bandwidth saving
  - ◆ No need to reserve/use double bandwidth
- Faster recovery
  - ◆ Speed of local protection recovery
  - ◆ Flow recovery within 50ms when a failure happens
- Easier to operate