

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

draft-chen-mpls-p2mp-ingress-protection
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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**)

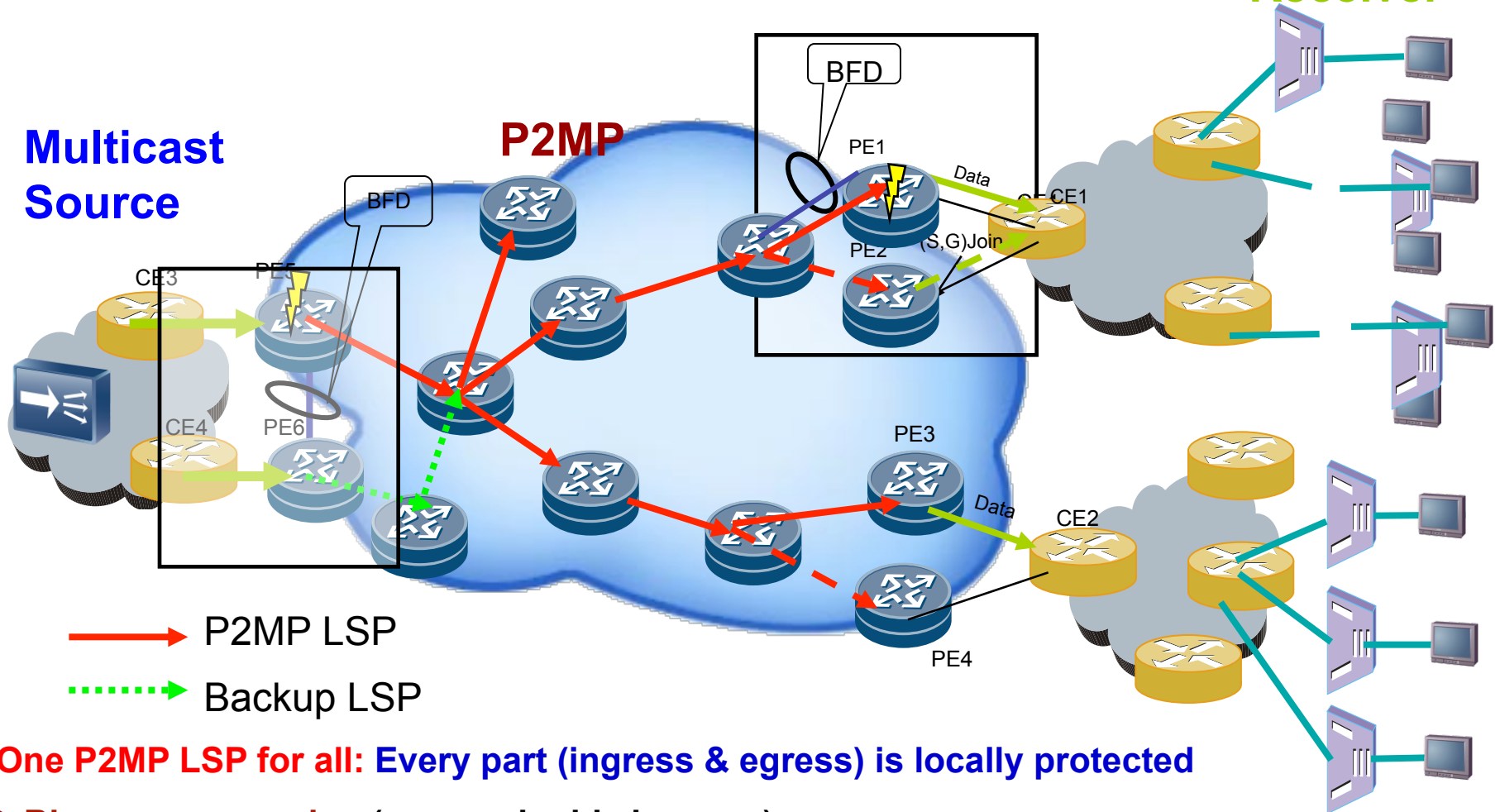
Thus

- All parts of P2MP LSP are locally protected

P2MP LSP Ingress & 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



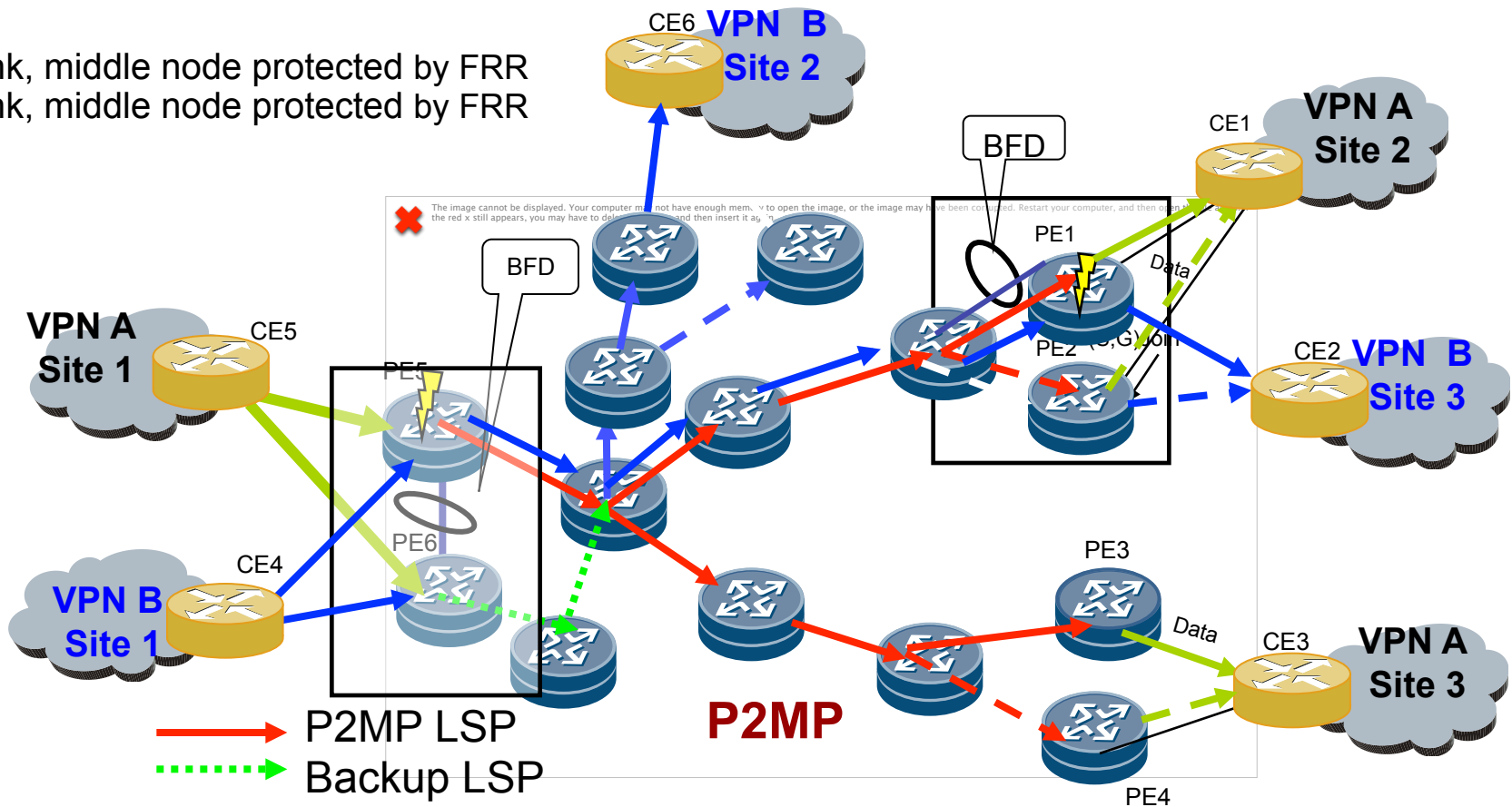
➤ **Big resource saving** (e.g, no double bw resv)

➤ **Faster failure recovery:** local protection speed

Advantages of P2MP LSP Ingress/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

Link, middle node protected by FRR
 Link, middle node protected by FRR



- backup**
- VPN Label used for forwarding in (**backup**) ingress (PE5/PE6)
- backup)** egress (PE1/PE2)

Next Step

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

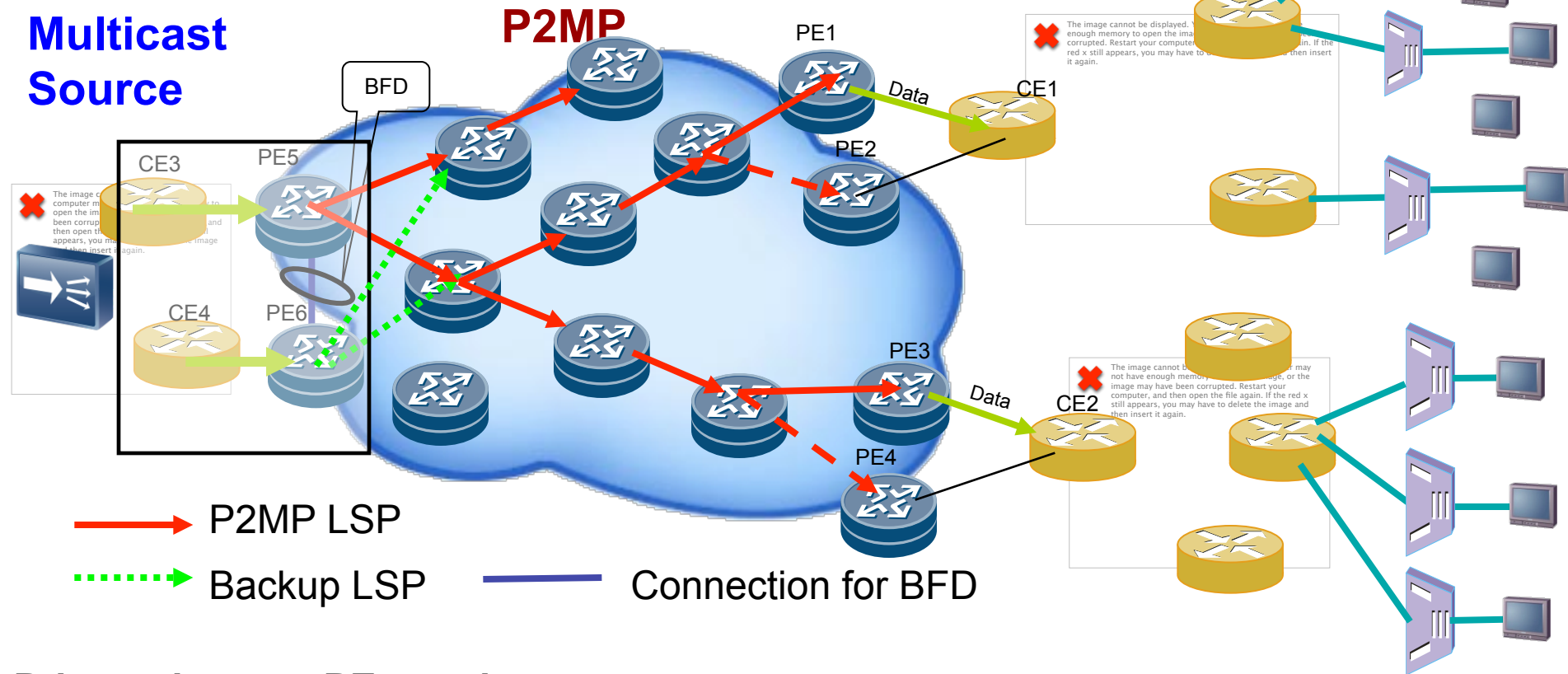
(Animated)

— Backup LSP Depends on Primary LSP

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

Multicast Source

Multicast Receiver



Primary ingress PE5 works:

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

P2MP LSP Ingress Local Protection

◆ PE6 keeps Backup LSP when PE5 fails

Multicast Source

Multicast Receiver

P2MP

BFD

→ P2MP LSP

→ Backup LSP

— Connection for BFD

Primary ingress PE5 fails:

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