

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

draft-chen-mpls-p2mp-ingress-protection

Huaimo Chen ([Huawei](#))

Ning So ([Tata](#))

Autumn Liu ([Ericsson](#))

Lei Liu ([KDDI R&D Lab](#))

# Protocol Extensions for Ingress Local Protection

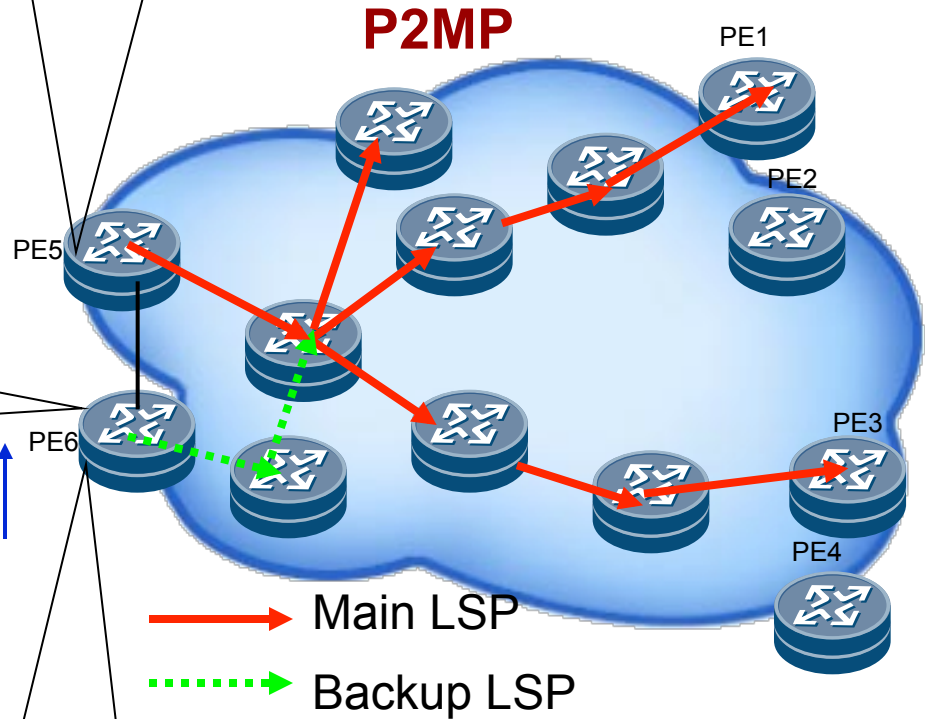
**Locally detect & repair ingress failure**  
**Ingress failure recovers within 50ms**

1. Desire for Ingress Protection
2. 1 to 1 or 1 to N backup
3. Info for creating backup LSP

PE6 creates backup LSP,  
FIB entry (inactive)

Status of protection (such as  
protection is available/ready)

(Primary) Ingress



Backup Ingress

Options:

1. New RSVP-TE Messages
2. New/Enhanced RSVP-TE Objects in existing messages
3. OSPF Opaque LSAs

# RSVP-TE Objects for Ingress Local Protection

## PATH Msg contains

1. A bit in Attr Flags TLV
2. 1 to 1 or 1 to n in FRR
3. ERO, RRO, BW, etc in FRR

1. Desire for Ingress Protection
2. 1 to 1 or 1 to N backup
3. Info for creating backup LSP

## RESV Msg contains

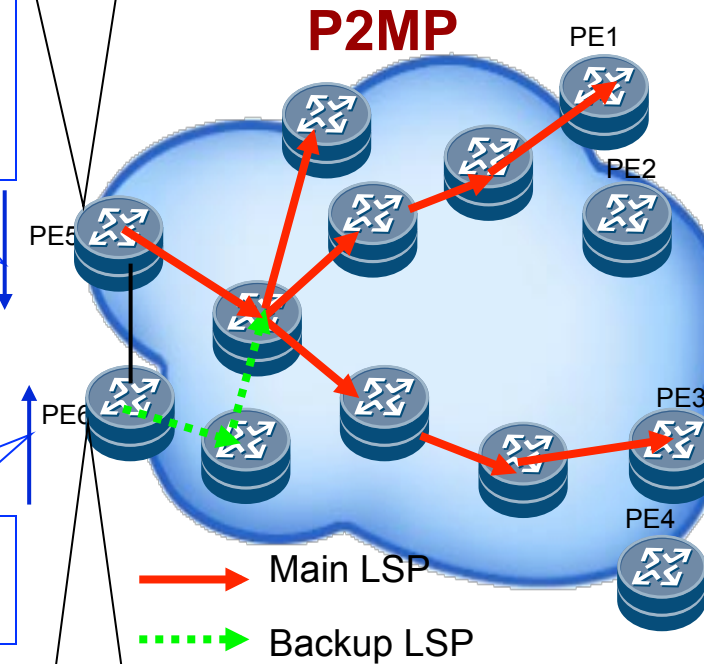
Protection Status in RRO

Status of protection (such as protection is available/ready)

ERO contains path from backup ingress to next hops of primary ingress (maybe loose), to egresses

RRO contains path main LSP traversed

(Primary) Ingress



Backup Ingress

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# RSVP-TE Extensions for Egress Local Protection

Locally detect and repair **egress** failure  
Egress failure recovers within **50ms**

1. **New** Object implies **Desire** for Egress Local Protection
2. 1 to 1 or 1 to N backup in FRR Object
3. Info for creating backup LSP in FRR, and **New**

PATH Message

Common Header

(Existing)

Label Request (Existing)

FRR Object (Existing)

Info for Backup Egresses

(New)

Backup Egress (+Egress)  
ERO for backup LSP

} For one egress to be protected

...

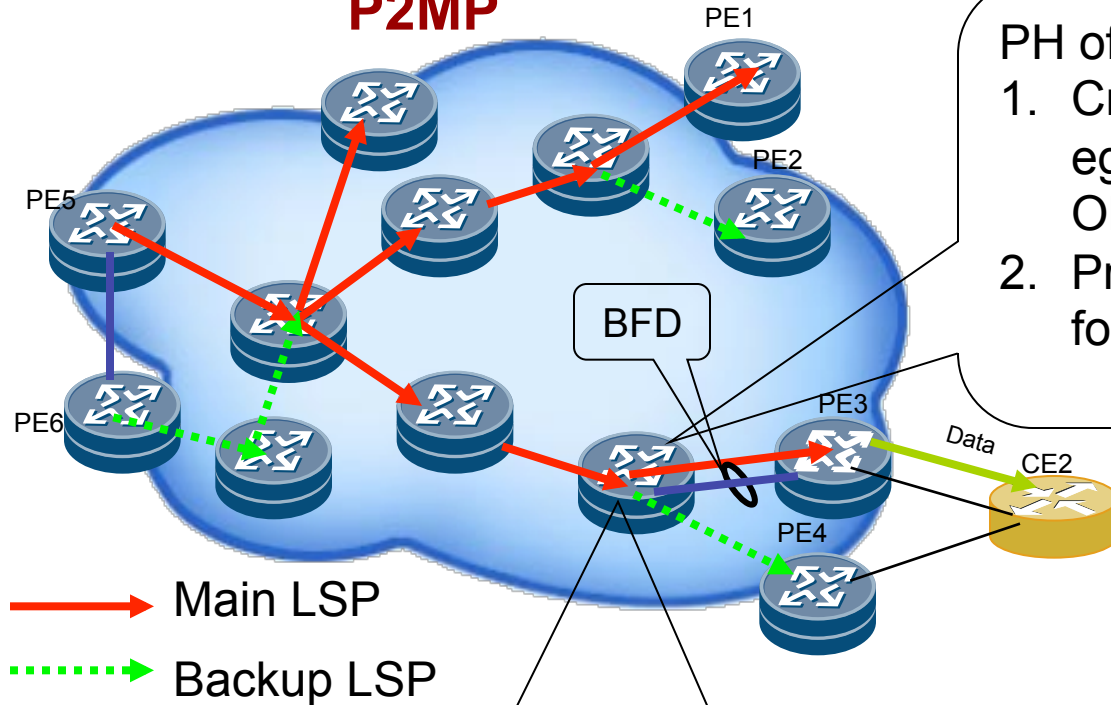
Backup Egress (+Egress)  
ERO for backup LSP

RESV Msg contains

Protection Status in RRO

# RSVP-TE Extensions for Egress Local Protection

**P2MP**



PH of Egress (PATH Msg):

1. Create backup LSP to backup egress if desire for it (New Object)
2. Provide 1 to 1 or 1 to N backup for egress accordingly

PH of Egress (RESV Msg):

Report status of egress protection in RRO in RESV message (Such as set node protection bit in RRO for egress when backup LSP is up)

# Next Step

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

# P2MP LSP Ingress Local Protection

Locally detect and repair **ingress** failure  
Thus **ingress** failure recovers within **50ms**

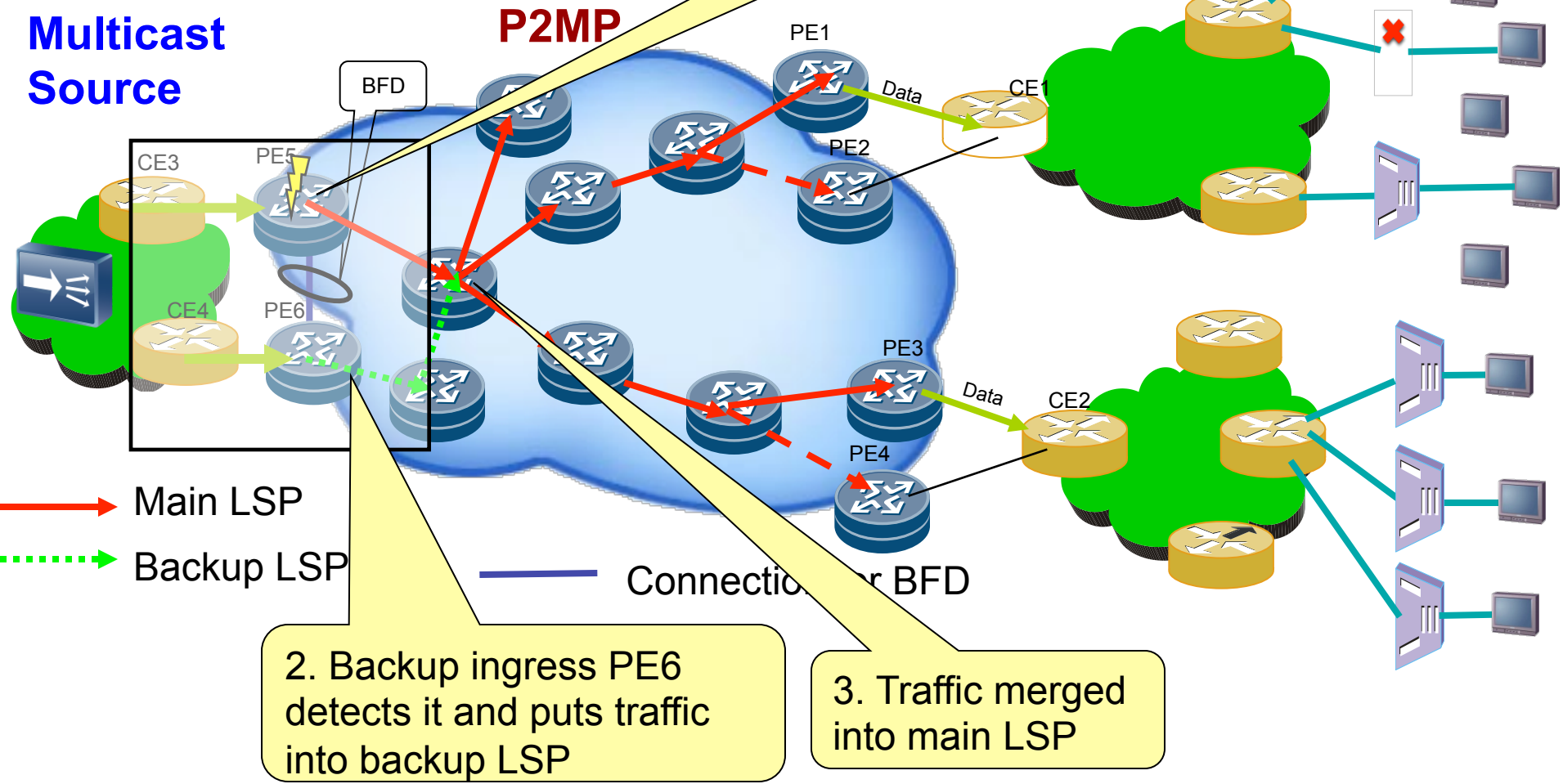
**Multicast Source**

**Multicast Receiver**

1. Ingress PE5 fails

2. Backup ingress PE6 detects it and puts traffic into backup LSP

3. Traffic merged into main LSP





# P2MP LSP Egress Local Protection

-- Locally detect and repair egress failure  
Thus egress failure recovers within 50ms

