

Extensions to RSVP-TE for LSP Ingress Local Protection

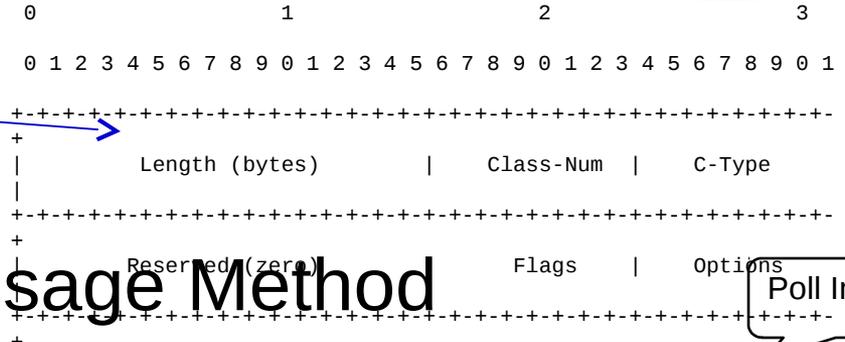
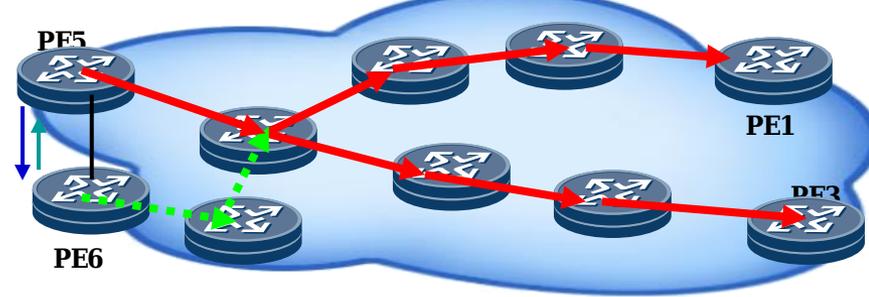
draft-ietf-teas-rsvp-ingress-protection-04

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Updates

- Removed sub-field (secondary LSP ID) in INGRESS_PROTECTION

INGRESS_PROTECTION object has
 Sub fields: ~~secondary LSP ID~~, Flags, Options
 Sub objects
 Backup ingress allocates LSP ID for global repair. Primary ingress not need to allocate and send it to backup ingress



Selected Relay-Message Method

Relay-Message Method



(8)

- Simpler, Primary LSP independent of backup ingress (1)
- Not good idea to signal primary LSP via backup ingress (1)
- Primary LSP not depend on backup ingress, simpler, less configuration and less control traffic (1)
- Simpler and better (1)
- Simpler with less configuration and less control overhead (1)
- Simpler, straight (1)
- Less extension, faster set up primary LSP (1)
- More efficient LSP set up (1)

Summary:
 Simpler (6), Primary LSP independent of backup ingress (3), less configuration(2), less control overhead (2), Faster LSP set up (2)

Proxy-Ingress Method



(4)

- Much less changes to the existing RSVP, thus simpler (1)
- A much smaller change to the architecture of RSVP-TE (1)
- Less special handling (1)
- Reuse bypass FRR (1)

Summary:
 Simpler(4) = simpler(3) + reuse bypass FRR(1)

Changes for Relay-Message vs. Proxy-Ingress

Changes for Relay-Message

- 1) Primary ingress sends Path messages with **Ingress-Protection** object to backup ingress after the primary LSP is set up.
- 2) Backup ingress creates backup LSP to locally protect the primary ingress after receiving Path message with **Ingress-Protection** object, and sends Resv message with Ingress-Protection object to primary ingress.
- 3) Primary ingress records the status of ingress protection after receiving Resv message with **Ingress-Protection** object.

Changes for Proxy-Ingress

- 1) Primary ingress handles the configuration of proxy-ingress or generates the information for the proxy-ingress and makes sure that the proxy-ingress address generated does not cause a loop.
- 2) Primary ingress specially processes all possible abnormal cases happening in the backup ingress and in the path segment between the proxy ingress (i.e., the primary ingress), backup ingress and the primary ingress. These are changes to the existing RSVP-TE protocol, especially mixed with signaling for the primary LSP.
- 3) Primary ingress changes the path for the primary LSP. The new path for the LSP will be: the proxy-ingress (i.e., the primary ingress), the backup ingress, the primary ingress, the next hop(s) of the primary ingress, and so on.
- 4) Primary ingress adds a new object (**Ingress-Protection**) into the Path and Resv messages for the primary LSP to the backup ingress.
- 5) Primary ingress specially handles the Path and Resv messages w/ **Ingress-Protection** for the primary LSP from and/or to the backup ingress.
- 6) Backup ingress specially handles the Path and Resv messages w/ **Ingress-Protection** for the primary LSP from and/or to the primary ingress. The procedures on the backup ingress for specially handling the Path and Resv messages are different from those on the primary ingress.

When the primary ingress fails, the backup ingress can not get any Path messages from its previous hop (i.e., the proxy-ingress or the primary ingress), thus it must keep the Path message(s) originally received from the primary ingress, update the message(s) and put the message(s) into the bypass LSP tunnel to the next hop(s) of the primary ingress.

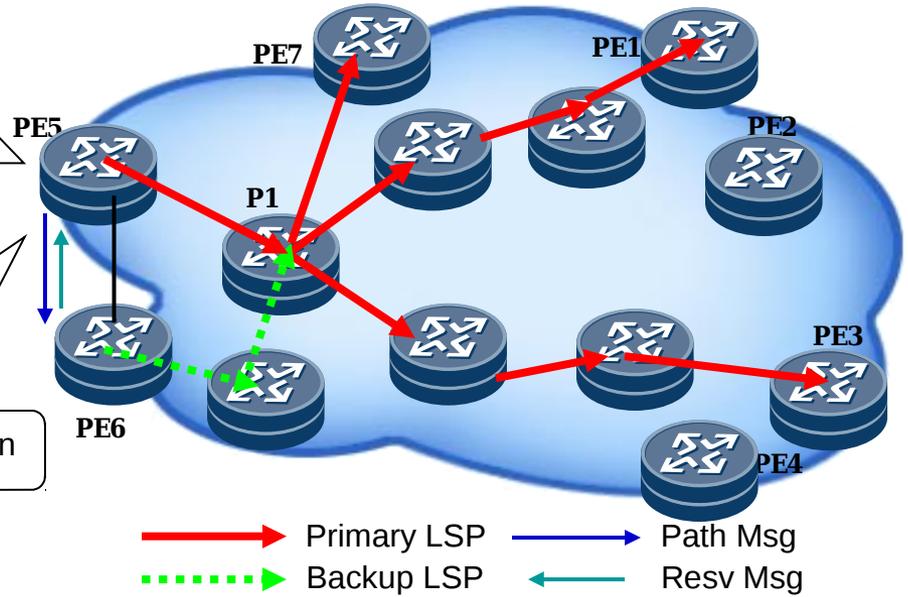
When the primary ingress fails, the backup ingress can not send any Resv message(s) to its previous hop (i.e., the proxy-ingress or the primary ingress), thus it should keep the Resv message(s) originally received from the primary ingress and update the message(s) such as setting Protection-in-use.

Relay-Message Method

1. Ingress PE5 sends Path w/ INGRESS_PROTECTION to backup ingress PE6 after primary LSP is set up

2. PE6 creates backup LSP to protect PE5 and sends PE5 Resv w/ INGRESS_PROTECTION

3. PE5 records status of ingress protection



Proxy-Ingress Method

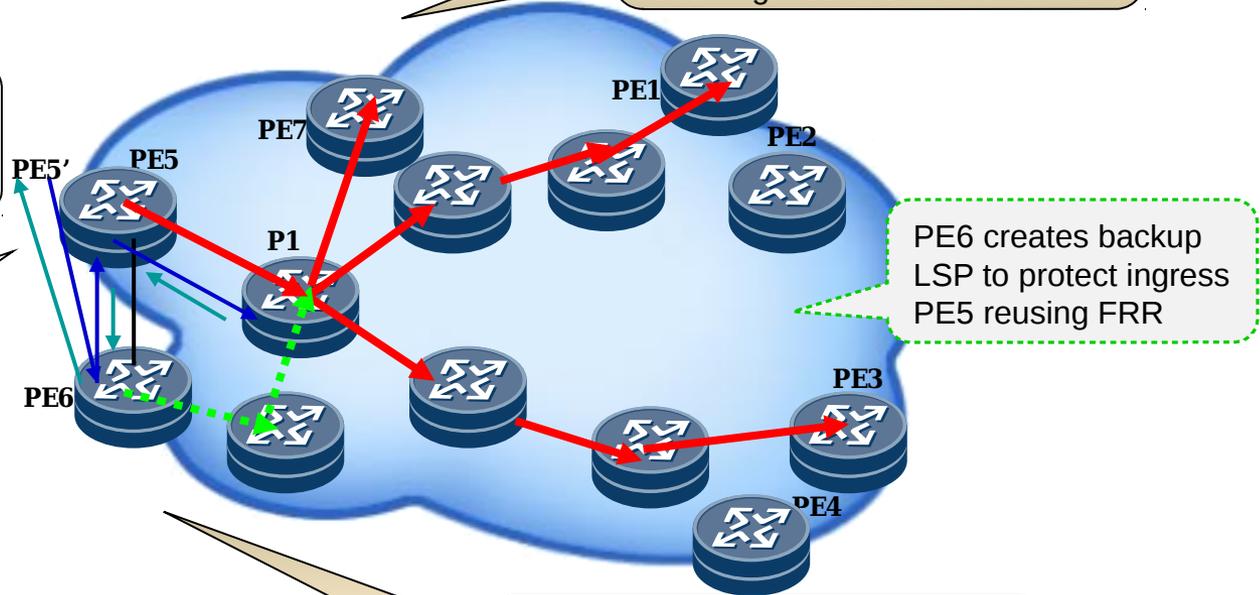
1. Proxy Ingress PE5' (i.e., primary ingress PE5 acting as PE5') sends Path w/ **INGRESS_PROTECTION** to backup ingress PE6

LSP Path (ERO):
PE5'—PE6—PE5—NHs ...

4. Primary ingress PE5 sends **Resv w/ INGRESS_PROTECTION** to backup ingress PE6 after receiving Resv from NHs

2. Backup ingress PE6 sends Path w/ **INGRESS_PROTECTION** to primary ingress PE5

3. Primary ingress PE5 sends Path to NHs (NHs send **Resv** to primary ingress PE5)



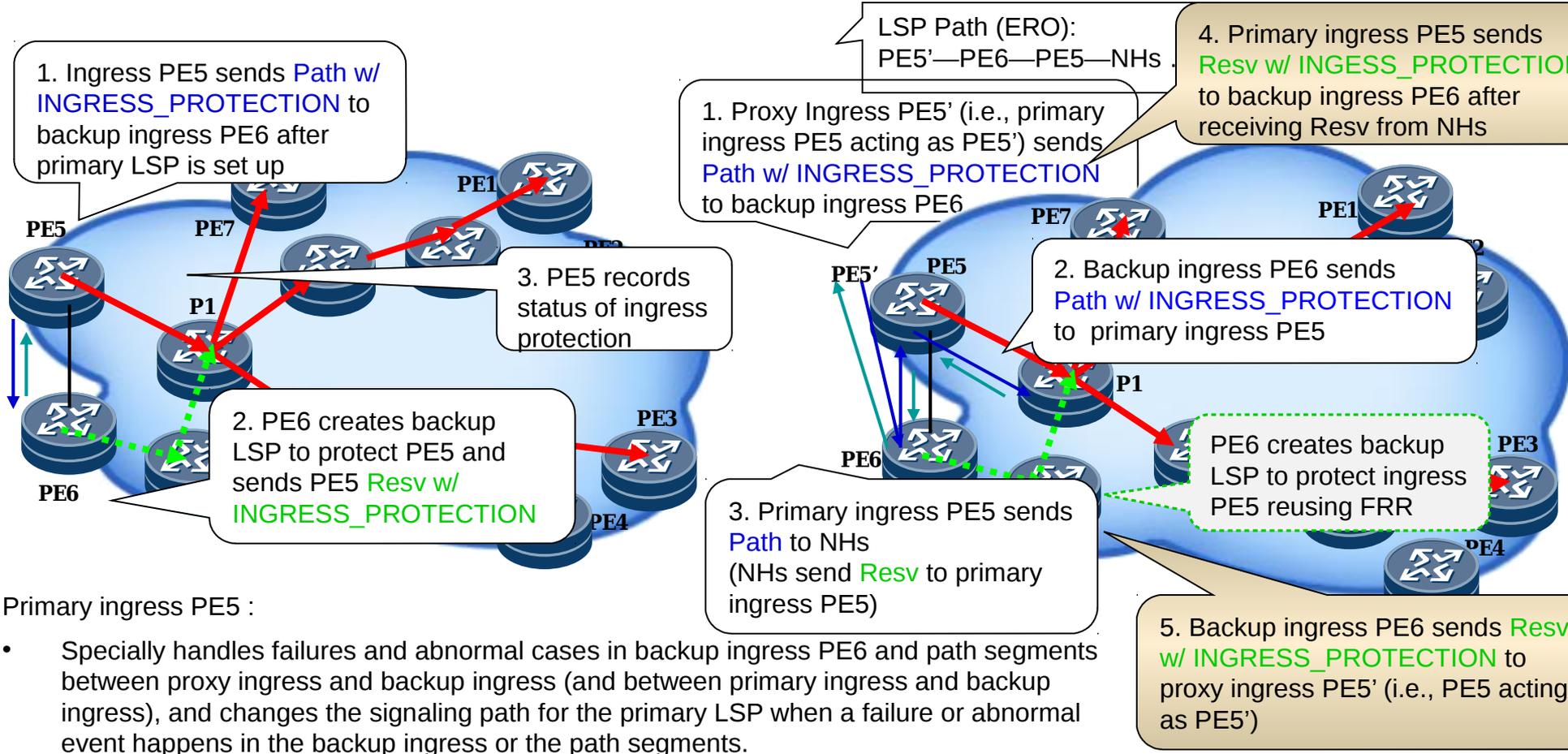
Primary ingress PE5 :

- Specially handles failures and abnormal cases in backup ingress PE6 and path segments between proxy ingress and backup ingress (and between primary ingress and backup ingress), and changes the signaling path for the primary LSP when a failure or abnormal event happens in the backup ingress or the path segments.
- Processes configuration for Proxy-ingress or generates the information for the proxy-ingress and makes sure that the proxy-ingress address generated does not cause a loop

5. Backup ingress PE6 sends **Resv w/ INGRESS_PROTECTION** to proxy ingress PE5' (i.e., PE5 acting as PE5')

→ Primary LSP → Path Msg
- - - → Backup LSP ← Resv Msg

Relay Message Method vs Proxy-Ingress Method



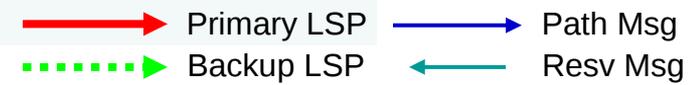
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Relay-Message Method	Proxy-Ingress Method
(8)	(4)

Simpler (6), Primary LSP independent of backup ingress (3), less configuration(2), less control overhead (2), Faster LSP set up (2)

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Next Step

- Welcome comments?