

SRv6 Multi-homed Egress Protection

draft-cheng-rtgwg-srv6-multihome-egress-protection-02

Presenter: Weiqiang Cheng

Co-authors: Weiqiang Cheng, Wenying Jiang,
Changwang Lin, Zhibo Hu, Yuanxiang Qiu

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Introduction

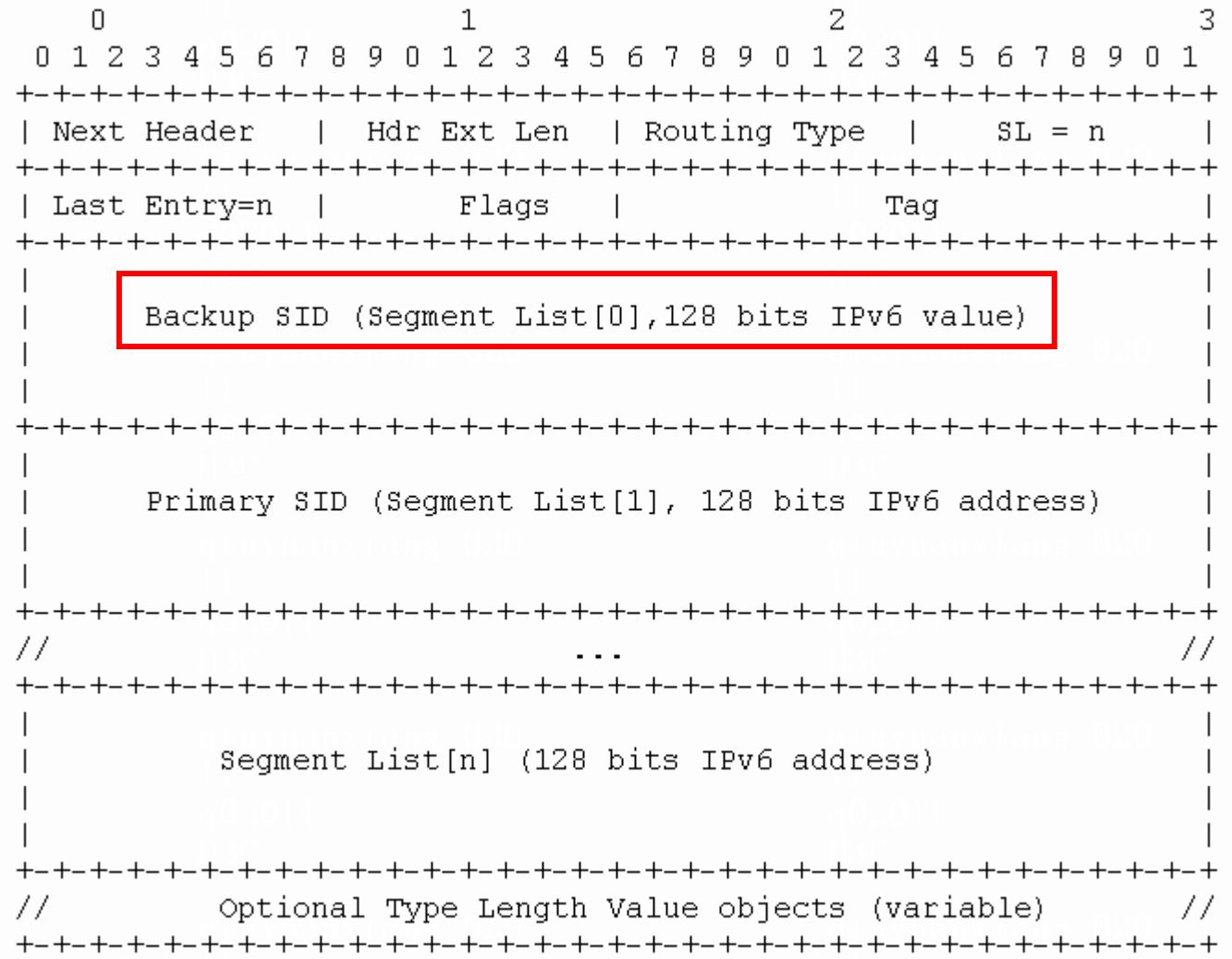
- ❑ Provide fast failover for multi-home egresses scenarios
- ❑ Simplify SRv6 egress protection solution

Egress fast failover mechanism

- Carry the SID of the backup egress in the SL[0] of the packet.
 - When the penultimate endpoint receives the packet and finds that its next hop direct neighbor is the egress node and is unreachable, it changes the destination address of the packet to the backup SID.
- Define PSD(Penultimate Segment Decapsulation) Flavor to indicate the SRv6 penultimate segment decapsulation processing.
 - Normally, the primary egress receives a SID with PSD Flavor, it removes the outer encapsulation of the packet and forwards the packet according to the exposed packet.

SRH encapsulation of Backup SID

The backup SID is encapsulated in the position of SL[0]



PSD Flavor

- Indicate the SRv6 penultimate segment to remove the outer encapsulation of the packet and forward the packet according to the exposed packet.
- Can be applied to End.DT4, End.DT6, End.DT46, End.DX4, End.DX6, End.DX2, End.DX2V, End.DT2U and End.DT2M.
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- The SRH processing of the SR endpoint behaviors defined in [RFC8986] are modified. The instructions S02 are substituted by the following one:

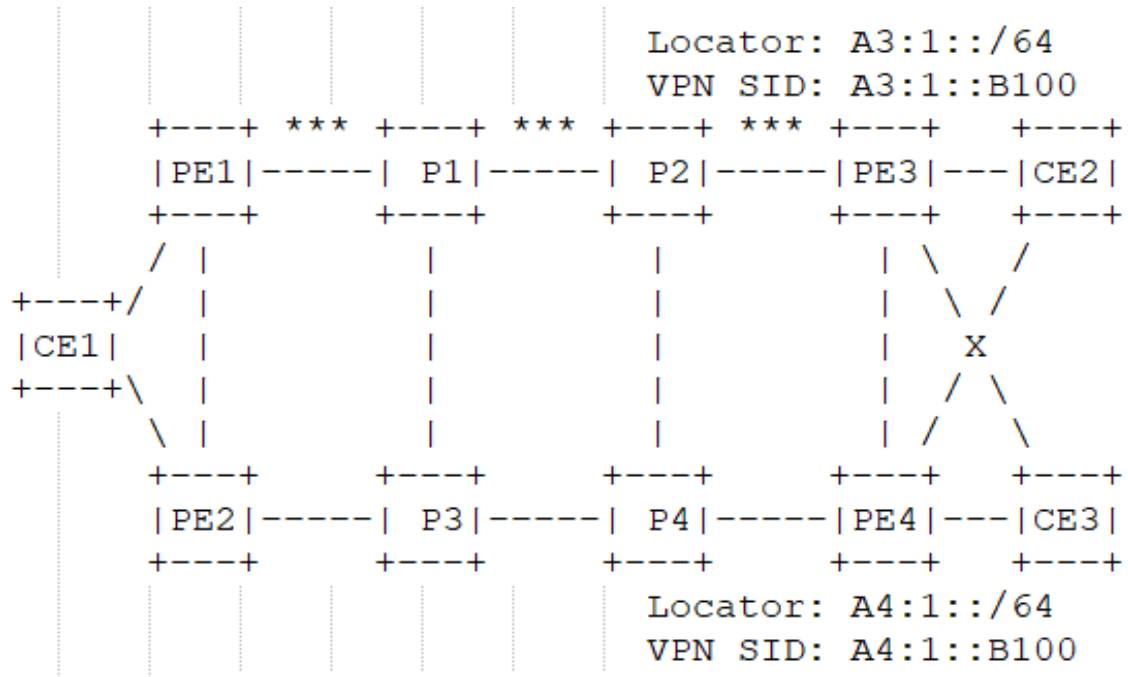
```
S02.  If (Segments Left != 0) {  
    ==>>  
S02.  If ((Segments Left != 0) && (Segments Left != 1)) {
```

Take END.DT4 as an example:

When N receives a packet destined to S and S is a local End.DT4 SID **with PSD Flavor**, N does the following:

```
S01. When an SRH is processed {  
S02.  If ((Segments Left != 0) && (Segments Left != 1)) {  
S03.      Send an ICMP Parameter Problem to the Source Address  
          with Code 0 (Erroneous header field encountered) and Pointer set to the Segments Left field,  
          interrupt packet processing, and discard the packet.  
S04.  }  
S05.  Proceed to process the next header in the packet  
S06. }
```

Egress Protection Mechanism



PE1 Ingress
 PE3 Egress
 PE4 Backup Egress
 CEx Customer Edge
 Px Non-Provider Edge
 *** SR Path

• Ingress Node

- encapsulates the SRH extension header, judges whether the primary VPN SID of the egress node (PE3) has a backup SID. If yes, **insert the backup SID into the position of SL[0]**.

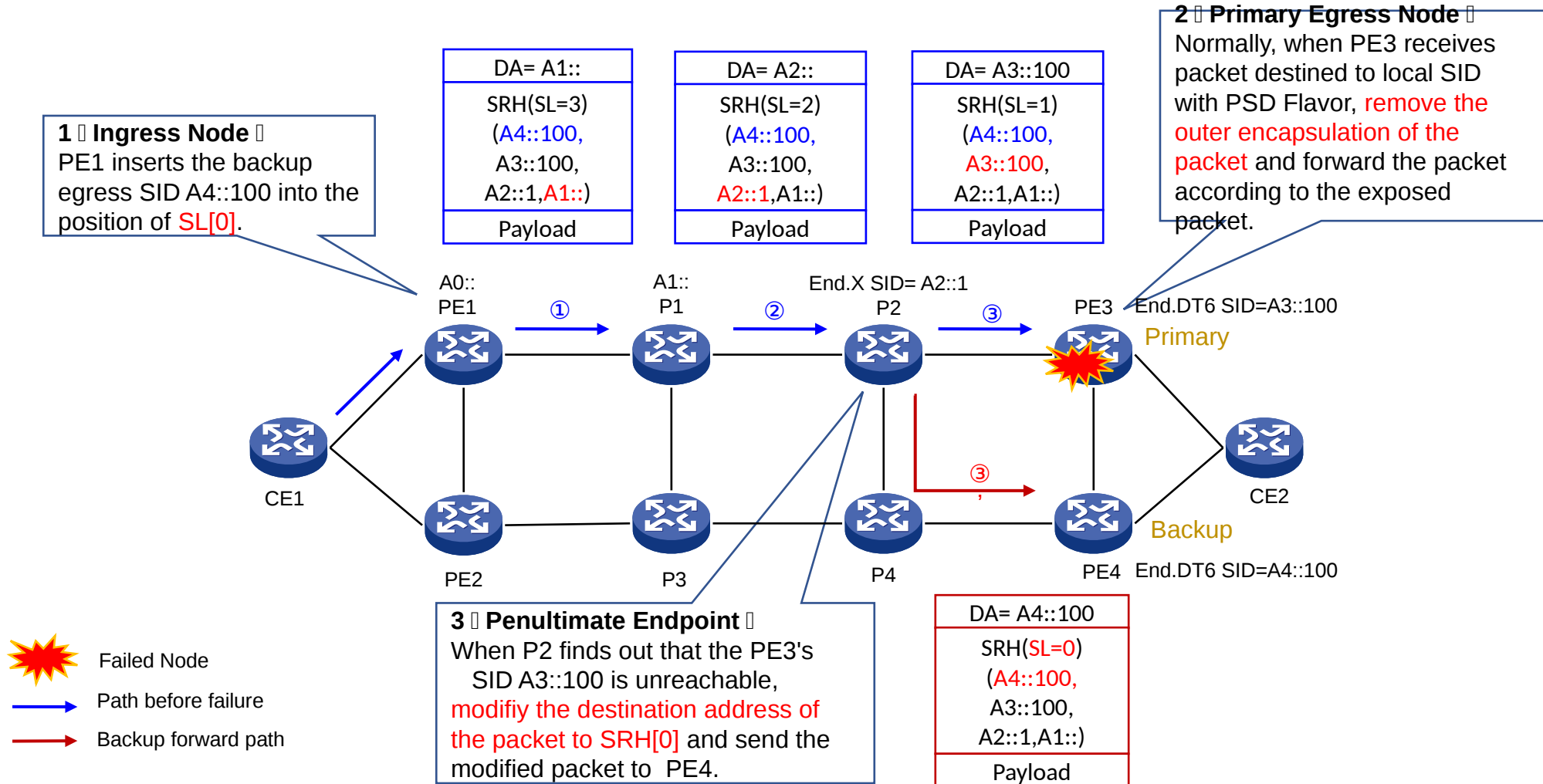
• Primary Egress Node

- When it receives a SID with PSD Flavor, **remove the outer encapsulation of the packet** and forward the packet according to the exposed packet.

• Penultimate Endpoint

- When primary egress node (PE3) fails, P2 finds out that the PE3's SID is unreachable. Then P2 **modifies the destination address of the packet to SL[0]** which is the backup SID, and sends the modified packet to backup egress node PE4. Through this method P2 can provide fast protection for the egress failure.

Example of Processing



Changes to Version 02 of the draft

- ❑ The PSD Flavor is defined to enable SRv6 penultimate segment to remove the outer encapsulation of the packet and forward the packet according to the exposed packet.
- ❑ Compared with Version 01, the location of the backup SID is changed from SL [LastEntry] to SL [0].

Next Steps

- Any questions or comments are Welcomed
- Seeking for feedback