Scalable Loop Free BGP FRR Using Repair Label

draft-bashandy-idr-bgp-repair-label-01

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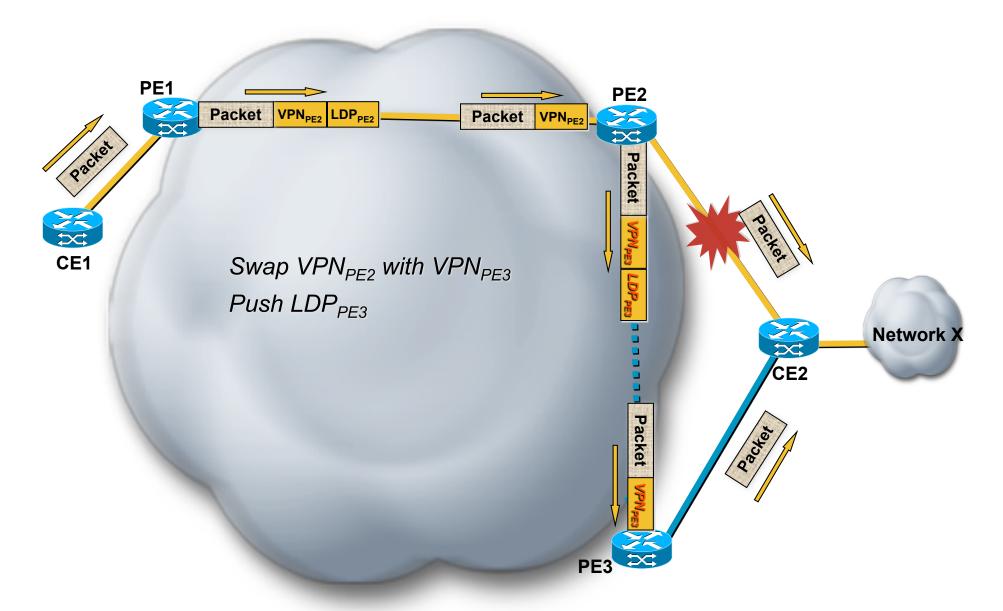Presenter :

Ahmed Bashandy,

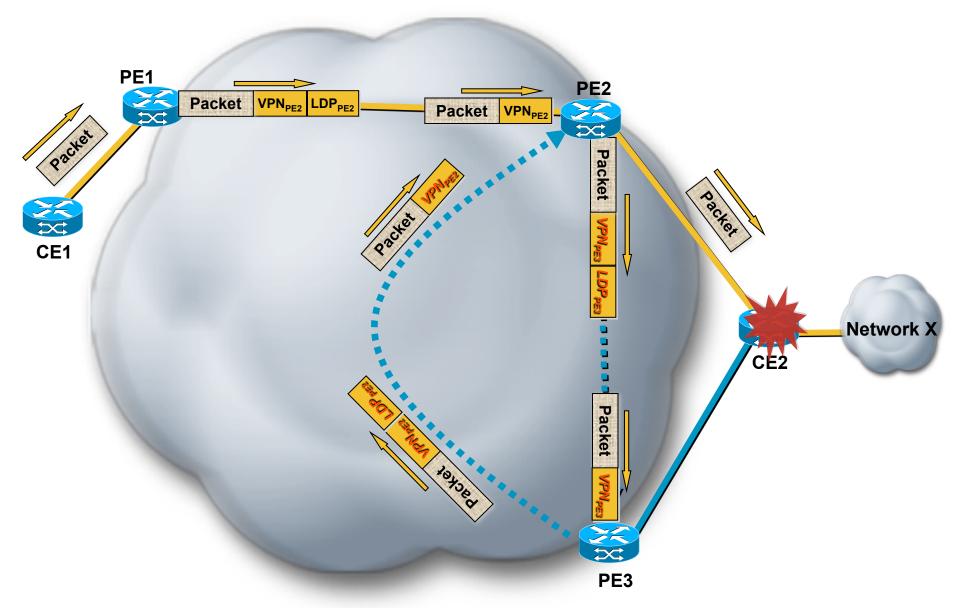Cisco Systems

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What do we want to do

◆ Assume BGP free core

- Packets are **tunneled** between edger routers

◆ On loss of primary path, we want to

- Restore traffic through a pre-calculated repair path

  - without waiting for control plane convergence, and

  - avoid loops when restoring traffic

Possible Solution

PE1

Packet | VPN_{PE2} | LDP_{PE2}

Packet | VPN_{PE2}

PE2

Packet

CE1

Packet

Packet

Packet

Swap VPN_{PE2} with VPN_{PE3}

Push LDP_{PE3}

VPN_{PE3}

LDP_{PE3}

Network X

CE2

Packet

Packet

VPN_{PE3}

PE3

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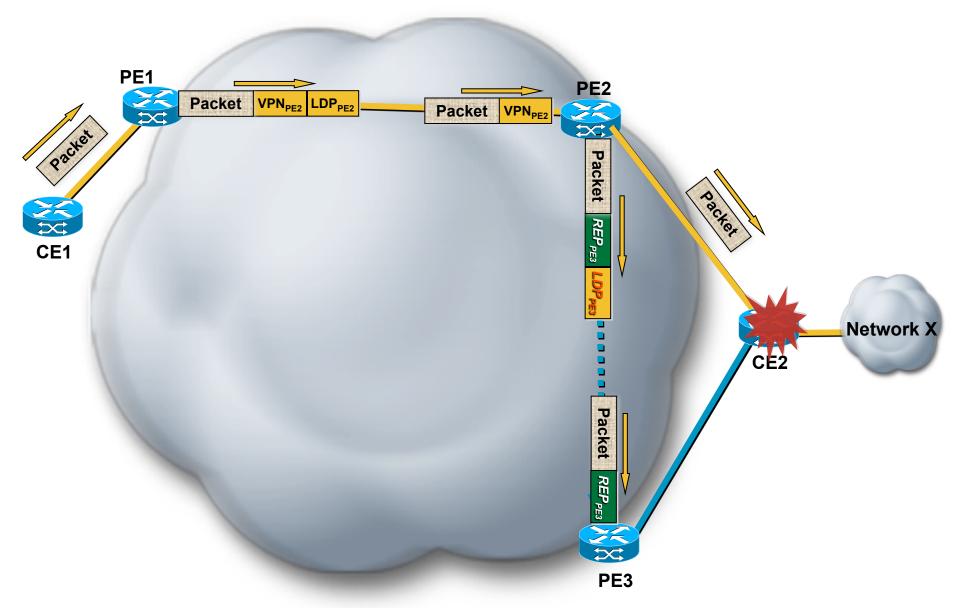
Possible Solution

Proposed Solution

1. A PE having an external path advertises a "*repair*" label

   - Optional non-transitive attribute

2. When repairing a failed NH, the repairing router uses the *repair label* instead of the primary label advertised by the repair PE

3. The repair PE *never* repairs repaired traffic:

   Deliver the packet to the external next hop

   OR

   Drop it

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Proposed Solution

Notes

◆ Solution *independent* of
- Repair label allocation scheme
- Primary label allocation scheme

◆ Per-CE/per-NH repair label allocation
- Better attribute packing
- Optimizes forwarding plane performance at the repairing and repair PE
- 100% forwarding plane backward compatibility at the repair PE

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Q & A