AUTO EDGE PROTECTION
draft-hegde-spring-auto-edge-protection
IETF 116

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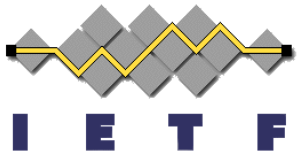


Agenda

- What is auto-edge protection?
- Use cases
- Problem Statement
  - Need for Context-ID
  - Need for Automation
- Solution overview
- Next steps

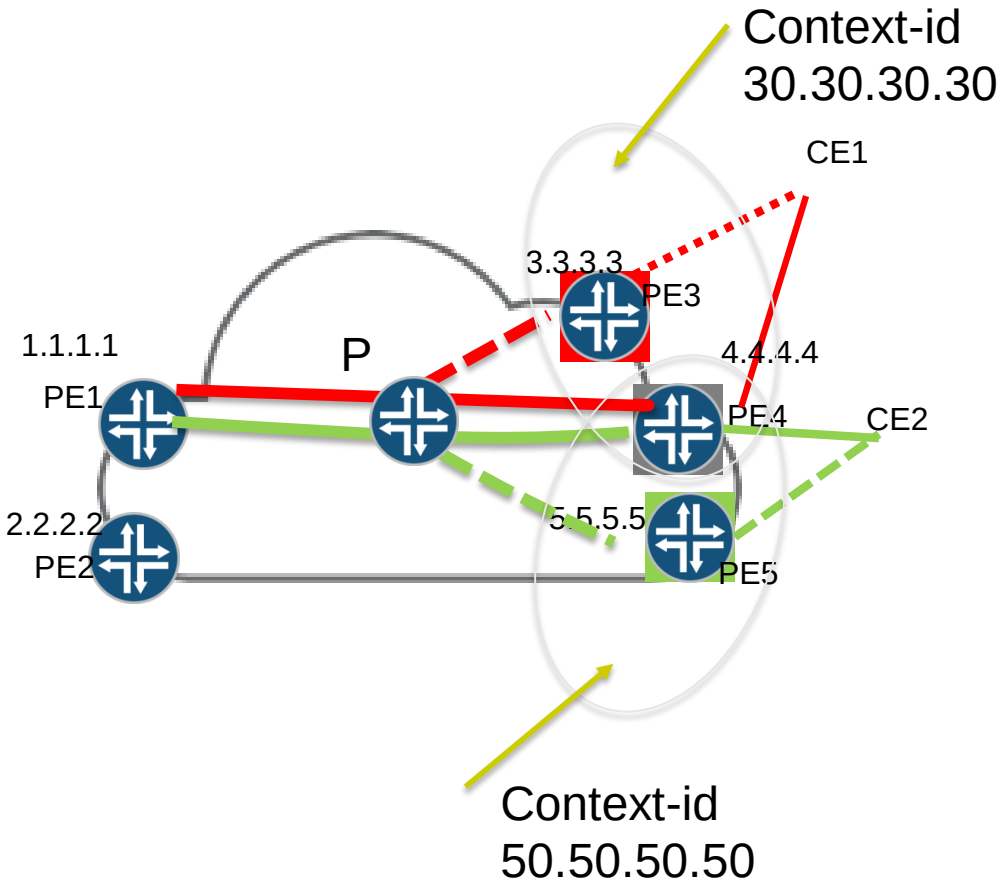
Auto-edge protection

- Achieve 50ms failover for PE node failure and PE-CE link failure
- Minimize configuration overheads
- Automatically detect multi-homing and build context

Use Cases

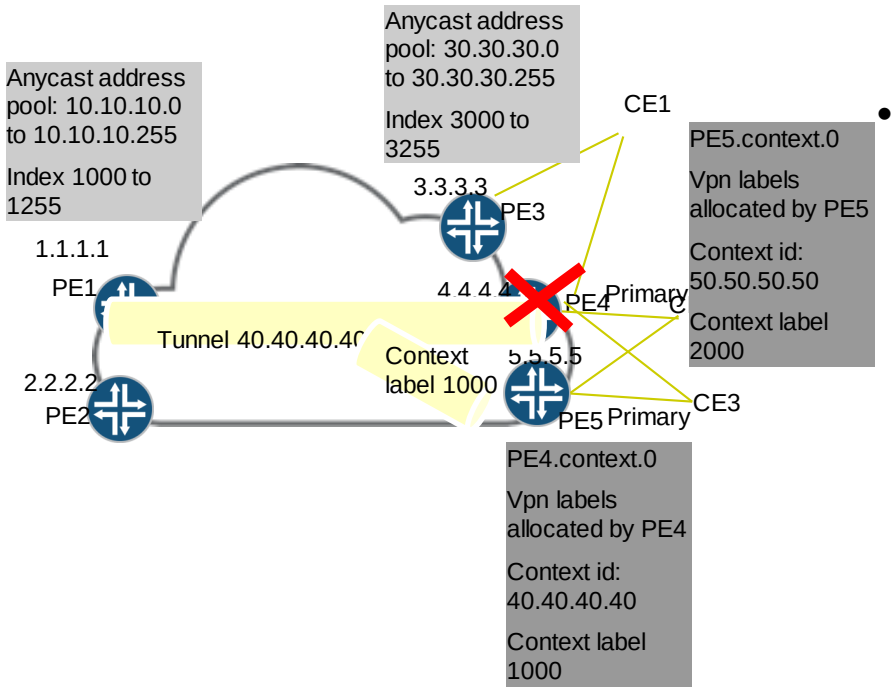
- Applications requiring 50ms convergence
  - Content collection applications for live streaming
  - Realtime image based applications
  - Military applications
  - Financial trading applications
- Premium customers

Need for Context-ID



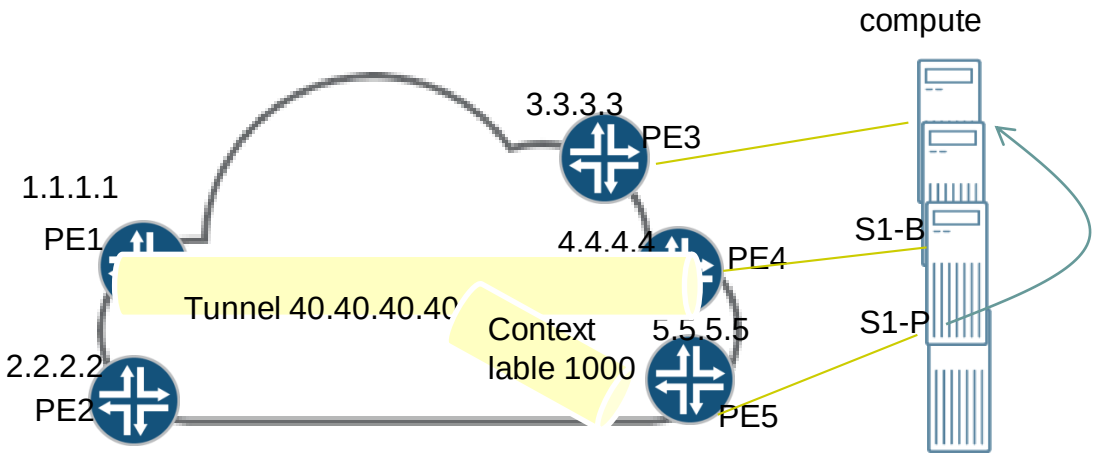
- CE1 multi-homed to PE4,PE3 with PE4 primary
- CE2 multi-homed to PE4,PE5 with PE4 Primary
- On PE4 failure
  - CE1 traffic to be sent to PE3
  - CE2 traffic to be sent to PE5

BACKGROUND



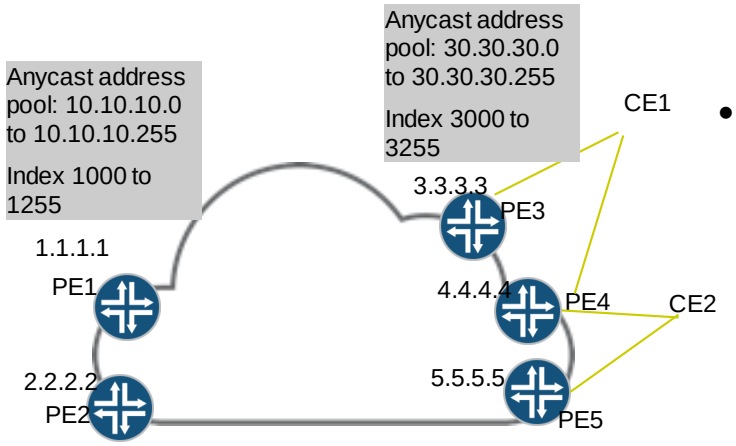
- **RFC 8679 Egress protection framework**
  - Context-ID
    - A pair of multi-homed PEs allocated a context-id
    - If the primary PE is different, a new context-id would be needed
  - Context table
    - A table consisting of service labels allocated by another multi-homed PE
    - Used to find the right VPN table when protection traffic arrives
  - Context label
    - A label associated with the context table

Need for Automation



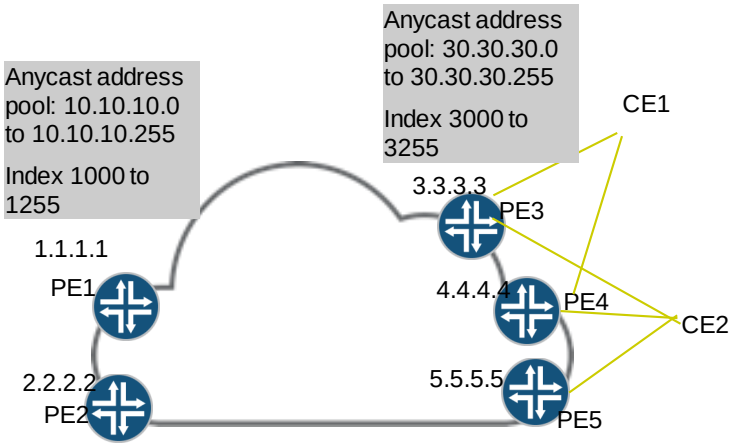
- **Virtualised services run on compute servers**
- **Service instances are moved based on availability of memory/cpu etc**
- **Multi-homing context need to be built dynamically**

Solution Overview: Infrastructure Pre-Provisioning



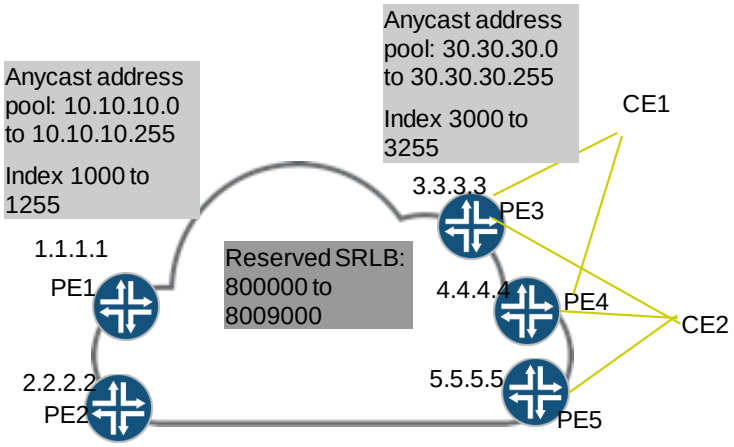
- **Context-id pool -Anycast address pool**
  - Separate address pool on each router
    - IP address pool for SR-MPLS underlay
    - Locator pool for SRv6 underlay
  - Local configuration on every egress router
  - Allocation is locally managed on the router
- **Reserved SRGB Index space for SR-MPLS**
  - Index space on every router reserved
  - Advertised in IGP
  - Need to be disjoint across routers
  - Nodes having conflicting index space stop participating in auto-egress protection

Detection of multi-homed prefixes



- BGP advertisement of CE1 from PE3 to PE4 (or via RR) and PE4 to PE3 triggers detection of multi-homing
- Condition for auto-egress protection
  - Egress protection feature should be enabled on all multi-homed nodes
  - Valid reserved index spaces on multi-homed nodes
  - Valid anycast address pool
- If any above is missing in any of the multi-homed node, auto-egress protection is aborted

CONTEXT DATABASE BUILDING



- Context Database

Key: Router-id of multi-homed PEs (in the order primary, secondary)

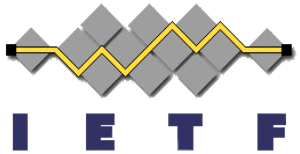
algorithm (color associated with multi-homed prefix)

Values: Allocated anycast address

Allocated anycast SID per algorithm

Next steps

- More detailed solution for SR-MPLS and SRv6 underlay described in the draft.
- Request review and comments



Thank you