Unified MPLS

Unified MPLS Overview

- Defined in draft-leymann-mpls-seamless-mpls
  - "Seamless MPLS Architecture"
- Unified MPLS is a scaling technique that combines three already defined components
  - IGP (OSPF/IS-IS)
  - LDP
  - BGP + Label

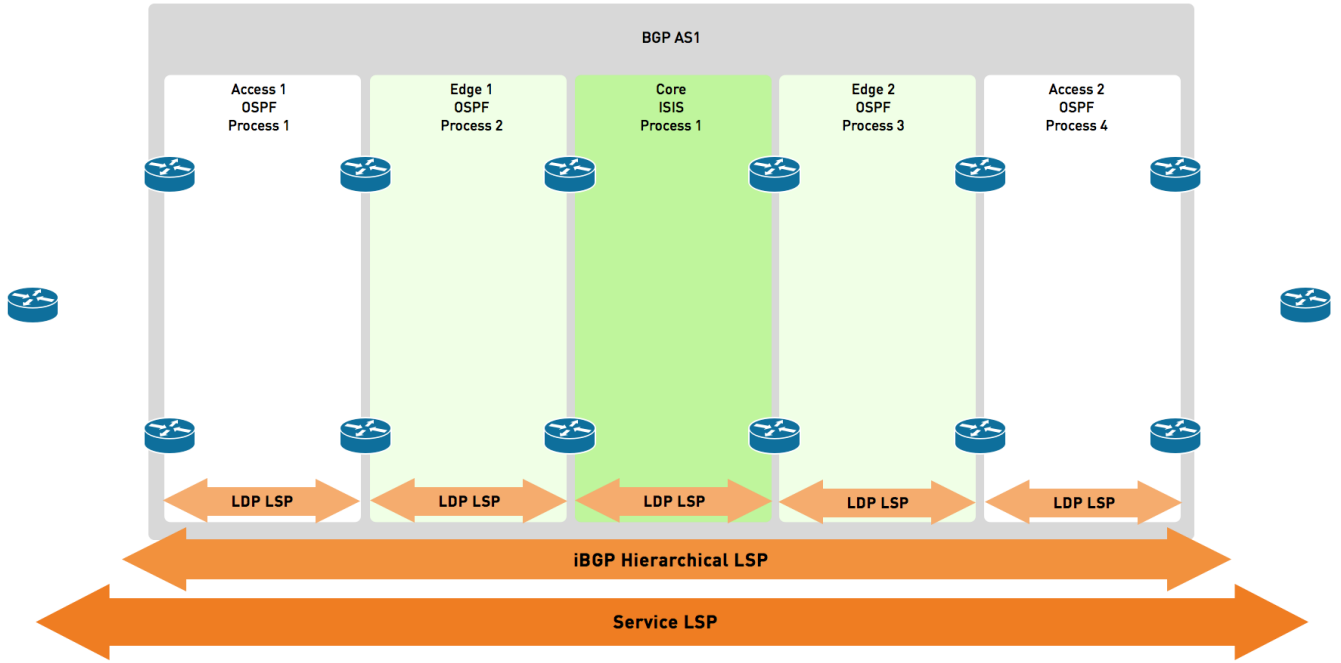
Scaling MPLS – Problem Statement

- **L2VPN & L3VPN requires end-to-end LSPs between PEs to establish end-to-end transport**
  - Implies that PEs are in the same IGP domain
  - Implies that summarization cannot be performed
    - i.e. /32 routes to loopbacks are required
- **IGP scaling techniques can only go so far**
  - Areas, prefix suppression, iSPF, etc.

Scaling through Unified MPLS

- Unified MPLS scales the network by breaking it into smaller isolated islands of IGP
  - Not separate areas, completely separate processes
- BGP is used to connect the IGP islands
  - Only necessary PE loopbacks are leaked into BGP
  - Arbitrary BGP policy can now be enforced
- End result is end-to-end LSPs through…
  - IGP + LDP within an IGP domain
  - BGP + Label between the IGP domains

Unified MPLS High Level Workflow



Implementing Unified MPLS

- **Unified MPLS doesn't require any new tools**
  - IGP + LDP within an IGP domain
  - BGP + Label between IGP domains
- **Key step is that ASBRs must be in the BGP forwarding path**
  - Implies next-hop-self for iBGP to iBGP
  - Two new commands to allow for this
    - IOS XR **ibgp policy out enforce-modifications**
    - IOS **next-hop-self all**

Q&A