Use Case of I2RS in Mobile Backhaul Network

draft-zhang-i2rs-mbb-usecase-00

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Multiple Applications across 2G to LTE, various network architectures, different service carriers make MBB configuration more arduous.

Traditional configuration and diagnoses mechanisms based on device-level management tools and manual processing are ill-suited to meet the requirements of today’s scalable, flexible, and complex mobile backhaul network.
UseCase1: Application configuration

- **Challenges**
  - various radio access modes: TDM/ATM-based and IP-based across 2G to 5G
  - various radio applications: OM, voice, data, video with different SLAs
  - various network architectures: multiple IGP areas and AS

- **Flexible Configuration**
  - where the T-LDP should be configured, where the BGP peer should be established, where the VPN instance should be deployed, and where the BGP LSP should be set up

- **I2RS Requirements**
  - Store a global mobile backhaul network solution provisioning information in a central location
  - Distribute MBB configuration from the central location automatically
Usecase2: Route Policy Enforcement

- **Route policy focus on:**
  - Avoiding route advertisement across entire network
  - supporting best route selection for VPN FRR or ECMP
  - allowing On-demand route advertisement

- **Dynamic enforcement**
  - Different network devices has individual route policy details in a network-wide route policy

- **I2RS requirements:**
  - Use common APIs to collect network information dynamically
  - Push route policy centralized and automatically
Usecase3: Service Tunnel Implementation

- **Service tunnel types:**
  - MPLS LDP LSP: DU, DoD, Longest length match, policy for LSP control
  - MPLS-TE LSP: multiple path control attributes and multiple protection modes
  - MPLS-TP LSP: multiple LSP types, static LSP is need in MBB

- **Hierarchical deployment**
  - service tunnel implementation is not constant and unique across access/aggregate/core network in MBB
  - kinds of LSPs could be used separately or simultaneously in the whole MBB

- **I2RS requirements:**
  - Acquire the ability of network devices automatically
  - Get the requirements of services on control plane to calculate and set up the LSP centrally.
Usecase4: Protection Mechanism

- **Hierarchical Protection Mechanism**:
  - Tunnel protection: LDP FRR (LFA, Remote-LFA, MRT, e.g.), MPLS-TE LSP HSB and TE FRR, MPLS-TP LSP Line or ring protection
  - Service protection: dual-homing attachment is suitable with PW Redundancy and VPN FRR or VPN ECMP

- **Flexible design**
  - Selection of service and tunnel, as well as the protection mode

- **I2RS requirements**:
  - Get the whole information about tunnel and service
  - Control and manage protection design centrally
Usecase 5: Network Monitoring

- Multiple monitoring tools:
  - Tools: Different monitoring tools for different monitoring objects, such as NQA, MPLS-TP OAM, IPFPM
  - Traffic path: get exact traffic path is useful for point-to-point detection

- Accurate deployment
  - Deploy appropriate monitoring tools and accurate detection

- I2RS requirements:
  - Get and store the entire topology and routing information centralized
  - Calculate and store the traffic path naturally
  - Deploy accurate network monitoring tools automatically
Next Steps

• Solicit comments and feedback
• Revise the draft