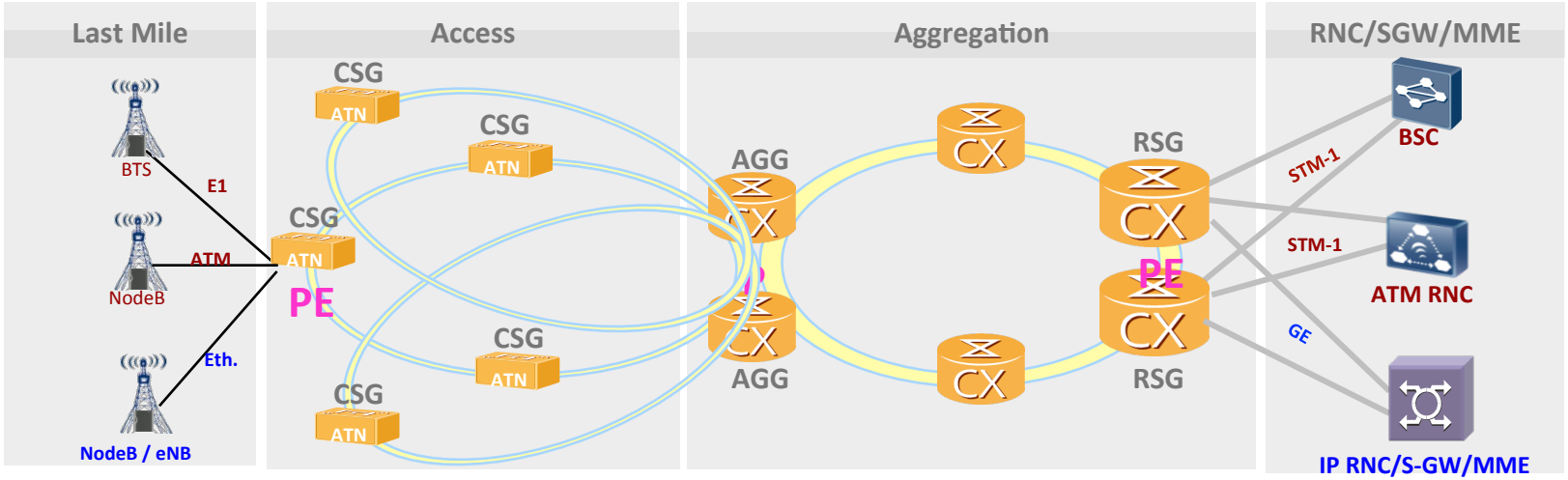
Use Case of I2RS in Mobile Backhaul Network

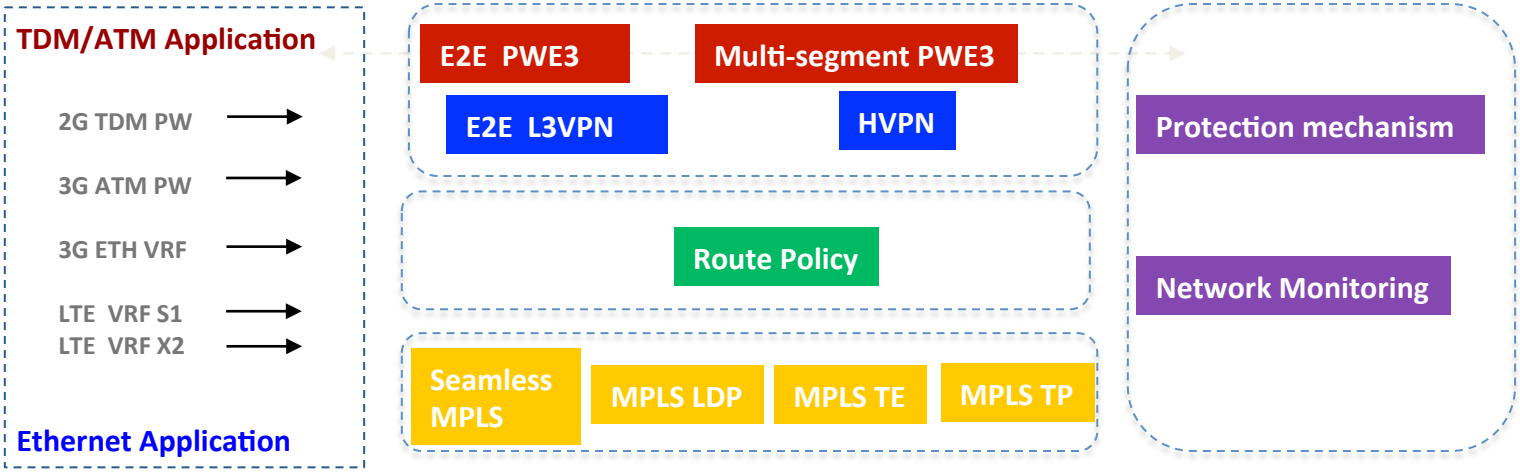
draft-zhang-i2rs-mbb-usecase-00

Li Zhang, Zhenbin Li (*Huawei Technologies)*
Dapeng Liu *(China Mobile)*

IETF 88, Vancouver,BC, Canada

Service Requirements for MBB Configuration





- Multiple Applications across 2G to LTE, various network architectures, different service carriers make MBB configuration more arduous
- Traditional configuration and diagnoses mechanisms base 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

Usecase5: 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