Fault and Performance Management for Carrier Ethernet Services

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Carrier Ethernet Overview & Operational Challenges

Operational Requirement & Solutions

- Real-time per-service Fault Management
- Real-time per-service Performance Management
- Active Fault Detection, Isolation, Diagnostics, and Verification
- Alerting for network failures
- End-to-end as well as per-segment SLA monitoring and verification

- OAM technologies
- Fault and Performance Management System
Ethernet OAM Overview

Service Layer OAM

Connectivity Layer OAM

Access Layer OAM

ITU Y.1731

IEEE 802.1ag

IEEE 802.3ah
Access Layer OAM / 802.3ah

- Discovery
- Link Monitoring
- Remote Failure Indication
- Remote Loopback
Continuity Check Messages (CCM)
- Loopback Message (LBM)
- Link Trace Message (LTM)
- Alarm Indication Signal (AIS)
Service Layer OAM / Y.1731

- Builds on 802.1ag
- Performance management for SLA verification
  - Frame loss ratio (FLR)
  - Frame delay (FD)
  - Frame delay variation (FDV)
  - Others (errored frame seconds, service status (up/dn), frame throughput, etc.)
Fault and Performance Management System
This part is a demo on a live management system on how it utilize the EOAM to provide Active Fault Detection, Isolation, Diagnostics and Verification on Carrier Ethernet Services.
Challenges and conclusion

- Get the equipment vendor to support EOAM
- Get the partners and customers to enable and configure Ethernet OAM
  .... and have them work with each other
- Get the system work well with equipment with different vendor, model, firmware versions.
- High availability system
Thank you!