Why OAM for Ethernet

Hiroshi Suzuki  
Bruce Tolley  
Cisco Systems, Inc
Ethernet deployments towards Service providers

• In Campus

• In Metro
  – Campus – Campus, POP-POP
  – 10Km, 40Km and beyond

• In Access : EFM
  – Long reach GE
  – Ethernet over Copper, EPON,
Ethernet over Metro Dark Fiber

Ethernet over Metro DWDM

- Ethernet access directly or aggregate multiple Ethernet ports
- Attach Ethernet directly to Long Reach / DWDM network
- Enables Gigabit services at costs equal to T3 (44.7 Mbps) OC-3 (155 Mbps)

Metro Distance: ~40/100 km
Ethernet in the First Mile

Data

Video on Demand

HDTV

Voice

Home Network

Access/Distribution Layer

Core Layer

100 Mbps Ethernet max 100m

1 Gbps Ethernet max 10km

10 Gbps Ethernet max 40km

Optical Network Terminal (ONT)

Optical Access Switch (OAX)

Optical Core Switch (OCX)

VoIP ports
A Problem on Ethernet for SP

“ I want Low Cost Ethernet for my SP networks. But you do not have what SP really needs: OAM”

• Low cost
• Reduced network complexity
• Common protocol across LAN / MAN / Access
• While keeping the same level of “Management” capability with existing transport / access networks.
What if Ethernet provides OAM?
TDM vs Packet based Metro Optical Transport

- SONET/TDM Based Optical Transport
  - OAM by SONET
- Packet Based Optical Transport
  - OAM by Ethernet!
What features would be needed on Ethernet?

• Fiber Management
  – Management Channel
  – Failure Indication / Isolation
  – Performance Monitoring
  – Protection Switch / Fail over
Must have:

- Transparent to existing Ethernet MAC
- No change to existing Ethernet Frame
- No changes to data transmission rate
- Complete set of OAM capabilities, including fail-over, message channel and performance monitor.
What Ethernet to be applied?

- Fast Ethernet
- GE
- 10GE
- Ethernet in the First Mile
- Any Future Ethernet…
Summary

• Significant interest in using Ethernet in Metro and Last/First mile service provider networks
• Ethernet avoids unnecessary protocol conversion and is simpler and less expensive than other technologies
• OAM is a requirement for service provider networks
• Desirable to have industry standard solution for OAM for Ethernet networks.
What to do next?

• Discuss “OAM Requirements on Ethernet” in EFM

• To form an “Ad-Hoc”?