Information Data Reliability With The XGbE WAN PHY

Roy Bynum
MCI WorldCom

GbE: Native IP Over Optical Transport

95% of IP Data originates on 802.3

GbE is direct Optical 802.3

GbE is more reliable than Packet Over SONET (POS)

Lower Data Loss: >1% Vs. ~3%

Faster Traffic Restoration: ~1.5ms Vs. ~500ms

(A proprietary version of POS: ~2ms)

Active Subscription Control:

Bandwidth reduction = slower data transfer

GbE: no data loss because of 801.d

POS: data loss and retransmission

Data Communications Technology Evaluation Lab

802.3 L2 Switches: Store & Forward and Cut Through
802.3 L2 / IP L3 Switches: RIP/OSPF/BGP Routing
IP Routers: Legacy RIP/OSPF/BGP POS Routing
L3 Switches: High Speed OSPF/BGP POS Routing
ATM: IP/LANe Over ATM PVCs/SVCs
Data Generation/Analysis: - 802.3/IP/UDP,TCP
- POS/IP/UDP,TCP
Transport: Active DWDM, Optical Switches, 802.3 Over SONET, Standard SONET OC3/OC12/ OC48/OC192

Evaluation Test Configurations:

Data Loss: Traffic Restoration After Optical/SONET Network Restoration

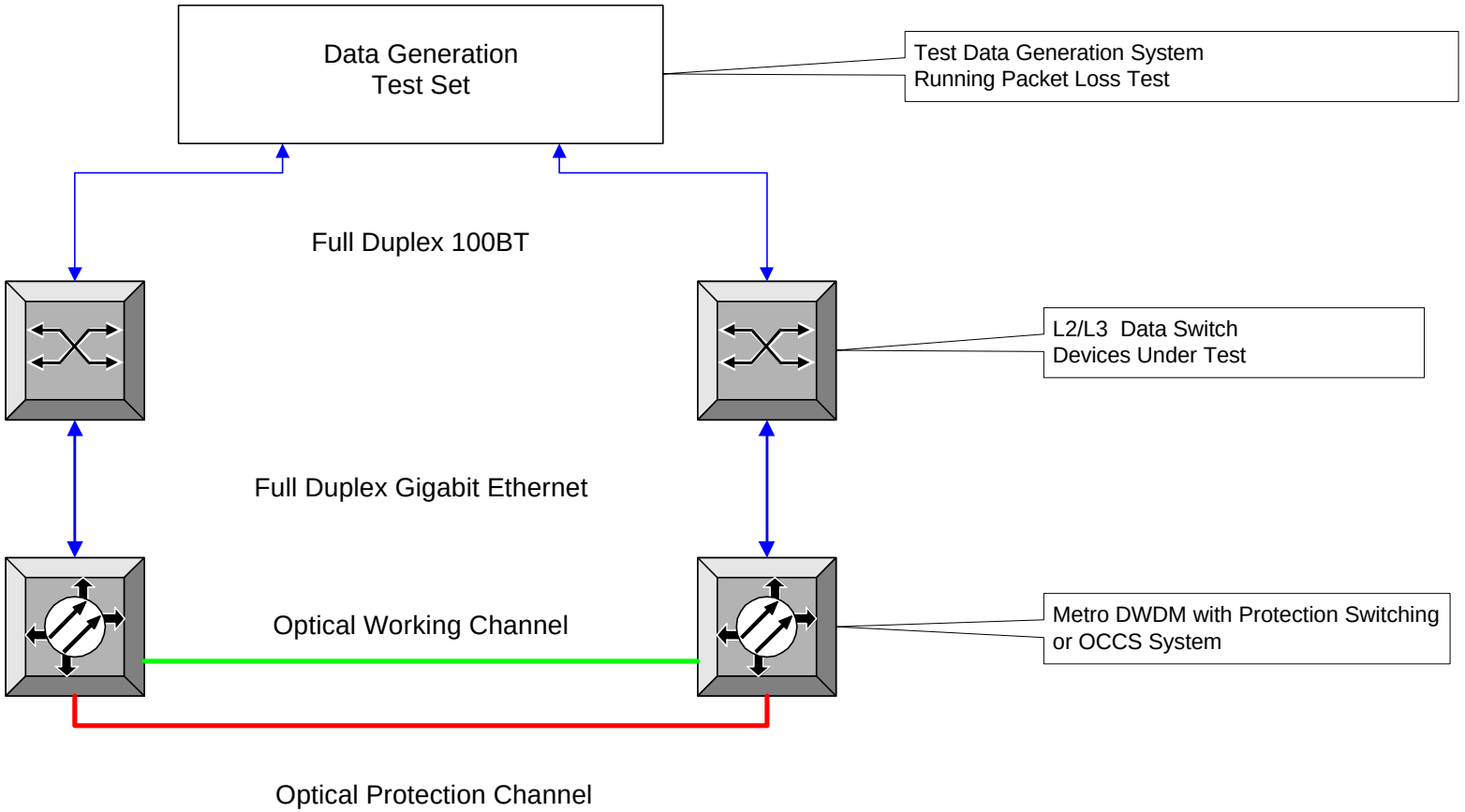
Data Loss: Traffic Characteristics During Overload/ Bandwidth Constraint Conditions

Differentiated Services: Priority Queuing Over Constrained Network Links

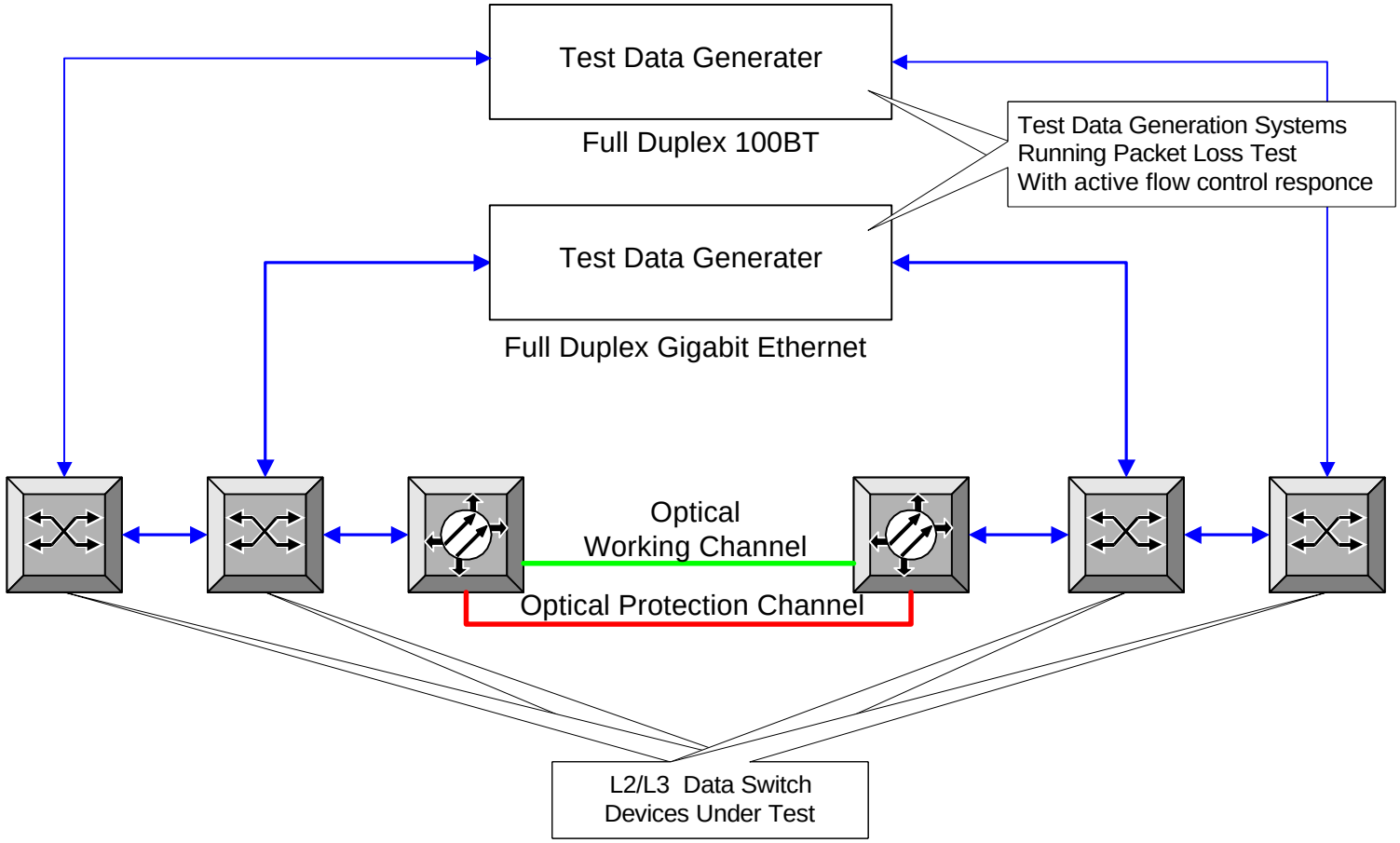
Service Reliability: Link Aggregation To Prevent IP Convergence

Virtual Segmentation: Simplified Routing Over Mesh Circuit Networks

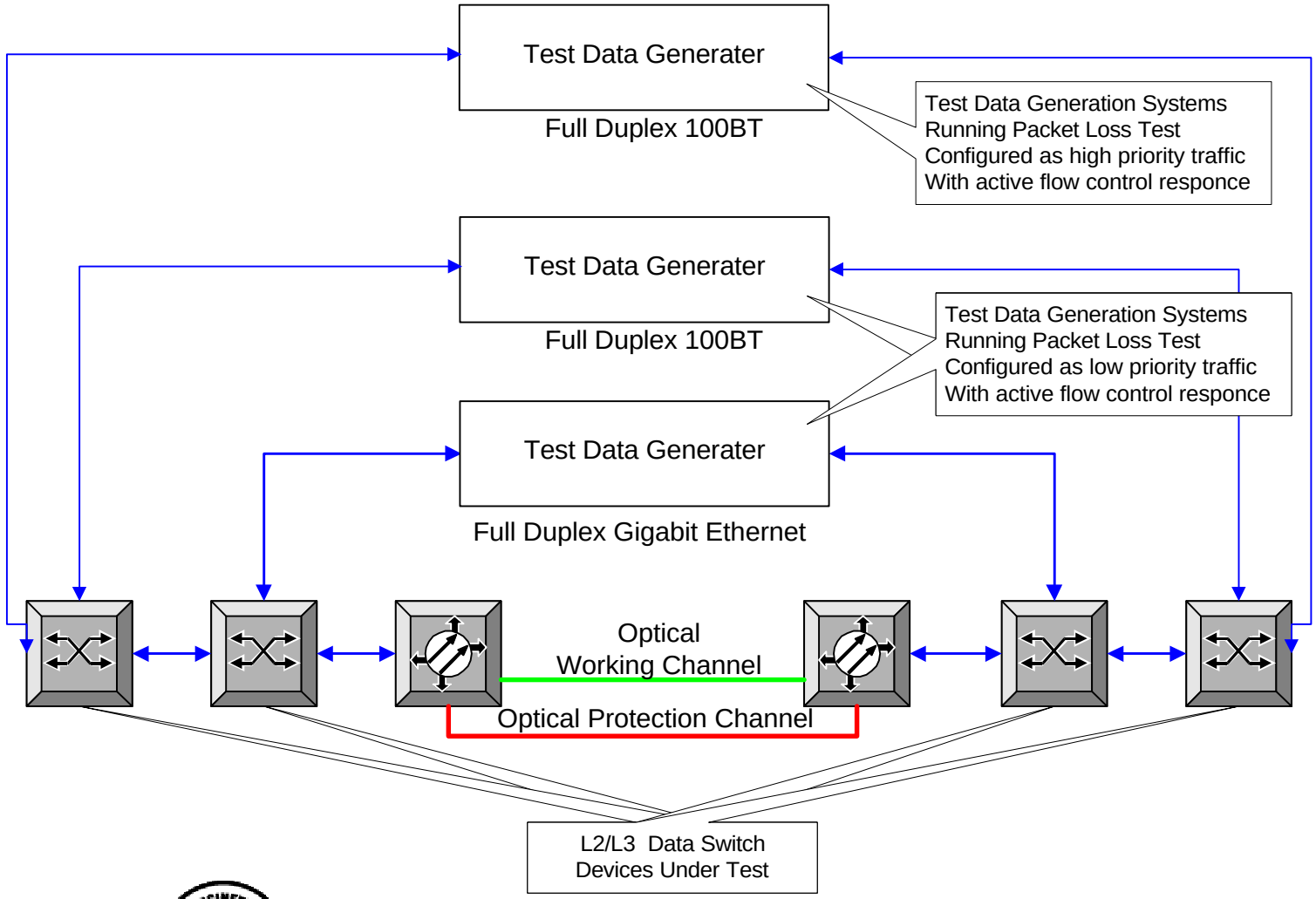
Test Configuration To Evaluate Traffic Restoration Over Active Optical Network



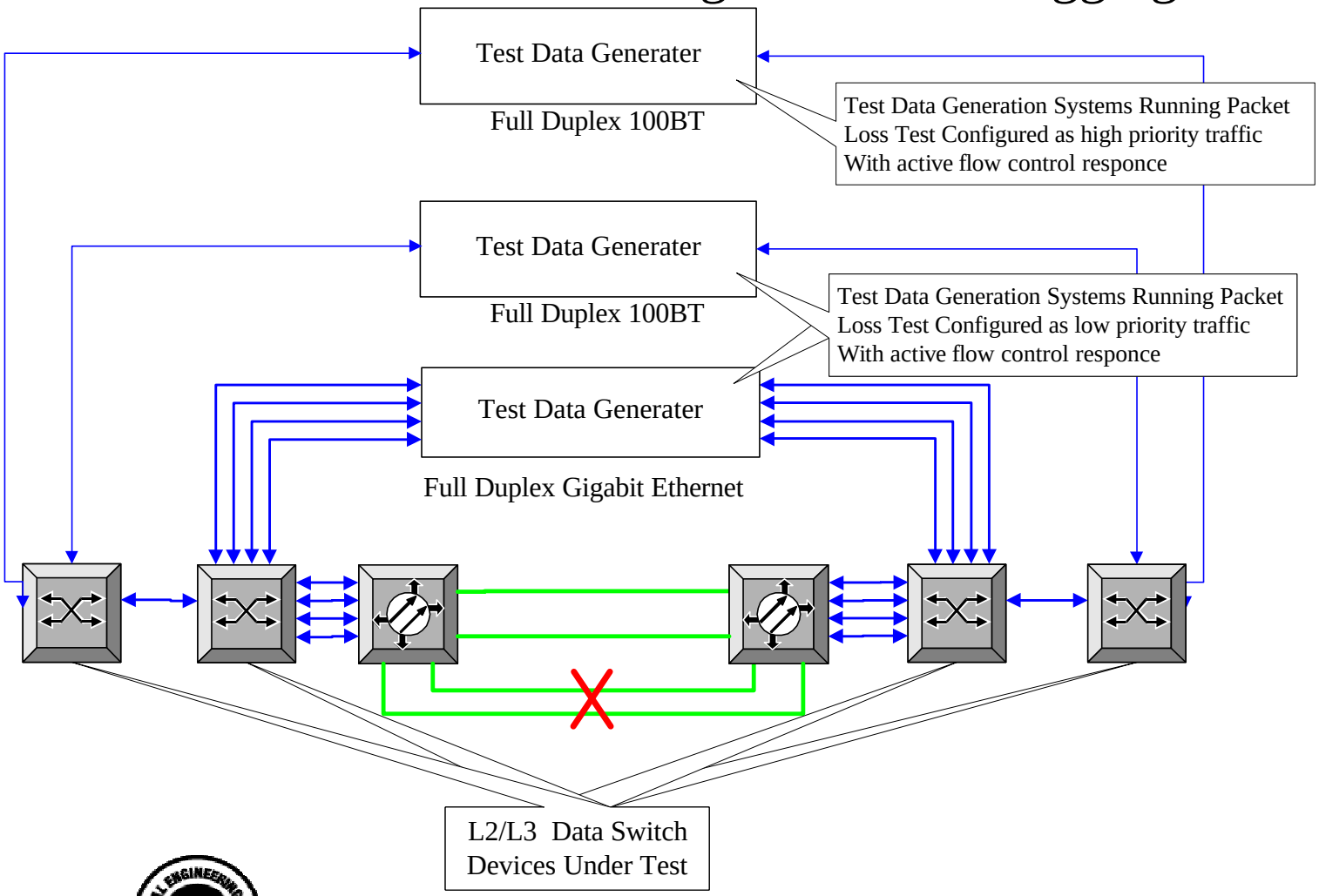
Test Configuration To Evaluate Traffic Subscription Control By Means Of Flow Control Over Active Optical Network



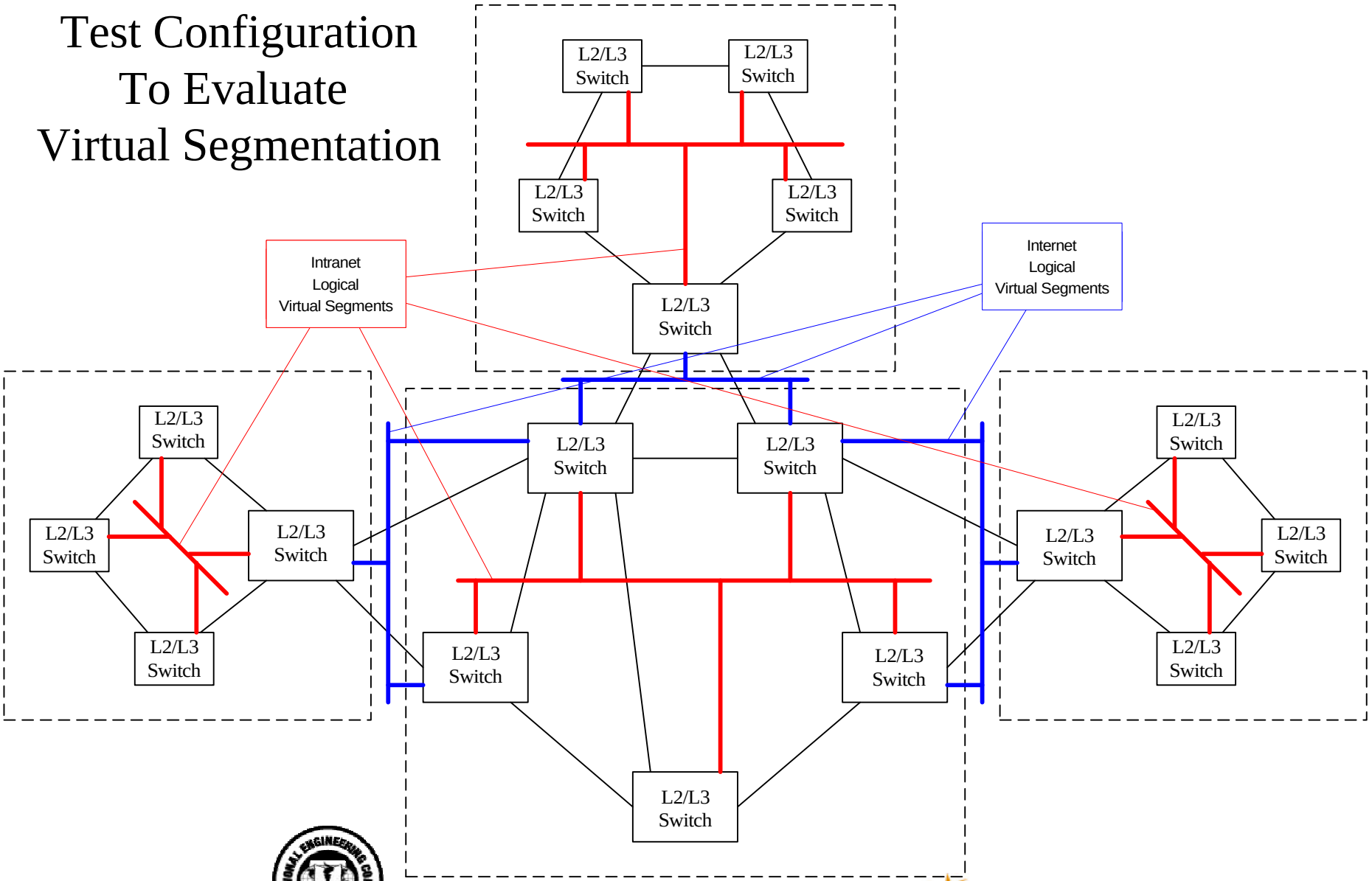
Test Configuration To Evaluate Differentiated Services By Means Of Priority Queuing Over Active Optical Network



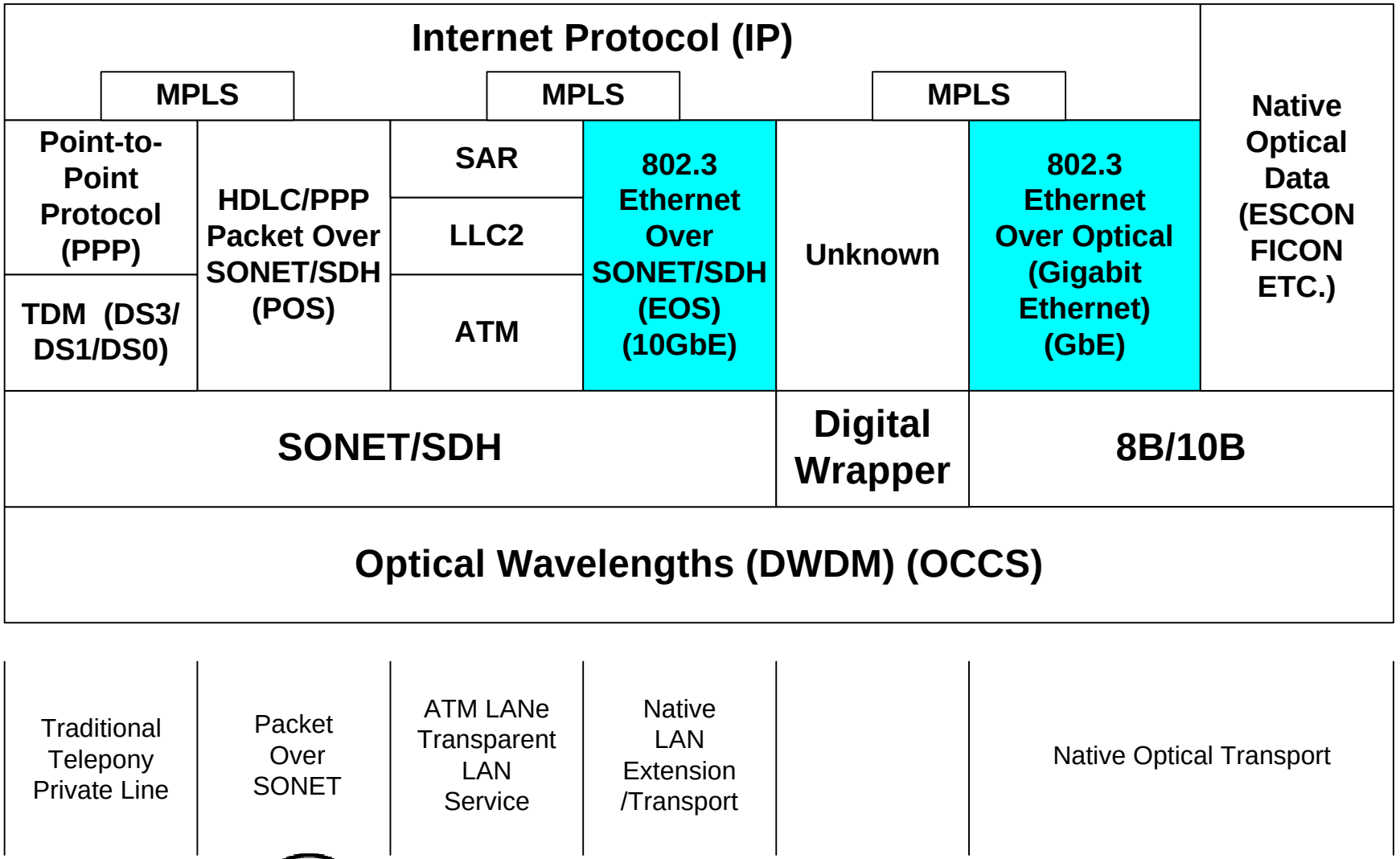
Test Configuration To Evaluate Traffic Restoration Over Active Optical Network Using 4X Diverse Aggregated Links



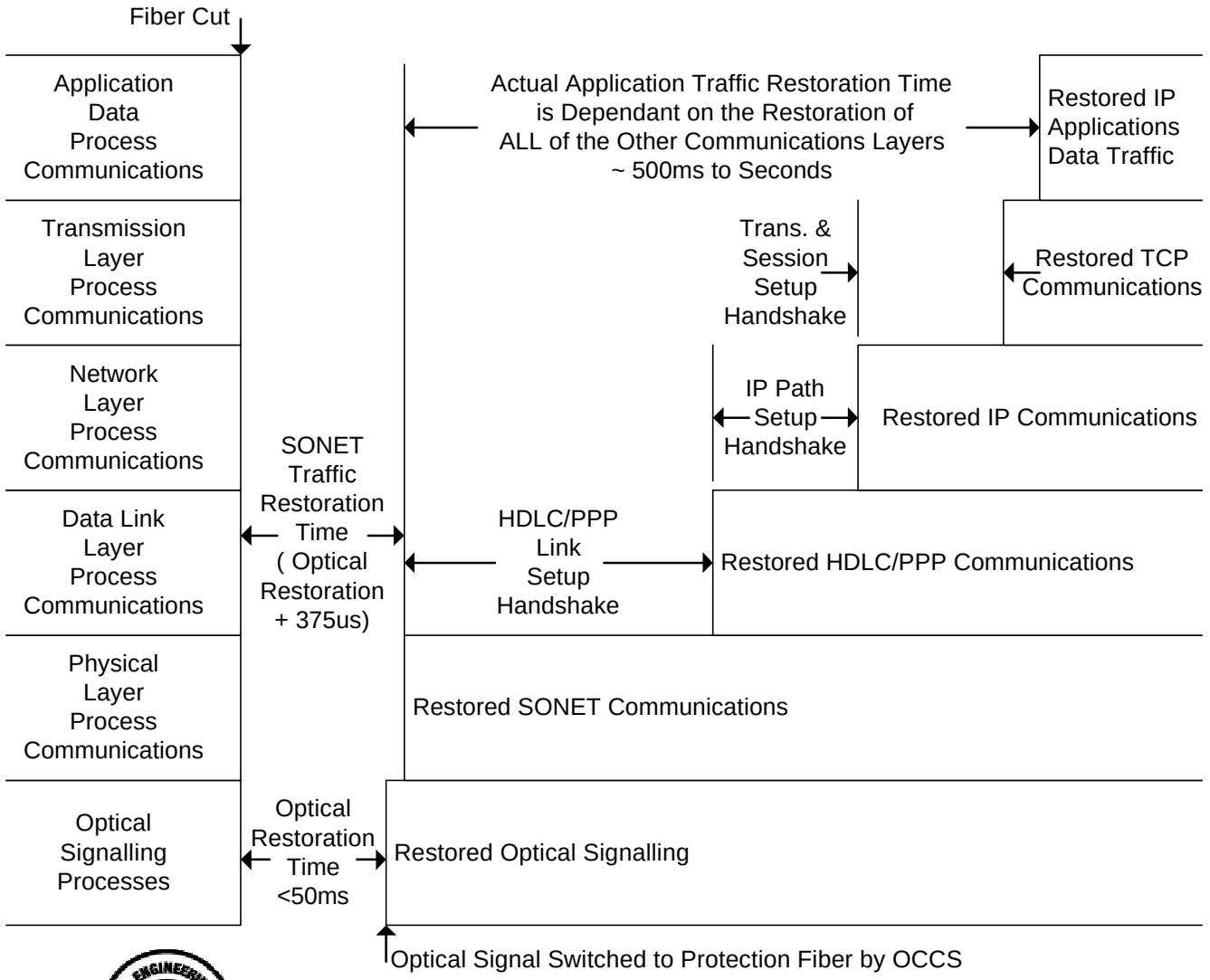
Test Configuration To Evaluate Virtual Segmentation



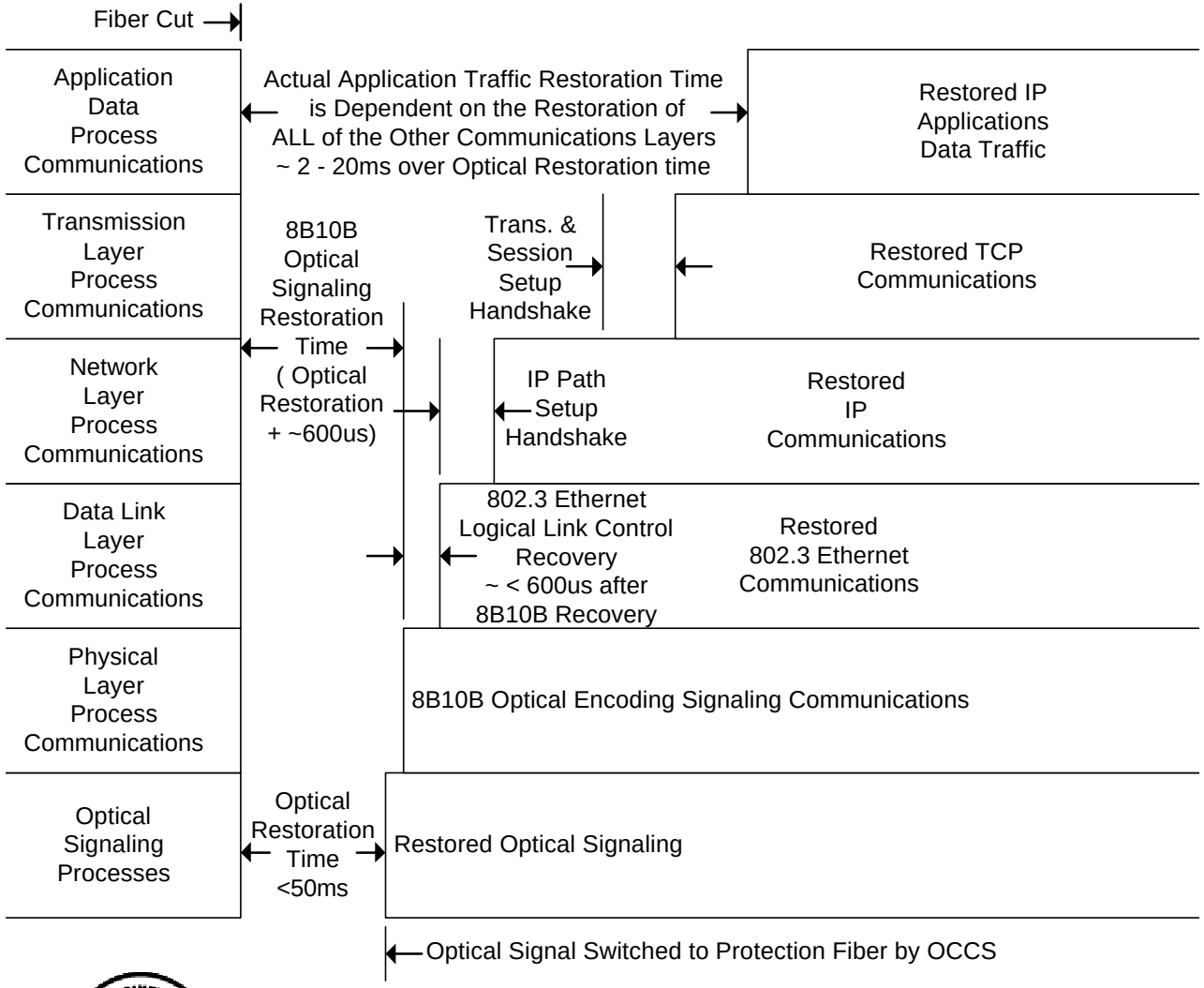
IP Over DWDM Networking Protocol Stack



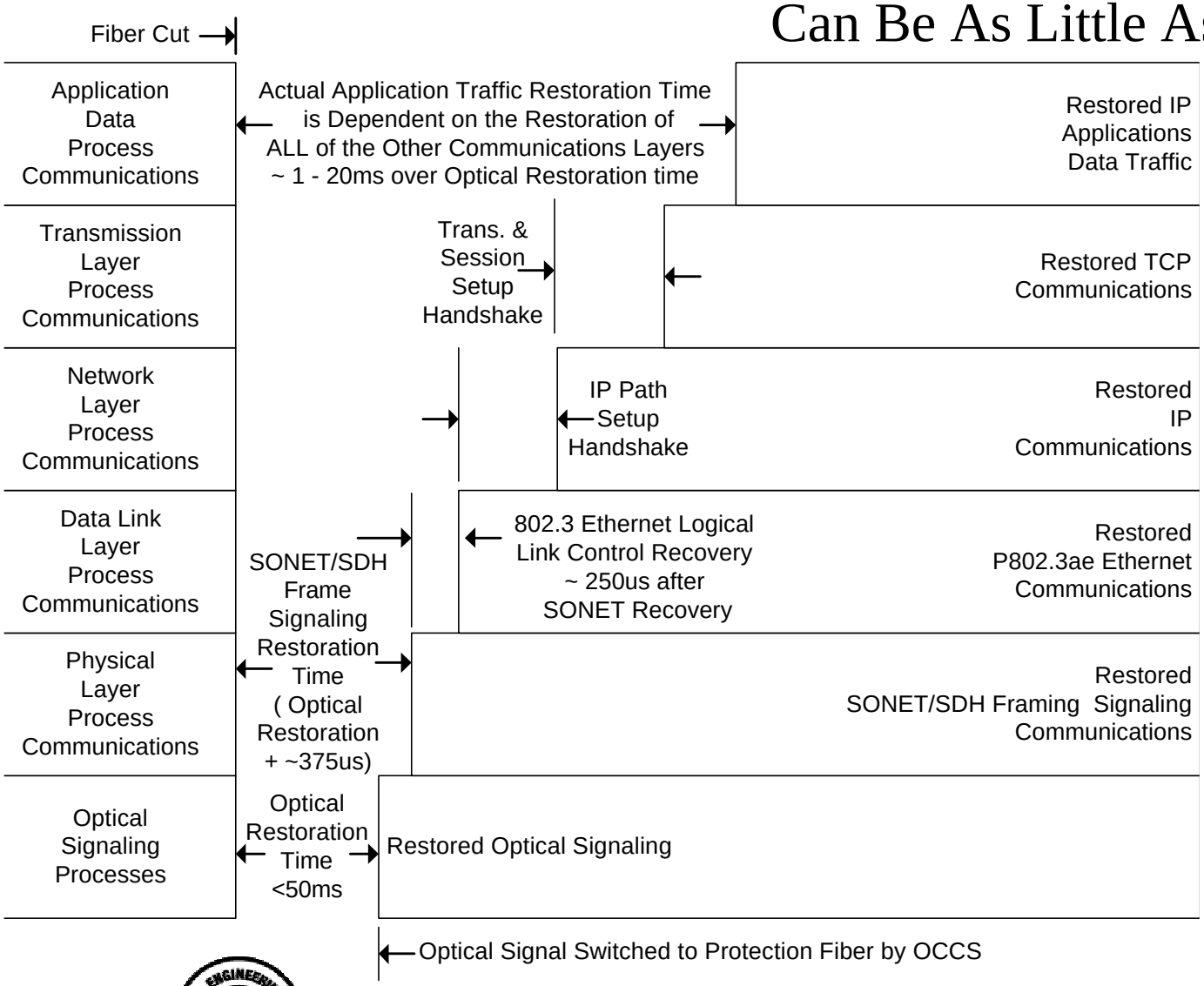
POS Traffic Restoration Is Limited By Multiple Layers Of Handshaking



GbE Traffic Restoration Indicative Of Native Optical Data Communications



P802.3ae WAN PHY Traffic Restoration Can Be As Little As 625us



XGbE (P802.3ae) Will Be The Most Reliable WAN Protocol To Date

XGbE WAN Will Provide:

- Very Fast Traffic Restoration Times
  - Direct Linkage To SONET/Optical Restoration
- Bandwidth Overload Protection
  - Through Active Flow Control
- Deterministic Latency And Differentiated Services
  - Through Priority Queuing
- Fault Tolerance and Resiliency
  - Through Link Aggregation
- Simplicity Of Routing Configuration
  - Through Virtual Segmentation