Experimental Demonstration and Results of Cross-layer Monitoring Using OpenNOP: an Open Source Network Observability Platform

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Introduction
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• Modern Network Demands and QoS Monitoring Challenges

• OpenNOP Cross-Layer Monitoring System

• Efficacy Demonstration
OpenNOP (Network Observability Platform)
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Testbed Setup
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DC – Data center
TPDR -1 and -2: Optical Transponders
VOA: Variable Optical Attenuator
EDFA: Erbium Doped Fiber Amplifiers
OSA: Optical Spectrum Analyzer
Performance Evaluation – Layer 2 Utilization and RTT

![Graphs showing Bandwidth and Round Trip Time](image-url)
Performance Evaluation
Summary

• Proposes a cross-layer monitoring system for OpenROADM-compliant optical transport networks

• Use a cross-layer monitoring tool, OpenNOP, for a cost-effective and efficient network management