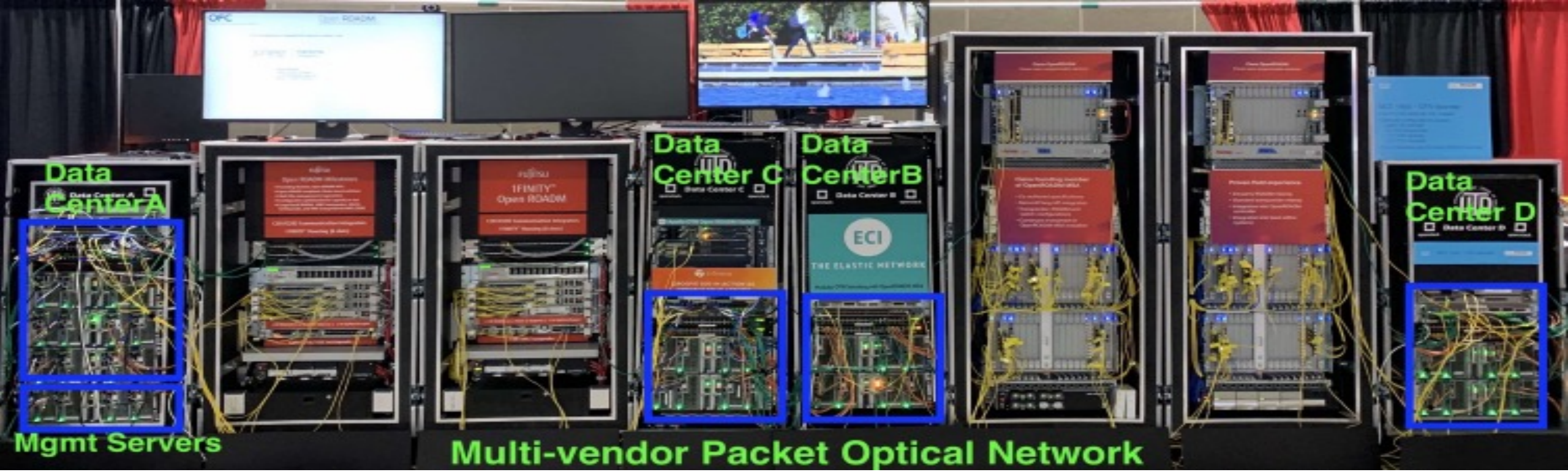

Experimental Demonstration and Results of Cross-layer Monitoring Using OpenNOP: an Open Source Network Observability Platform

Ramanuja Kalkunte

December 8, 2023

N. Ellsworth *et al.*, "Experimental Demonstration and Results of Cross-layer Monitoring Using OpenNOP: an Open Source Network Observability Platform," *Proc. International Conference on Transparent Optical Networks (ICTON)*, 2023.

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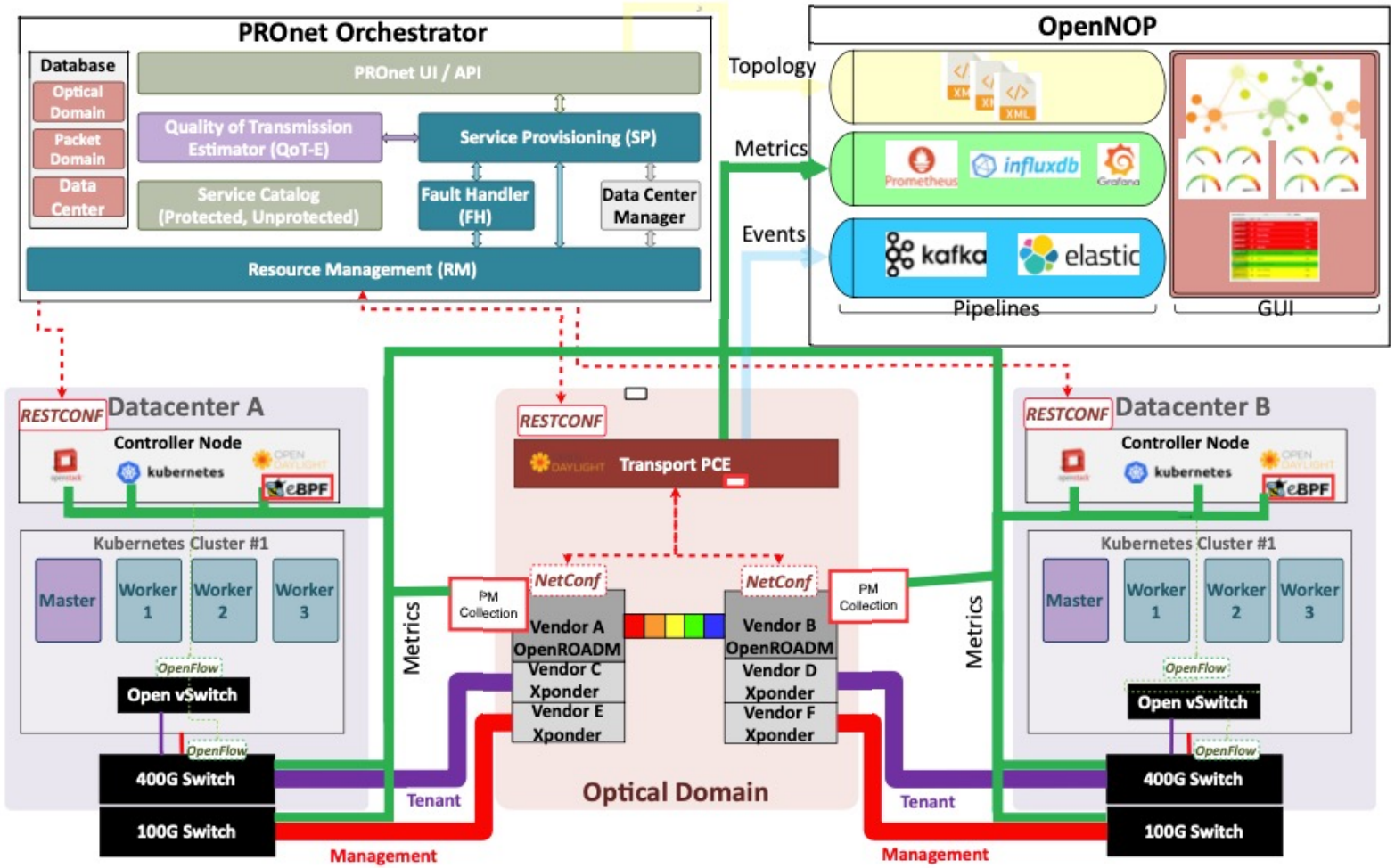
Introduction

Introduction

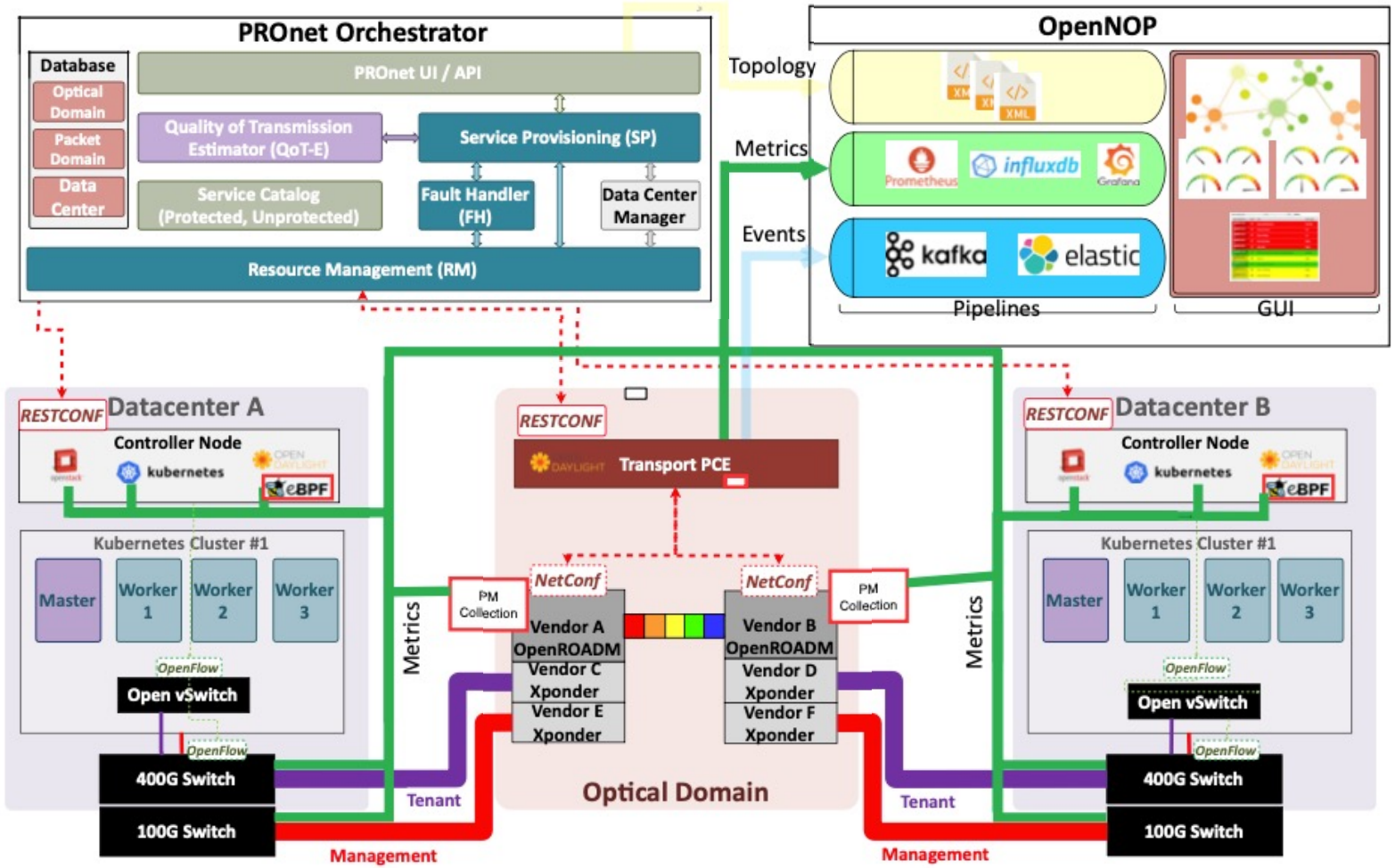
- Modern Network Demands and QoS Monitoring Challenges
- OpenNOP Cross-Layer Monitoring System
- Efficacy Demonstration

OpenNOP (Network Observability Platform)



OpenNOP (Network Observability Platform)

Operators need a clear view of FCAPS (*Fault, Configuration, Availability, Performance, and Security*)



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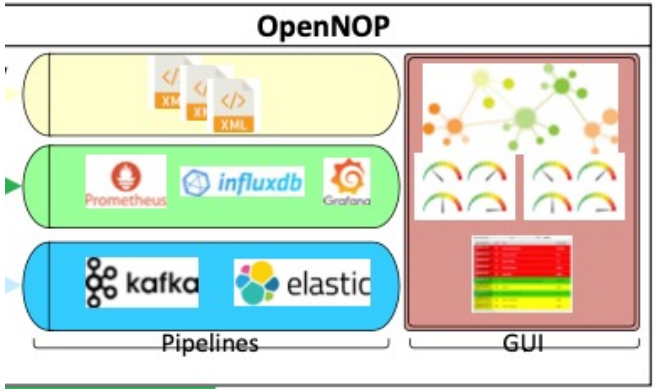

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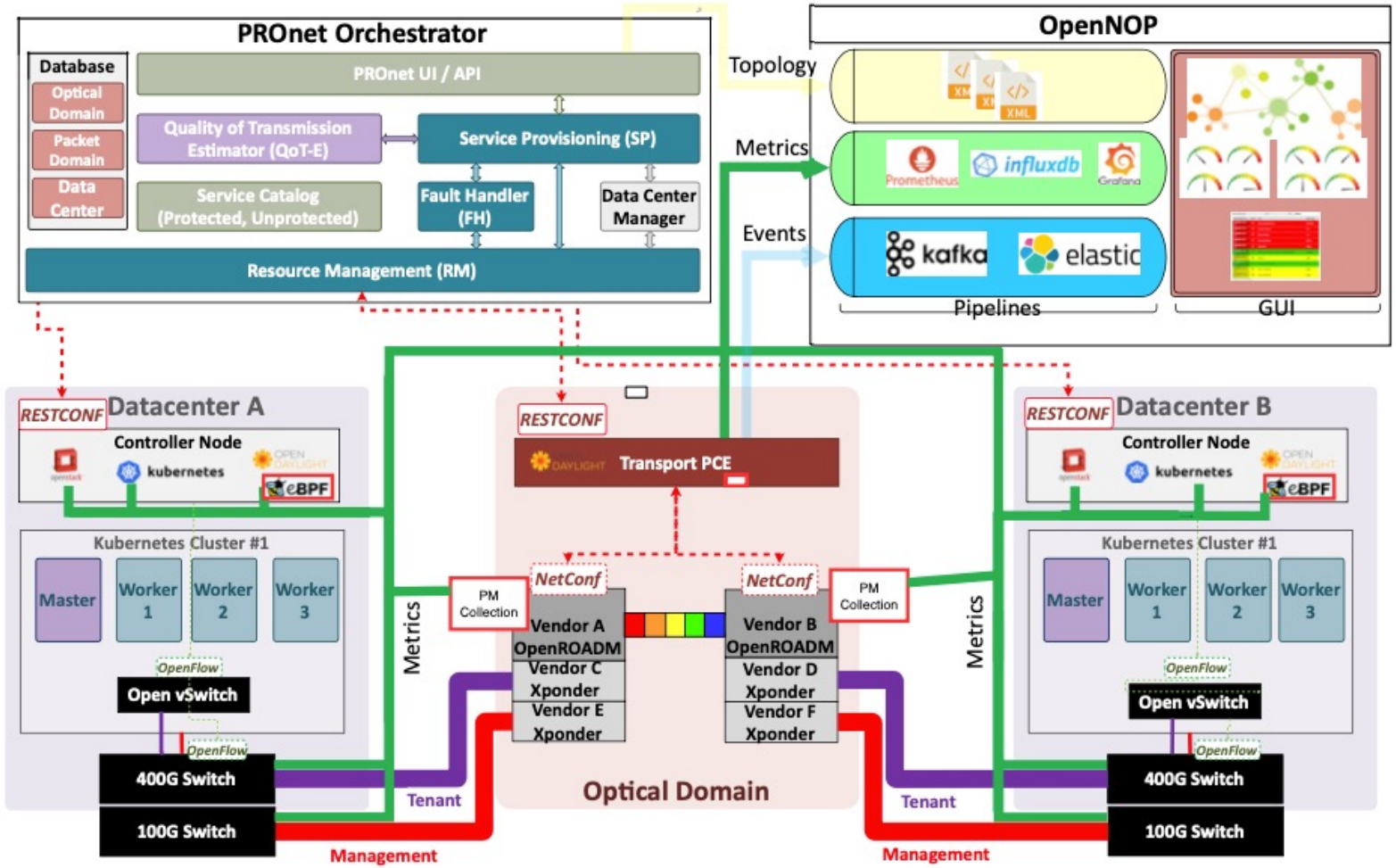

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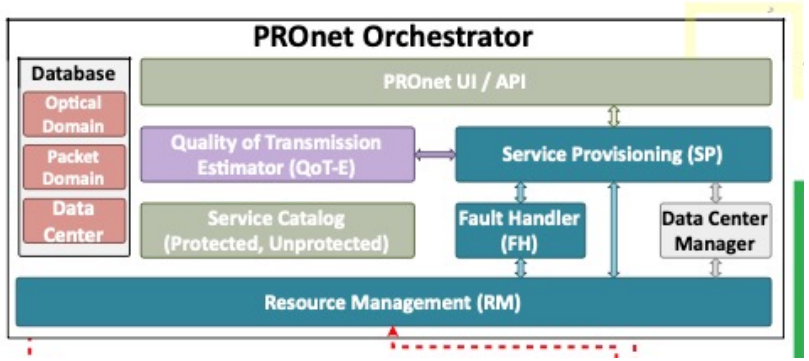

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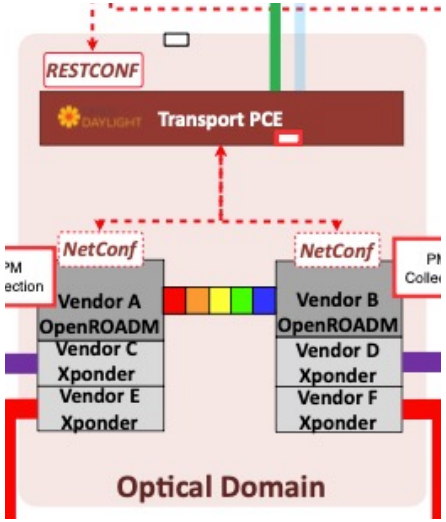

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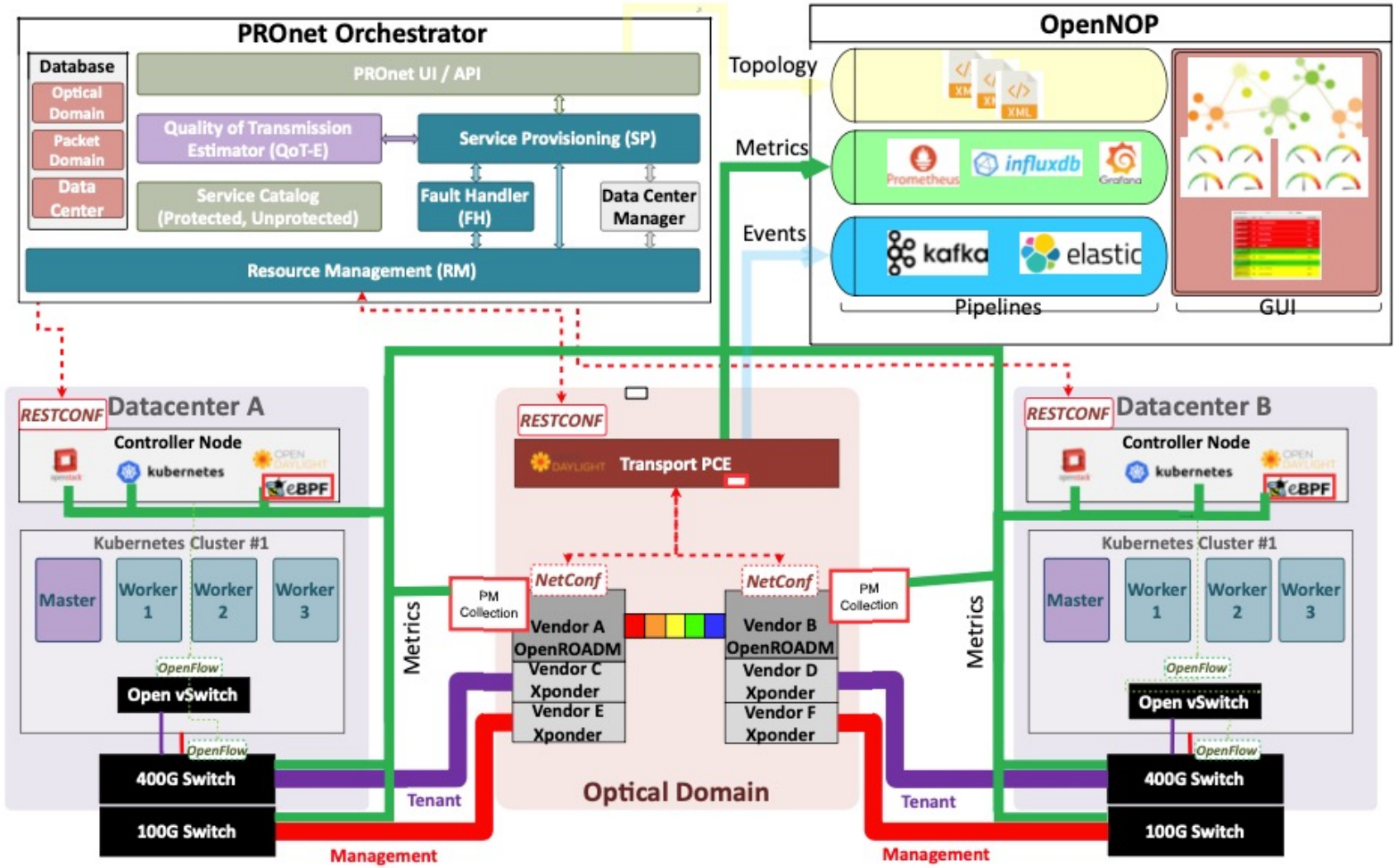
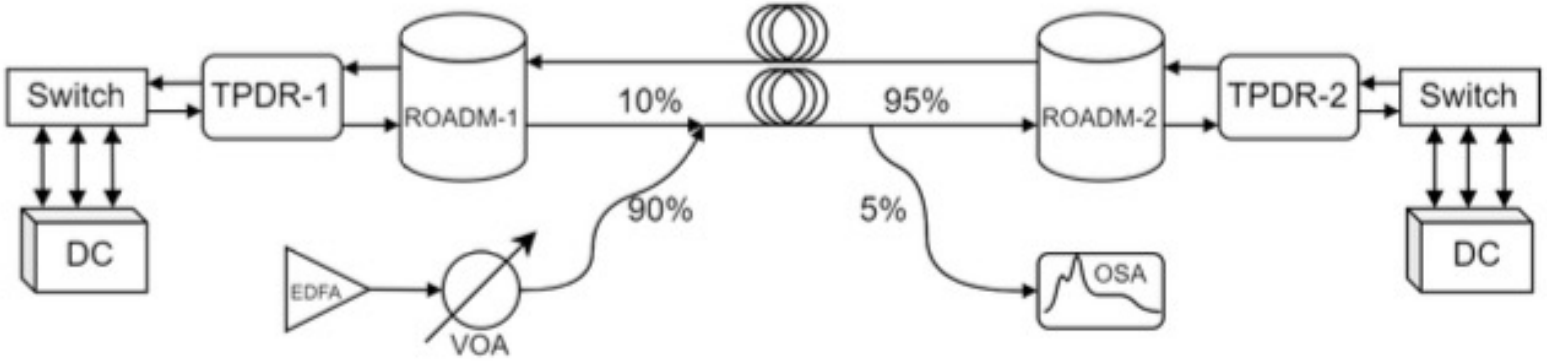


Testbed Setup



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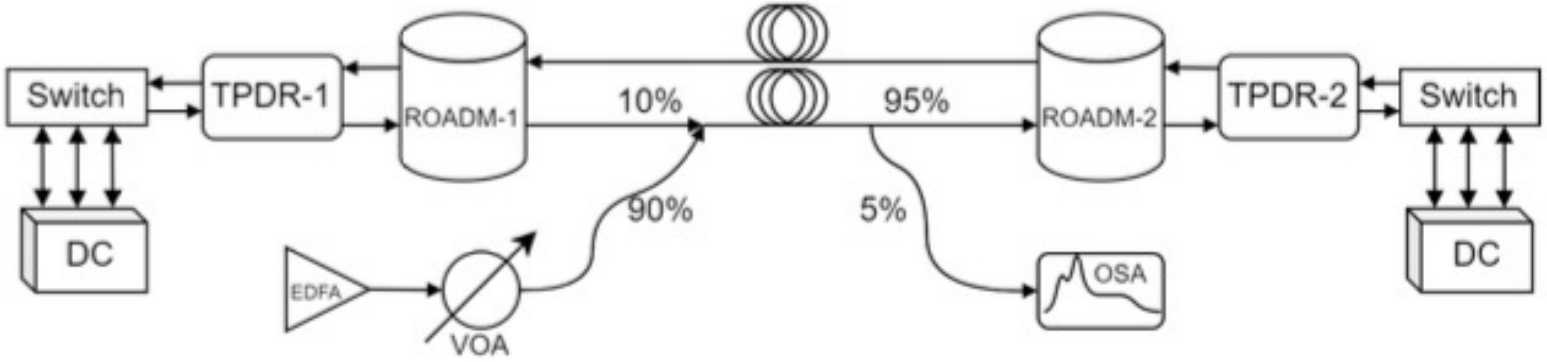

DC – Data center
TPDR -1 and -2: Optical Transponders
VOA: Variable Optical Attenuator
EDFA: Erbium Doped Fiber Amplifiers
OSA: Optical Spectrum Analyzer

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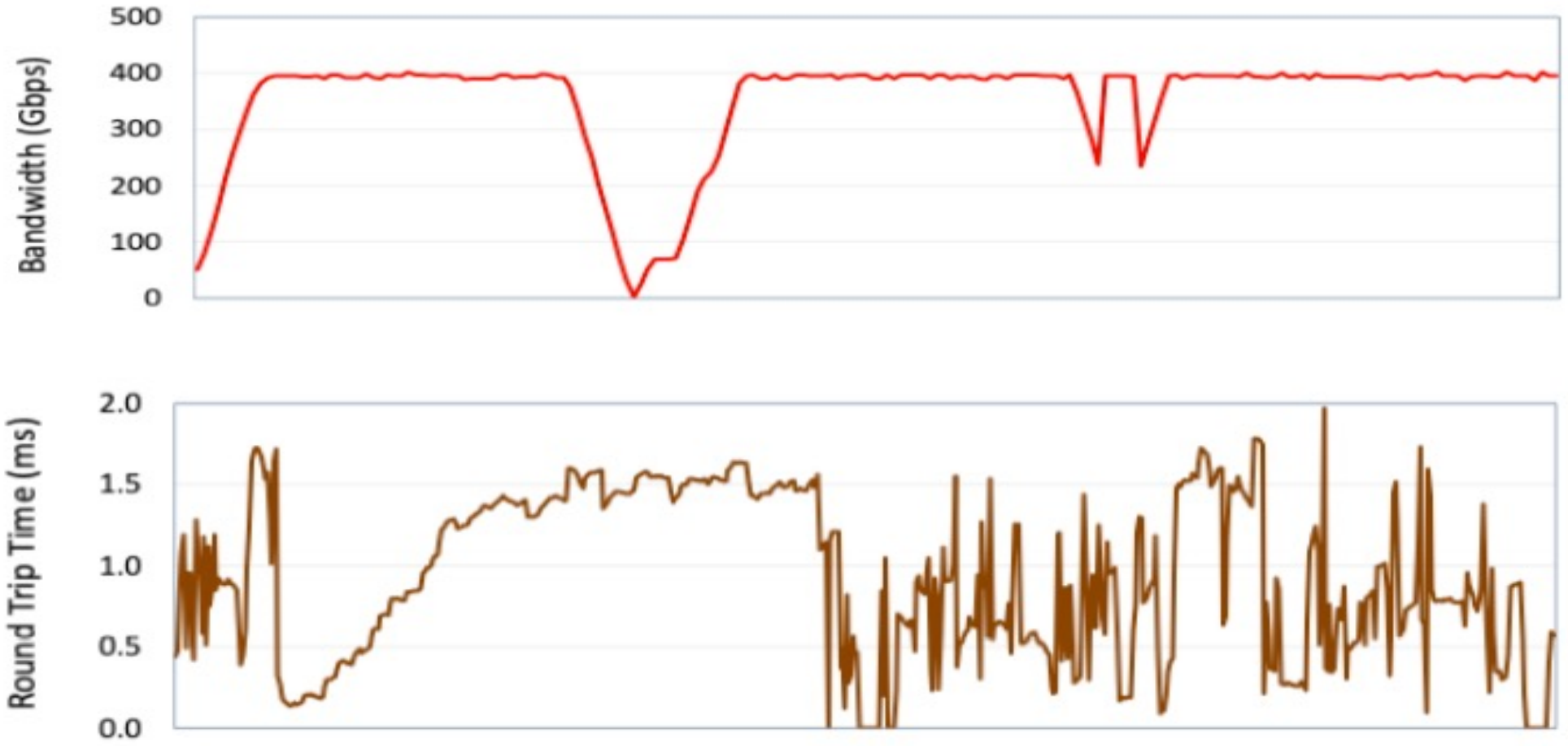
Performance Evaluation – Layer 2 Utilization and RTT



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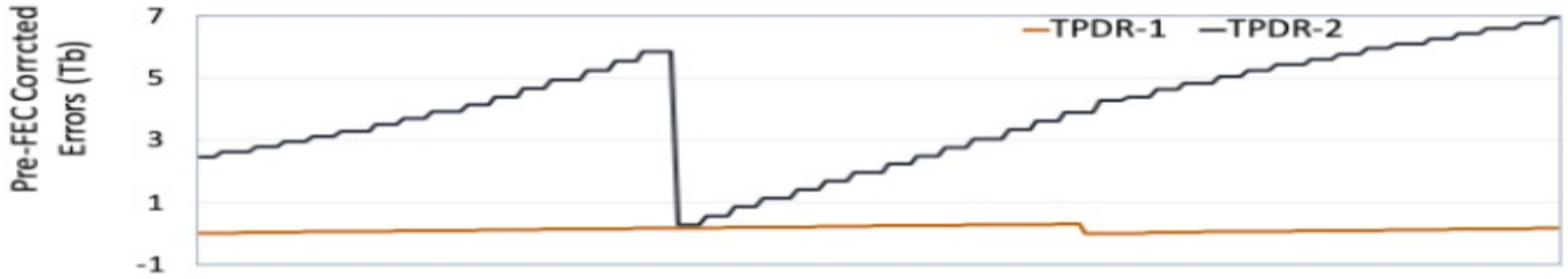
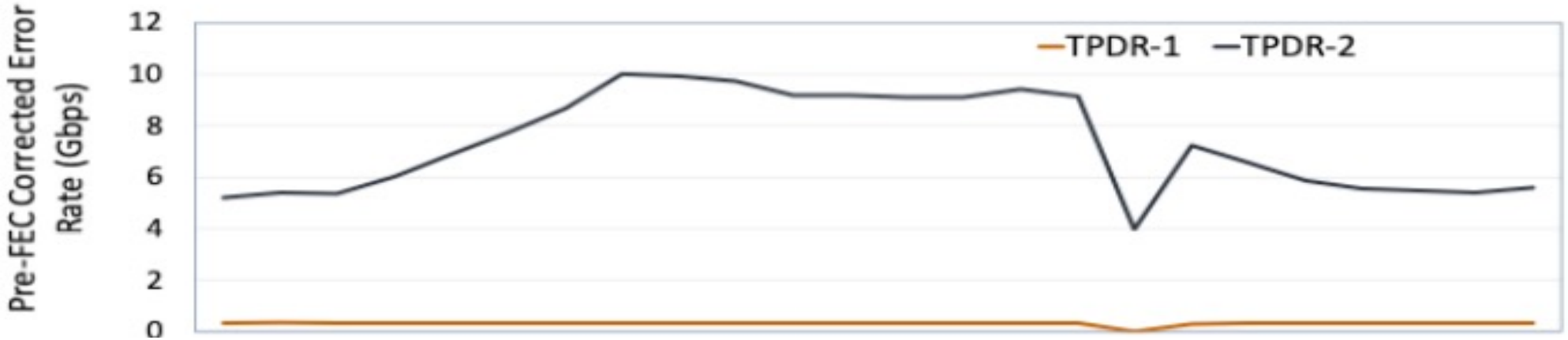
Performance Evaluation





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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