

Goal

Multi-layer SDN control with ONOS for programmability and optimization across packet and optical networks for a more efficient WAN.

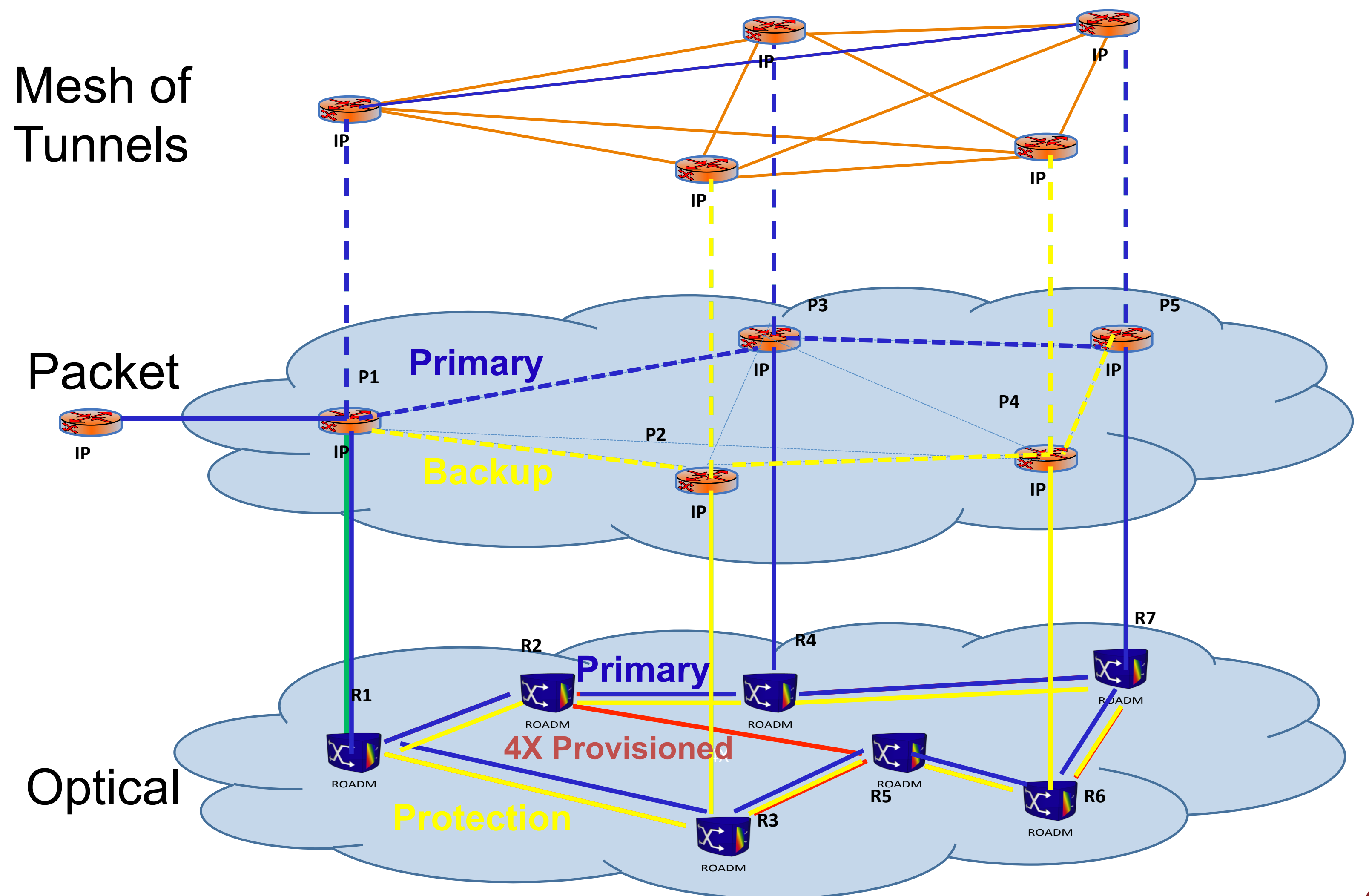
Inefficiencies with Current Practices

Packet and optical networks managed independently

Each network does its planning independently resulting in overprovisioning and significant inefficiencies.

Provisioning of Optical networks is static and lacks agility (bandwidth on demand is slow)

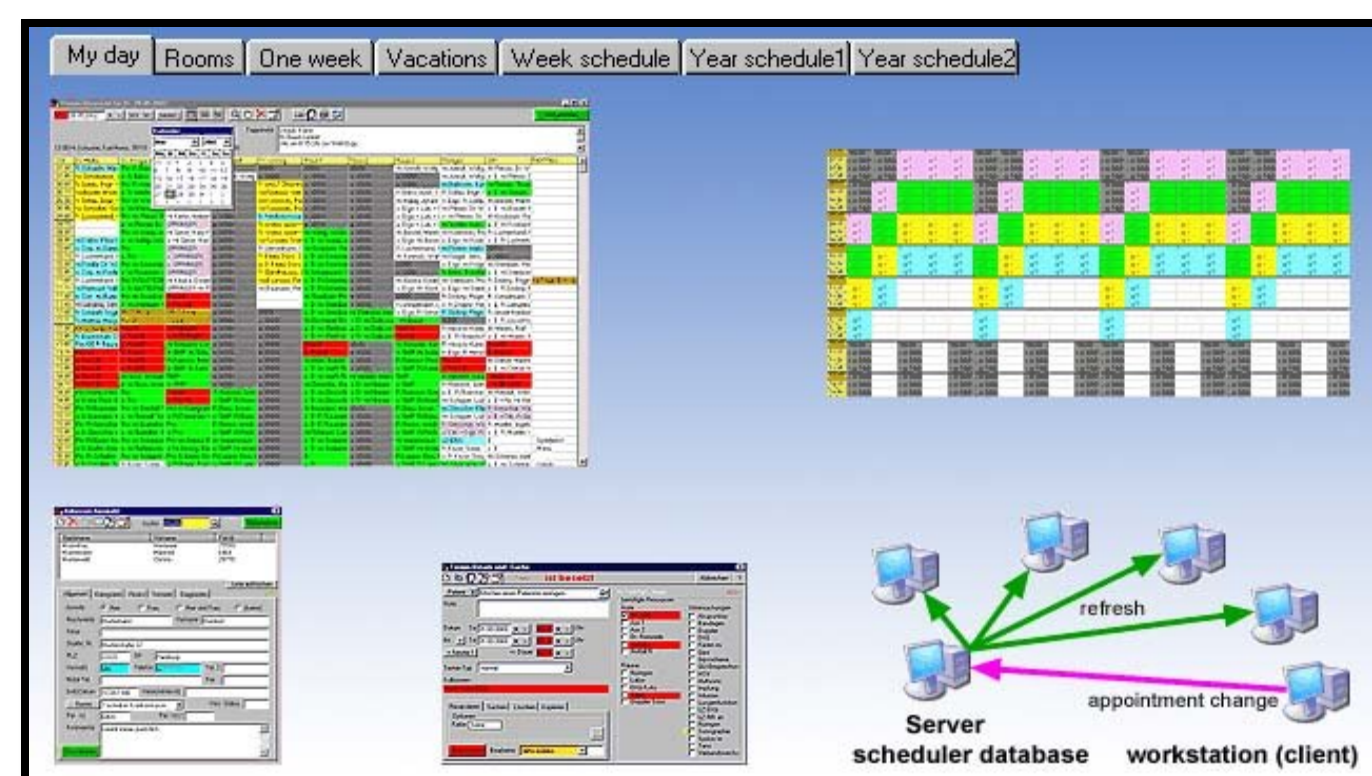
Solution: Optimization across packet and optical networks, programmability and agility with **Multi-layer SDN Control**.



Multi-layer SDN Control with ONOS

BW Calendaring application provides:

- Ability to specify bandwidth scheduling with a set of SLAs and optimization parameters.



ONOS provides:

- NB Intent Framework for provisioning across packet and optical
- PCE for multi-layer optimal path selection
- Network graph abstraction with both layers
- Packet and optical Data model
- Topology discovery of packet and optical
- Pluggable SB for adaptors
- Failure detection and rerouting
- Visibility (GUI) and statistics



Calendaring Application

BW on Demand Intents

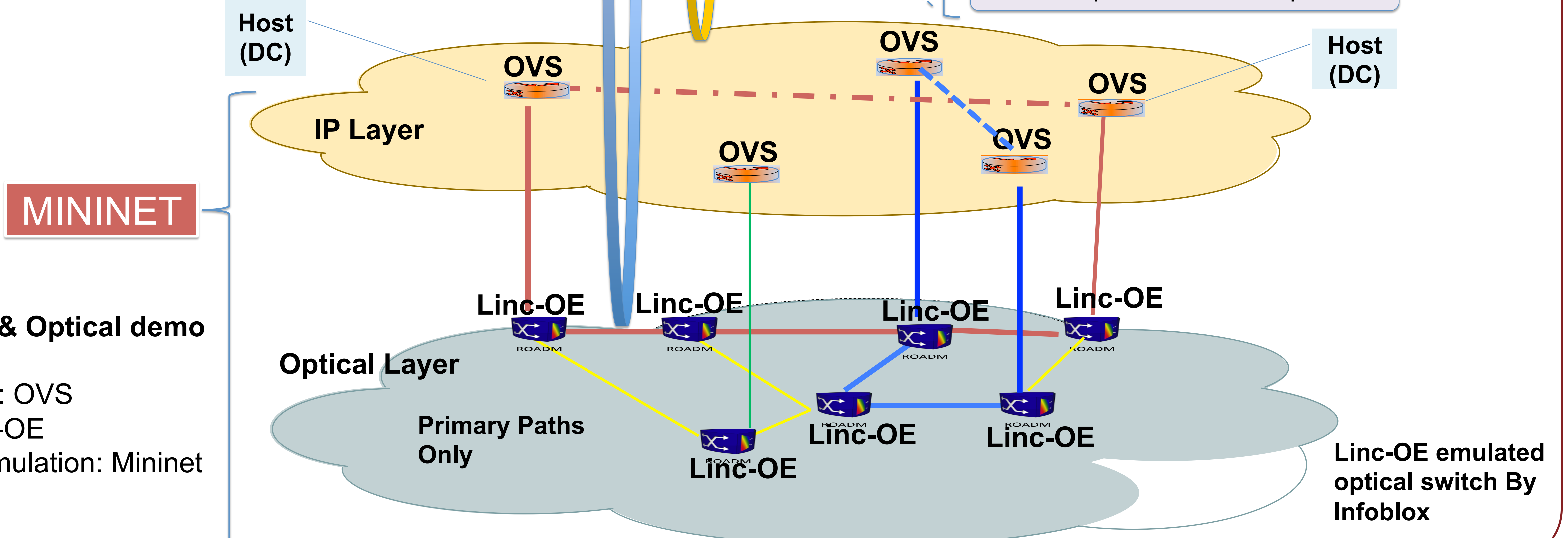
NB Interface

Intent Framework & Embedded PCE

Network Graph Abstraction, Usage & States (PACKET-OPTICAL)

Packet-Optical Switches Cross Connects, Triggers & Events

SB Open Flow + Adaptors



Emulated Packet & Optical demo environment:

- Packet switches: OVS
- ROADMs: Linc-OE
- Orchestration/emulation: Mininet

ONOS Partners:

