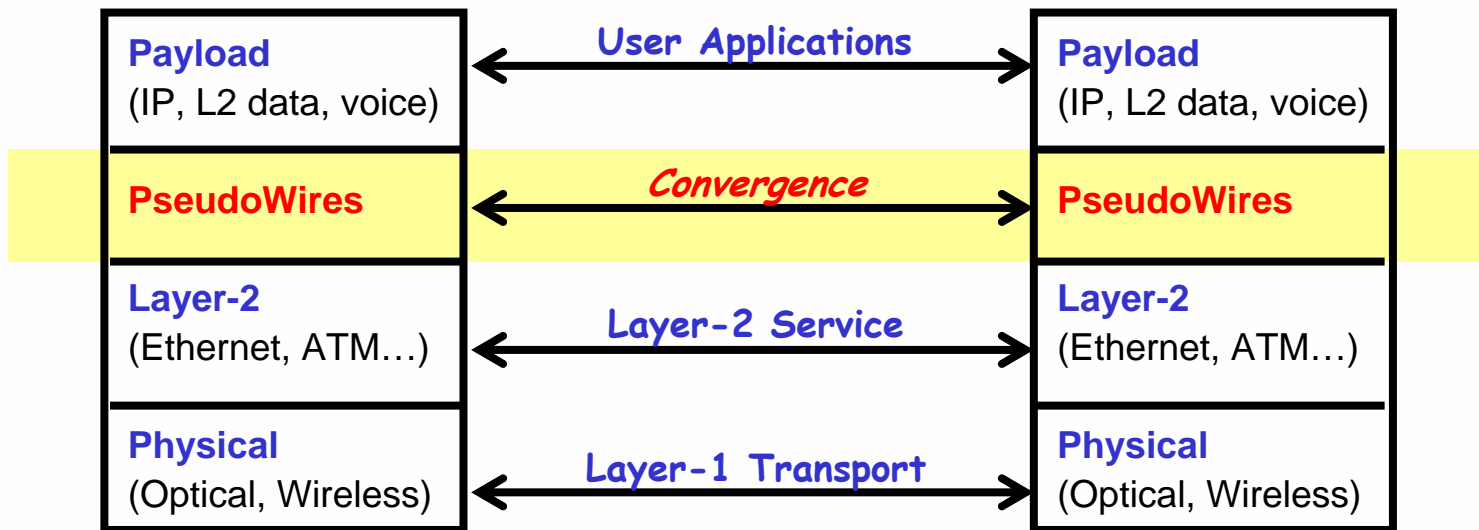


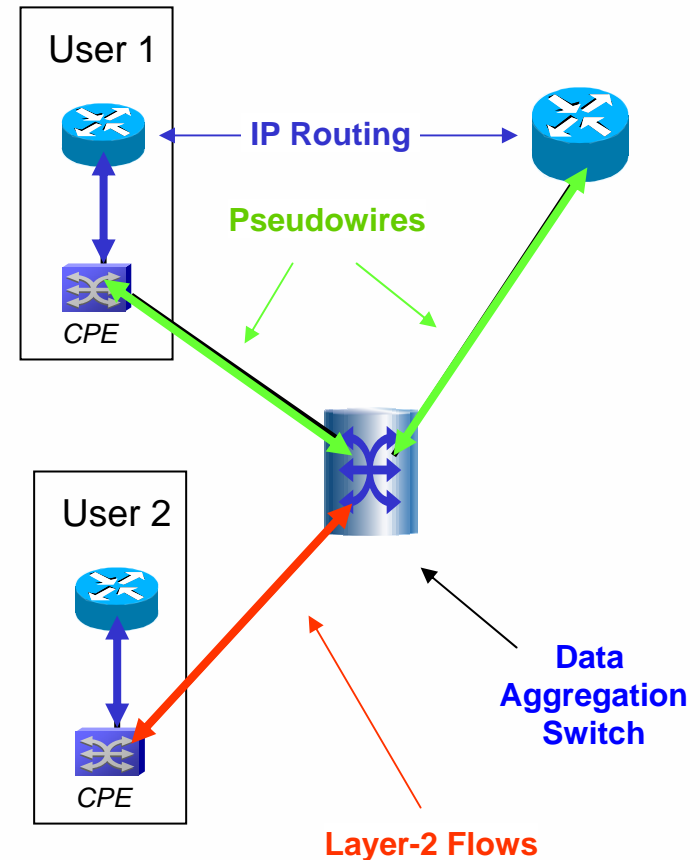
Why Carriers Like Pseudowires...

- A type of “*virtual circuit*”: on top of all Layer-2, below Layer-3 (IP)
- A **point-to-point connection** that carries packets, cells or bit streams
- Uses **MPLS control plane** to provision data flows
- Works over legacy as well as low-cost Metro **Ethernet**
- **Future-proofed** against ‘next big thing’ in access
 - ➔ Suitable for Service Convergence
 - ➔ Utilizes current access assets

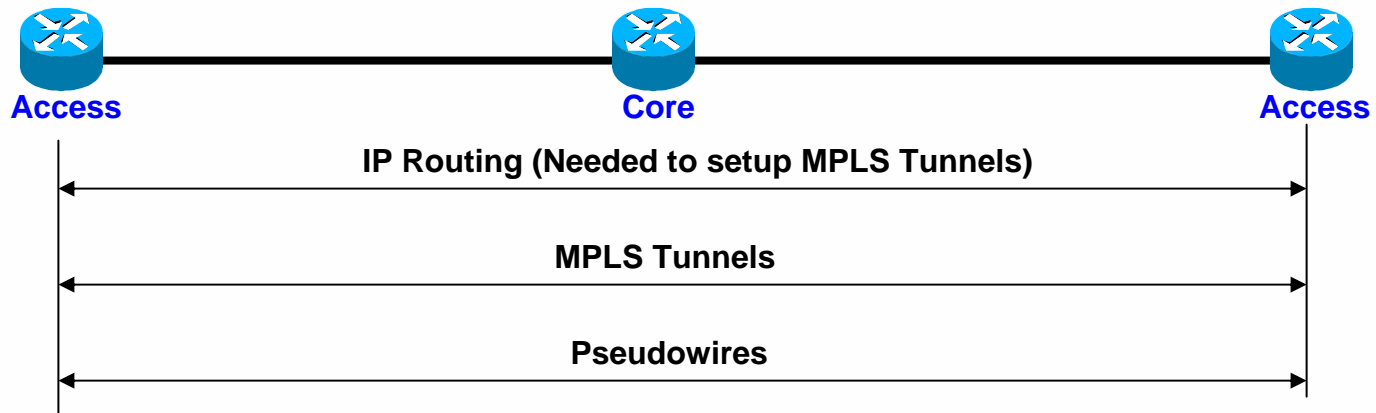
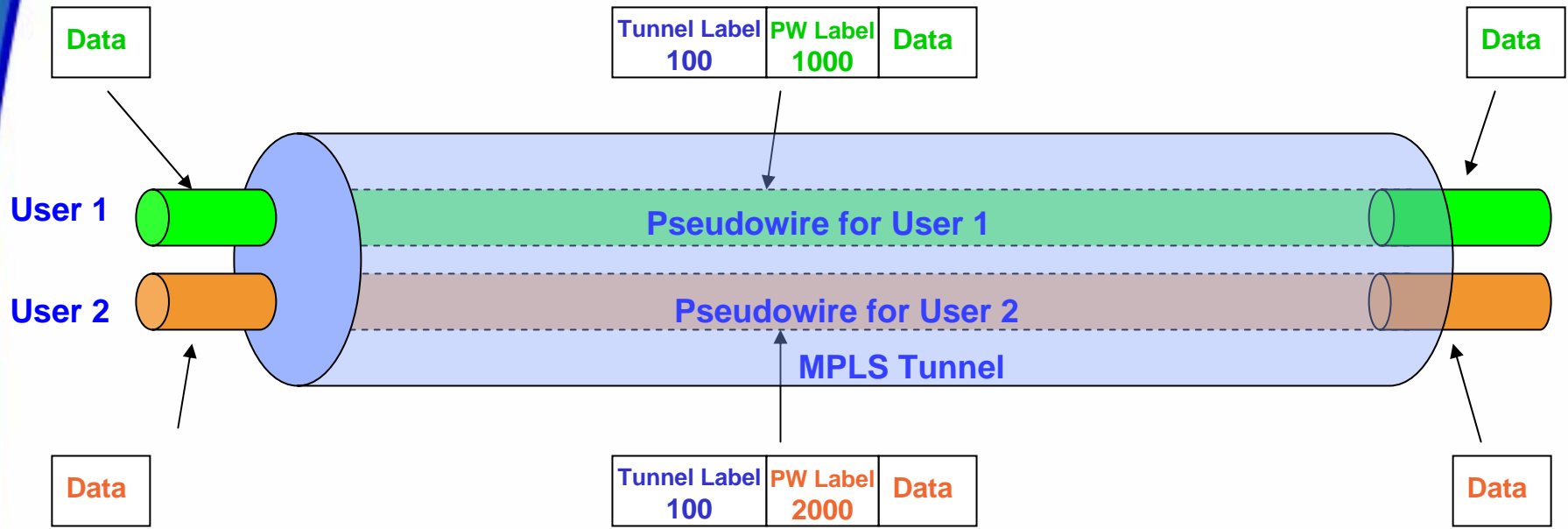


Making a Service out of Pseudowires

- **Flexibility**
 - Multiplex traffic from all access infrastructure
- **QoS guarantees at fine granularity**
 - Sustain per-flow QoS after aggregation
 - Support delay-sensitive traffic
- **Edge-to-edge OAM**
 - Support MPLS-Ethernet/ATM OAM Mapping
- **Rapid Protection & Restoration**
 - Recovery from failures in msec's
- **Support Multiple Control-Planes**
 - MPLS, Ethernet, ATM...
- **Easy to Manage**
 - Compatible with backbone's MPLS control-plane
- **Cost Effective**
 - Remove unnecessary IP functions
- **Equipment Requirements**
 - Process at Pseudowire-level (e.g. switching)
 - No need to carry Layer-2 traffic with Layer-3 gear

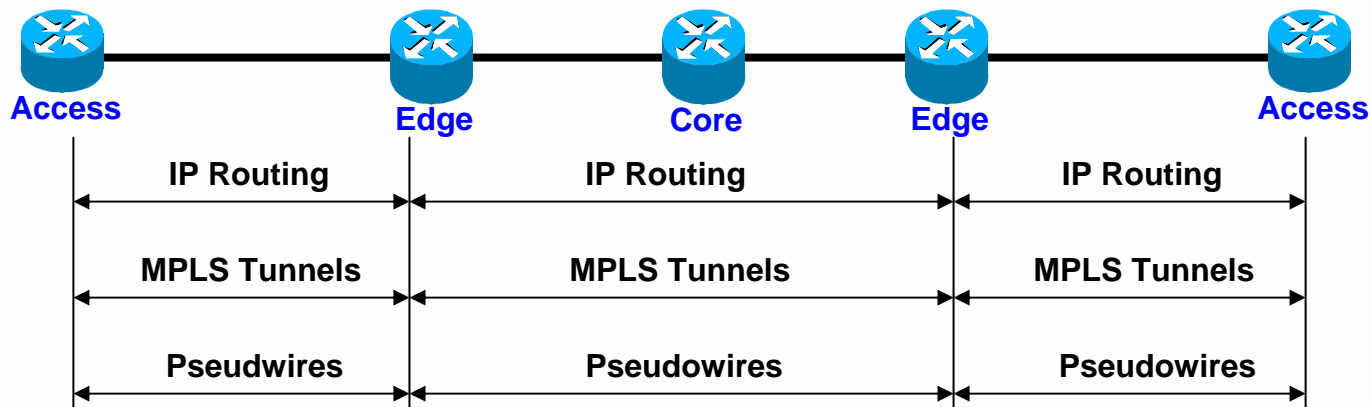
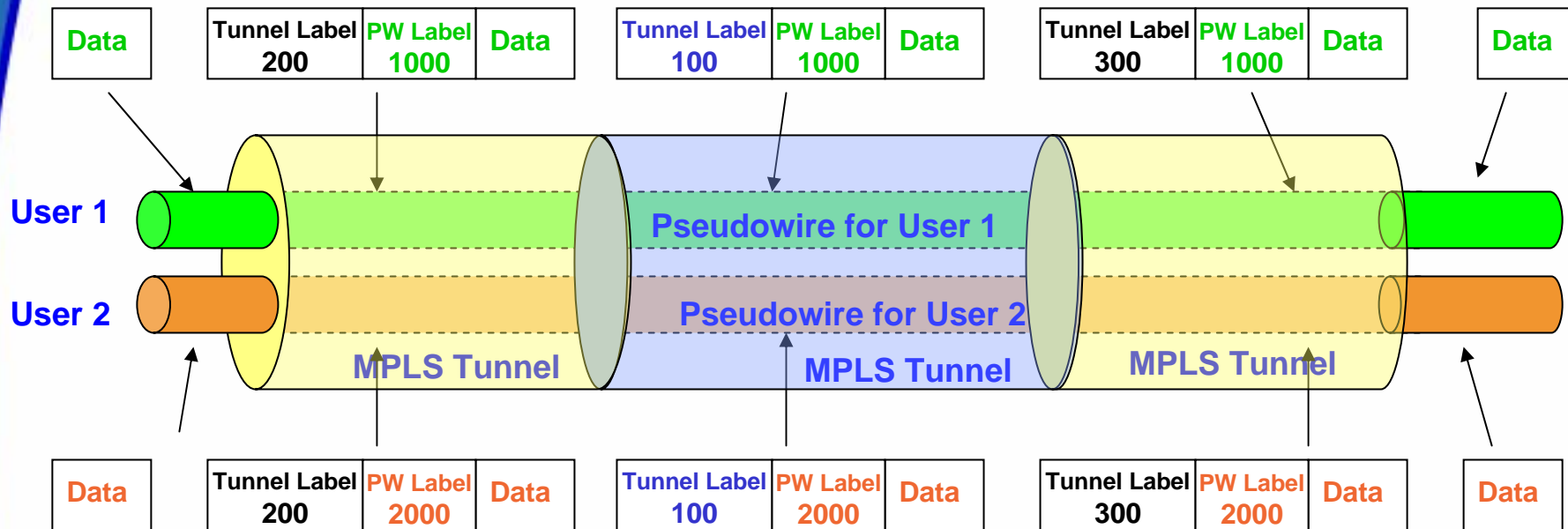


Draft-Martini: Originally Designed as Generic Encapsulation for Routers



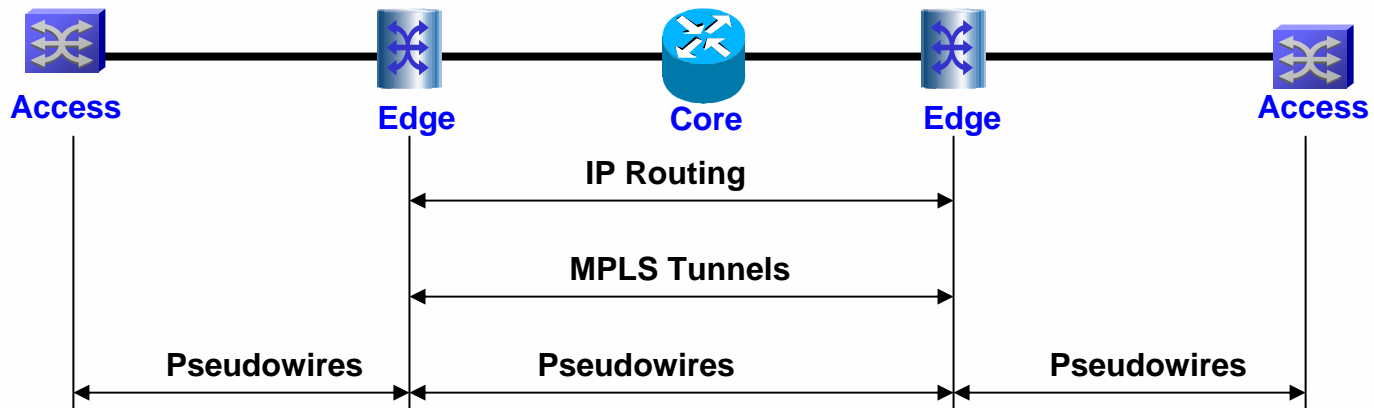
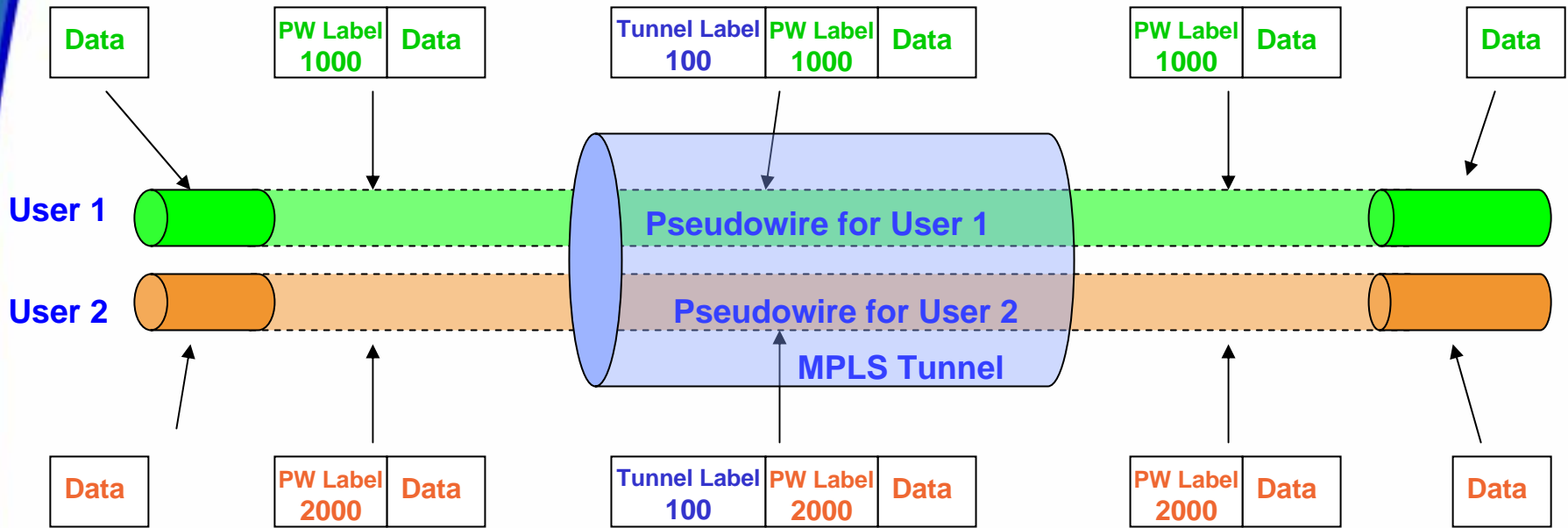
Draft-Martini:

In Practice, Requires IP Routing and Routers Everywhere

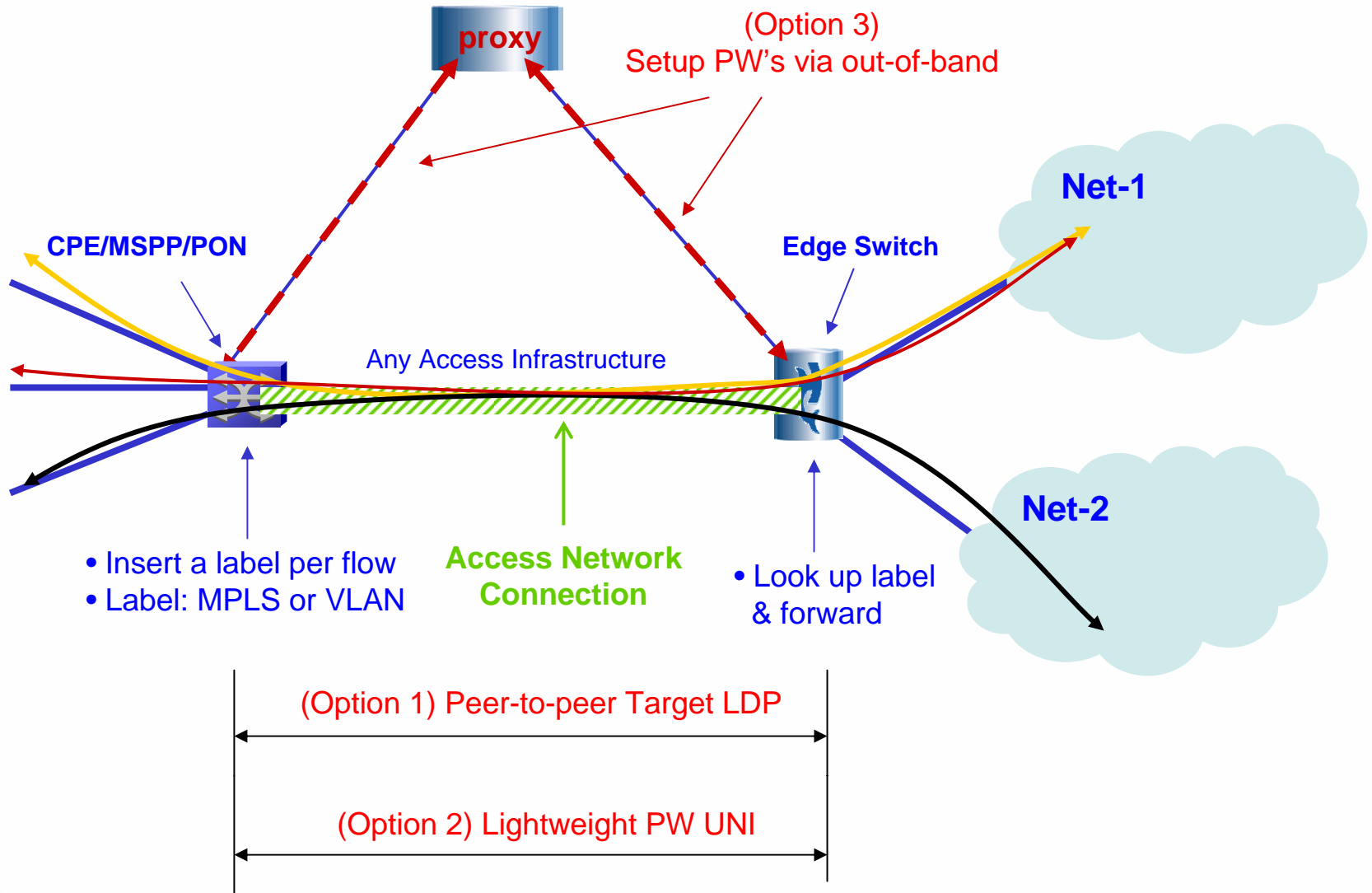


Dry-Martini:

Provide Data Multiplexing, Simplify Network Access



How does Dry-Martini Work?



Impact of Dry-Martini

- **IP Router is overkill for data access**
 - Support of draft-martini needs IP routing (to setup MPLS tunnels)
 - With dry-martini, no need for full IP/MPLS stack on access devices
- **Access devices can be cheap and simple**
 - Just insert labels to data flows
 - Control plane can be as simple (or fancy) as you want
 - Access device can aggregate data flows with minor add-on for packet forwarding
 - Introduce cost reduction for access devices:
 - EPON, GPON
 - CPE
 - MSPP
- **Edge switch needs not to be a “God Box”**
 - Aggregate user flows toward IP routers for VPN services...
 - Support PWE3 and some basic MPLS features
 - But needs to be very good at **QoS, OAM** and **per-port cost**