Enterprise CORD
Smart Pipes in the Metro

Marc De Leenheer      ON.Lab
CORD Aims to Deliver to Service Providers

Economies of a datacenter
Infrastructure built with a few commodity building blocks using open source software and white boxes

Agility of a cloud provider
Software platforms that enable rapid creation of new services
Central Office Re-architected as a Datacenter

- Large number of COs
- Evolved over 40-50 years
- 300+ Types of equipment
  Huge source of CAPEX/OPEX

- SDN Control Plane
  ONOS

- NFV Orchestration
  XOS

- Leaf-Spine Fabric
- SDN enabled DC Fabric

- Commodity servers, switches and network access
Current State of the Art

- Service provisioning takes days, weeks or even months.
- Expensive and vertically integrated equipment.
- Very hard to monitor and control.
- Very hard to spawn VNFs, enterprises use OTT instead.

E-Line

- Central Office
- Branch Office

Regional HQ

HQ

Public Cloud
- Firewall
- IDS
- Policy Control
- VPN
Win-Win for Enterprises and Providers

- Virtualized Net on Demand: SDN WAN, Simple on-prem
- Customer Control: Observe, Control, Adapt
- Innovative Services: Security, policy control, ...

Carrier-grade Network as a Service
Built on an open platform
Bring data center economy and cloud agility
E-CORD in Metro
Open ROADM

1. Programmable backplane between ROADM and transponders
2. Optical bypass within CO

- ONOS
  - Bandwidth On Demand
  - Alarm Handling
  - Power Management
  - Optical Restoration

- OpenFlow, SNMP, NETCONF, REST

- Leaf-Spine Fabric

- To access
  - DSL G.Fast
  - PON OLT MACs

- To metro

- Fiber switch

- muxponder
- transponder

- 20x20 ROADM, 1U
- 8x2 transponder, 1U
- 320x320 fiber switch, 7U
Solutions Showcase
Summary

- Enterprise **WAN connectivity** and innovative **carrier grade services**
- Built on **commodity hardware** and **open source software**
  - Disaggregated **ROADM**
- **Win-win** for enterprises and service providers

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**SDN/NFV-based Enterprise Connectivity & Services**

- **2016.1Q**
  - Carrier Ethernet services
  - Converged packet/optical

- **2016.3Q**
  - Enhanced MEF service models
  - White boxes for Carrier Ethernet

- **2016.4Q**
  - OAM
  - Carrier grade VNFs
  - Autonomous Tools

**2017**

**Field trials?**
Agenda Mini-Summit

- Enterprise CORD: Smart Pipes in the Metro — Marc De Leenheer, ON.Lab
- E-CORD Services — Ayaka Koshiibe, ON.Lab
- Open CE and MEF services on E-CORD — Bill Rembert, AT&T
- VPN services on ONOS/CORD — Tang Xiongyan, China Unicom