OPEN.

FOR BUSINESS.
Open Networking Deployment in Production

Atilla de Groot | Sr. Systems Engineer | Cumulus Networks
Network Disaggregation

Cisco
Arista
Juniper

App  App  App

Network OS

Open Hardware

Cumulus NetQ
Cumulus Linux
Network Operating System
Cumulus OCP customers

- 28% of Fortune 50 Companies
- 25% of Mega-Scale Public Clouds
- >4M Ports Powered by Cumulus Technology
- 1100+ Customers Across Many Industry Verticals

Logos of Cumulus OCP customers including Verizon, Athenahealth, NTT, Yandex, Medallia, Orion VM, and others.
Open hardware & disaggregation

- **Juniper**
  - QFX 3500
  - Nexus 3100
  - Nexus 9000

- **Cisco**
  - 7500E
  - 7250X

- **Arista**
  - X770

- **Extreme**
  - OCP open switchgear

- **HCL:** Edge-Core, Facebook, Penguin, HPE, Agema/DNI

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Powered by Trident II
Simple Architecture – Spine and Leaf
3-Tier Spine and Leaf
OCP Chassis

Edge-Core OMP800

Facebook Backpack

https://www.opencompute.org/products
Open hardware and disaggregation
Facebook Backpack
Edge-Core OMP800 Fabric Connectivity
3-Tier Spine and Leaf

32 port fabric cards

32 port line cards
ONIE – “PXE on steroids”

- Born from decades of PXE baggage, talented embedded engineers, and disaggregation goal across the industry
- No need for console
  Simply scp the operating system directly to ONIE!
- Backwards-compatible w/PXE setup
  (DHCPv4 and TFTP)
- [https://github.com/opencomputeproject/onie](https://github.com/opencomputeproject/onie)
ONIE
From loading dock to production

Boot into ONIE
- Management interface network discovery
- OS image source discovery
- File name search (onie-installer)
- Install Cumulus Linux

Reboot into Cumulus Linux
- Zero touch provisioning
  Optional step to invoke provisioning script
  if DHCP option 239, run script

Subsequent boot ups
- Normal Cumulus Linux restart
Cumulus Linux architecture on OCP hardware
Uniform operating model – write any tools, use any apps

User Space
Routing Suite
Network Orchestration
Automation
Monitoring
Third Party/Customer Applications

Linux Kernel
VxLAN
Routing Tables
ARP Table
Bridge Table
Ethernet Interfaces

OCP hardware
Switch Silicon
Front Panel Ports
switchd
Switch HAL
ASIC Driver

VXLAN switchd
Switch HAL
Switch硅
Front Panel Ports
Customer use-case
Campus Deployment

Naturalis Biodiversity Center

- Campus deployment
- Greenfield building
- Automated with ONIE and Ansible
Automated provisioning demo
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