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OCP U.S. SUMMIT 2016

Enabling Pervasive Network Security Using OCP Switch Hardware and ONL

Sunit Chauhan
Big Switch Networks

Open Compute Hardware is Great!

...But where do I start?

- What should be My First OCP Deployment?
- Production network transformations are complex, a bit scary and slow to roll-out
- Deploying new compute, storage, racks, network in one step is not always easy

▪ **Is there a smaller, incremental step?**

Open Network Linux

(Brief Recap)



ONL: Open Network Linux

Reference NOS for the Open Compute Project (OCP)

- Collection of software packages, utilities, drivers, and abstractions to run on OCP, bare metal, “brite box” hardware
- i.e., a “NOS” that ONIE would install



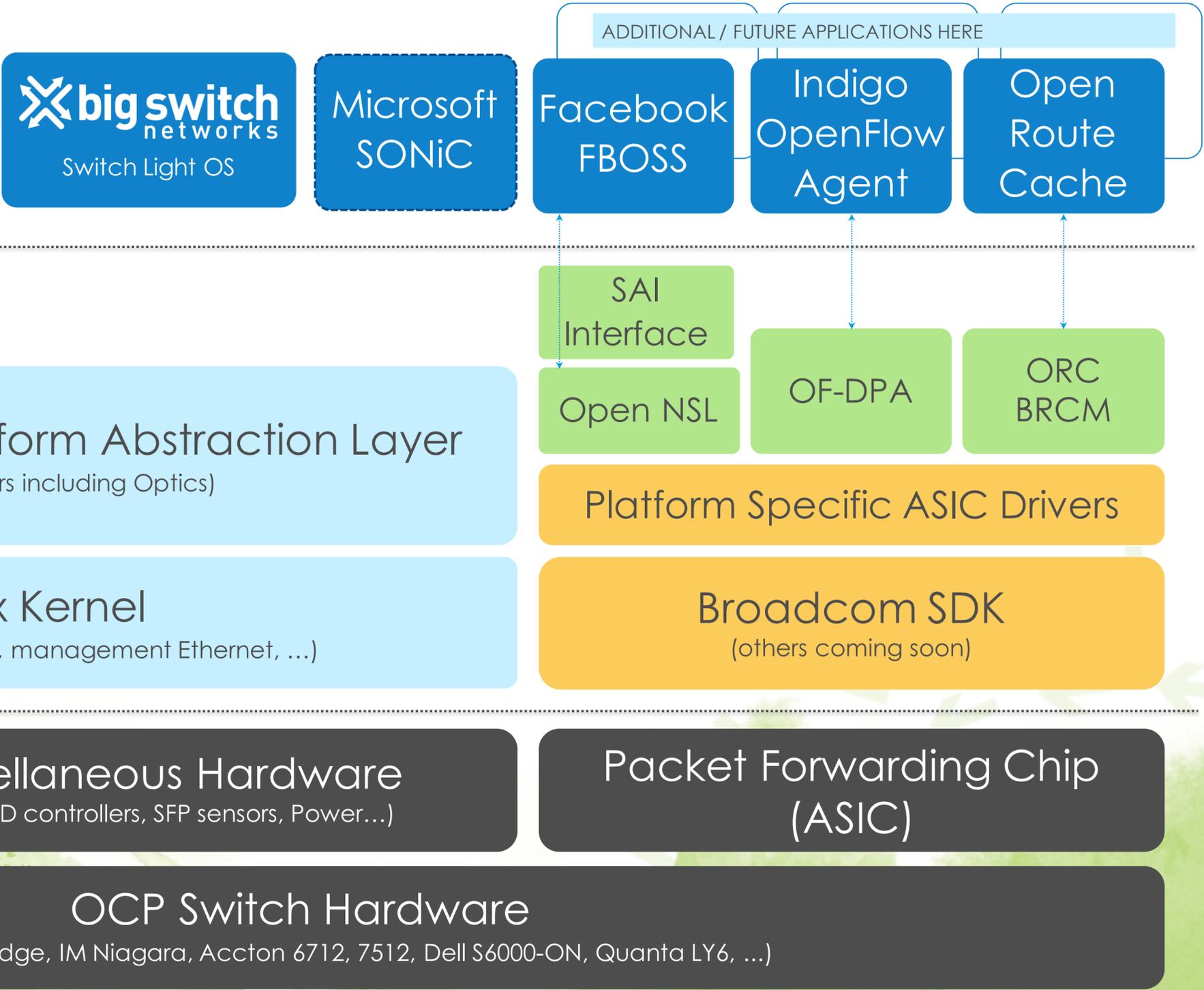
Use Cases

- Reference hardware testing platform, e.g., OCP Certification i.e., a “NOS” that ONIE would install
- DIY packet forwarding platform, e.g., for academic research
- Building Block for Commercial or Production-grade Software

<http://opennetlinux.org>

ONL: Architecture

Common Platform with Pluggable Forwarding Agents



Enabling Pervasive Network Security & Visibility



Every Organization Needs Packet Monitoring...

TOOLS

Application
Performance
Monitoring



Network
Performance
Monitoring



Security
Monitoring



Customer
Experience
Monitoring



Traffic
Analytics /
Recorders



Lawful
Intercept

Billing
Verification

But where do you
attach the tools?

“Everywhere” is
too expensive.

Enabling Pervasive Security / Tap Every Rack

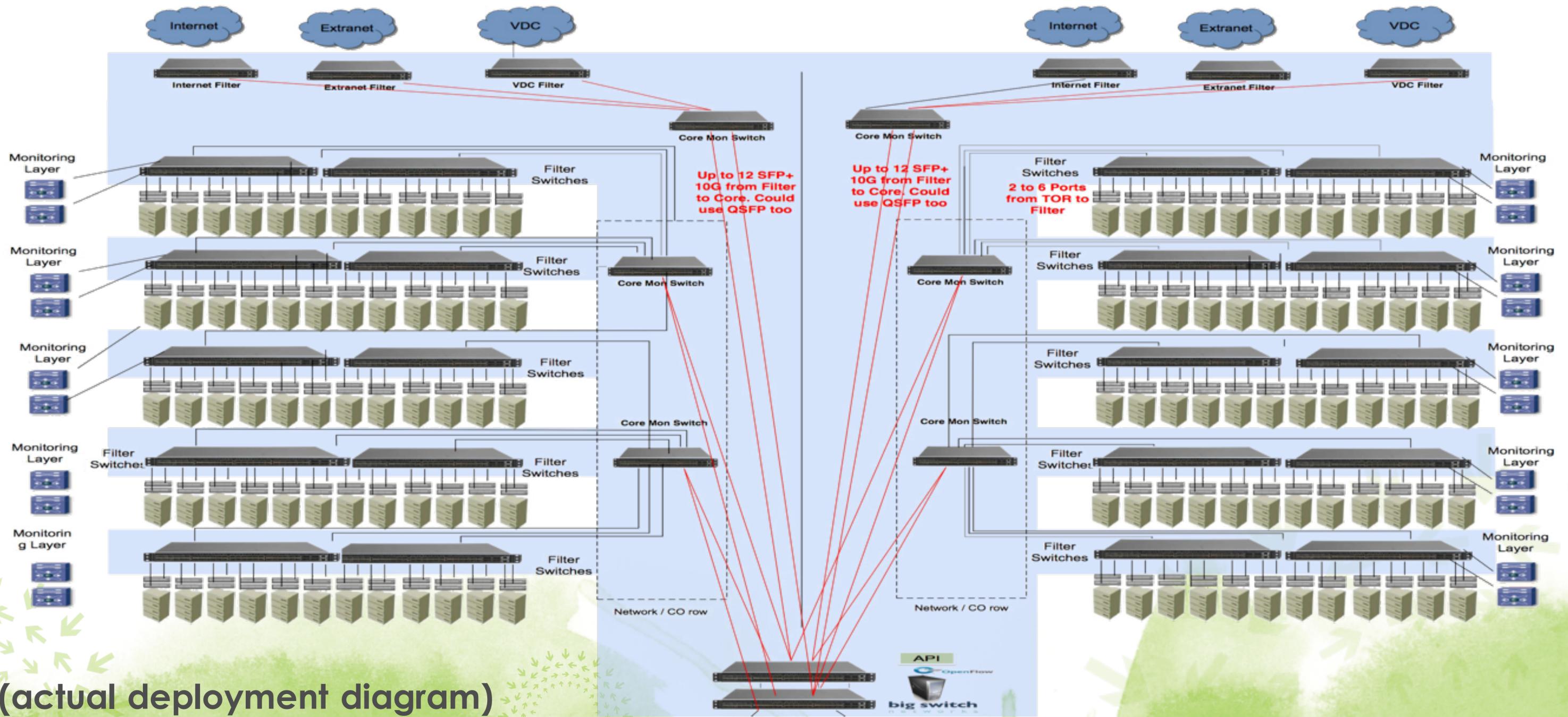


Tier-1 US Financial Services Institution

- Centralized tool farm for 120 racks
- Mix of 1GE, 10GE and 40GE taps and tools
- ‘Service Nodes’ for advanced packet features



Enabling Pervasive Security / Tap Every Rack



(actual deployment diagram)

Centralized
Tool Farm



Deployment Technical Details

...Under the Hood

- Deployed 32 EdgeCore AS6710 OCP switches
- Deployed in 2014, Production in 2015
 - 32x40G QSFP Ports per switch
 - Same as AS6712 but with PPC CPU
 - Yes, the PPC is also an official OCP design
- Each switch running Switch Light OS (ONL-based) and programmed from a centralized SDN Controller.
- Open Network Linux installed via ONIE

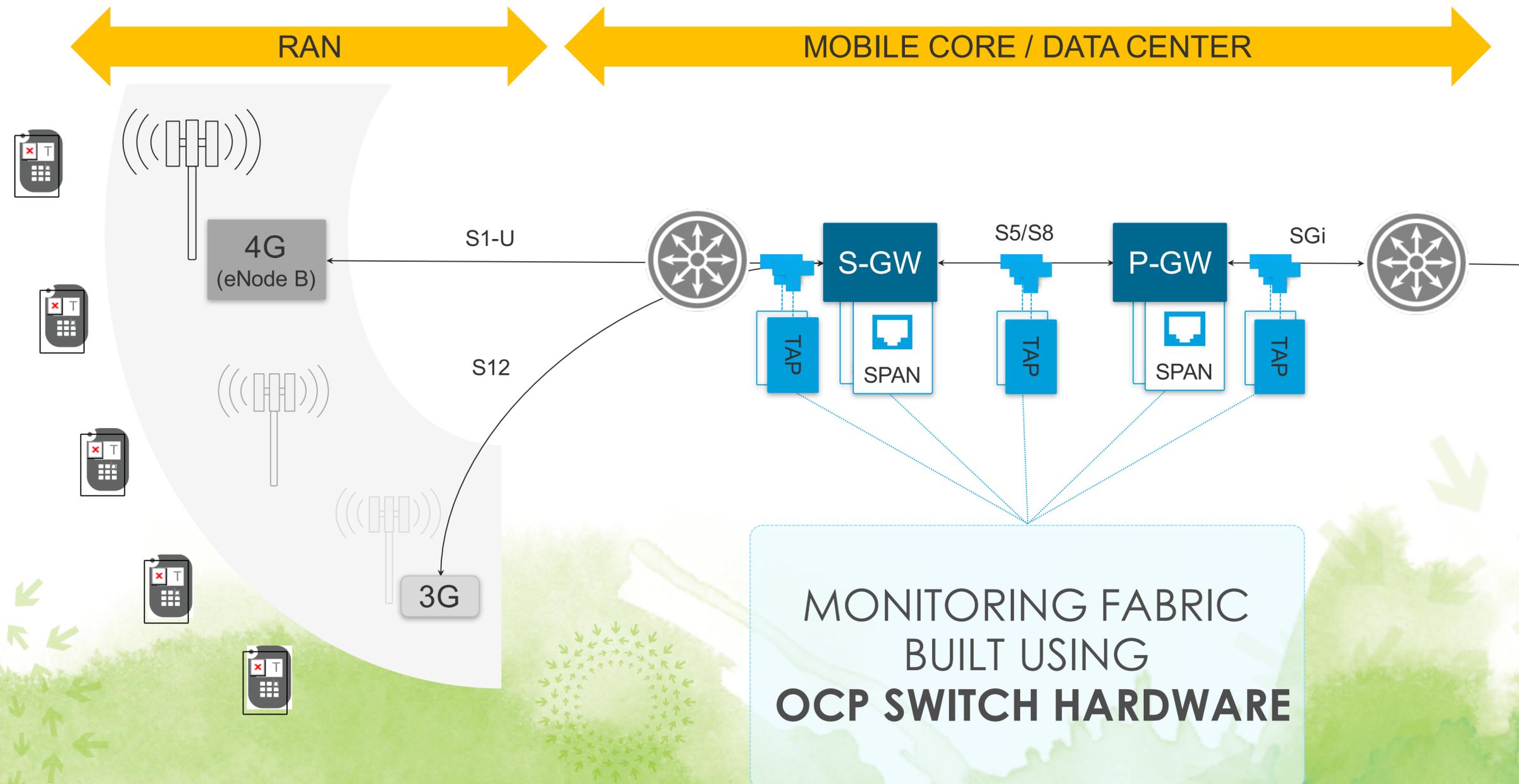
OCP vs. Traditional Costs

	Open Compute HW	Traditional NPB
Capex Benefits (incl. hardware, software, support)	<ul style="list-style-type: none">• Costs ~\$600K	<ul style="list-style-type: none">• Budgeted ~\$3M/Pod
Operational Benefits	<ul style="list-style-type: none">• ~1000 40G ports (~70 ports dedicated to Tools)• Optics & Cable savings from End of Row Deployments	<ul style="list-style-type: none">• Single point of management
Tool Efficiencies	<ul style="list-style-type: none">• 10+ Management points	<ul style="list-style-type: none">• Per tool redundancy not required – handled in monitoring network• Required – no redundancy in monitoring network

OCP Standard Switch HW → Faster SW Innovation

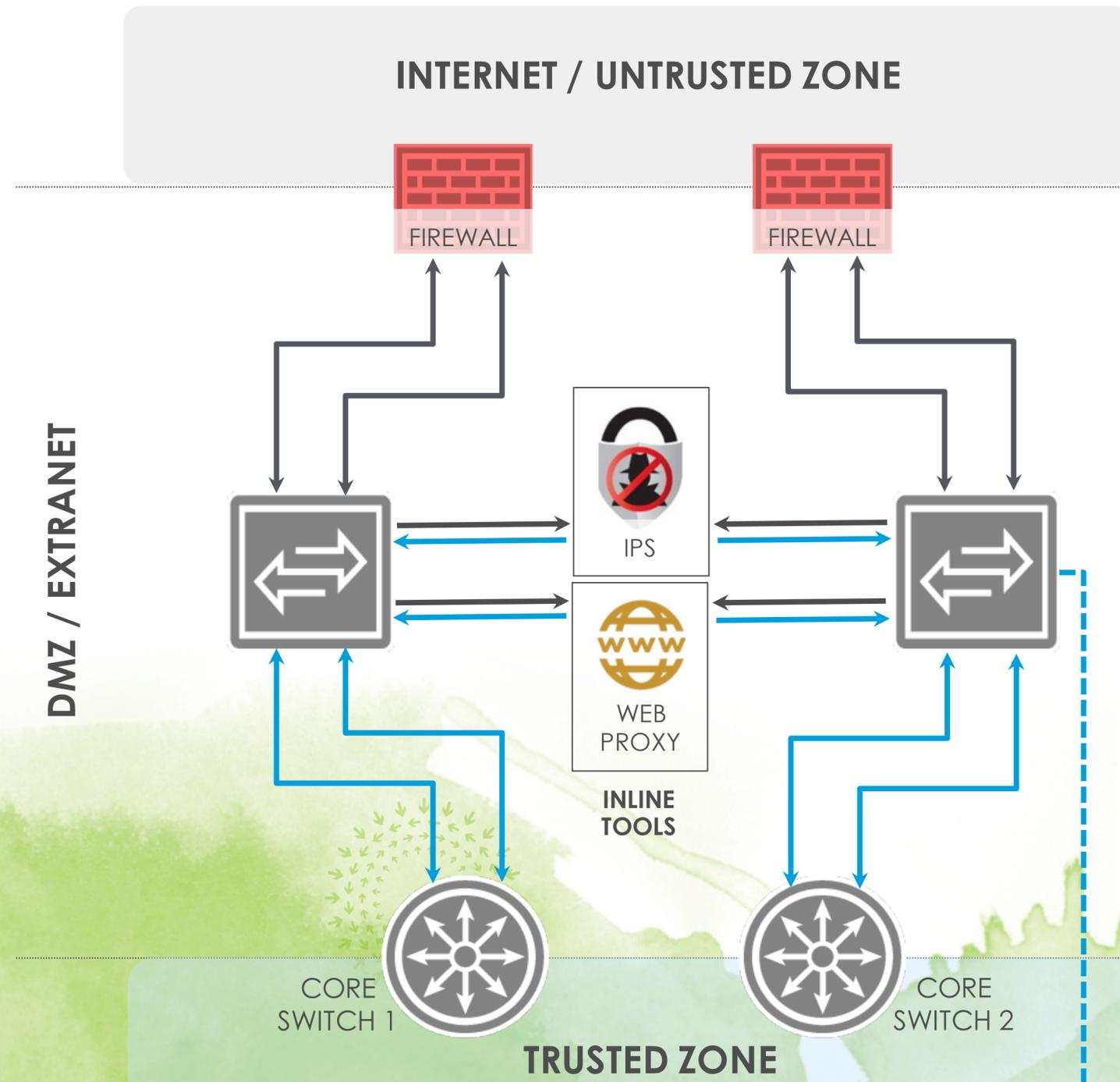
Where Else is This Being Used?

Mobile 4G/LTE Networks



Where Else is This Being Used?

DMZ Service Chaining – Transparent Service Interconnect



Conclusion

- OCP/ONL Hardware Crossing the Chasm
 - Hyperscale → Service Providers & Enterprises
 - DIY & Commercial Solutions
- Economic Benefits Too Huge to Ignore
- Starting Small & Scaling Out is a Viable Option

<http://opennetlinux.org>



OPEN

Compute Project

