

# OCP U.S. SUMMIT 2016

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OCP U.S. SUMMIT 2016

# Enabling Pervasive Network Security Using OCP Switch Hardware and ONL

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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

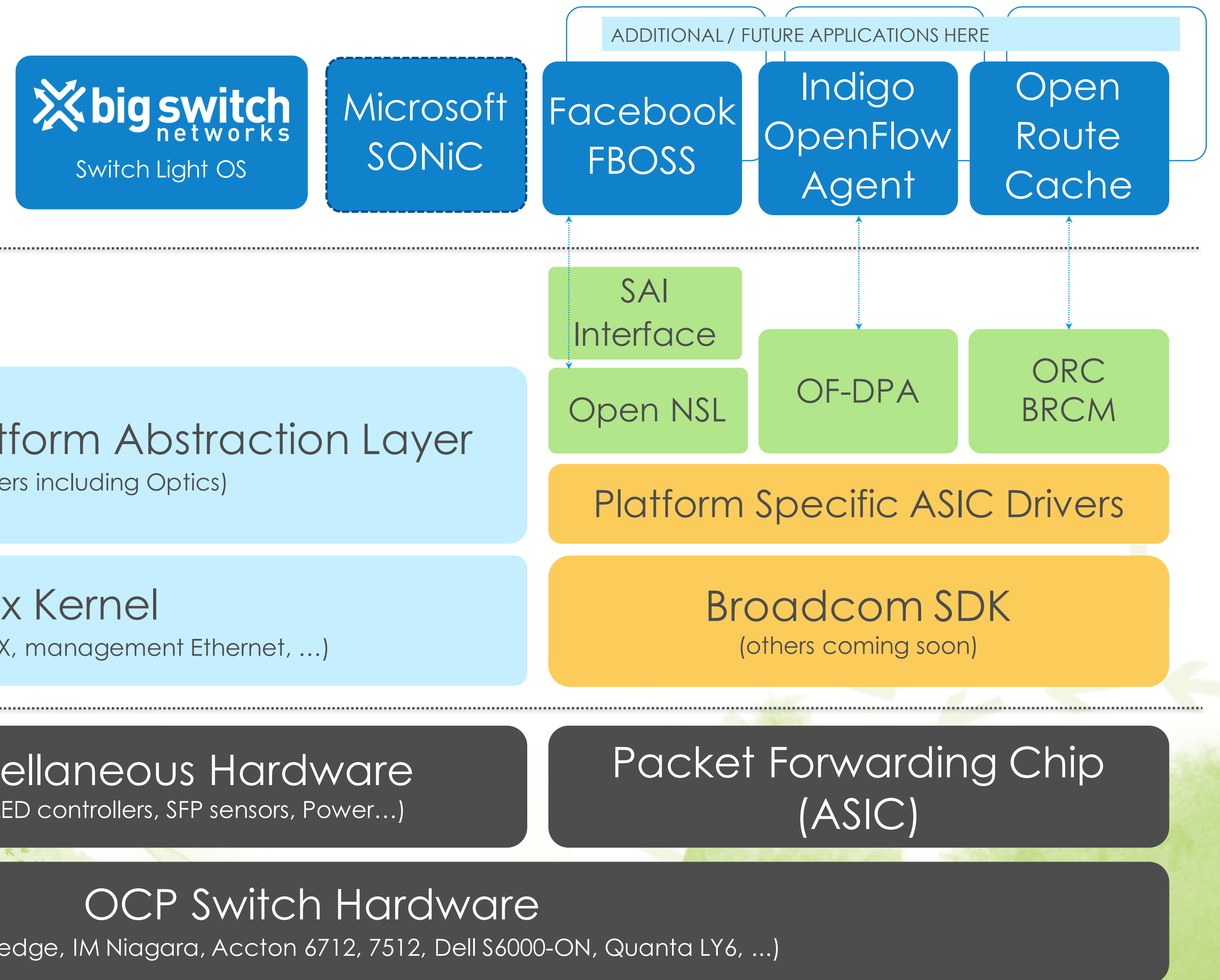
- Reference hardware testing platform, e.g., OCP Certification i.e., a “NOS” that ONIE would install
- DIY packet forwarding platform, e.g., for academic research
- Building Block for Commercial or Production-grade Software

<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

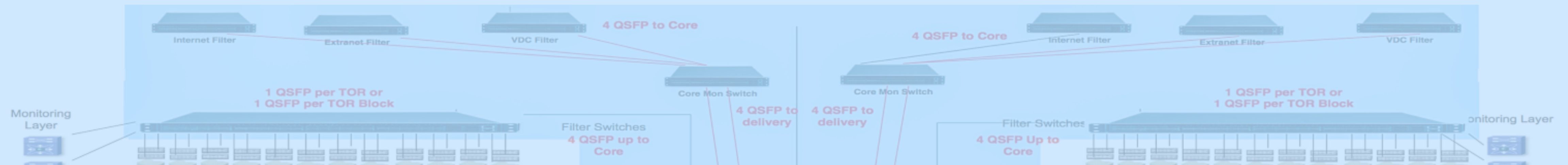
### Billing Verification

But where do you attach the tools?

“Everywhere” is too expensive.



# Enabling Pervasive Security / Tap Every Rack



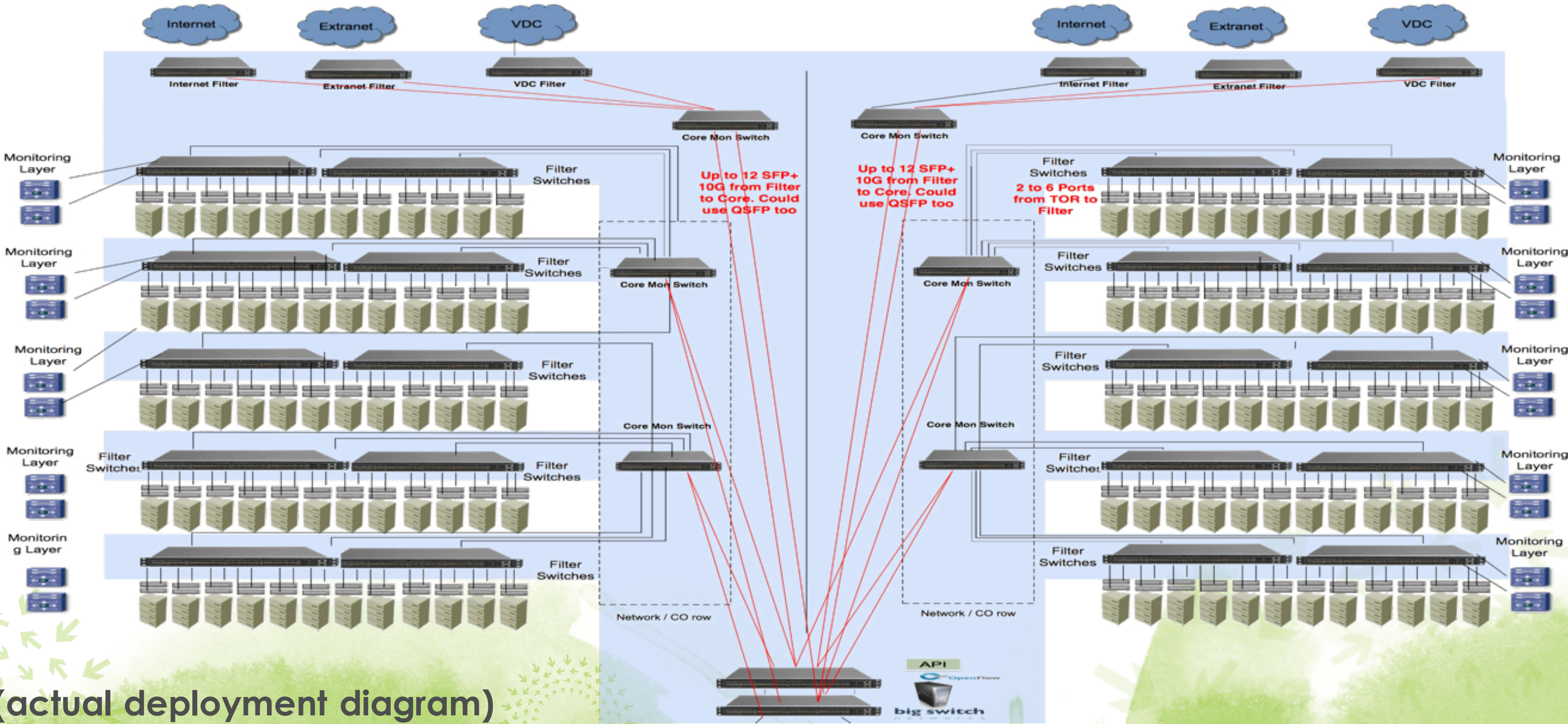
## Tier-1 US Financial Services Institution

- 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



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

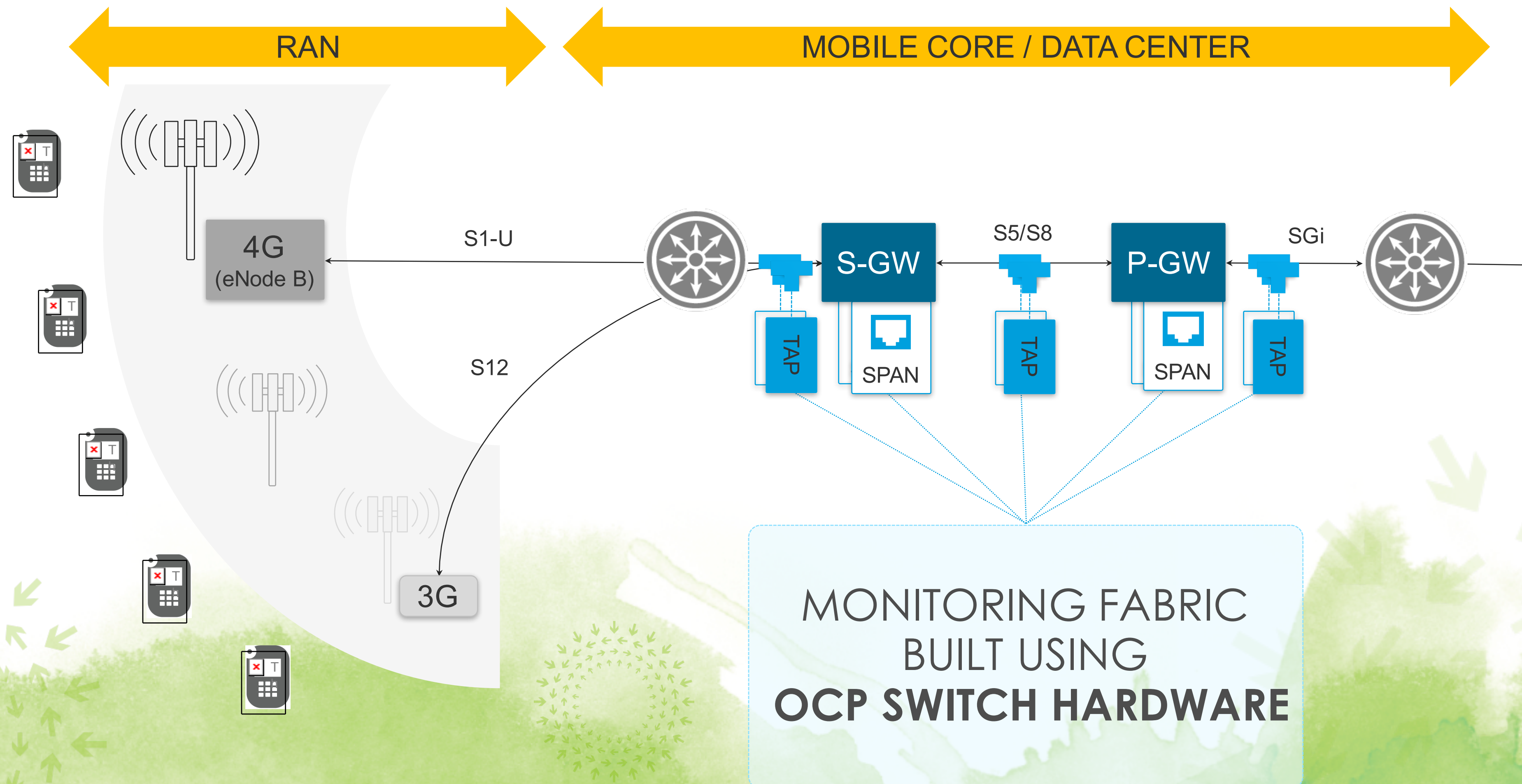
	Open Compute HW	Traditional NPB
<b>Capex Benefits</b> (incl. hardware, software, support)	<ul style="list-style-type: none"><li>• Costs ~\$600K</li><li>• ~1000 40G ports (~70 ports dedicated to Tools)</li><li>• Optics &amp; Cable savings from End of Row Deployments</li></ul>	<ul style="list-style-type: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

**OCP Standard Switch HW → Faster SW Innovation**



# Where Else is This Being Used?

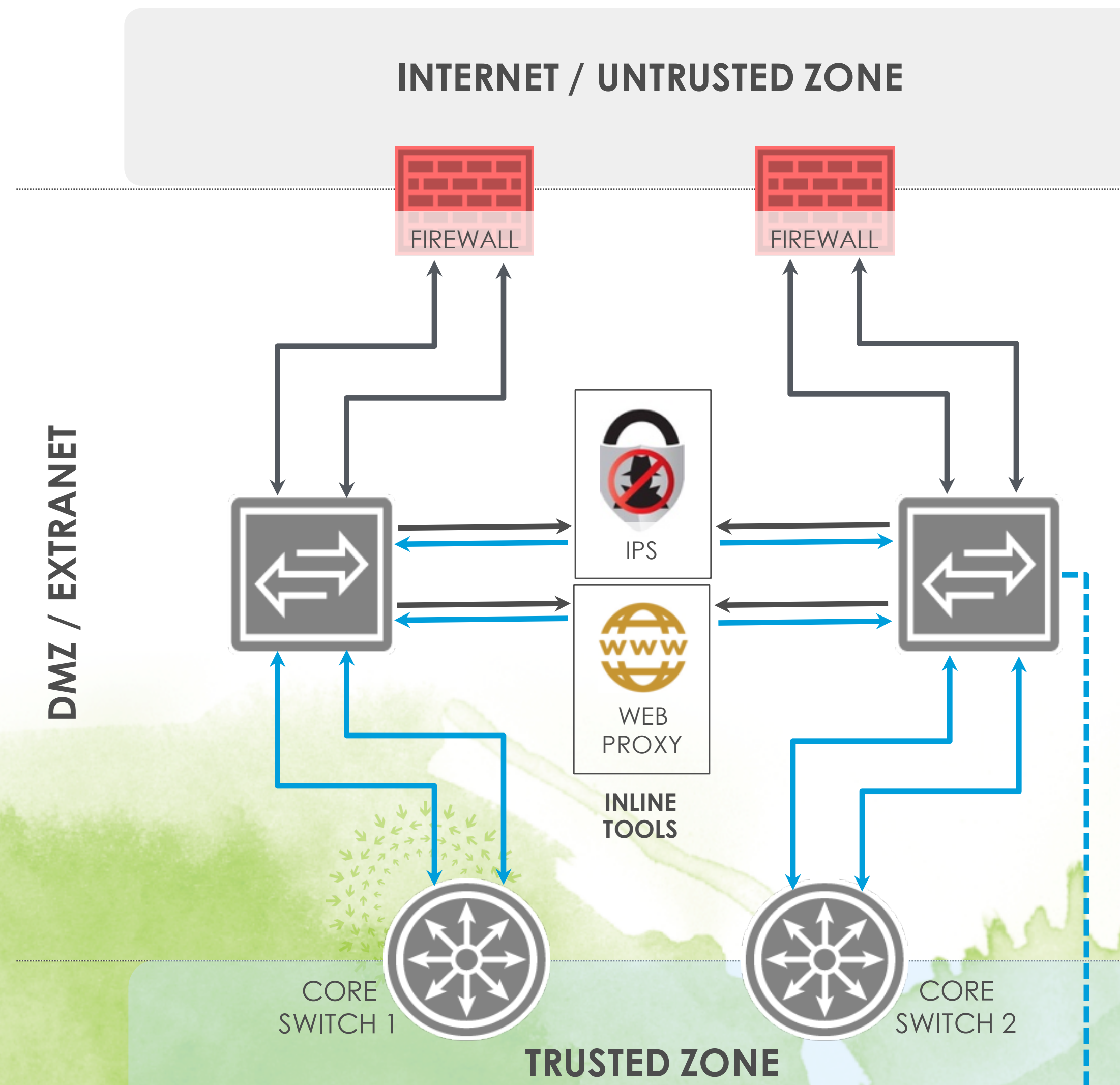
## Mobile 4G/LTE Networks





# Where Else is This Being Used?

## DMZ Service Chaining – Transparent Service Interconnect



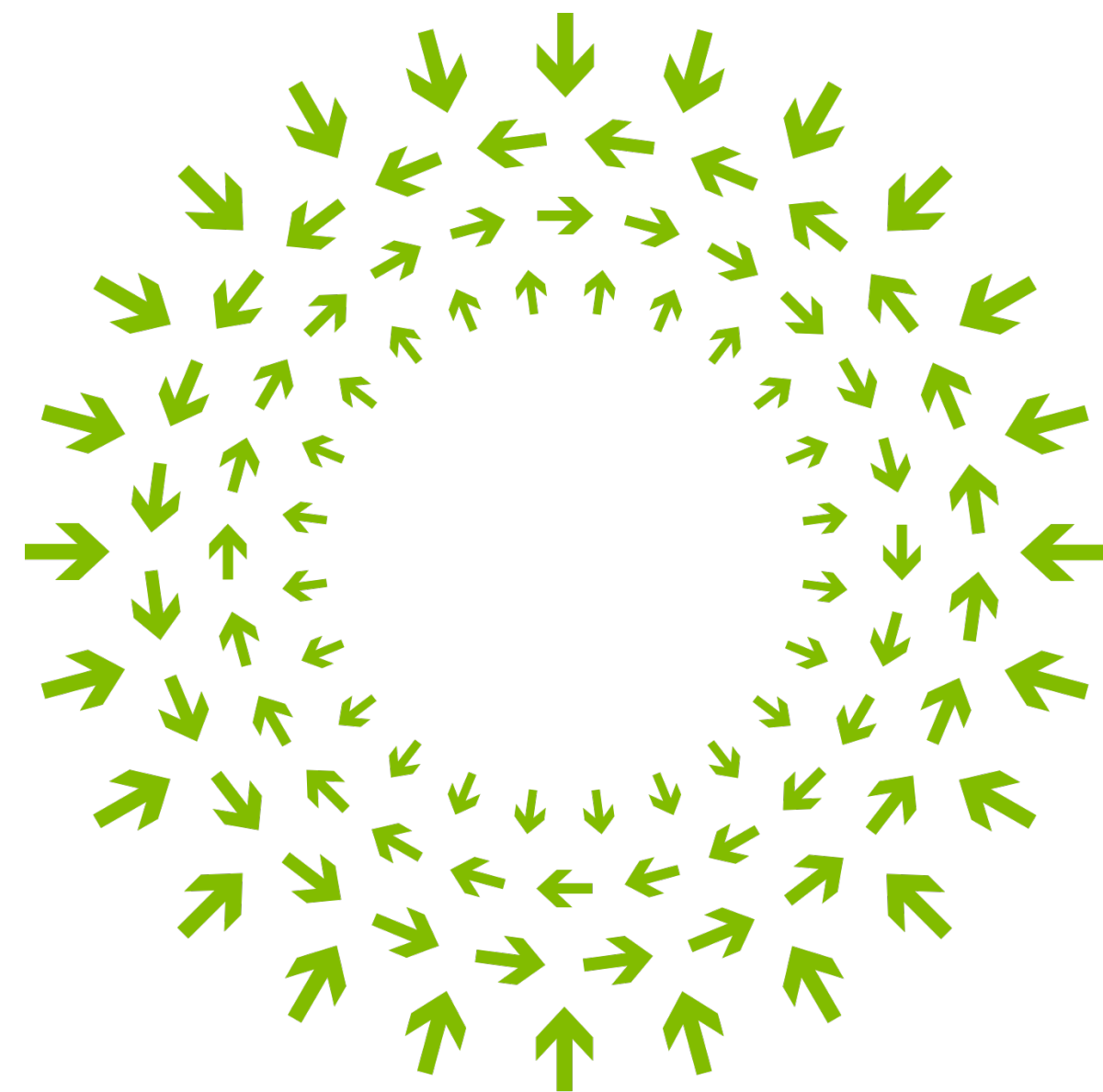


# Conclusion

- 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