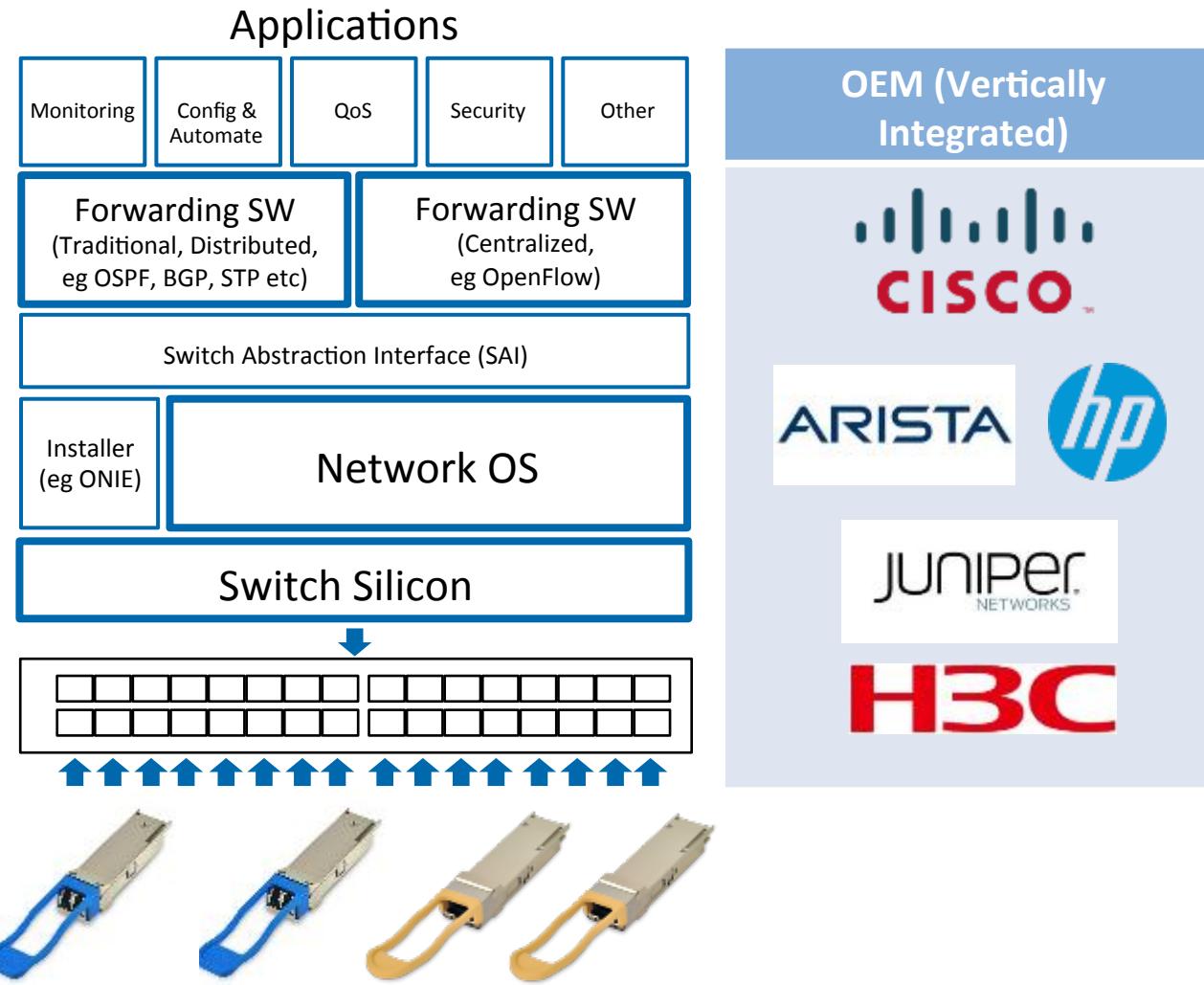


Open Optical Monitoring

RIPE 73
October 2016

Craig Thompson

Traditional Network Systems

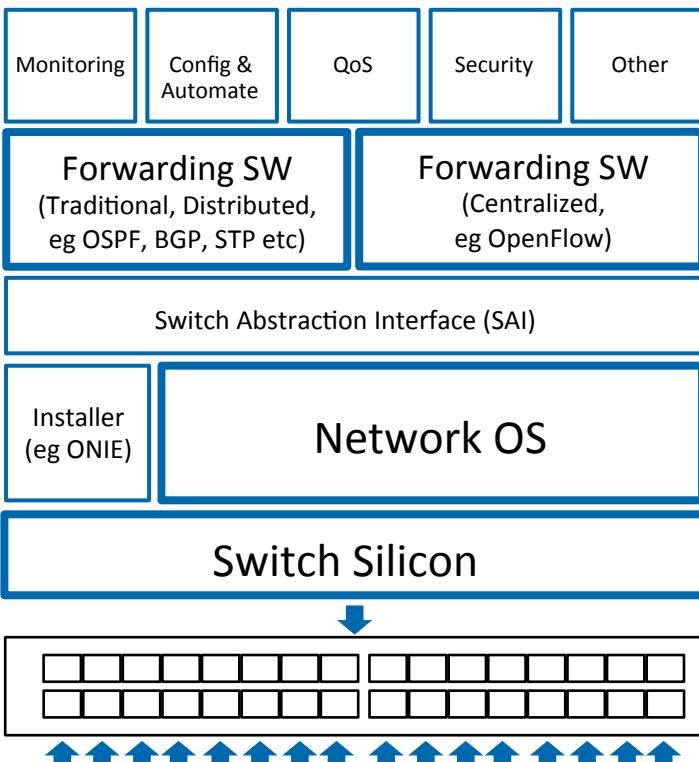


OEM (Vertically Integrated)



Open Network Ecosystem: Choice, Flexibility and Innovation

Applications



OEM (Vertically Integrated)



Open Switch, Bare Metal

100s of 3rd Party Apps

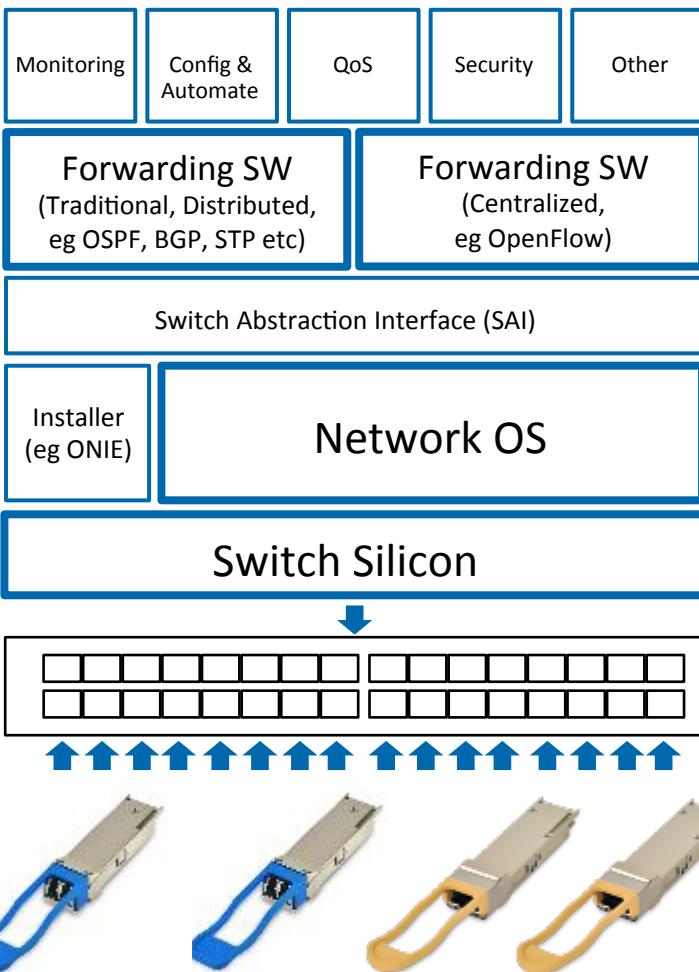


Many 3rd Party & Open-source



Open Network Ecosystem: Choice, Flexibility and Innovation

Applications



Open Switch, Bare Metal

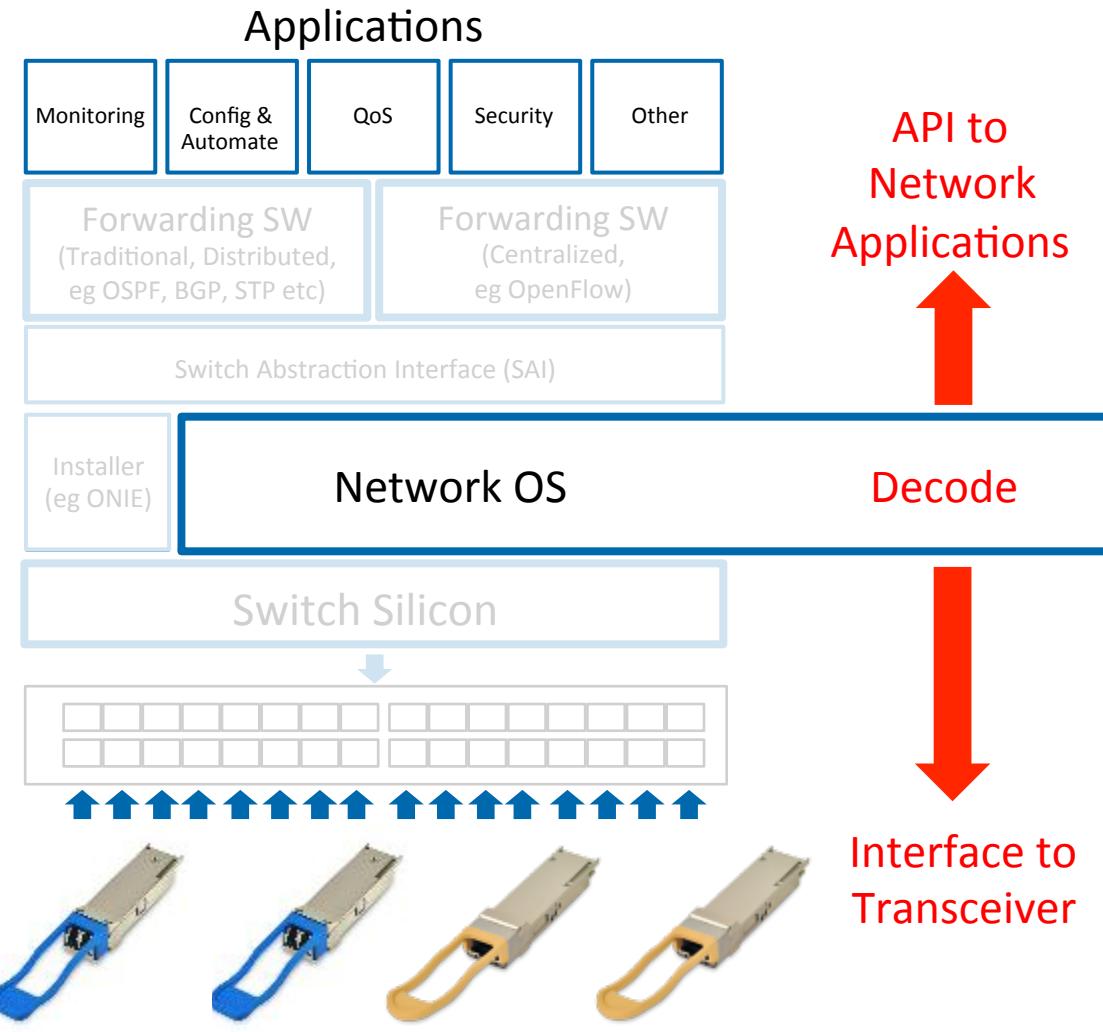
100s of 3rd Party Apps



Many 3rd Party & Open-source



Open Optical Monitoring and Control (OOM)



OOM was kicked off by the OCP Networking group in October 2015... To address problems with consistent access to Serial ID information on modules during OCP Interop testing.



FINISAR

Accton
Making Partnership Work

BROADCOM
connecting everything™

cumulus networks

big switch
networks

What is Open Optical Monitoring (OOM)?

A Python package, providing a standard API to read/write optical modules.

- ◆ EEPROM data encoded/decoded in key/value pairs.



Same API: any NOS, any switch, any module vendor, any module type.

- ◆ Requires a simple shim to interface with the NOS.

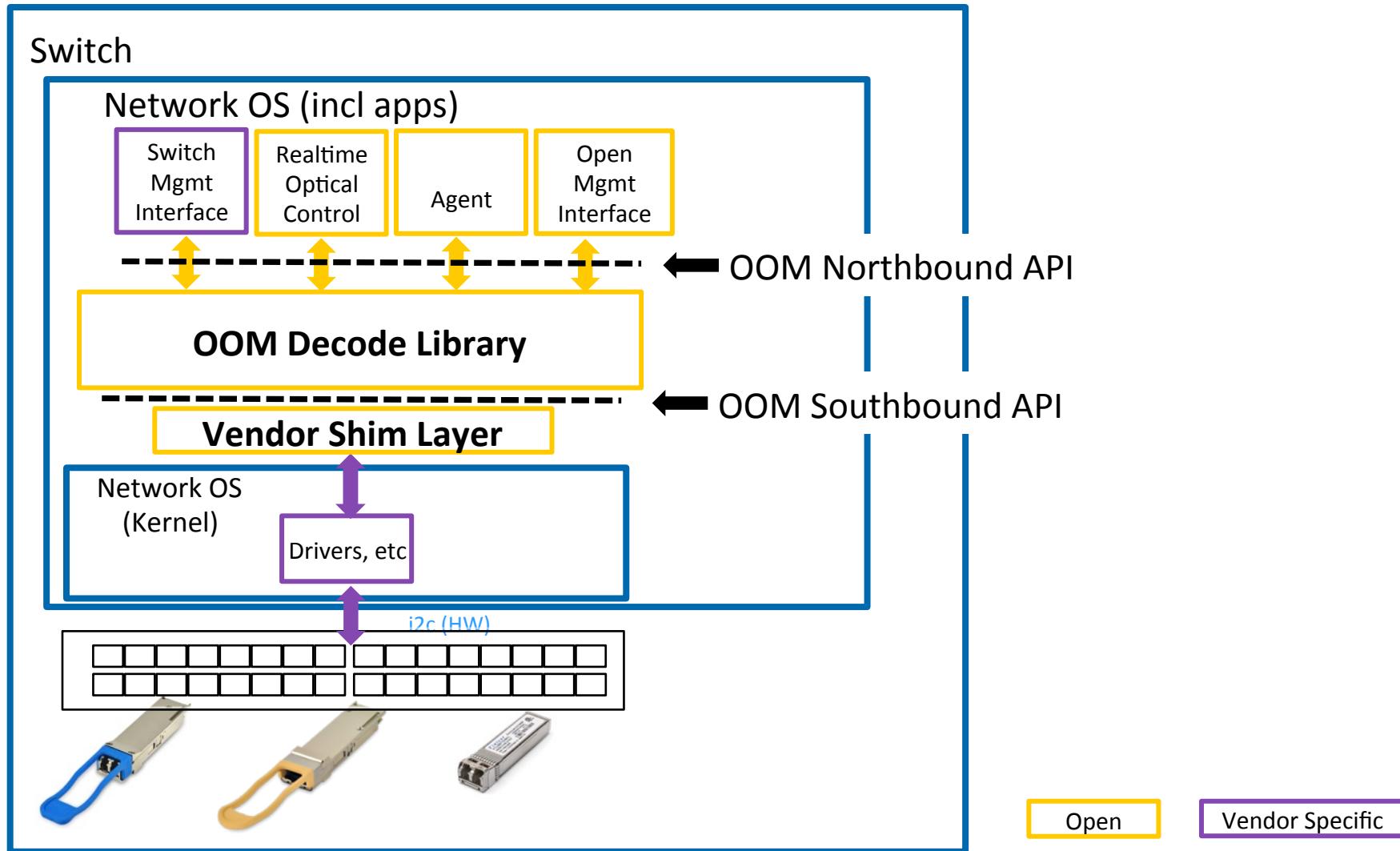
Open Source, easy to maintain, easy to extend.

```
from oom import *
for port in oom_get_portlist():      # enumerate the ports on the switch
    status = oom_get_memory(port, 'DOM') # DOM = voltage, temp, {TX, Rx}Power, bias
    print port.port_name + str(status)

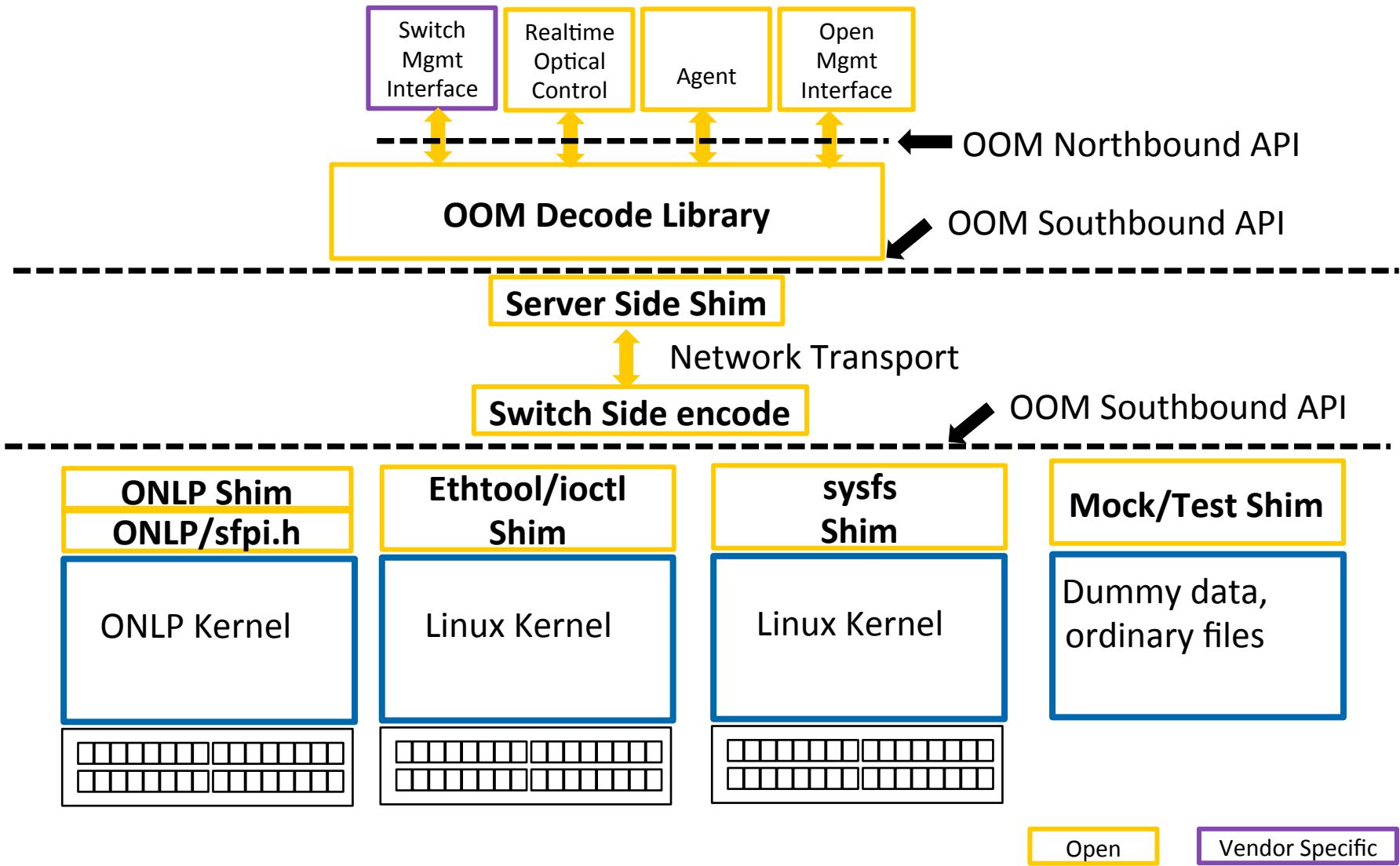
port0{'VCC': 3.30, 'TEMP': 23.55, 'TX_POWER': 0.57, 'RX_POWER': 0.56, 'TX_BIAS': 7.4}
port1{'VCC': 3.31, 'TEMP': 24.02, 'TX_POWER': 0.57, 'RX_POWER': 0.53, 'TX_BIAS': 7.3}
```



Simplified OOM Architecture



Over The Network



Open Optical Monitoring (OOM) Applications

Inventory – track and verify module part number, revision, vendor, features, options...

Health monitoring – continuous monitoring of key properties (TX/RX power, laser bias, temperature, thresholds, alarms, warnings...)

- ◆ Via DOM (Digital Optical Monitoring): a Finisar technology widely used by the industry



Diagnostics – isolate connectivity issues to transmit module, receive module or fiber

- ◆ Operator diagnostics using connection database
- ◆ Vendor diagnostics while modules are online

Custom uses – innovative new features

- ◆ Customer or vendor-defined, vendor-specific keys
- ◆ Example 1: BIST for network commissioning
- ◆ Example 2: FINISAR Connectivity Diagnostics



OCP SUMMIT 2016: Interoperability and Open APIs

Open Networking Interoperability Testing

- Testing dozens of NOS / Switch / Cable / Module combinations
- Proven solutions added to Open Networking Integrators List
- Testing occurs weekly at UNH-IOL
- Next Plugfest planned for May 2-5, 2016 at UNH-IOL

Come see presentation: 'Ensuring Interoperability and Open APIs for Open Networking Systems' Tuesday 8:30am, Lower Level, L100A

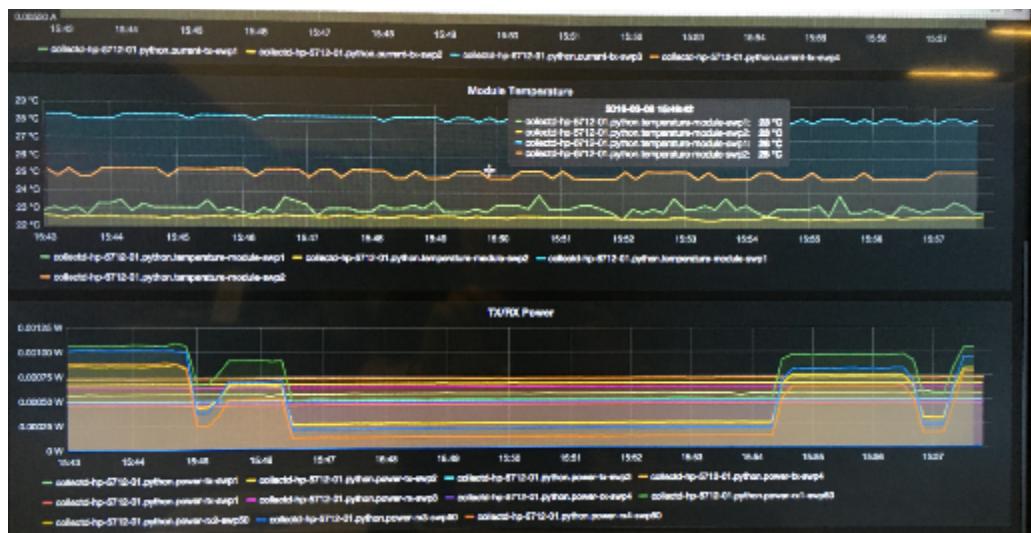
Accton 



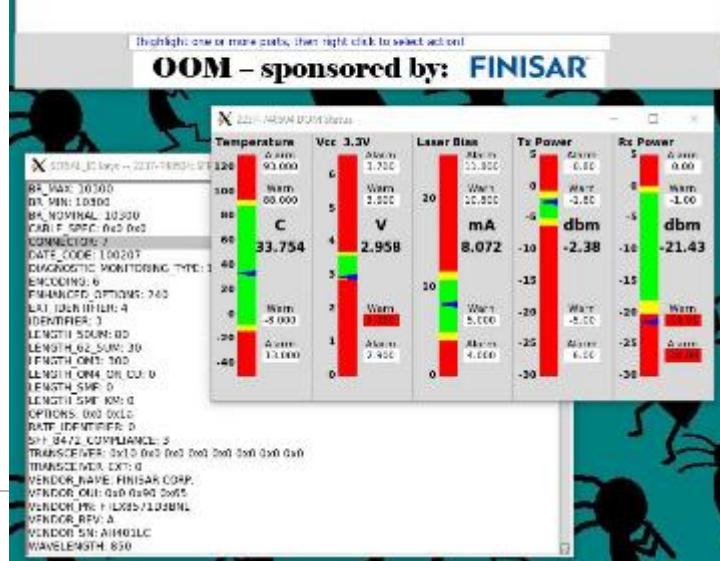
big switch
networks



The Institute for Interoperability
InterOperability Laboratory



Port Name	Module Type	Part Number	Serial Number	Manufacturer
X237-1409M-SFP	PTLX657103BNL	N401LC	(FINISAR CORP.)	



How can you access & participate in OOM?

Download, use and improve!

<https://github.com/opencomputeproject/oom>

200+ keys decoded for QSFP+, QSFP28, SFP+

Many shims available supporting numerous Linux OSs, EdgeCore switches, evaluation boards and a simulator

Share your use-cases with us

Now an **OCP Accepted™ Project**

Used in Interoperability testing at UNH IOL Plugfests



OCP Interoperability Testing

- ◆ OpenCompute.org leading open switch solution compliance testing
- ◆ Testing dozens of NOS / Switch / Cable / Module combinations
- ◆ Proven solutions added to Open Networking Integrators List
- ◆ Testing occurs weekly at UNH-IOL
- ◆ Next Plugfest planned for December at UNH-IOL, focusing on 25GbE



Thank you!

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