OPEN
Compute Summit

Changing the network industry

Networking project readout

Omar Baldonado & Carlos Cardenas
OCP Networking Project Leads

OCP Networking Project

"…create a set of networking technologies that are

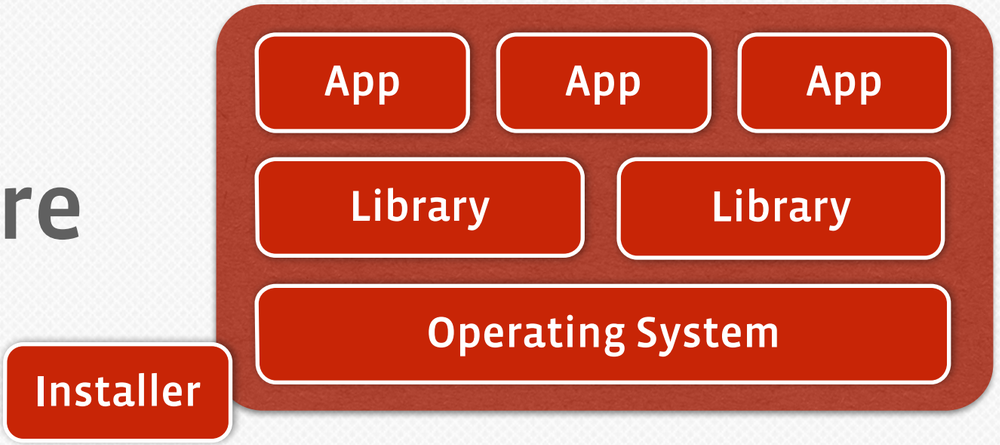
***disaggregated** and **fully open**,*

allowing for rapid innovation in the network space…"

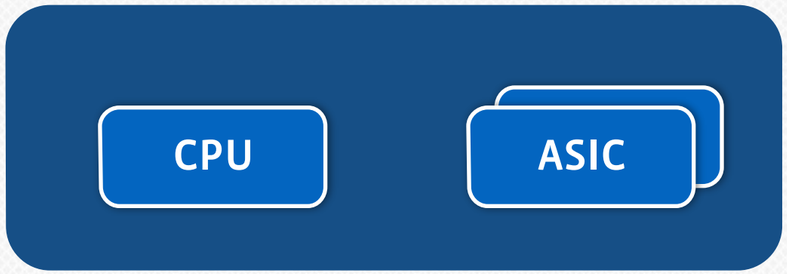
founding charter, May 2013

Network disaggregation is here!

Software



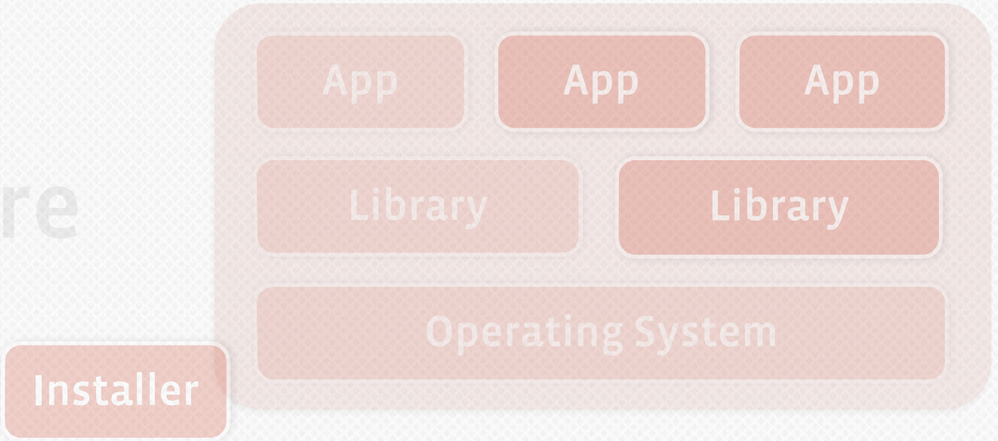
Hardware



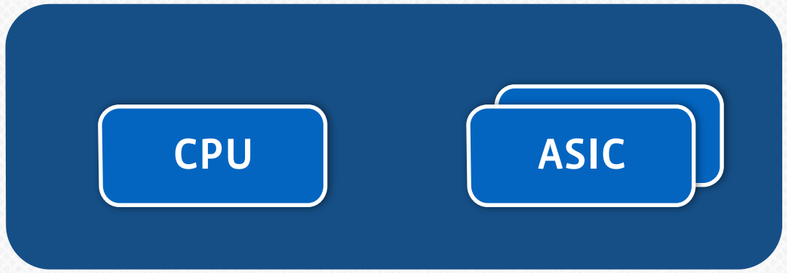
Testing

- Interoperability
- Integration
- Validation

Software



Hardware



Testing

Interoperability

Integration

Validation

Open networking hardware is reality!

First OCP networking switch accepted in 4Q2014

- Accton TOR switch - 48 x 10G + 6 x 40G
  - Full design package - an industry first
- Accton Open Rack Switch Adapter
  - Allows 19” switch in 21” Open Rack

Accton

More nearing the finish line

ALPHA Networks	▪ 48 x 10G switch and 32 x 40G switch (w/ Juniper) ▪ Reviewed w/ OCP IC, design pkgs submitted
BROADCOM	▪ Leaf/Spine switch - in final review/licensing
Mellanox TECHNOLOGIES	▪ MSX 1400 OCP - initial review

More spec contributions…

Accton

- 32 x 40G switch and a ***32 x 100G*** switch

1.5M simultaneous Netflix movies!

Facebook - “Wedge” switch

In production across FB data centers

- Has OCP Microserver and BMC
- Server-like mgmt and sw development
- Building block for FB switches

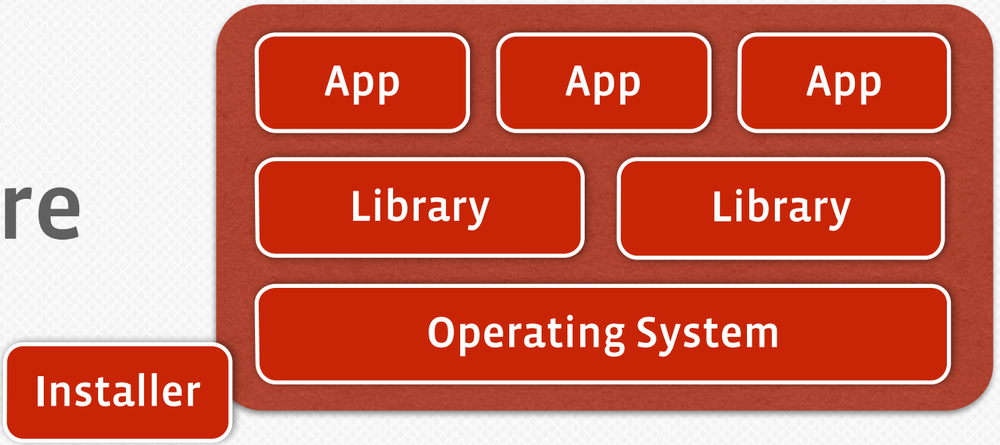
Accton

BROADCOM

cumulus®

big switch networks

Software



Hardware

Testing

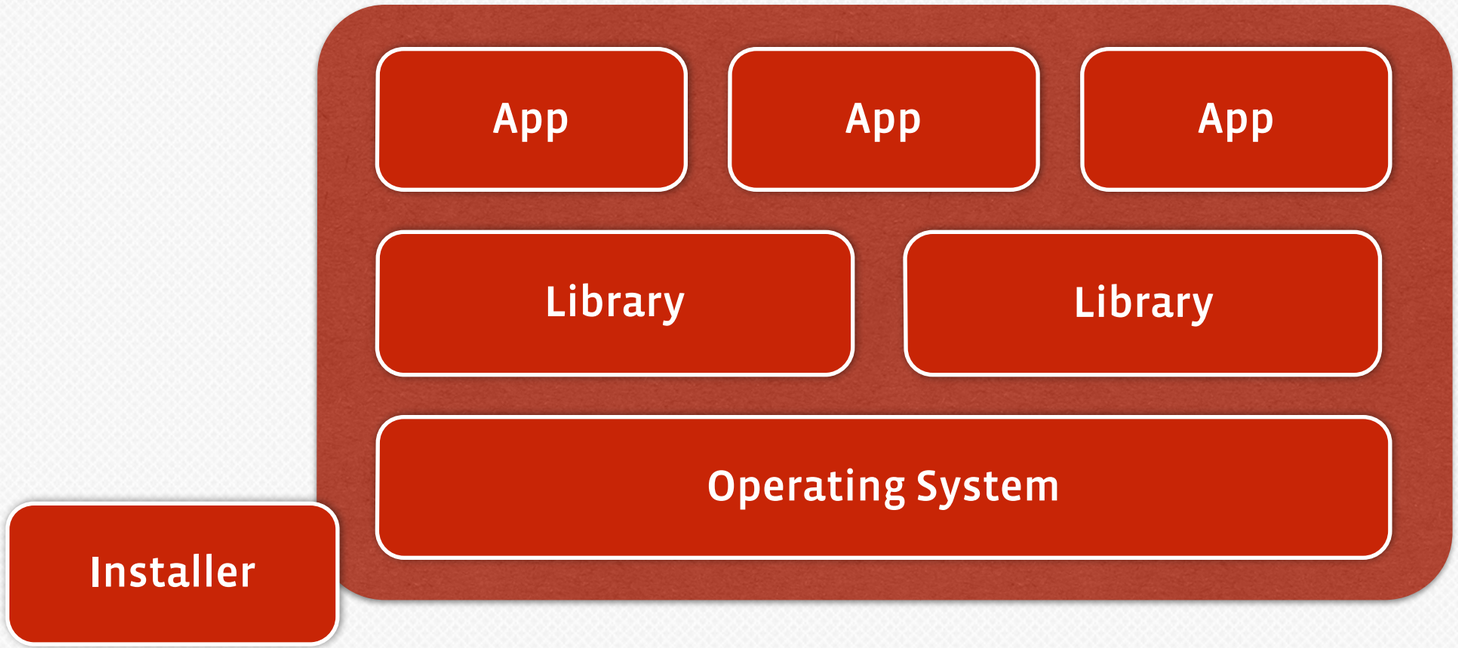
Interoperability

Integration

Validation

Active software projects

Providing building blocks

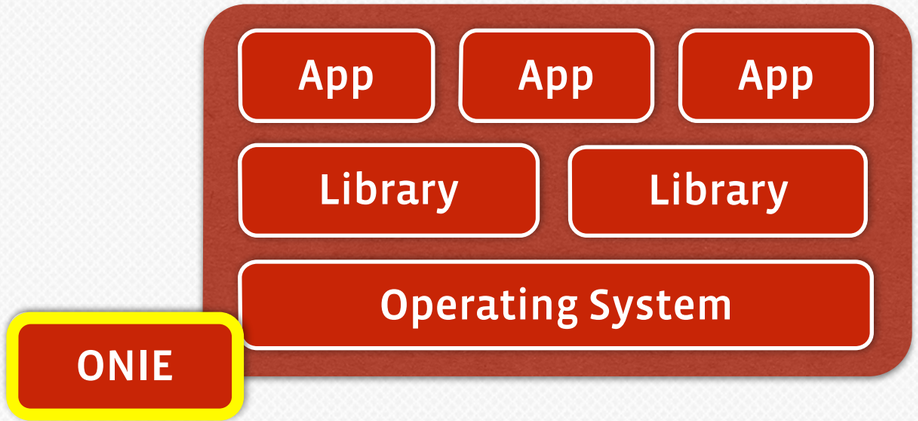


Open Network Install Environment (ONIE)

- Broadly used

Hardware Vendors

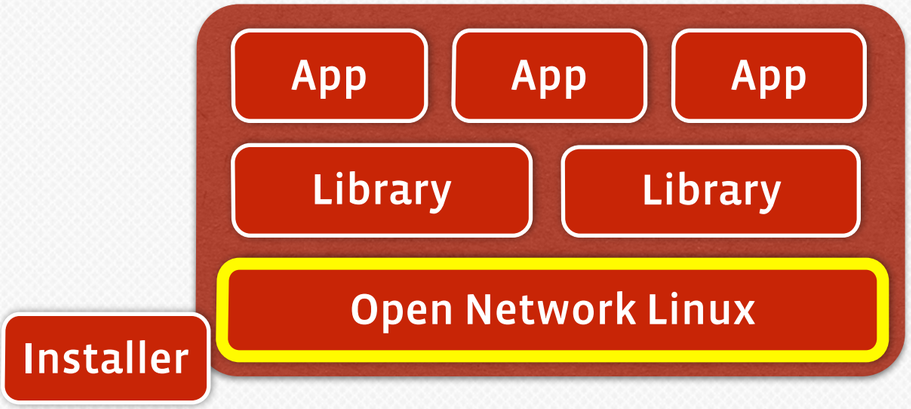
Agema
Celestica
DELL
ALPHA
Edge-corE
Quanta
Interface Masters TECHNOLOGIES
Mellanox

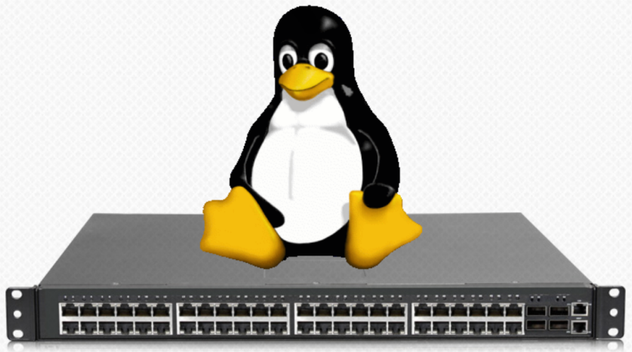


- Testing program with C & I
  - First batches of switches certified this quarter

Open Network Linux

- Accepted Jan 2015
- Big Switch, Pica8, Accton, Quanta, DNI
- Basis for Network Operating System
- Takes care of platform “stuff”

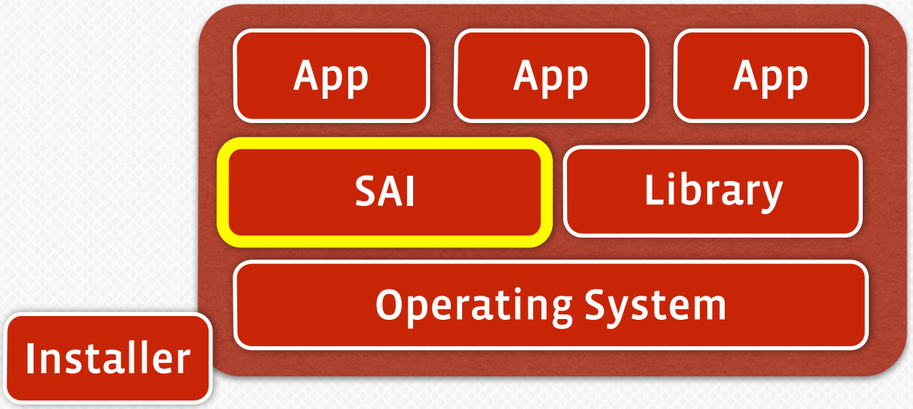




Switch Abstraction Interface (SAI)

Open, multi-company effort

- An abstract interface above switch SDKs
- Very active open-source collaboration
- Multi-system demo, implementations



New!

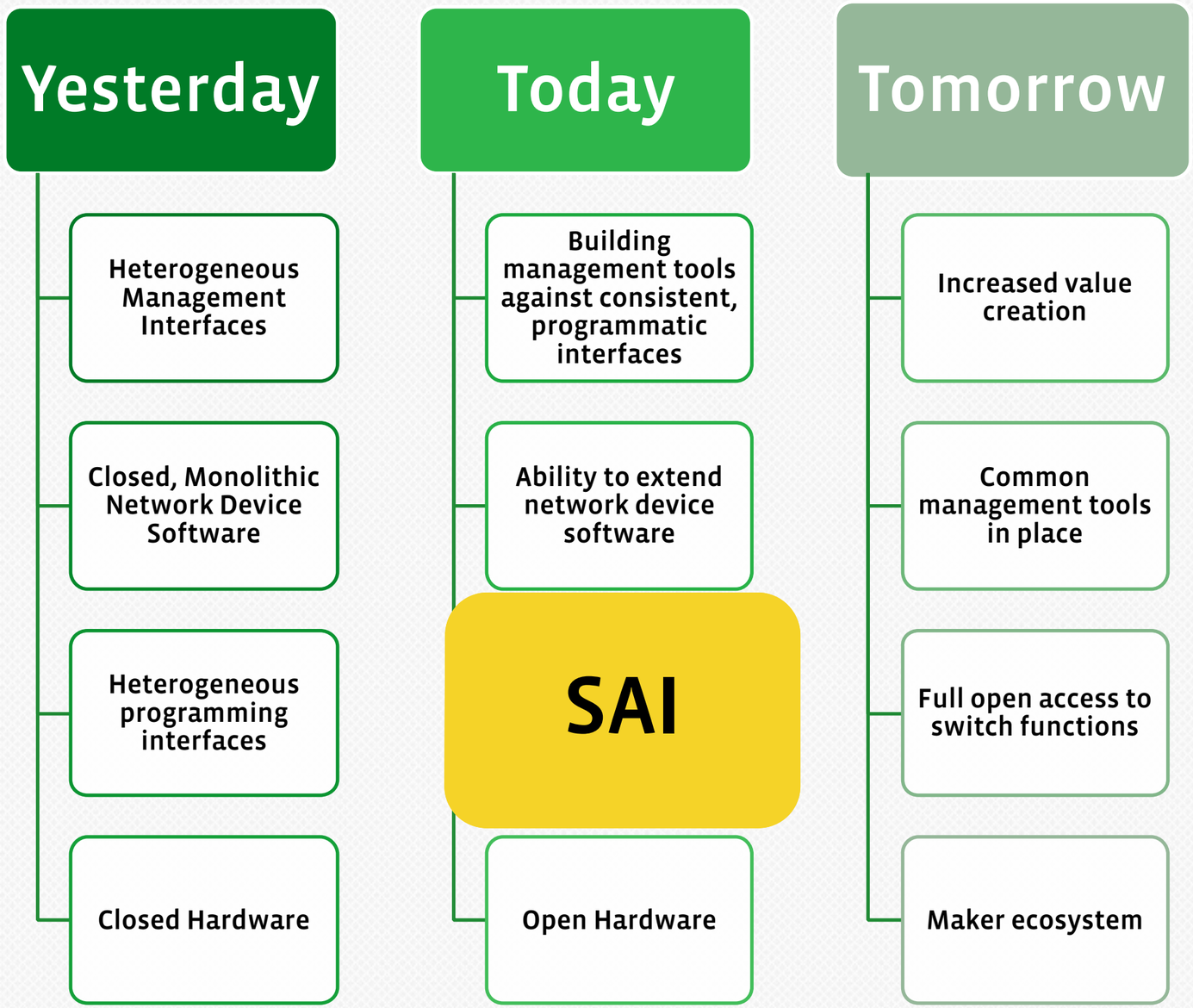
Microsoft

DELL

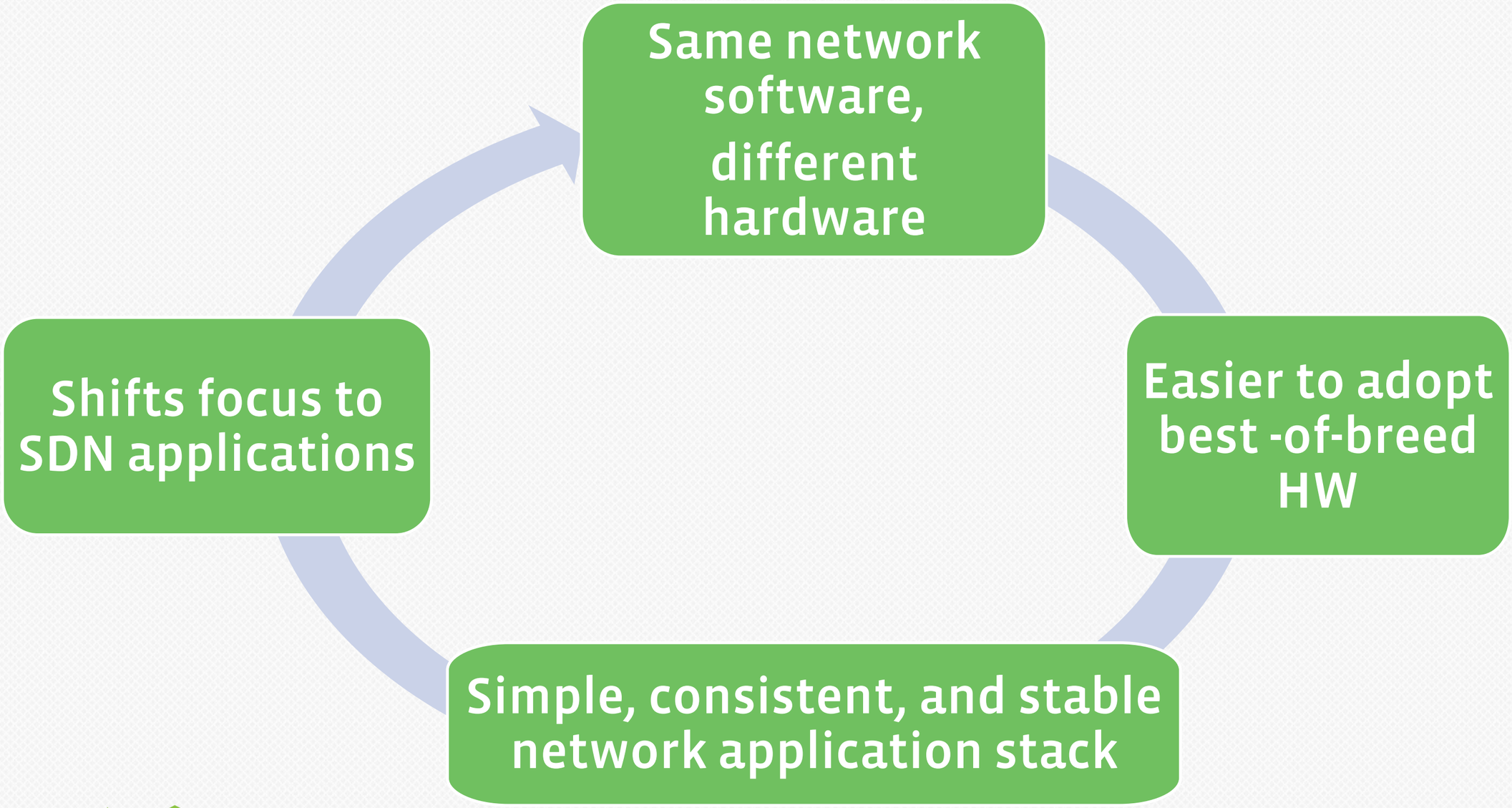
BROADCOM

Mellanox
TECHNOLOGIES

SAI Evolution



SAI Advantages for Microsoft (and others!)



SAI Timeline

3 months!

V0.90 Dec 2014

- Supporting Companies (Dell, Microsoft, Broadcom, Mellanox, Facebook, Intel)
- 1st proposal

V0.91 Dec 2014

- Contributing companies (Dell, Mellanox, Microsoft)
- 7 proposals - Versioning, Upstreaming, Pull requests
- First Demo!

V0.92 Mar 2015

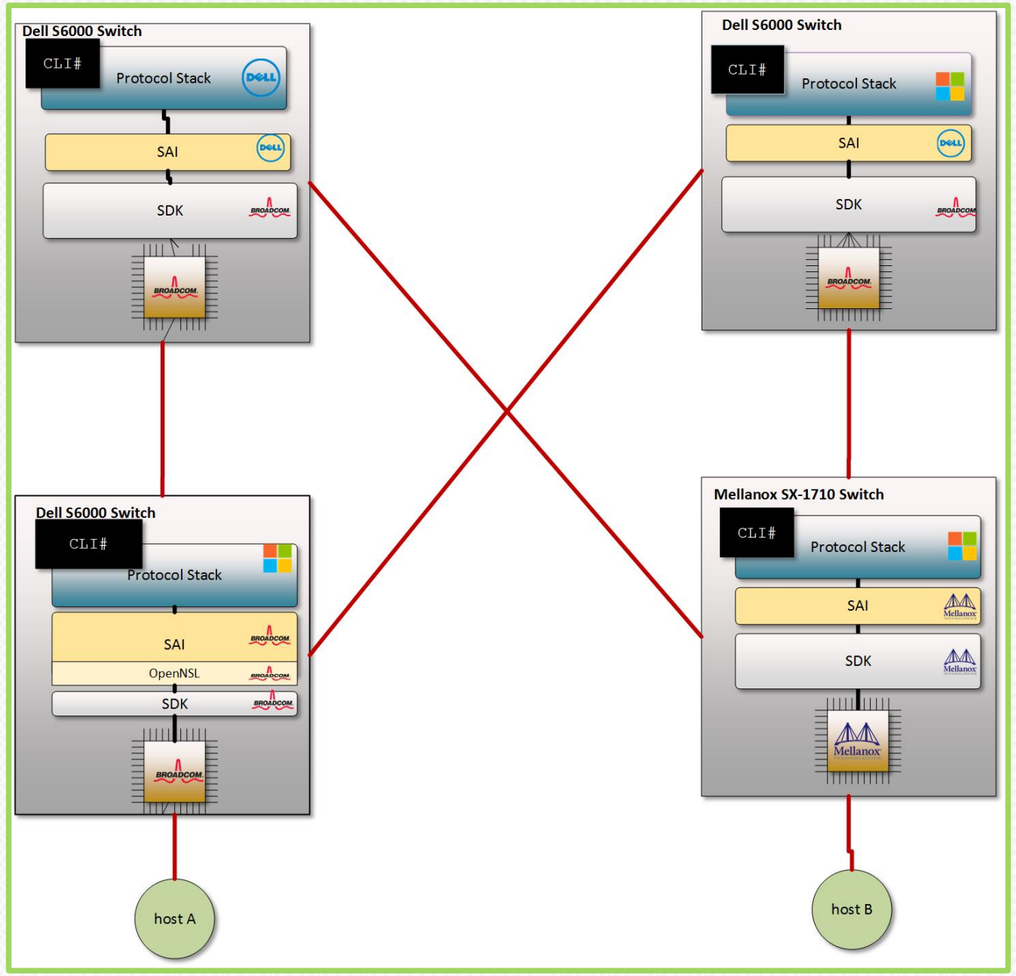
- Contributing companies (Dell, Mellanox, Microsoft, Broadcom)
- 15+ proposals
- Possible deployment

V1.0 Summer 2015

- Contributing companies expected to be 6+
- 20+ proposals covering a broad range of proprietary ASIC architecture

SAI Demo - Today, 4:45 PM, Networking Project

- By the numbers…
  - 3 Vendors + 1 Operator
  - 2 ASICs: Broadcom, Mellanox
  - 2 OS stacks: Dell, Microsoft
  - 2 HW systems: Dell, MLNX

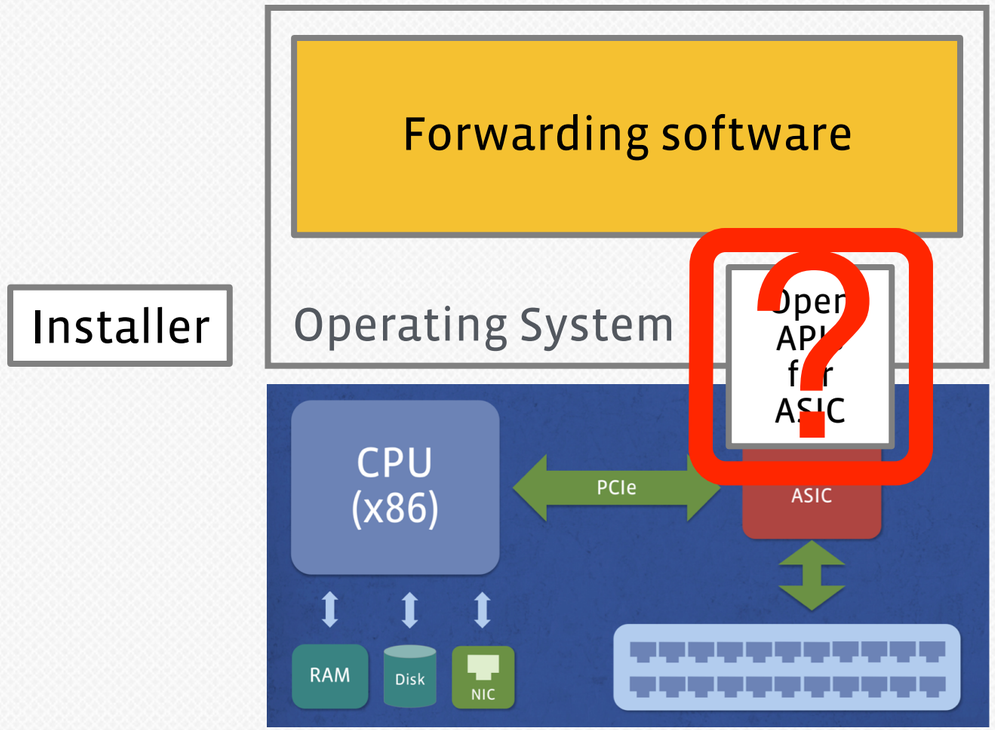


Broadcom - OpenNSL

Open Network Switch Library

New!

- Opening the APIs to the switch ASIC
- Enables open-source development
  - Network operating systems
  - Applications
- Enables OEMs to provide access

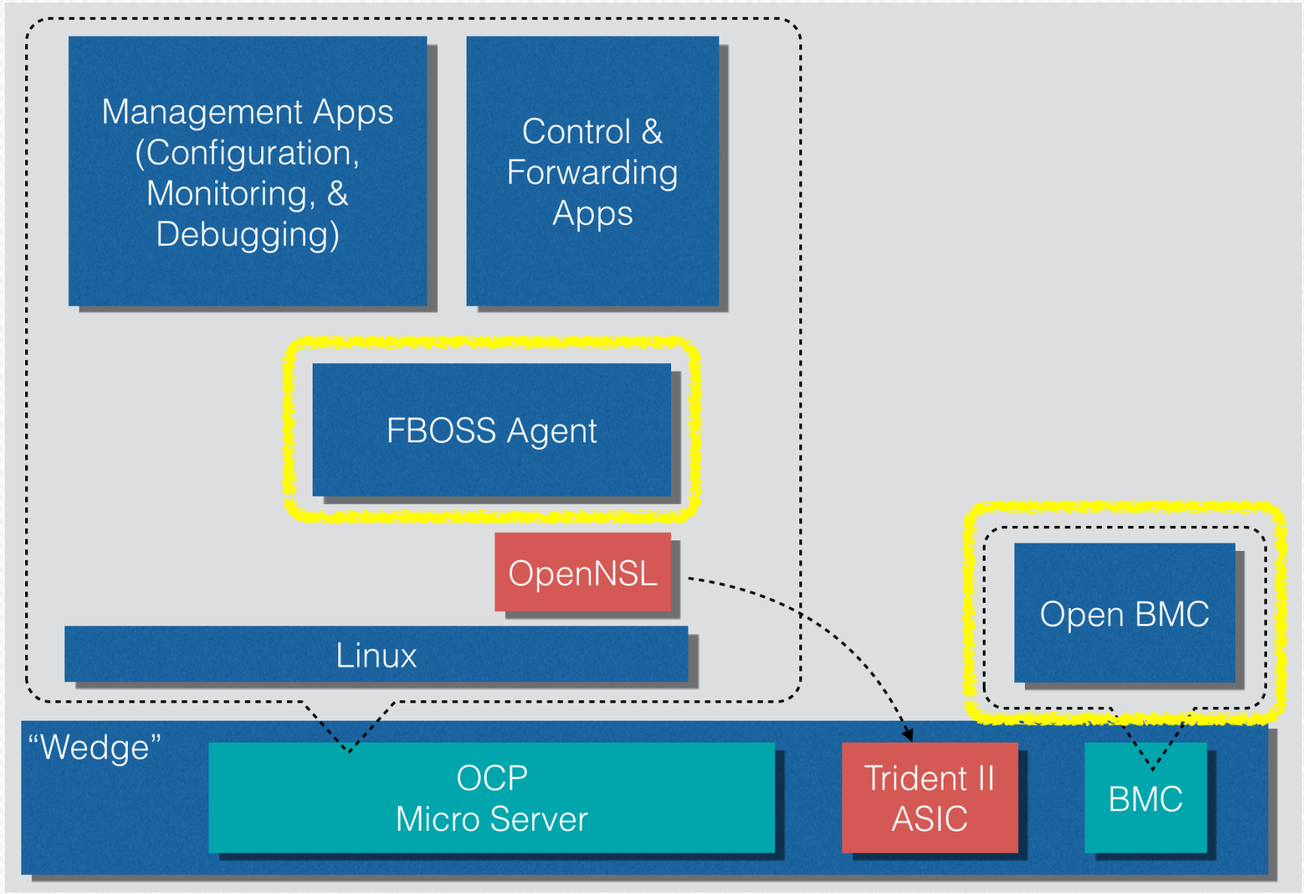


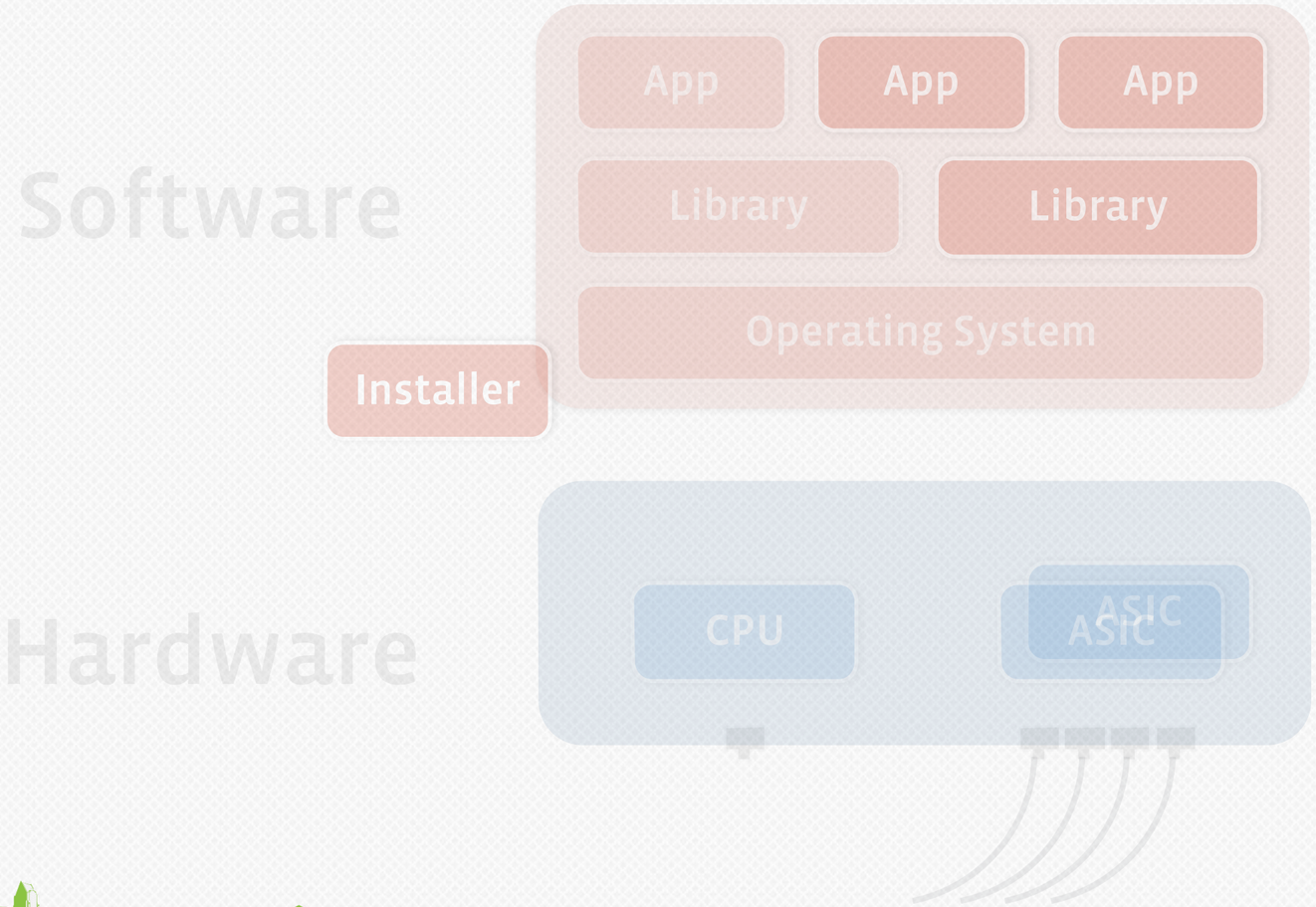
Facebook - FBOSS Agent & OpenBMC

In production in FB data centers

New!

- FBOSS Agent
  - Core library to switch ASIC
  - Thrift interfaces
- OpenBMC
  - Low-level system management of board





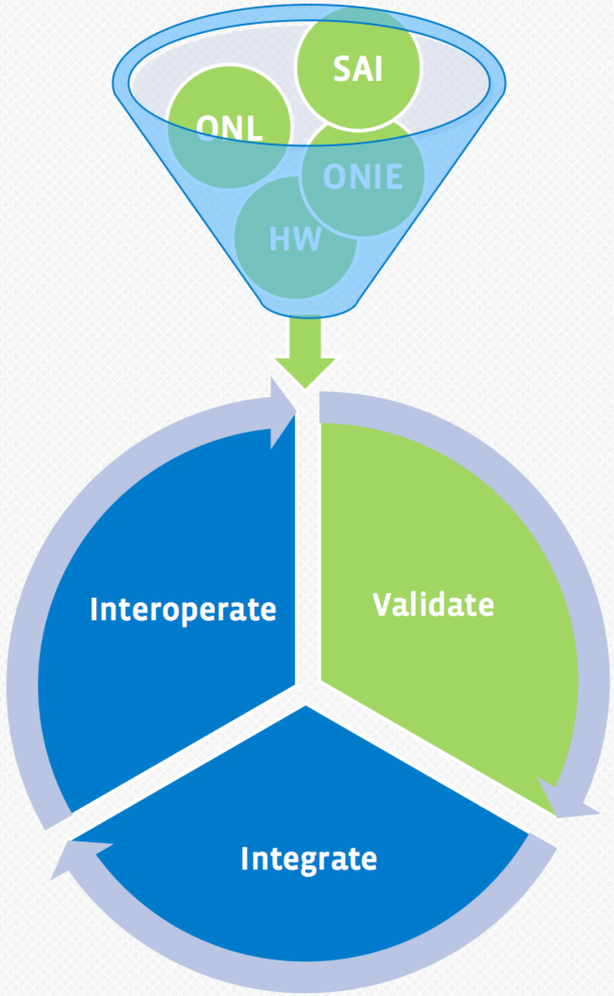
Interoperability

Integration

Validation

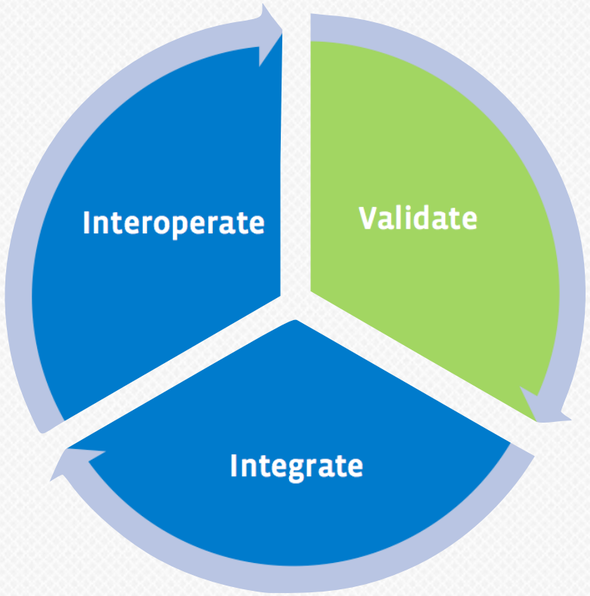
Testing

Validation, integration, and interoperability



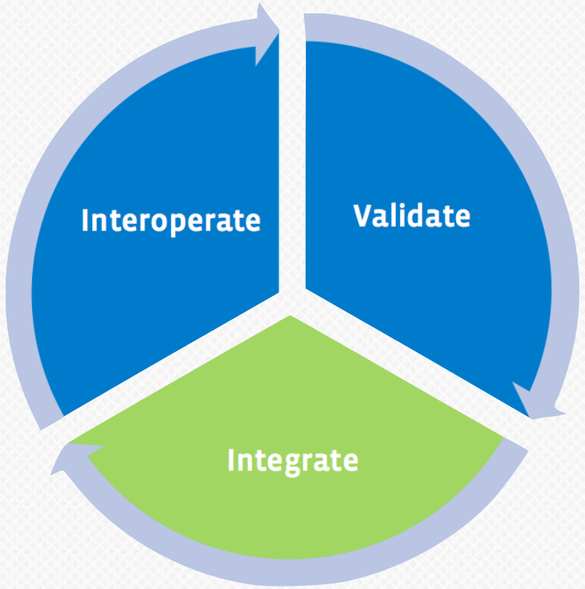
Validation of components

- Individual OCP components are validated
  - Switch
  - ONIE
  - ONL
  - SAI
  - APD
- OCP components are combined and validated
  - Switch with ONIE, ONL, SAI, APD, …
- Successful validation earns OCP seal or certificate



Integration of non-OCP components

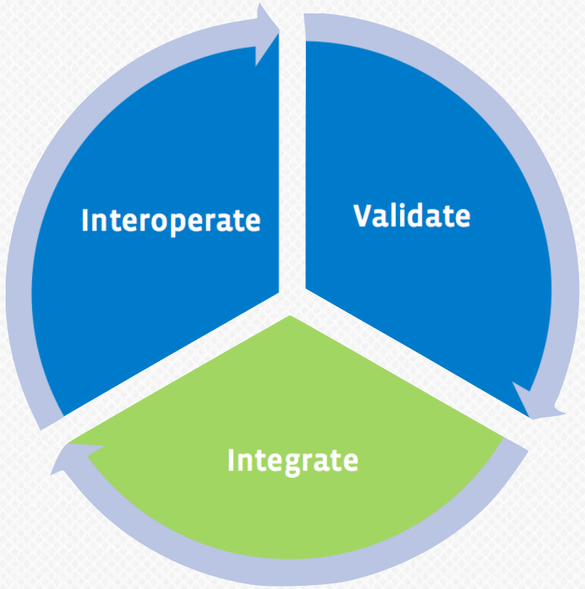
- Include network operating systems (NOS)
  - Cumulus Linux
  - Switch Light
  - PicOS
  - Other systems
- Include FRUs
  - XCVRS, AOC, DAC
- Include “other” technologies
  - NPUs, …



Integration of non-OCP components

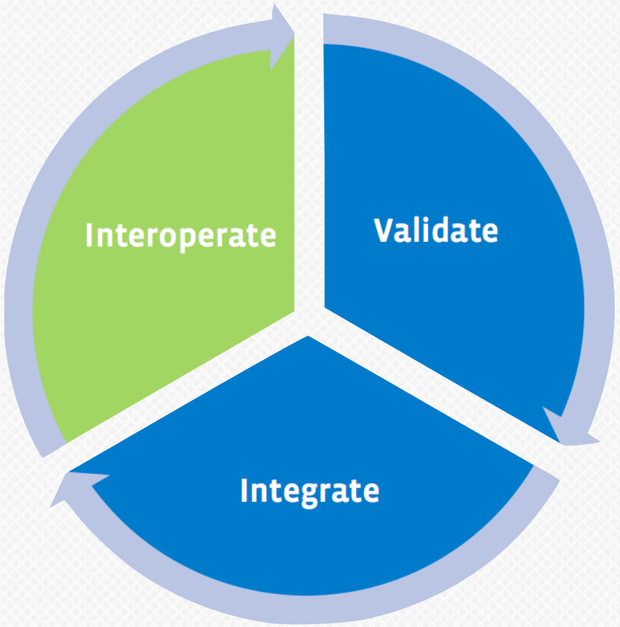
Open Networking Interoperability Testing

- Week of 2015 Feb 23 at UNH - IOL
- 6 vendors
  - Accton
  - Amphenol
  - Avago
  - Big Switch Networks
  - Cumulus Networks
  - Finisar



Interoperability with industry

- With traditional network equipment & protocols
  - Traditional vendor interoperability testing
    - Cisco, Juniper, Arista
    - OSPF, BGP, etc…
- With “new” network equipment & protocols



What’s next?

Continue innovation, drive adoption

Software

An open SW ecosystem

A complete open-source stack?

Hardware

Beyond TOR

100G+ optics?

Testing

Test plans & software

Seals & certifications

Solutions for specific use cases?

Come join us!