OpenSwitch and Composable Networking

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Evolution of Network Disaggregation

- Legacy Networking Equipment
  - Proprietary and Single Vendor
  - Monolithic
  - Full Solution
  - Expensive to Maintain
  - Vendor controlled roadmap
  - Single vendor support

Closed Solution:
- Proprietary CLI or other interfaces
- Management
- Protocol Stack
- Custom OS
- ASIC & Integrated HW

Legacy Networking
Open Networking 1.0

- Division of Hardware and Software
- Open Hardware – ONIE Enabled
- Programmable Silicon + SAI
- NOS + Protocols + Management Stack
- (+) Choice of best fit NOS
- (−) Feature delivery tied to software vendor roadmap
Open Networking 2.0

- Full software disaggregation
- Composable Networking:
  - Open Hardware
  - Open Networking OS
  - Micro-services
- Deploy what you need
- Less dependence on single vendor roadmap
- Support Strategy?

Legacy Networking

Closed Solution:
- Proprietary CLI or other Interfaces
- Management
- Protocol Stack
- Custom OS
- ASIC & Integrated HW

Networking 1.0

Software:
- North Bound Interfaces
- Management Software
- Protocols
- NOS
- SAI
- Silicon Code

Networking 2.0

- North Bound Interfaces
- Management Software
- Protocol Stacks
- Programming Interfaces & Hardware Abstraction
- Networking OS
- Open Hardware (ONIE)
- Open Hardware (ONIE)
Composable Networking

- Building Custom Network Solutions:
  - Using Management & DevOps tools
  - L2/L3 Routing Protocols
  - Considering Scales and Performance
  - Enabling Security Features
  - Using Monitoring and Maintenance tools
Challenges to Composable Network deployment

- Support model
  - Single Neck to choke

- Workable business model for Vendors
  - Vendors willing to adopt new paradigm

- Open, Closed, or Hybrid?
  - When is a closed source micro-service acceptable?
OPX Support
OPX (OpenSwitch)

- Linux Foundation open source project
- Diverse growing community led by Dell EMC
- Open source NOS for hardware switches
- Commercial-Grade turnkey solution
- Enables rapid on-boarding of new platforms, protocols & applications

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OPX & Open Networking 2.0

- OPX is designed from grand up based on composable networking architecture
- Total disaggregation of software and hardware
- Choice of hardware and Software solutions based on network needs
- First Open Networking OS with complete support package
OPX as composable networking solution

- Ready for popular DevOps tools
- L2/L3 Protocol stacks enabled
- Scalable
- Includes security features
- System and Network Monitoring tools

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OPX Architecture & Design

Open Applications

- OPX-Control
  - BGP
  - REST
- Community Applications
  - STP
  - LLDP
  - BGP
  - OSPF

Other OPX-Applications

OPX Base

- OPX Services
  - Platform Abstraction
  - System Device Interface
  - Control Plane Services (CPS)
  - Network Abstraction
  - Network Device Interface
- Drivers
  - Platform Drivers
  - Switch Abstraction Interface (SAI)

Open Hardware and NPU

Standard Linux Distro

Direct Configuration using native Linux tools

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OPX as a building block...
OPX in Action…

• Commercially deployed cases:
  • Verizon Connect:
    • Initially deployed with Quagga
    • Later moved to FRR
  • Awnix:
    • Apstra, DellEMC Open HW, running OPX
    • Open IaaS Network Infrastructure solution

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Take Away…

• OPX key differentiations
  • Full NOS solution
  • Simple onboarding of partners
  • Proper support model
Thank You!

Join OPX today
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