Open Networking Advancing, Expanding, and Deploying

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Open Networking Advancement

May 2013
First OCP Networking Meeting

March 2017
OCP Summit

~ 4 year Ecosystem Building
Open Networking HW Advancement

10G/40G Designs

10G Modular Chassis Designs

32x100G Designs

Wi-Fi Access Points

PoE Switches

DCI Switches

1G GPON vOLT

64x100G Switches

Programmable ASICs

25G Switches

Wi-Fi Access Points
Open Networking SW Advancement

- ONIE Installer
- Open Network Linux
- Switch Abstraction Interface (SAI)
- Open Optical Monitoring (OOM)
- FlexSwitch SONiC
SW Ecosystem

- ONL
- FlexSwitch
- SONiC
- ONIE
- SAI
- OOM
- ADARA
- CUMULUS
- ipinfusion
- big switch networks
- PICA8
- Pluribus
- snaproute
Edgecore Contribution AS7800-64X

- 64 x 100G QSFP28 Switch
  - Based upon Broadcom Tomahawk 2 silicon

- Single PCB board design for all 64 ports

- PHY-Less design provides reduced cost and latency

- X86 CPU options

- Optional BMC Module
Edgecore Contribution AS7800-64X
**Edgecore Contribution AS7300-32X**

- 48 x 25G + 6 x QSFP28 Top of Rack Switch
  - Based upon Broadcom Tomahawk silicon

- PHY-Less design provides reduced cost and latency

- X86 CPU options

- Optional BMC Module
Edgecore Contribution AS7300-32X
Edgecore Contributions Wi-Fi

- Wave 2 Qualcomm QCA based designs
  - 4x4 Enterprise grade Access Point
  - 2x2 Cost effective Access Point
Edgecore Contributions Wi-Fi

ECW5211 2x2

- IPQ4018 Dakota Cortex-A7 Quad-Core
- QCA8075/8072 GbE Switch PHY
- X'FMR
- SPI NOR Flash
- NAND Flash
- DDR3L SDRAM
- 2.4GHz FEM QFE1922
- 5GHz FEM QFE1952
- BLE/BT4.x
- Gigabit Ethernet

ECW5410 4x4

- IPQ8068
- SPI NOR Flash
- NAND Flash
- DDR3 SDRAM
- USB
- Console
- TPM
- Reset
- Temp Sensor
- Current Sensor
- QCA 9990 2.4G
- QCA 9990 5G
- Ti CC2540 PoE PD
- QCA 8033 PHY
- QCA 8033 PHY

BLE/BT4.x
CBW Technology Showcase Participants

• Edgecore Networks
• Agema
• SnapRoute
• AT&T
• Benu Networks
• Ubuntu/Canonical
• Mojo Networks
### Technology Showcase Setup

**Demonstrates:**
- Working Linux kernel on OCP H/W
- Enterprise Wi-Fi service
- User space application
  - Cloud managed distributed Firewall
  - Campus Wi-Fi
  - Managed business Branch Networking
- OCP ONIE Bootloader

**Benu Networks**  
CBW Linux (OpenWRT)

**ONIE CBW Linux + Snappy Bemu Networks, Ubuntu**

**Demonstrates:**
- Cloud managed distributed Firewall
- Campus Wi-Fi
- Managed business Branch Networking

**EdgeCore H/W**  
Broadcom Based AP

**Live-CBW-SSID**

**Demostrates:**
- Open Source L2/L3 Branch Switch

**SnapRoute Flex Switch**

**WAN 1**  
- DHCP Server / V4 NAT
  - 192.168.1.0 /24
  - Agema H/W

**WAN 2**

**AT&T 5G Mobility**  
- Fast Mobility
- Automation / ML:
  - Wi-Fi Radio Resource Management

**EdgeCore H/W**  
Qualcomm Based AP

**Benu Networks**  
Qualcomm Based AP

**Broadcom Based AP**

**ECW7220**

**EdgeCore H/W**

**ECW5410**

**EdgeCore H/W**

**WAN 2**

**EdgeCore H/W**

**Qualcomm Based AP**

**DHCP Server / V4 NAT**

**192.168.1.x**

**192.168.1.x**

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**192.168.1.x**

**192.168.1.x**

**EdgeCore H/W**  
Broadcom Based AP

**ECW7220**

**ECW7220**

**EdgeCore H/W**

**Mojo Networks**

**Wi-Fi NOS**

**Demonstrates:**
- 5G Mobility
- Fast Mobility
- Automation / ML:
  - Wi-Fi Radio Resource Management
Open Network Deployments

Tier I
Facebook, Google, BAT

Tier II
Financial Services, Retail, Carrier

Tier III
Retail Deployment

- OCP 100G Spine switches
- OCP 25G ToR Switches
- OCP QMX DCI Switches
- OCP ONL
- OCP FlexSwitch

100G Spine Switches

25G ToR Switches

25G Servers

Application Workloads

Network Functions

DC Interconnect Switches
Carrier Deployment

ONOS Open Source Controller

Cloud Management and Service Orchestration

Fabric 100G Switches

R-CORD
Residential Services (GPON)

E-CORD
Enterprise Metro Ethernet Services

Access Switches

VNFs on White Box Servers

- OCP Servers
- OCP 100G Spine switches
- OCP QMX Access Switches
- OCP ONL
- ONF OpenFlow
- ON.Labs CORD

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Open Networking Future...

- 400Gb Ethernet
- Programmability
- Optical Networking

- Cellular / Wi-Fi
- Backhaul
- Optical Networking

- CORD
- Carrier / MEF