SONiC Paves the Way for Open Networking!
SPEAKERS

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One thing about open source is that even the failures contribute to the next thing that comes up.

Unlike a company that could spend a million dollars in two years and fail and there's nothing really to show for it, if you spend a million dollars on open source, you probably have something amazing that other people can build on.

Matt Mullenweg
240+ companies
8K engineers
190+ contributions
OCP Tenets

Efficiency

Growth

Scale

Openness

Broadcom at a Glance

- FY20 net revenue of $23.9B
- One of the industry's broadest IP portfolios with >20,000 patents
- $5.0B investment in R&D in FY20
- 25 Category-Leading Semiconductor & Infrastructure Software Divisions

Continuous Scaling

- 2010: 0.64 Tbps (40nm)
- 2012: 1.28 Tbps (40nm)
- 2014: 3.2 Tbps (28nm)
- 2016: 6.4 Tbps (16nm)
- 2018: 12.8 Tbps (16nm)
- 2020: 25.6 Tbps (7nm)

40X Bandwidth Increase per Switching Element Over 10 Years, Exceeding Moore’s Law

Broadcom-Enabling Open Networking

Simplification in Hardware leads to simplification in Software

SONiC was developed and open sourced by Microsoft in 2017

BRCM is the largest contributor to SONiC after Microsoft.
Source: Microsoft Keynote at OCP Global Summit - 2020
**SONiC and Broadcom**

<table>
<thead>
<tr>
<th>Innovations across the entire software stack (SAI, Application, Management)</th>
<th>Platform Development Kit: A framework to enable new HW platforms in a matter of days, rather than months</th>
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<tbody>
<tr>
<td>Enabling new use cases (Telemetry, Flow analytics, Time Sync, Multi-tenancy)</td>
<td>Enabling open-source to move at the speed of silicon innovation</td>
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SONiC Architecture

- Built on a Linux Base
- SAI (Switch Abstraction Interface) acts as translator between switch silicon and SONiC
- Containerized Architecture
  - Provides Serviceability
  - Enables Extensibility
- Open Management Framework for Operational Simplicity and Automation
  - gNMI
  - RestConf
  - OC Yang Models
  - Industry Standard CLI

SONiC Deployment @Large Enterprise

Case Study
Customer Profile

Introduction
Large global Enterprise Customer
- History of Mergers and Acquisitions
- Security and Isolation is Critical
- Time to Market for new products is important

Customer Pain Points
Existing Data Centre switching solution didn’t meet the business needs
- Legacy 3-Tier Architecture based on OEM Solution
- Lacked ability to scale, with the required pace
- Resiliency decreased with Scale

Customer’s Compute/Storage requirements not fit for Public Cloud
- Cost Prohibitive
- Business Demand necessitated a hybrid approach

Customer’s High-Level Objectives

**Freedom and Choice**
Eliminate Vendor Lock-in (Tools, Hardware, Support)
Open APIs for management & Orchestration

**Flexibility and Speed of Deployment**
Fast, Seamless deployment with Minimal intervention of Network Admins
Increased Flexibility for Workload Placement

**Independence & Control**
Support for Multi-tenancy with complete isolation
Limit/Contain Failure Domains
Feature Velocity

SONiC is Enterprise Ready

Customer Requirements

- Freedom & Choice
- Independence & Control
- Flexibility & Speed of Deployment

SONiC Solution

- Choice of Silicon/Switch/Support = No Vendor Lock in
- Multi-Tenancy
- Micro Segmentation
- Availability Zones
- Comm Control
- ZTP
- TPCM
- gNMI
- Open APIs
- OC
- YANG
- Ansible
- Puppet
- SNMP
- IS CLI

• SONiC met all customer requirements.
• Clos topology-based network deployed
  o Spines based on Tomahawk 2
  o Leaf switches based on Trident 3
• Multi-Pod Deployment PoD 0 as superspine
  o All inter-Pod communication through Pod 0
SONiC in Production

• VXLAN EVPN based Fabric providing Multi-tenancy
• BGP as Underlay and Overlay protocol
• Select routes are leaked between VRFs.
• Separate Tenant Traffic is protected with inter VRF FWs attached to Border Leaves
  o Inter POD, Inter-VRF traffic is filtered through the Pod 0 Firewall
  o Intra POD Inter VRF traffic is filtered through the PODn FW
  o Trusted VRF to Trusted VRF traffic is sent directly without traversing FW
SONiC in Production

Current Deployment Status

L2 Design
- Europe1 DC: 259

VxLAN Design
- Japan DC: 82
- ME2 DC: 82
- APAC3 DC: 70
- West DC: 438
- East DC: 268
- Europe2 DC: 259

TOTAL
Switches in 7 DCs
1458 → 4000
Key Customer Benefits

Increased Availability – streamlined, simplified, hardened software, less prone to bugs
Ease of Management – Integration with Open DevOps tools
Massive improvement in Performance
Optimized Utilization of Servers (>70%)
Rapid Troubleshooting - Deep Visibility with silicon enabled Telemetry
Speed of Deployment (ZTP) and seamless Scalability
Built at a fraction of cost compared to OEM Solution
**Gartner**

**Prediction:** By 2025, 40% of organizations that operate large data center networks (more than 200 switches) will run SONiC in production environments.”

Source: Gartner blog SoniC Disruptions in the Data Center Network (Mar 15, 2021)

“There is a very strong possibility that, within the next two to five years, SONiC for data center networking will become analogous to Linux as a server OS, allowing enterprises to standardize on an NOS that is supported across hardware vendors.”

Source: Gartner Magic Quadrant for Data Center and Cloud Networking (Jun 30, 2020)

**IDC**

SONiC data-center switch market will be worth **$2 billion by 2024**.

“SONiC has the potential to become the ‘Linux of networking’ as the SONiC community now has more than 850 members, including major cloud providers, service providers, silicon and component suppliers, as well as network hardware OEMs and ODMs,” Brad Casemore, IDC’s Research Vice President, Datacenter Networks
About Edgecore

- Full Portfolio of Open and Traditional Platforms
- Accton Group Branded Subsidiary - Since 2004
- Leader in Open / Disaggregated / Networking
- Headquartered in Taiwan, Offices in USA and Asia, Worldwide Sales and Support Coverage
Market Leadership

18 Designs Contributed to Open Communities

20+ 20+ Proven Commercial Software Options

9.2M Ports Shipped in 2020

CONNECT. COLLABORATE. ACCELERATE.

Open Compute Project®
ONF
Open Networking Foundation
TELECOM INFRA PROJECT
SONiC
DDENT

Complete Solutions Offering

- DC Leaf, Spine, Super-Spine
- Optical Packet Transponder - DCI
- Edge Switching - Campus & Branch

Open Networking for Data Center and Enterprise

- Mobile Backhaul
- Broadband Access - FTTx
- Core & Aggregation Routing

Open Networking for Telecom

- Smart City
- CCTV Surveillance
- FTTx

Traditional Wired and Wireless

Edgecore & SONiC

- Top 5 Contributor to SONiC Community
- Hardened & Validated SONiC Distribution
- Diverse Choice of Switching Platforms
  - Form-Factor - Fixed and Modular
  - Interface Speeds - 1G, 10G, 25G, 100G, 400G
  - Capacity - From 480Gb to 12.8Tb
- Comprehensive Service & Support Offering for Both Hardware and SONiC

Source: Microsoft Keynote at OCP Global Summit - 2020
Supported Platforms

25-GE
AS7326-56X
Trident 3

100-GE
AS7816-64X
Tomahawk 2

AS7726-32X
Trident 3

1-GE
AS5835-54X
Trident 3

AS4630-54PE
Trident 3

Wedge100BF-32X

400-GE
AS8000 – Minipack
Tomahawk 3

AS9716-32D
Tomahawk 3
Service Offering

PLAN & DESIGN
- Design support and review
- Trial support
- Validate & Stage
- Consult

DEPLOYMENT SERVICES
- Readiness assessment
- Project management
- Deployment assistant
- Engineering experts
- Lab as a Service

HARDWARE SUPPORT SERVICES
- Hardware maintenance
- High quality and reliability of repairs and spares
- Advance RMA
- Spare parts dimensioning support
- Emergency service – 24x7 follow the sun

SOFTWARE SUPPORT SERVICES
- Upgrade support
- Expert services
Edgecore & SONiC

- Community-Sourced while supported by Edgecore
- Worldwide Developer Community Contributing to SONiC
- Further ”hardened” for commercial deployment

- Tailored for Data Center use-cases
- Deployed in large-scale environments

- Single Vendor, with single point of contact for Support
- No “finger-pointing”

- Fastest time to market for SONiC
- Single vendor for platforms and SONiC distribution

The Way2Open: We live our Vision

There to Support

Open Networking

SDN Project

Academy

UK Office

APS Switch

2014

2015

2017

2017

2018

The Way2Open: We live our Vision

- Started SONiC Development
- Introduced SONiC Remote Lab
- Development of SONiC SW Tools
- Introducing Switch2Open Product range
- STORDIS #Switch2Partner Program

SONiC Activity
SONiC Lab
SONiC Tools
#SWITCH2OPEN
Partner Program

2020
2020
2021
2021
2021

The Way2Open: We live our Vision

There to Support

Open2Support
Smart I Advance I Premium
STORDIS SLA

Academy
SONiC Certified Training Academy

Open Source
100% on Open Source Networking

2021
2021
Future

Our Service for You

Benefit from our Service offering

Consultancy Service

Solution Design Service

Integration Service

Support Service

Community is Key
We are committed to Community work and give back

Our Partners Trust Us
Only trust bring success

#SWITCH2OPEN
“Freedom is nothing else but a chance to be better”

Albert Camus

“Let’s be better Together”
Q&A
THANK YOU