Innovating the Cloud Network

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Control the Network via Software You Control

Requirements for high quality cloud services

- Deep diagnostic capability: utilize cloud-scale deep telemetry and fully-automated failure mitigation
- Reliability: deploy improvements or fixes with zero customer impact
- Manageability: enable SDN to control all hardware uniformly

Velocity is essential for cloud

- Development: feature agility weekly
- Livesite: bug mitigation hourly
- Security: patch as soon as possible
A Solution to Unblock Hardware Innovation

Monitoring, Management, Deployment Tools, Cutting Edge SDN

Merchant Silicon

Open. Together.
SONiC  Software for Open Networking in the Cloud

configuration and management tools

Jenkins  ANSIBLE  kubernetes  SWARM  puppet  CHEF  1st party

New  More apps  SNMP  BGP  DHCP  IPv6  New

Database  Platform  TeamD  LLDP  RedisDB  SYNC

SWSS  Utility  Linux  Switch Abstraction Interface (SAI)

Open. Together.
OCP Network Stack Enriched by SONiC

- Software for Open Networking in the Cloud
  - SONiC
- Switch Abstraction Interface
  - SAI
- Open Network Linux
  - ONL
- Open Network Install Environment
  - ONIE
- OCP Hardware

Network Software Components

- H/W Programming interface

- Base OS and installer

- Open networking Hardware
<table>
<thead>
<tr>
<th>Year</th>
<th>Features</th>
<th>Platforms</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>Linux, Basic L2/L3, Containerized, Redis DB, Linux, Basic L2/L3, Containerized, Redis DB</td>
<td>40G, 5 platforms</td>
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<tr>
<td>2017</td>
<td>RDMA/QoS, IPv6, Mgmt. via Swarm, Fast Reboot(&lt;30s), RDMA/QoS, IPv6, Mgmt. via Swarm, Fast Reboot(&lt;30s)</td>
<td>100G, 16 platforms</td>
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<tr>
<td>2018</td>
<td>Streaming Telemetry, Config DB, Support Virtualization, Warm Reboot (&lt;1s), Streaming Telemetry, Config DB, Support Virtualization, Warm Reboot (&lt;1s)</td>
<td>ARM based &amp; Lower end, 31 platforms</td>
</tr>
</tbody>
</table>

**ASIC**
- BRCM: Trident 2
- MLNX: Spectrum
- Cavium: Xpliant
- Centec: Goldengate

**ASIC**
- BRCM: Tomahawk/Tomahawk2
- Marvell: Prestera
- Barefoot: Tofino

**ASIC**
- Nephos: Taurus
- BRCM: TD2/TH3, Helix4
- Cisco: Lacrosse

**ASIC**
- BRCM: DNX
- Innovium: Teralynx
- Marvell: Falcon
- MLNX: Spectrum II

**Powering data center ToR/Leaf**

**Powering bare metal service**

**Powering AI/gaming service**
3 releases/year
120~250 commits/month
841 community members
202 active code contributors
68 supported platform

Community members:
- 2016: 133
- 2017: 387
- 2018: 760
- 2019: 841

Supported platforms:
- Mar-16: 5
- Mar-17: 16
- Mar-18: 31
- Mar-19: 68

Active Community posts:

Commits/Month:
- January: 100
- February: 150
- March: 200
- April: 250
- May: 100
- June: 150
- July: 200
- August: 250
- September: 100
- October: 150
- November: 200
- December: 250
Newly Joined Since Last Year

- Juniper Networks
- ALPHA Networks
- Mitac
- Ruijie Networks
- Baidu
- DiDi
- JD Cloud
- CAVIZ
- Asterfusion
- Criteo
- Wipro
- The Hong Kong University of Science and Technology
- Building block for Tencent open DCN Networking
- Will deploy SONiC to POD and Fabric
- Adding INT, NETsense, MOD, Tencent NOC for DC operation
- 2019 OCP Tech Day talk
- Building block for a flexible datacenter infrastructure
- SONiC complements Open19 ecosystem
- Deployed in 40% data centers
- Vision: 100% switches running on SONiC
- Enhancements Contributed
  - FRR integration
  - IPv6 ACL
  - FIB-acceleration
  - Warm reboot collaboration
  - Leading security process
Building block for fast evolution, high reliability, operation cost reduction
- Deployed to 44 regions
- Firmware upgrade up to thousands of switches per day
- High fidelity emulation tool—ONE for configuration validation
- Feature release reduced from months to weeks

Looking forward
- Inside data center all on SONiC
- Extending to management network, WAN, and other roles
Open Invitation

Inviting contributions in all areas

• SONiC/SAI
• Hardware platform
• New features, applications and tools
• Download, test, deploy!

Website:  https://azure.github.io/SONiC/
Mailing list:  sonicproject@googlegroups.com
Source code:  https://github.com/Azure/SONiC/blob/gh-pages/sourcecode.md
Wiki:  https://github.com/Azure/SONiC/wiki/
Thank you!