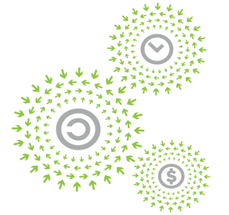
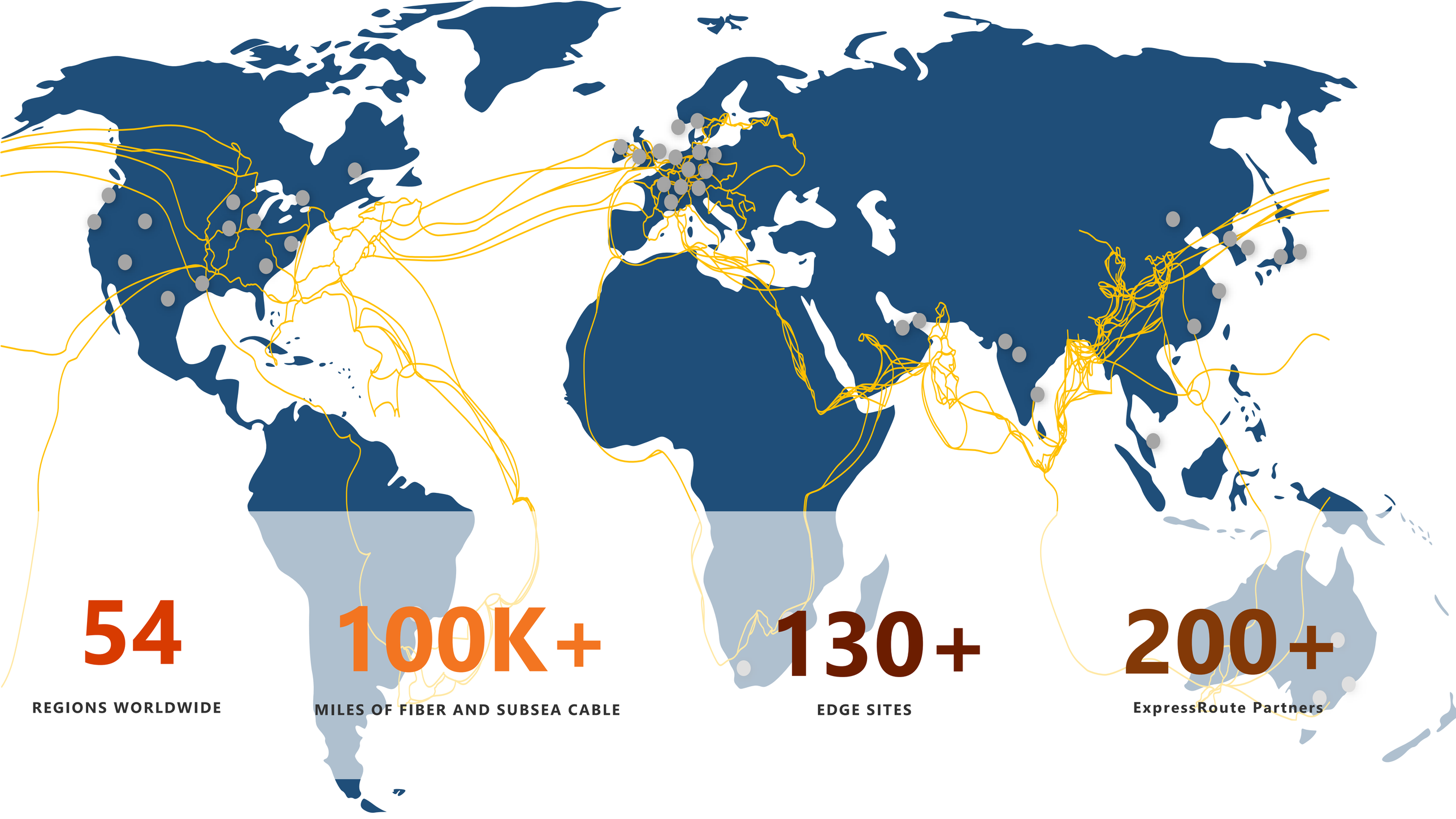
SONiC - Innovating the Cloud Network

Xin Liu
Principal Product Manager
Microsoft Azure Networking




54
REGIONS WORLDWIDE
100K+
MILES OF FIBER AND SUBSEA CABLE
130+
EDGE SITES
200+
ExpressRoute Partners

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

CAVIUM
BROADCOM
cisco
Mellanox TECHNOLOGIES
MARVELL
centec networks
BAREFOOT NETWORKS
Innovium
Nephos

SONiC Software for Open Networking in the Cloud

configuration and management tools

Jenkins ANSIBLE kubernetes docker SWARM puppet CHEF 1ST party

New | More apps | SNMP | BGP | DHCP | IPv6 | New

SONiC

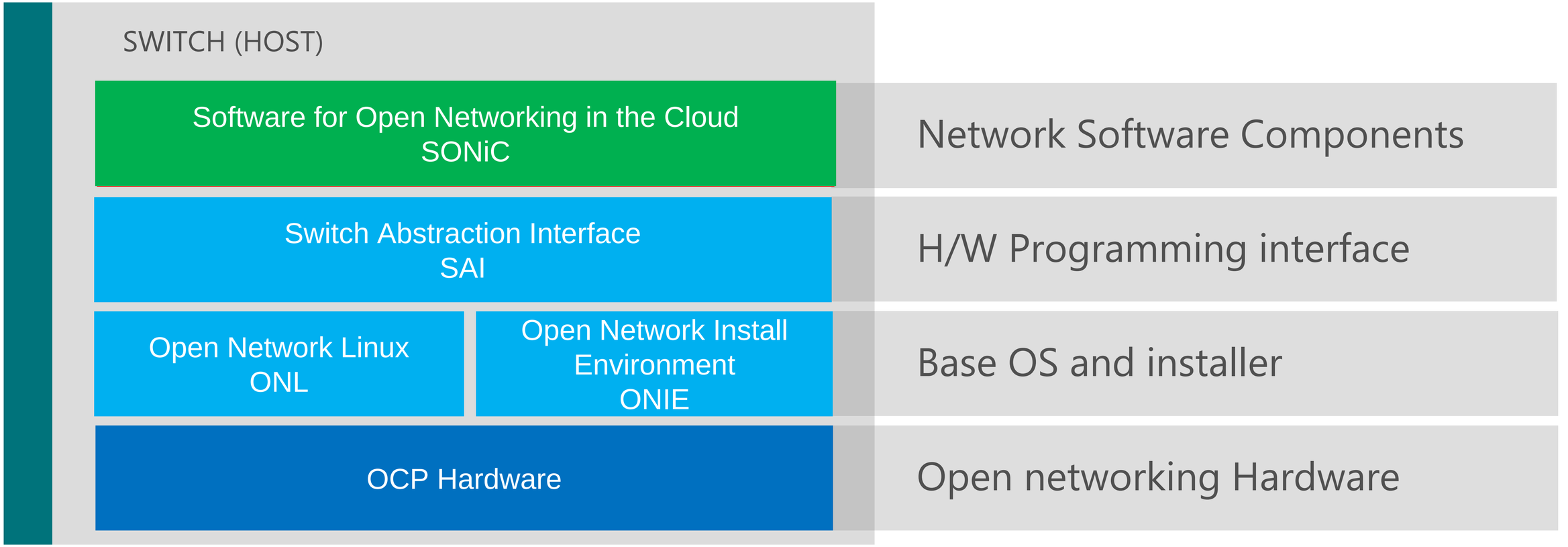
Database | Platform | SWSS | Utility

TeamD | LLDP | RedisDB | SYNCD

Linux

Switch Abstraction Interface (SAI)

OCP Network Stack Enriched by SONiC



- Linux
- Basic L2/L3
- Containerized
- Redis DB

- 40G
- 5 platforms

- ASIC

BRCM: Trident 2
MLNX: Spectrum
Cavium: Xpliant
Centec: Goldengate

- RDMA/QoS
- IPv6
- Mgmt. via Swarm
- Fast Reboot(<30s)

- 100G
- 16 platforms

- ASIC

BRCM: Tomahawk/ Tomahawk2
Marvell: Prestera
Barefoot: Tofino

- Streaming Telemetry
- Config DB
- Support Virtualization
- Warm Reboot (<1s)

- ARM based & Lower end
- 31 platforms

- ASIC

Nephos: Taurus
BRCM: TD2/TH3, Helix4
Cisco: Lacrosse

- Richer Features
- Advanced Mgmt
- Stringent Tests
- Development Tools

- Chassis Support
- 69 platforms

- ASIC

BRCM: DNX
Innovium: Teralynx
Marvell: Falcon
MLNX: Spectrum II

3
releases/year

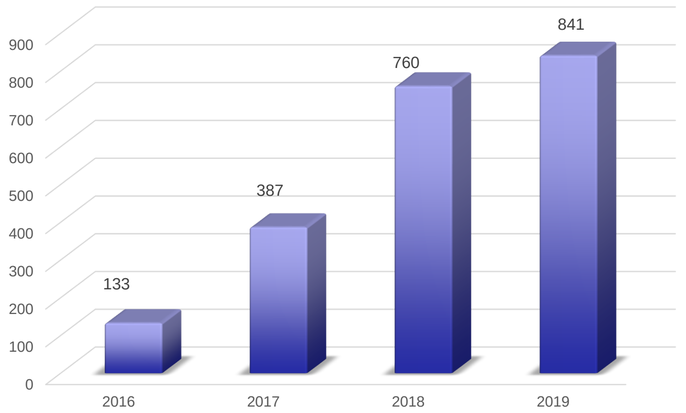
120~250
commits/month

841
community members

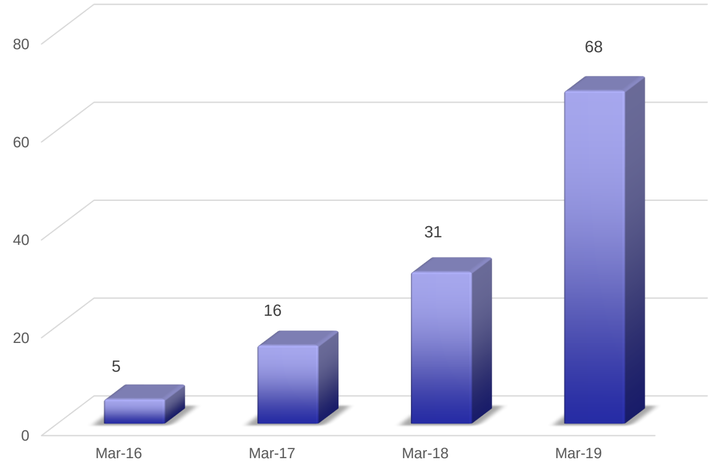
202
active code contributors

68
supported platform

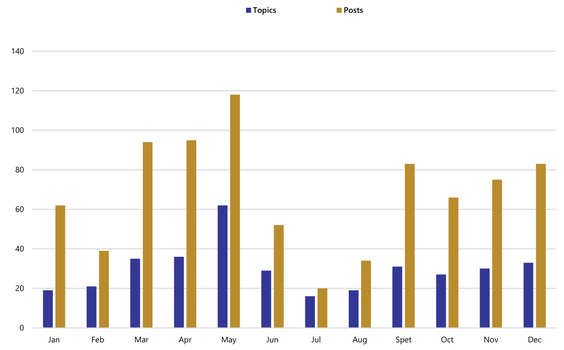
Community members



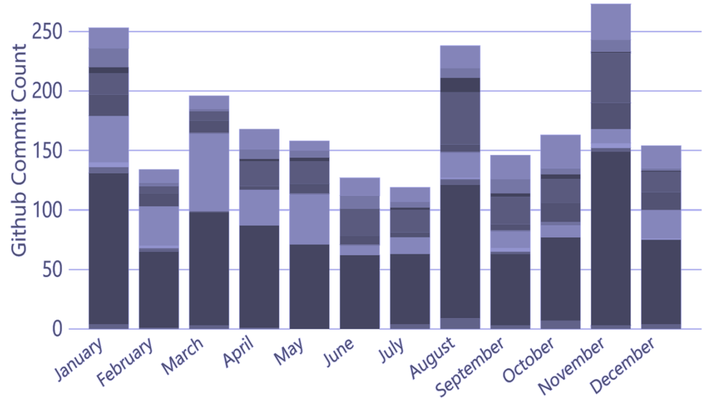
Supported platforms



Active Community posts



Commits/Month



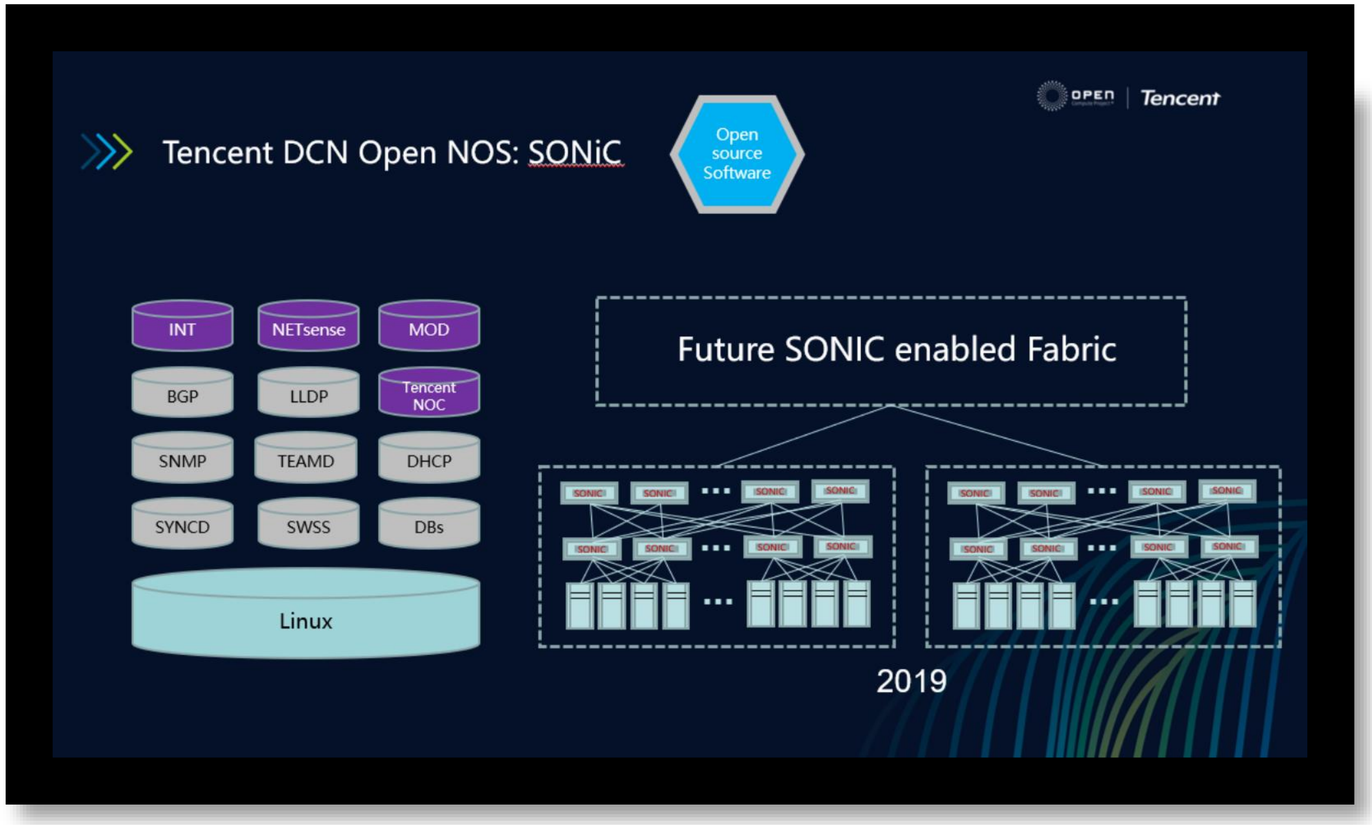
ARISTA
BAREFOOT NETWORKS
BROADCOM
Alibaba Group
apstra
docker
centec networks
Celestica
CANONICAL
CISCO
Mellanox TECHNOLOGIES
DELL
恒为科技 EmbedWay
DELTA
PEGATRON 和碩聯合科技
Tencent 腾讯
metaswitch
Edge-corE NETWORKS
ufiSpace
MARVELL
Inventec
Microsoft
CAVIUM
Nephos
Quanta Computer
WNC Wistron NeWeb Corp.
Innovium

Newly Joined Since Last Year

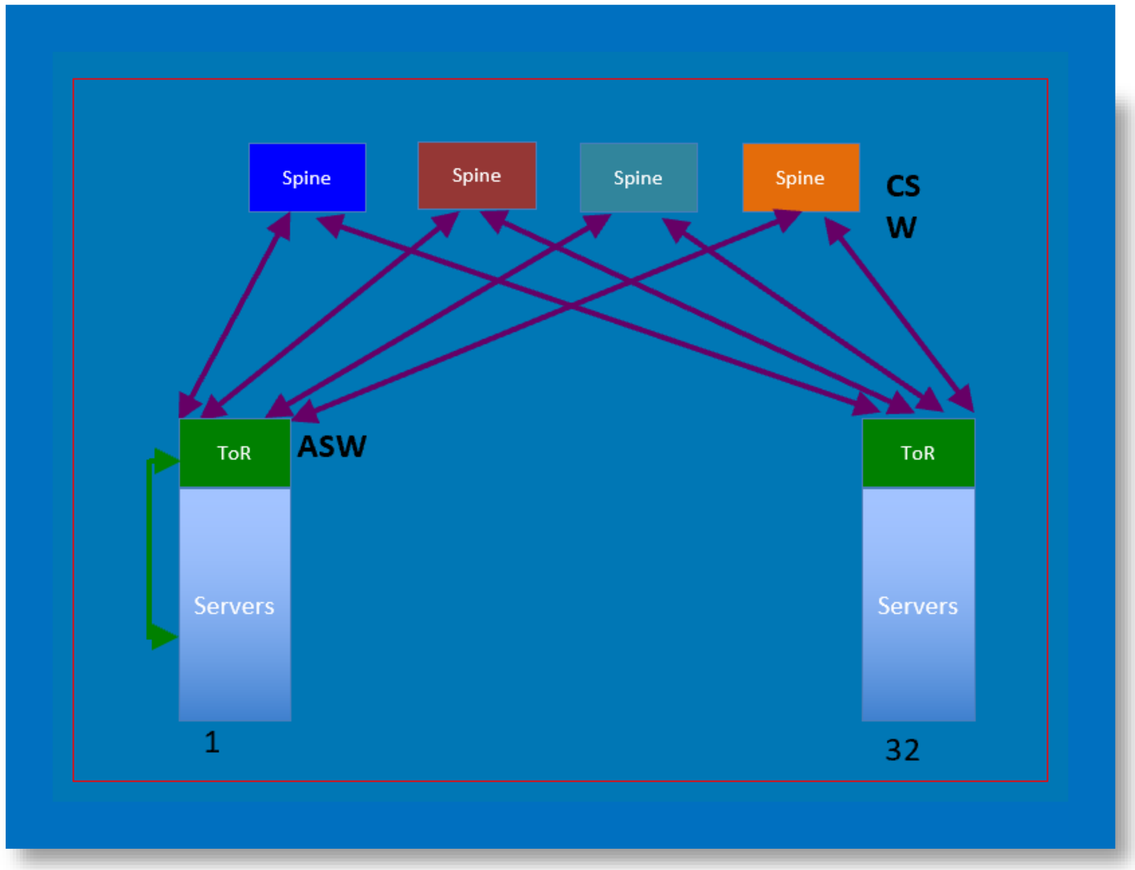
Tencent 腾讯

- 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



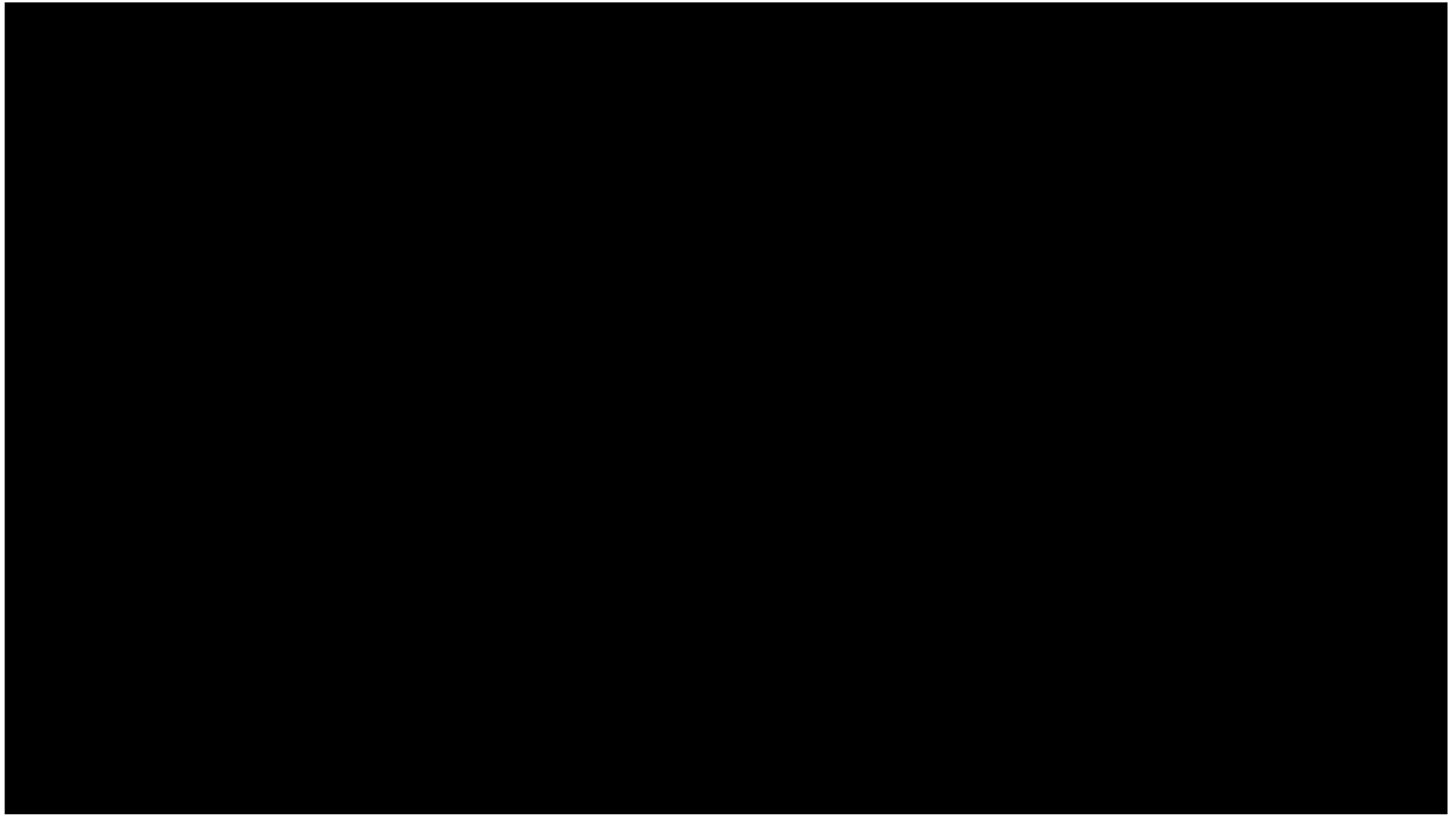
Microsoft

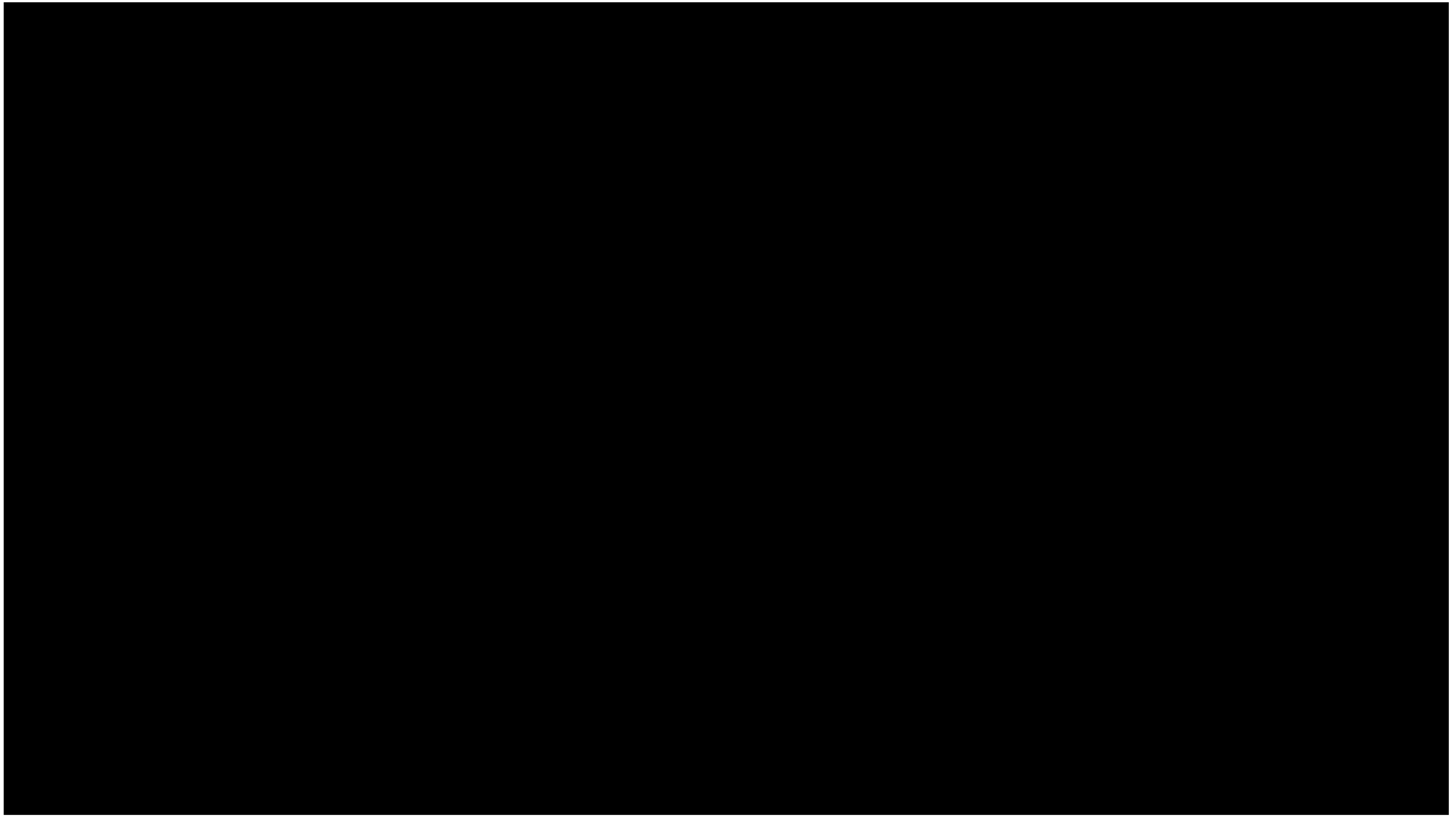
Building block for fast evolution, high reliability, operation cost reduction

- 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!