SONiC Workshop

Joint host: ODCC Phoenix Project & OCP SONiC Project

Beijing, China, 10/19/2018

Today's Agenda

Slot	Agenda	Speaker
09:00 ~ 09:30 am	Registration, Opening	Alibaba/Zhihua Yang
09:30 ~ 09:45 am	SONiC Introduction and Roadmap	Microsoft/Xin Liu
09:45 ~ 10:30 am	SONiC 数据中心网络部署实践	Alibaba/Yongfeng Liu
10:30 ~ 10:45 am	Break	
10:45 ~ 11: 15 am	Taking SONiC Beyond BGP with Mellanox Spectrum	Mellanox/Dror Goldenberg
11:15 ~ 11:45 am	SONiC 命令行扩展与应用	Alibaba/Yongcan Wang
11:45 ~ 01:00 am	Lunch break	
01:00 ~ 01:40 pm	SONiC Architect & Platform Management Service	Microsoft/Ying Xie
01:40 ~ 02:10 pm	SONiC Powered by Programmable Data plane	Barefoot/Glow Yang
02:10 ~ 02:30 pm	Q & A	

Why SONiC
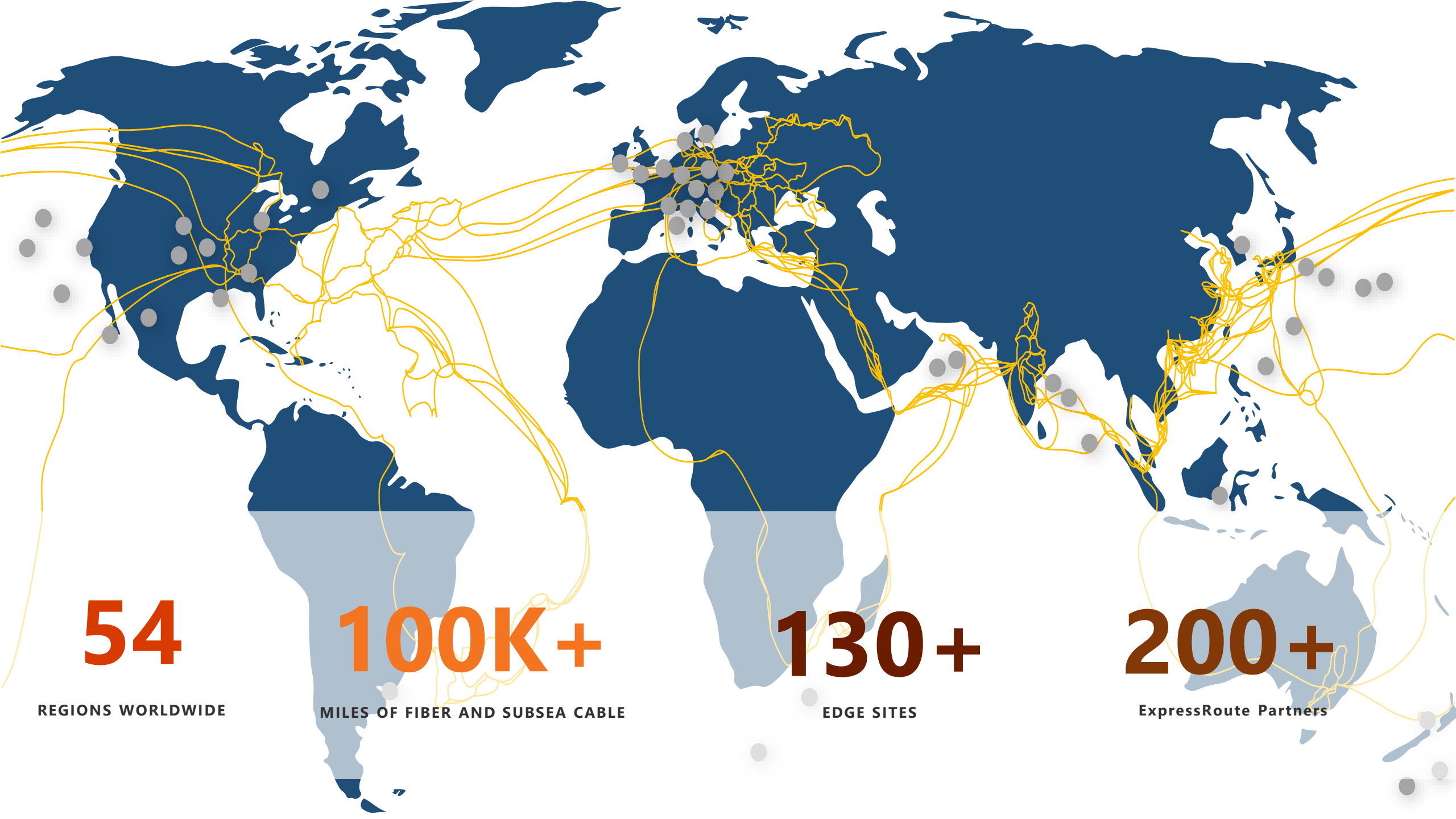
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REGIONS WORLDWIDE

100K+
MILES OF FIBER AND SUBSEA CABLE

130+
EDGE SITES

200+
ExpressRoute Partners

A Solution to Unblock Hardware Innovation

Control the Network via Software You Control

Velocity is essential for cloud

- Development: feature agility weekly
- Livesite: bug mitigation hourly
- Security: patch as soon as possible

Serviceability

- 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

What is SONiC

SONiC Recap – Platform Agnostic NOS

SONiC Recap – Containerized NOS
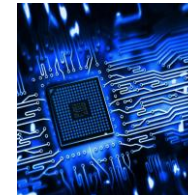
Momentum Timeline

2014
- SAI started (Dell, Mellanox, Microsoft, Broadcom, Facebook, Intel)
- 1st proposal

2015
- SAI open sourced to OCP
- SONiC V1 Demo

2016
- SONiC V2 containerized design available
- SONiC Open sourced to OCP

2017
- More contributors join SAI + SONiC community
- Public release in cadence

2018
- Rapid ecosystem growth
- Richer classes of devices, roles, and scenarios
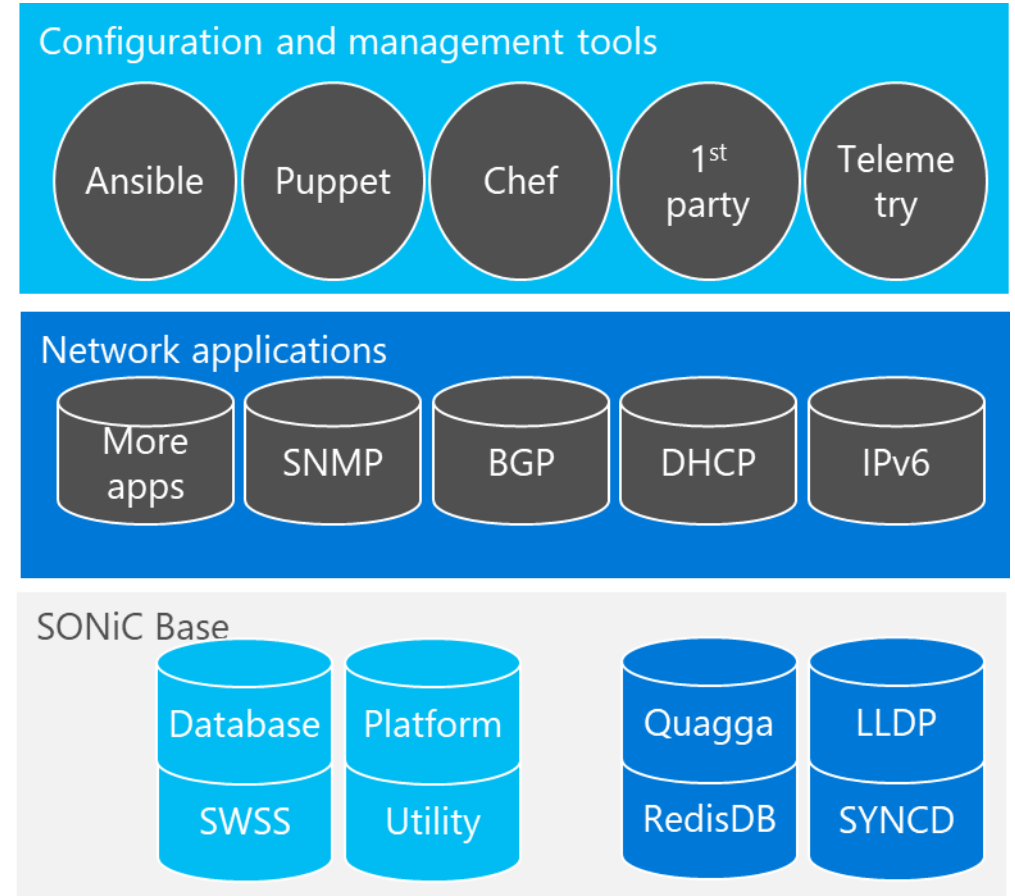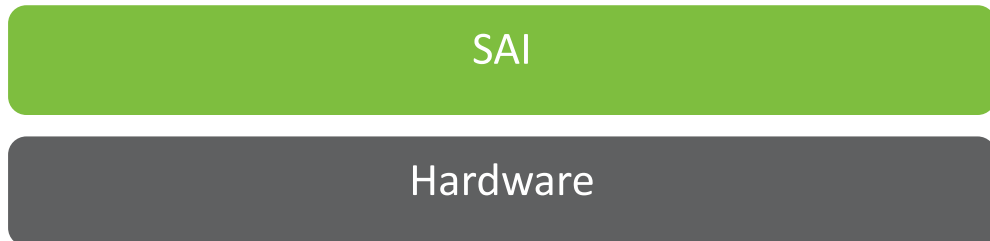
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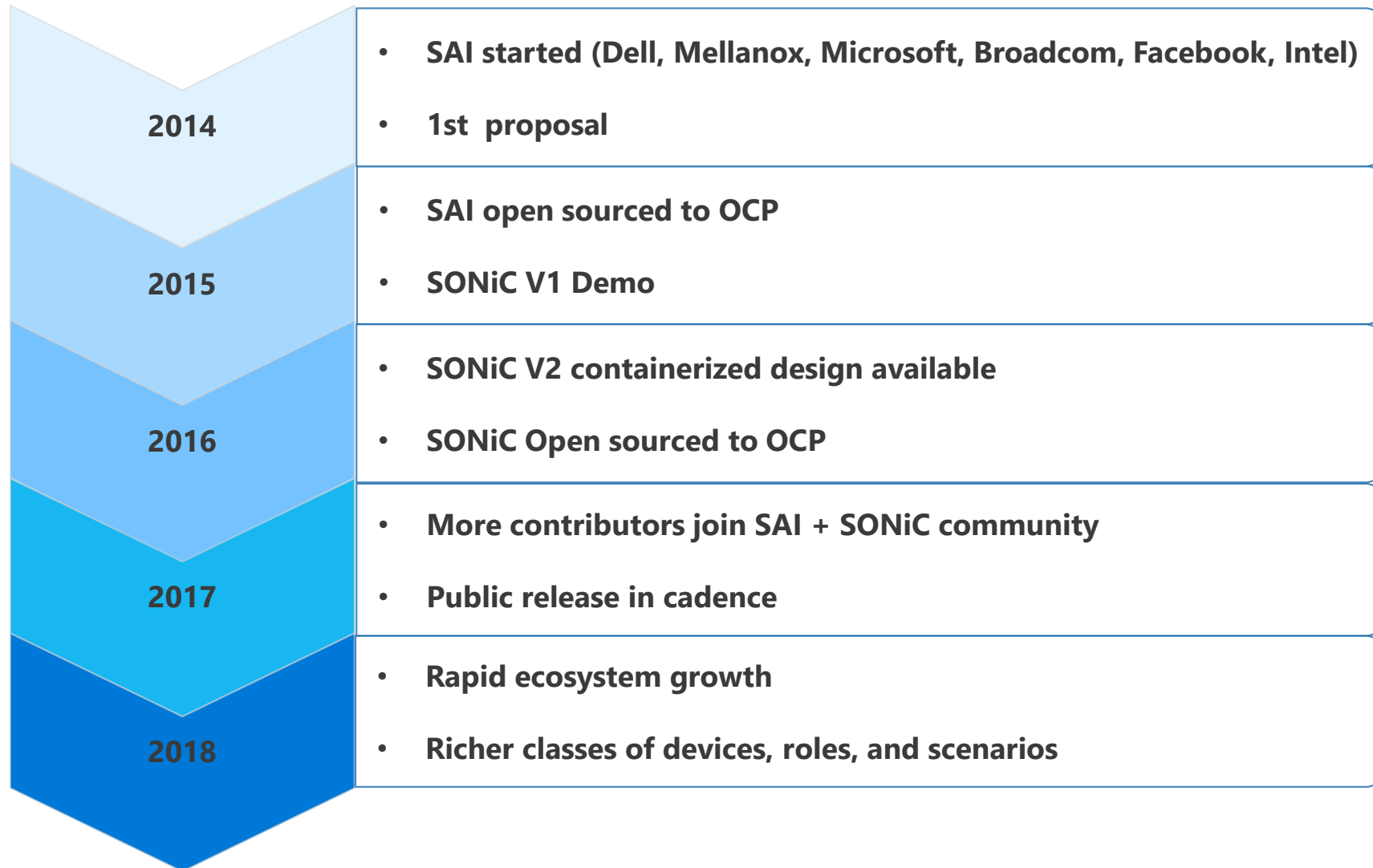
Application & Management tools

SONiC [Software For Open Networking in the Cloud]

SAI [Switch Abstraction Interface]

Switch

Silicon/ASIC

SONiC: In a Nutshell

- Native Linux kernel
- Leverage Unix networking stack

Native Linux

- Quick feature release and bug fix
- Hitless upgrade without customer impact

Containerized

Switch OS

- On GitHub with Apache license
- Build on top of SAI

Open Sourced

Rich Ecosystem

- Platform/ASIC Agnostic
- Many community packages: Quagga, RedisDB, Teamd
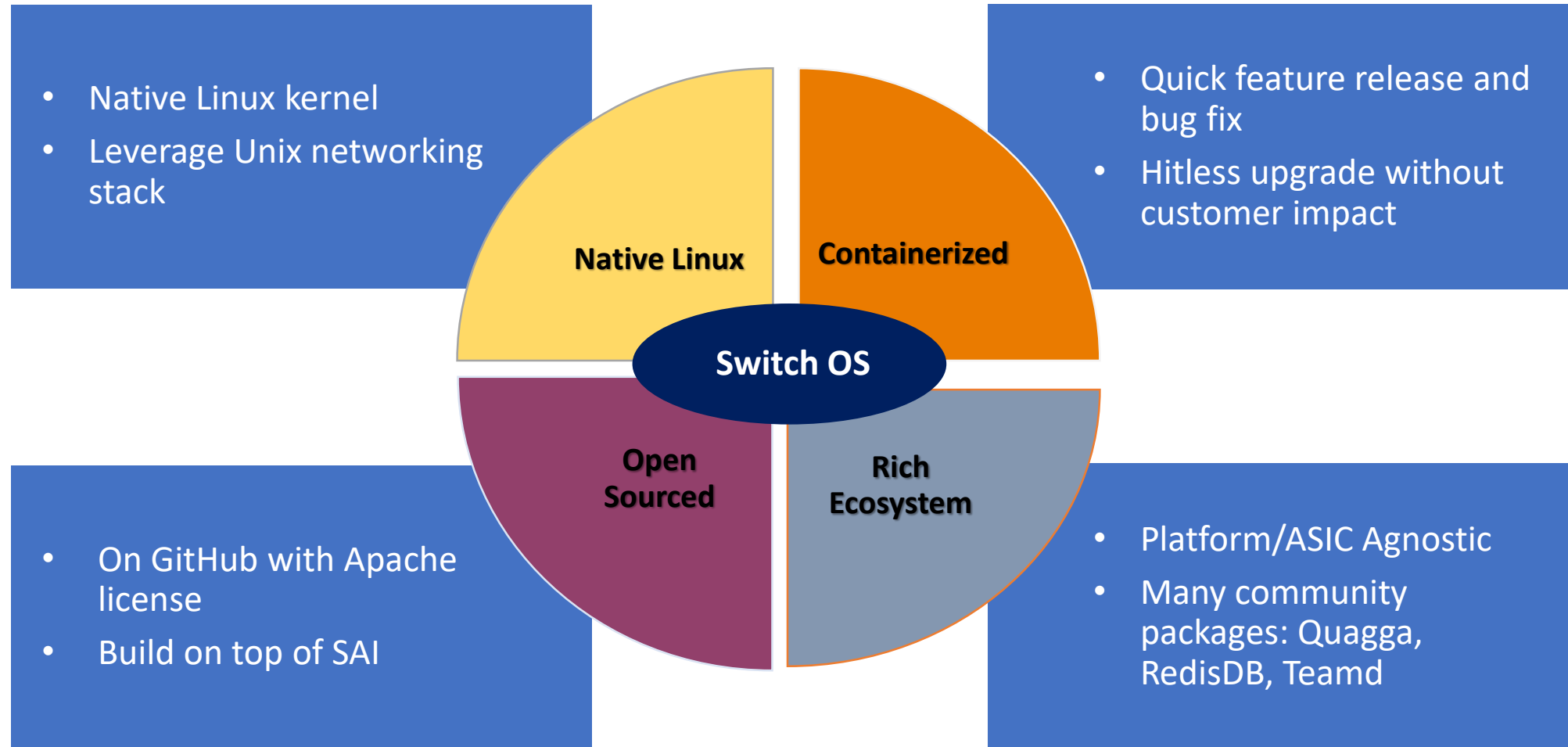
What is in SONiC

L2/L3
BGP · ECMP · LAG · ACL
LLDP · DHCP · VLAN · CoPP
IPv6 · VLAN Trunk · FRR

Monitoring
SNMP · Syslog · EverFlow · OOM
TCPDump · Critical Resource Monitor
Dtel · Streaming Telemetry

Virtualization
Vxlan
VRF

QoS
RDMA · ECN · PFC WD
WRED · Watermark · Asymmetric PFC

System
NTP · ONIE Install · CLI
TACACS+ · AD · Debian 9
ConfigDB

Reliability
Fast Reboot · Warm Reboot
BGP Graceful Restart

https://github.com/Azure/SONiC/wiki/Sonic-Roadmap-Planning

Driving Force for Evolution

- ## Innovations from operating large-scale cloud network
  - Everflow (201709 release)
  - CRM (201803 release)
  - Streaming telemetry (201807)

Network faults are unavoidable and diverse
    Packet drop, latency spike, low throughput, load imbalance, loop…

Existing tools insufficient
   Device counters, ping, traceroute…

Everflow: Packet-level telemetry offers unprecedented detailed view of the network

Streaming Telemetry on SONiC

- Implementation built upon gNMI (gRPC Network Management Interface) with customization for SONiC

- Support services
  - Get
    - Pull model
    - Used to retrieve snapshots of the data on the target by the client
  - Subscribe
    - Push model
   - Used to control subscriptions to data on the target by the client

Driving Force for Evolution

- Innovations from operating large-scale cloud network

- Higher and higher bar of quality and reliability
  - Fast reboot (201712 release)
  - Warm reboot (201810 release)
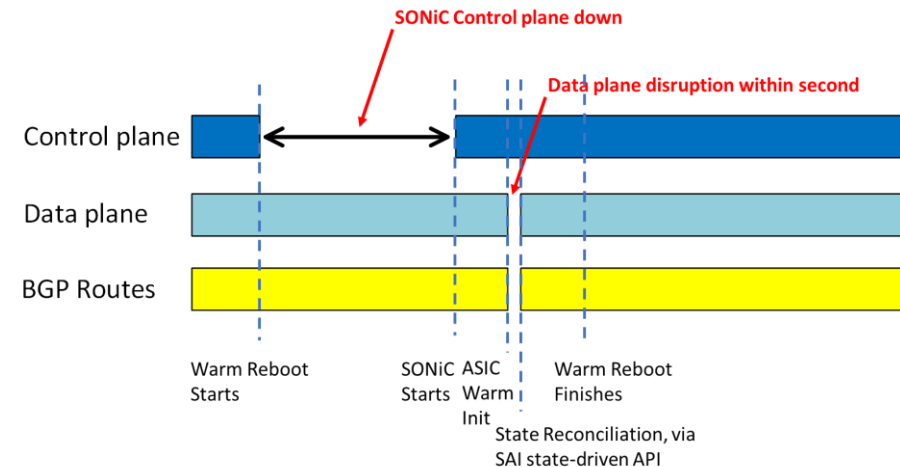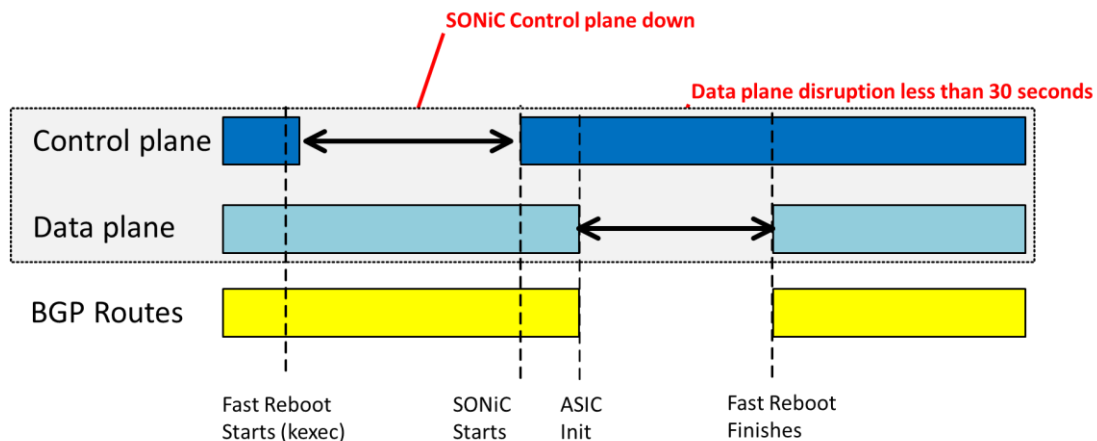
Driving Force for Evolution

- Innovations from operating large-scale cloud network

- Higher and higher bar of quality and reliability

- **Non-stopping emerging new scenarios**
  - VxLan/VRF (201810 release)
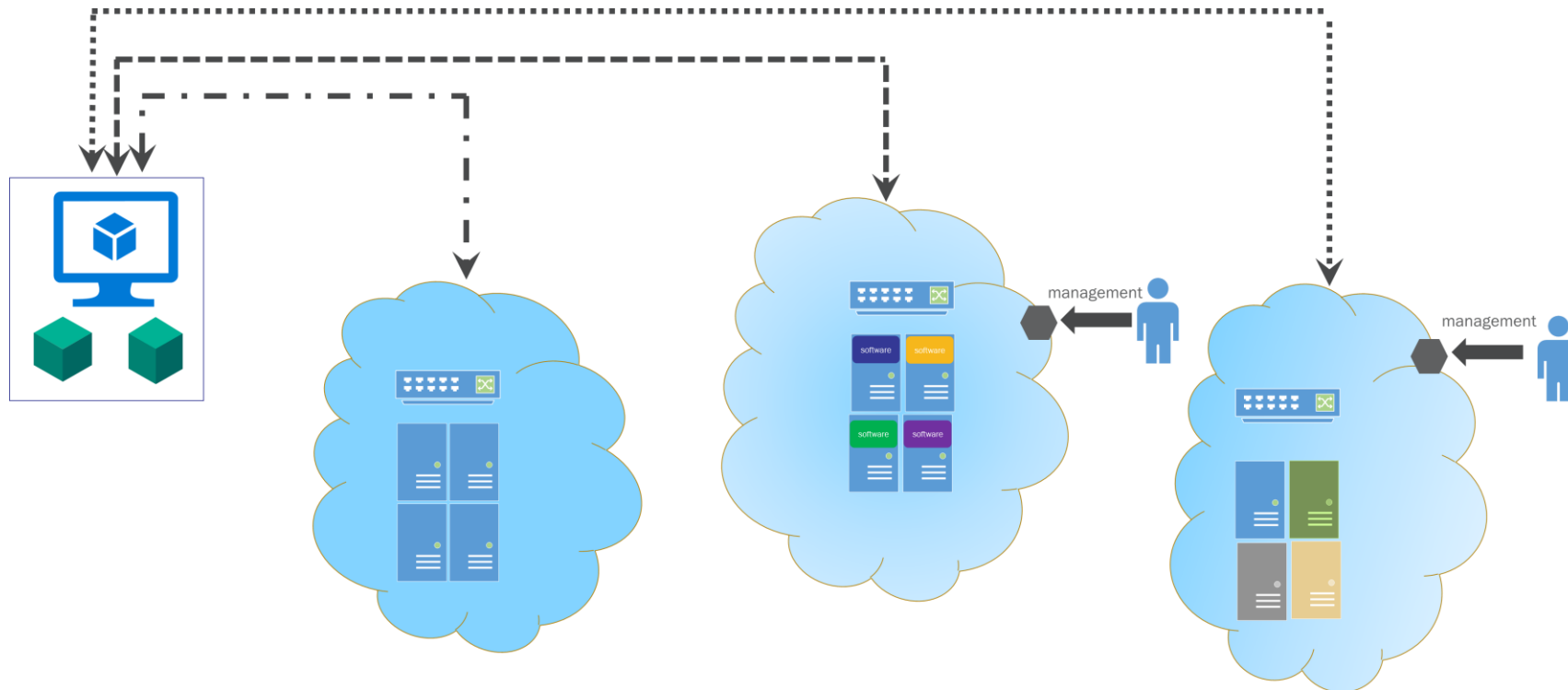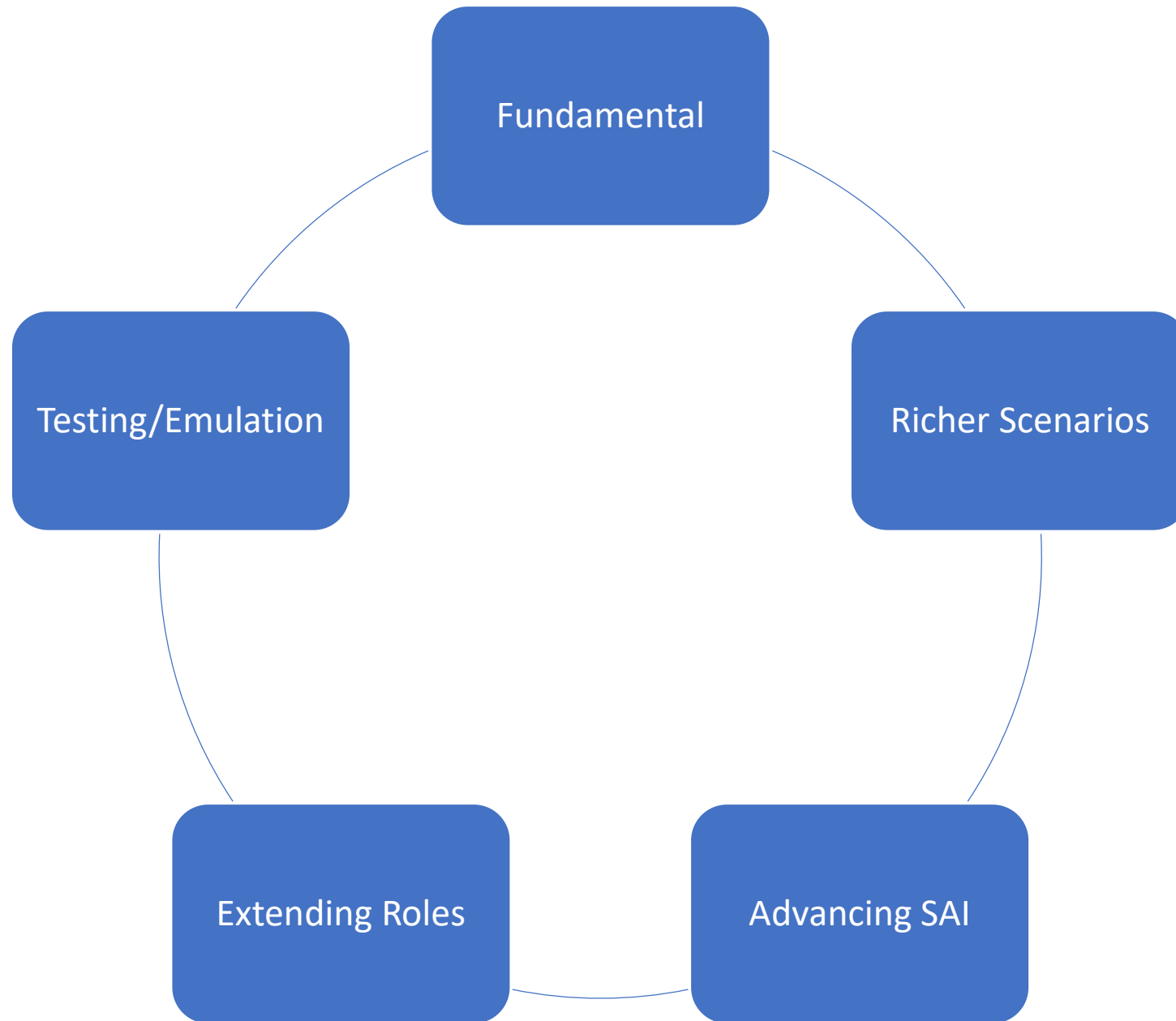
Open Invitation

Inviting contributions in all areas

- SONiC/SAI
- Hardware platform
- New features, applications and tools
- Download it, test it and use it!

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/

Bi-weekly meeting Tuesday 8am ~ 9am PST

Back up

Community Activities

- Community Meeting
  - Calendar: https://www.opencompute.org/projects/networking
  - Time: Bi-weekly Tuesday 8am ~ 9am PST
  - Recording posted at Youtube (https://www.opencompute.org/wiki/Networking/SONiC)

- Mailing List
  - sonicproject@googlegroups.com

- Issue Tracking
  - https://github.com/Azure/SONiC/issues

- Slack Discussion Group
  - sonicswitch.slack.com

- Open Invitation

How Does a Release Work?

Backlog Pool or New User Scenario → Contributor Commitment → Community Design Review → Community Test plan Review

↓

Branch locked except bug fix & platform ← Release Branch Out ← Merge Code to Master/Test ← PR for Code Review