



OPEN
Compute Project



OCP U.S. SUMMIT 2017

Santa Clara, CA



SONiC: Enabling Fast Evolution in the Network

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OPEN HARDWARE.

OPEN SOFTWARE.

OPEN FUTURE.



Rapid Growing SONiC Ecosystem

Application,
management,
tools

Monitoring, Management, Deployment Tools, Cutting Edge SDN



metaswitch

ARISTA



CANONICAL



docker

Switch Platform

SONiC

ARISTA

Edge-core
NETWORKS

ingrasys



Merchant
Silicon

Switch Abstraction Interface (SAI)



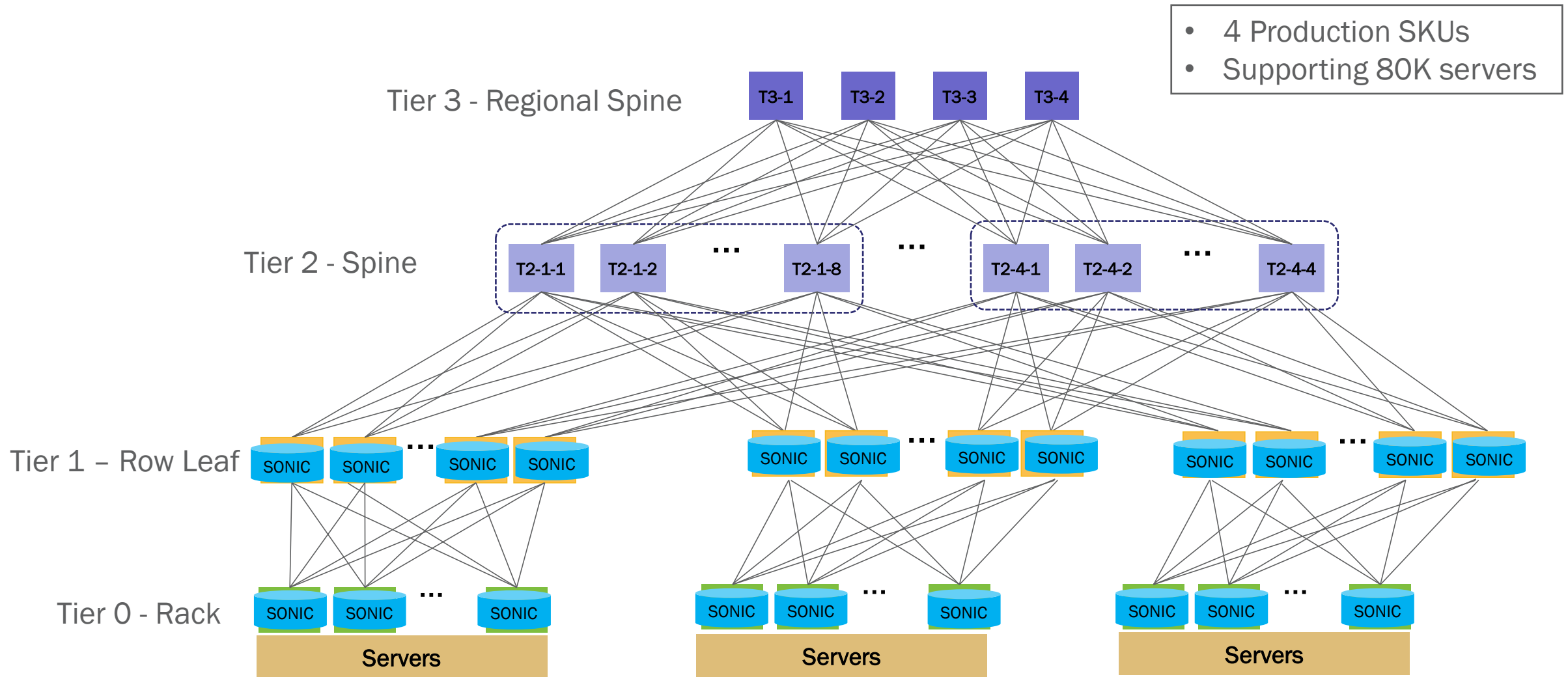
BAREFOOT
NETWORKS



Microsoft Cloud Network - 15 Billion Dollar Bet



SONiC Is Powering Microsoft Cloud At Scale



Feature Velocity Essential for Cloud

Cloud-scale creates the following requirements on switch firmware:

- Disaggregate firmware features
 - Minimize the baggage – switch firmware loaded with only features needed
 - Operators can select the best building blocks for the job
- Hitless upgrade so updates don't cause customer impact
 - Fix bugs or apply security patches in hours
 - Rollout features in days
- Development environment
 - Realistic emulation environment

SONiC – Containerized

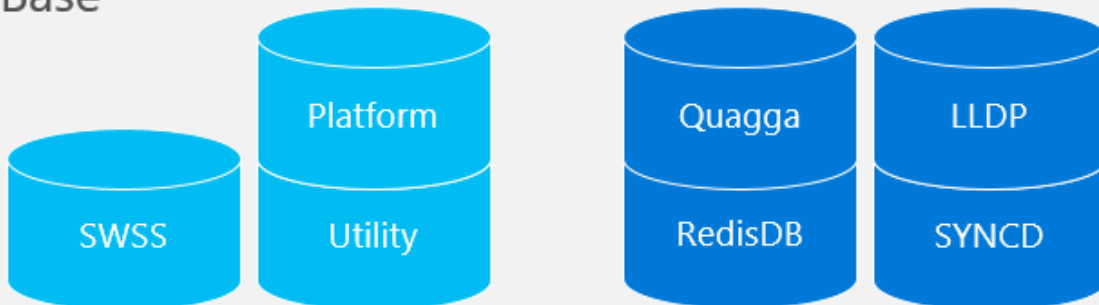
Configuration and management tools



Network applications



SONiC Base



Open Compute
Project (OCP)
software
components

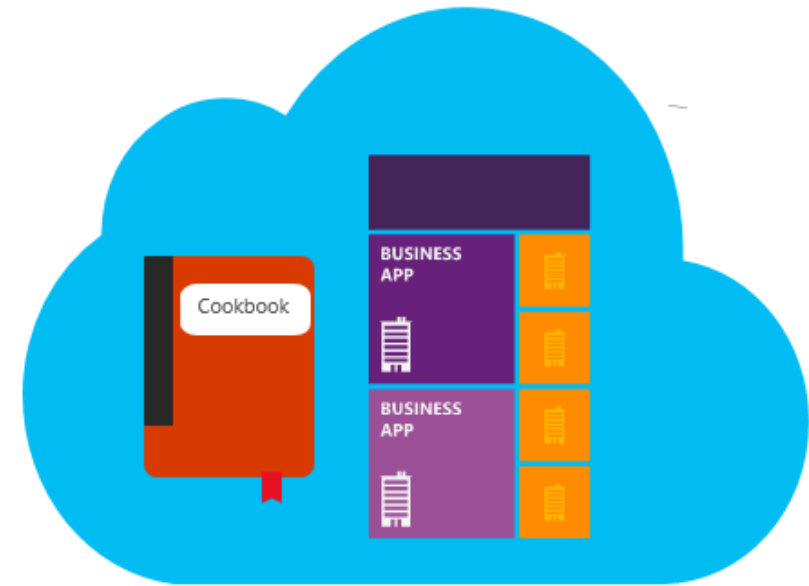


Third party
software
components



Bring your own
custom
software
components

010101
101010
010101



SONiC Containerization

Container Strength

- Clean isolation
- Easy deployment
- Transactional
- Run universal

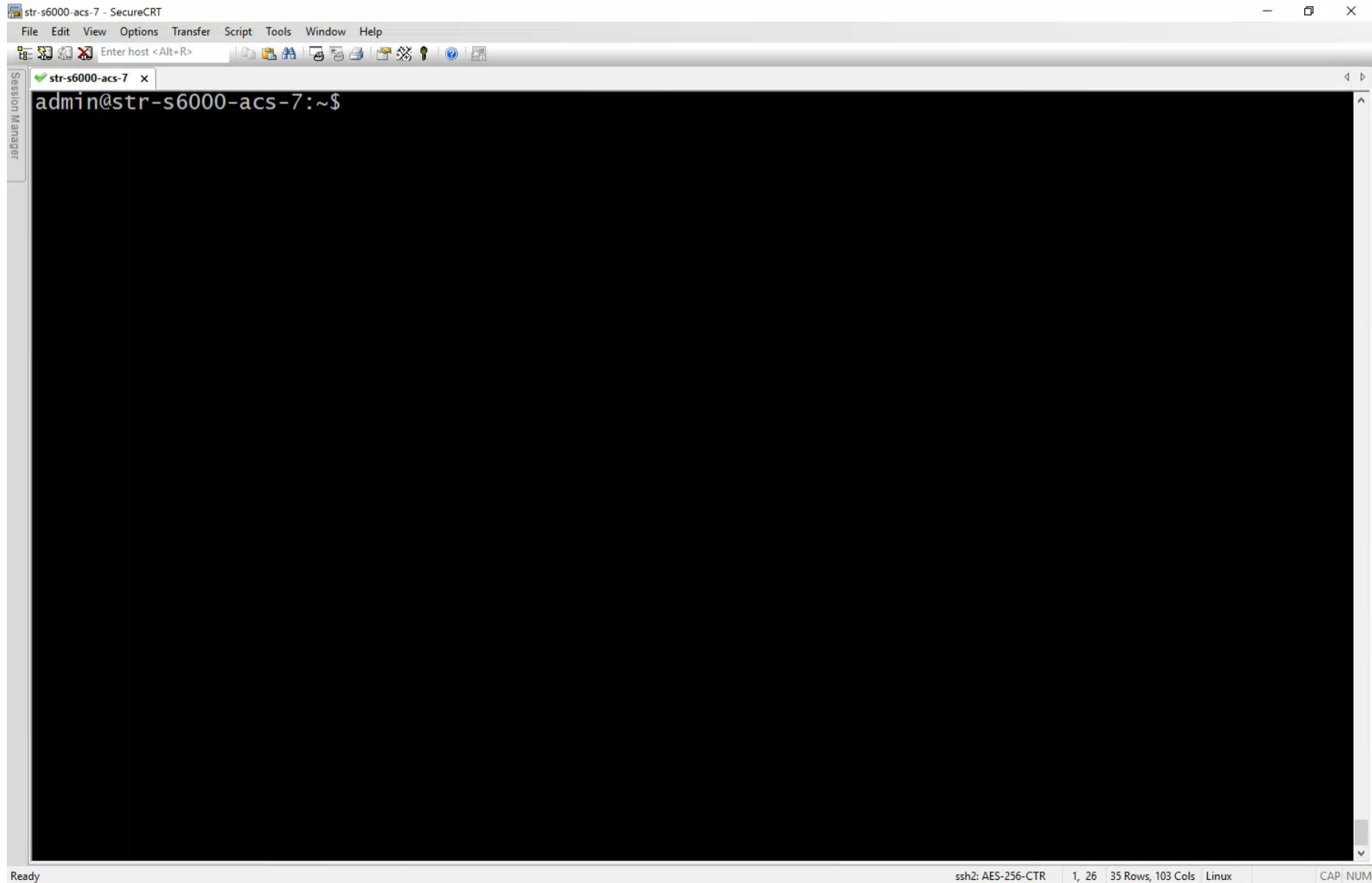


SONiC Benefits

- Serviceability
- Extensibility
- Development agility
- Cross-platform

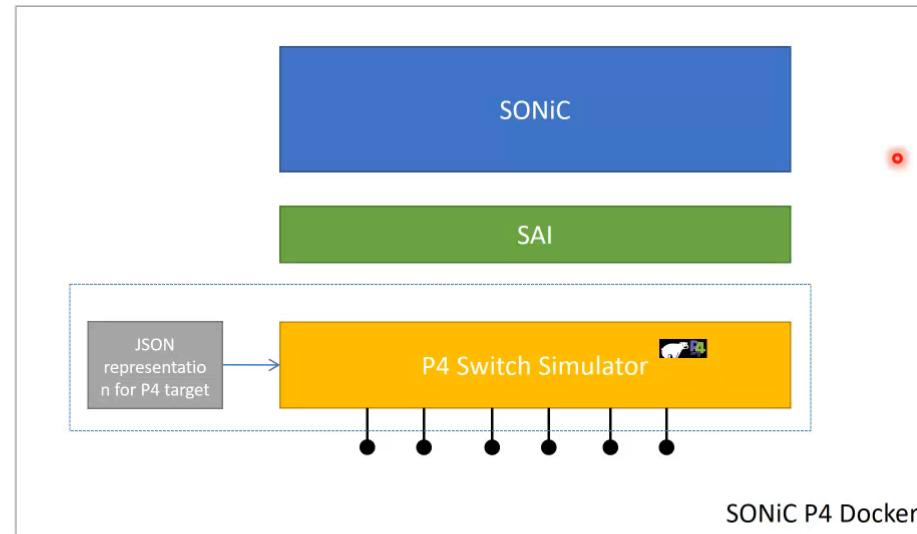
What Would Containerized SONiC Enable?

SONiC Containers – Peek into Arista cEOS



SONiC-P4 Software Switch

SONiC P4 Software Switch Docker

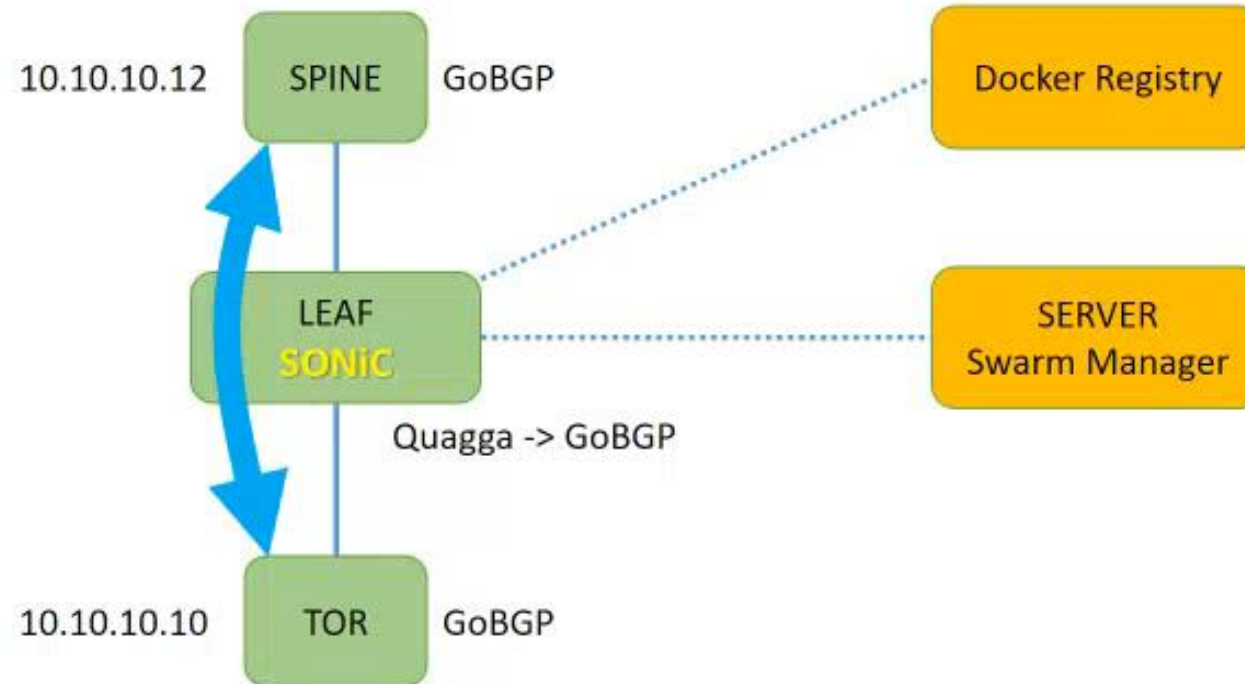


SONiC Container Orchestration with Swarm



- Joint work with Docker
- Manage a cluster of SONiC switches with Swarm.
- Simple architecture with very few components
- Easy to use – single command to create cluster
- Declarative service model
- Powerful rolling update and rollback

Hitless BGP Upgrade Through Docker Swarm



More Demos in Microsoft Booth

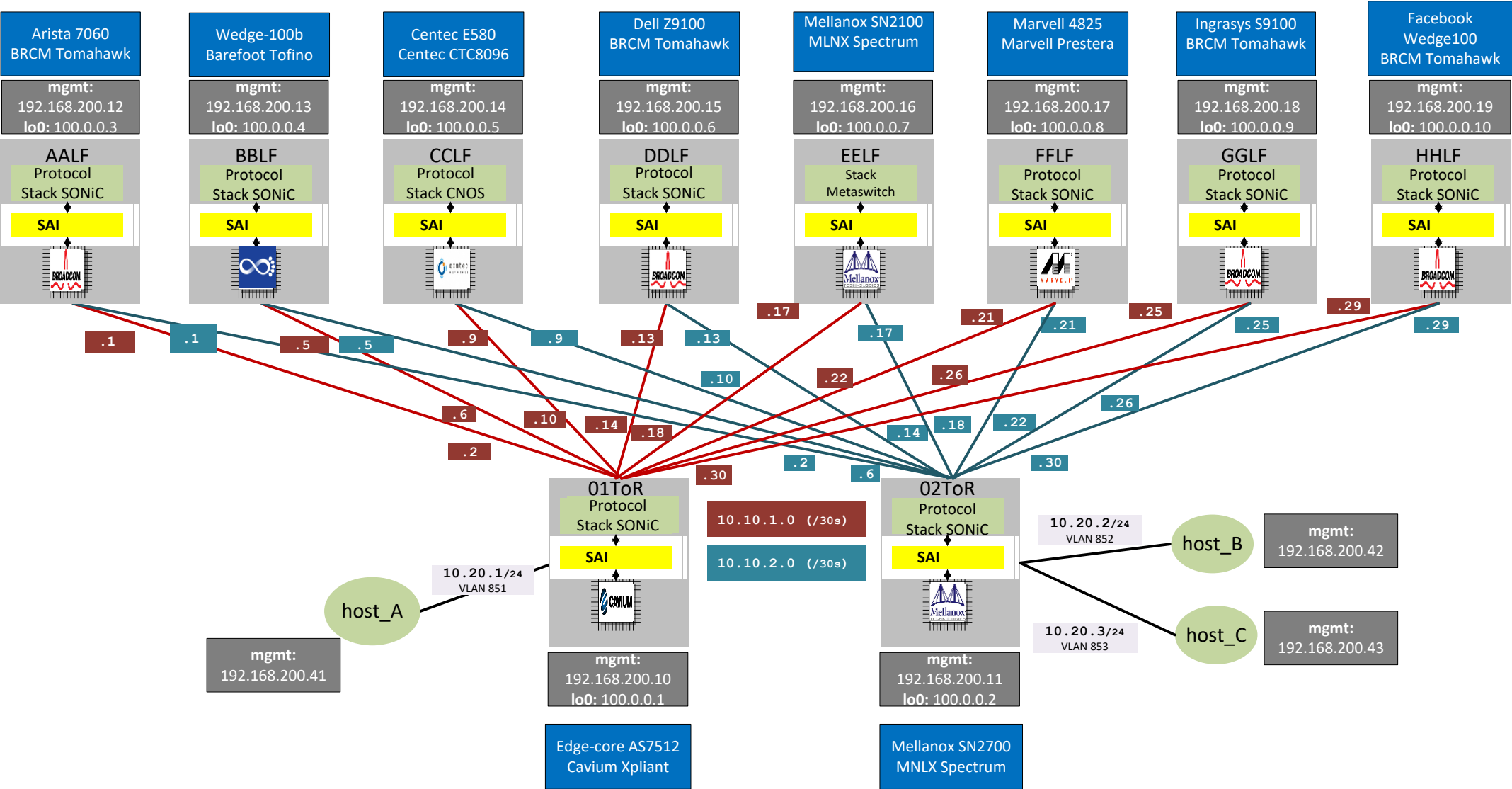
100G !

RDMA

Swarm

Container

Wedge



Open Invitation

- Inviting contributions in all areas
 - SAI
 - Hardware platform
 - New features, applications and tools
 - Download 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/>

Supported Devices and Platforms

iguohan edited this page 18 hours ago · 19 revisions

Following is the list of platforms that support SONiC. Last updated Feb 2017.

Switch Vendor	Switch SKU	ASIC Vendor	Switch ASIC	Port Configuration	SONiC Image
Arista	7050QX-32	Broadcom	Trident2	32x40G	SONiC-Abot-Broadcom ²
Arista	7050QX-32S	Broadcom	Trident2	32x40G	SONiC-Abot-Broadcom
Arista	7060CX-32S	Broadcom	Tomahawk	32x100G	SONiC-Abot-Broadcom
Barefoot	Wedge 100BF-65X	Barefoot	Tofino-T10-064Q	65x100G	
Barefoot	Wedge 100BF-32X	Barefoot	Tofino-T10-032D	32x100G	
Barefoot	SONiC-P4	Barefoot	P4 Emulated	Configurable	SONiC-P4
Centec	E582-48x6q	Centec	Goldengate	6x40G + 48x10G	SONiC-ONIE-Centec
Dell	S6000-ON ³	Broadcom	Trident2	32x40G	SONiC-ONIE-Broadcom
Dell	S6100-ON ³	Broadcom	Tomahawk	64x40G ¹	SONiC-ONIE-Broadcom
Dell	Z9100-ON ³	Broadcom	Tomahawk	32x100G	SONiC-ONIE-Broadcom
Embedway	E56428A-X48Q2H4	Centec	Goldengate	4x100G + 2x40G + 48x10G	SONiC-ONIE-Centec
Ingrasys	S9100-32X	Broadcom	Tomahawk	32x100G	SONiC-ONIE-Broadcom
Edge-core	AS7512-32X	Cavium	XPliant CNX880**	32x100G	SONiC-ONIE-Cavium
Marvell	RD-BC3-4825G6CG-A ⁴	Marvell	Presteria 98CX84xx	6x100G+48x25G	
Marvell	RD-ARM-48XG6CG-A ⁴	Marvell	Presteria 98EX5-4xx	6x100G+48x10G	
Mellanox	SN2700	Mellanox	Spectrum	32x100G	SONiC-ONIE-Mellanox

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- FAQ
- For Users
 - Quick Start
 - Supported Devices and Platforms
 - SONiC P4 Software Switch
 - Configuration and Minigraph
 - Command Reference
- For Developers
 - Architecture
 - Building SONiC
 - Porting Guide
 - Testing Guide
 - Developing Guide
 - Features and Roadmap
- Talks
 - SA/SONiC Talk - OCP 2016

Clone this wiki locally

<https://github.com/Azure/SONiC>

Clone in Desktop



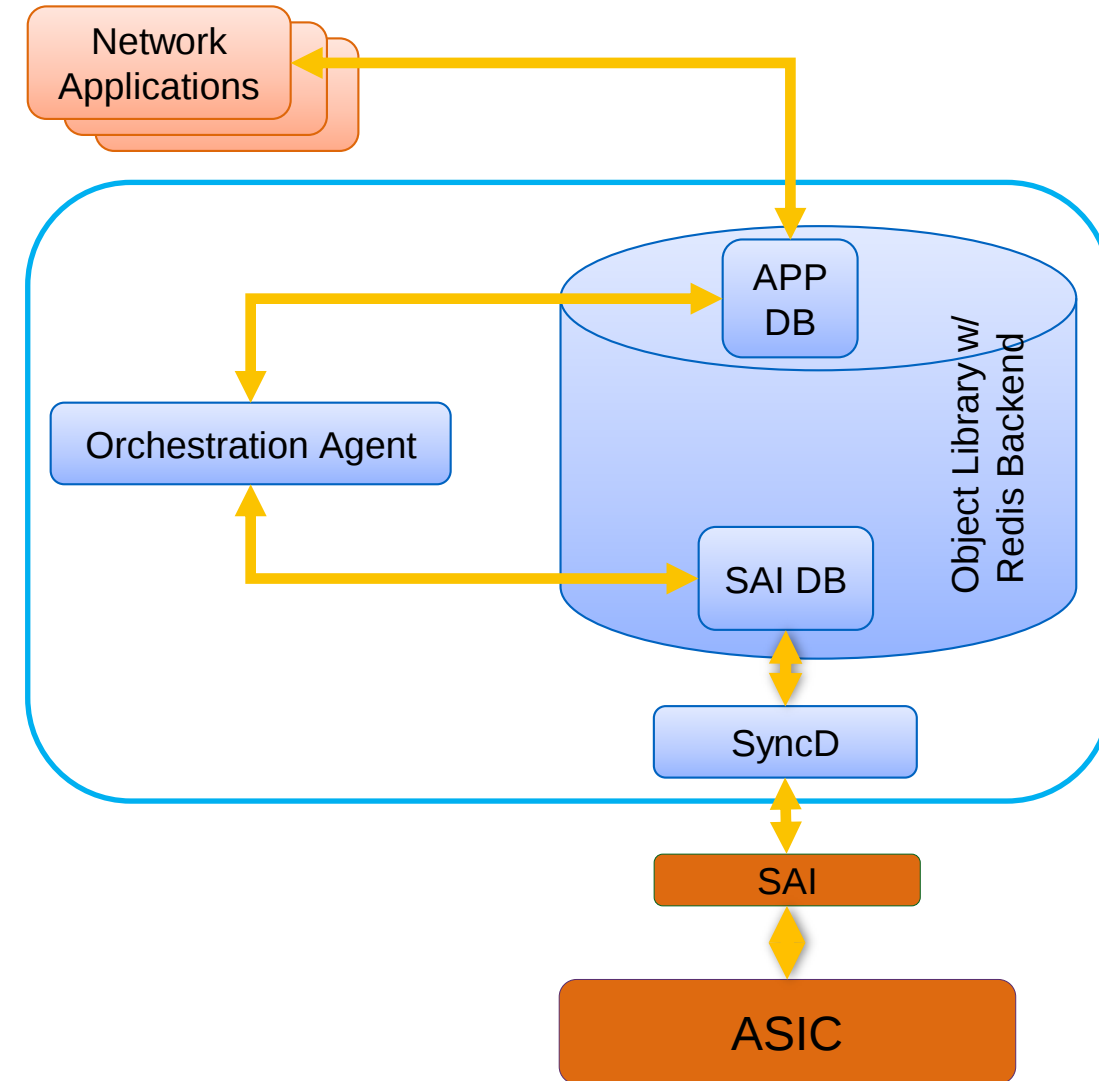
OPEN

Compute Project



SONiC Architecture - Switch State Service (SWSS)

- **SAI DB:** persist SAI objects
- **App DB:** persist App objects
- **DB backend:** redis with object library
- **SyncD:** sync SAI objects between software and hardware
- **Orchestration Agent:** translation between apps and SAI objects, resolution of dependency and conflict
- **Key Goal:**
 - Evolve components independently
 - Enable easy integration of containers
 - Enable large scale debugging



Other Capabilities in SONiC

- Diagnose based on Switch State data
 - Streaming data out from Redis DB for monitoring
- ASIC level diagnostic capability
 - Adding TAM, critical resourcing monitoring, microburst monitoring, INT etc
 - Scenarios driven by cloud scale troubleshooting requirement

Docker Orchestration with Swarm

- Simple
 - Simple architecture. It has very few components running in manager or worker nodes.
 - Easy to use. Create cluster in single command. Almost no need to read manual for Docker users.
- Declarative service model
 - Extend Docker API to cover service, node, secret primitives.
 - Built-in raft store to persist system state.
- Secure by default
 - Built-in CA to support cryptographic node identity and key rotation.
 - Encrypted network communication.
- Powerful
 - Support service rolling update / rollback
 - Built-in routing mesh to implement load balancing
 - Flexible and platform independent. Easy to integrate into existing infrastructure.

