

CISCO *Live!*



#CiscoLive



The bridge to possible

Learn How to Build a Web-scaler Network:

One Silicon, One Architecture, Any Software – Cisco 8000

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BRKSPG-1020



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Agenda

- Define the Problems at Web-Scale
- Architecting a Solution
 - Why Hardware Matters
 - All Things Software
- Why it Matters to Any Large Network

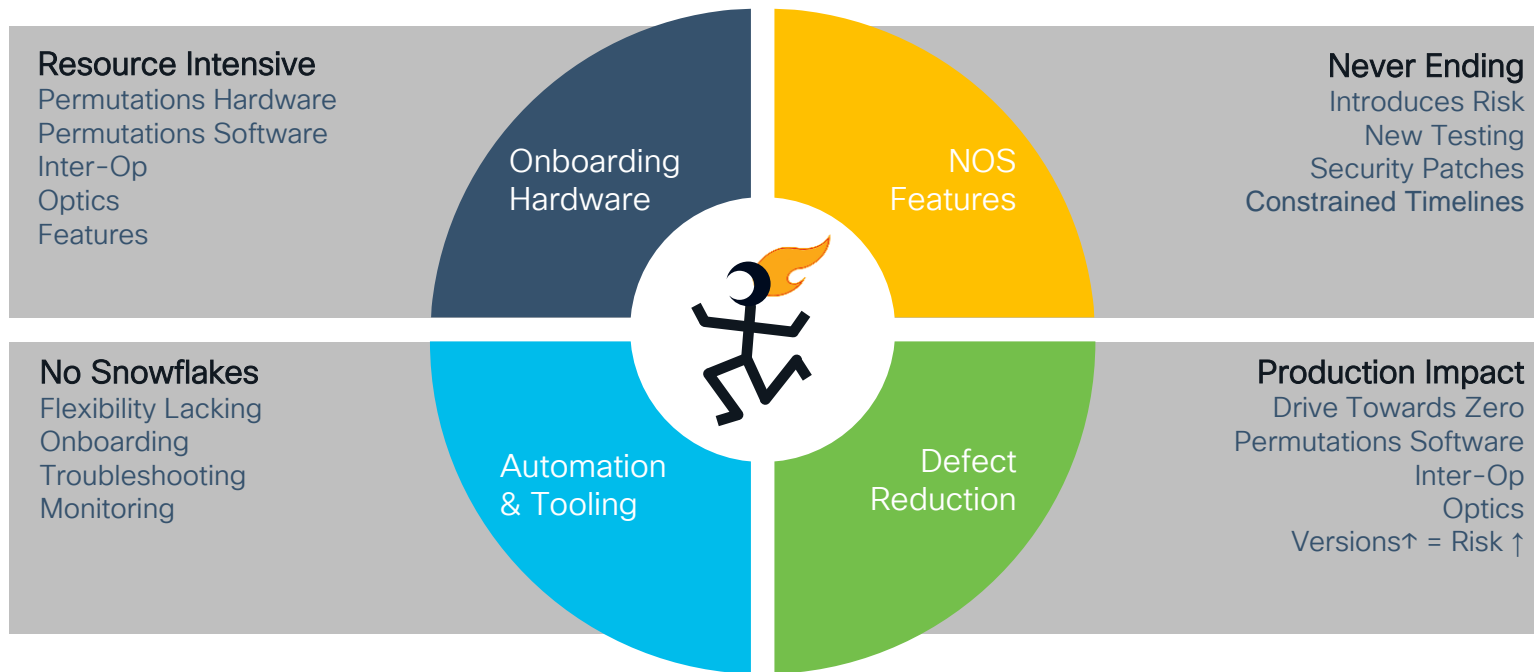
Web-Scaler Networks

Defining the problems Web operators were facing and
Why should you care?



Web-Scale Infrastructure Problems

Just the same as yours, just supersized!





Problem

- Onboard Hardware
- NOS Features
- Defect Reduction
- Automation Tooling



Solution

Cisco Silicon One



- Single Silicon Architecture
- Single Hardware Family (Cisco 8000)
- Single SDK
- Deploy Across Network
- Consistent Features

Operational Value in Hardware:

How Cisco 8000 and Cisco Silicon One deliver operational benefits.

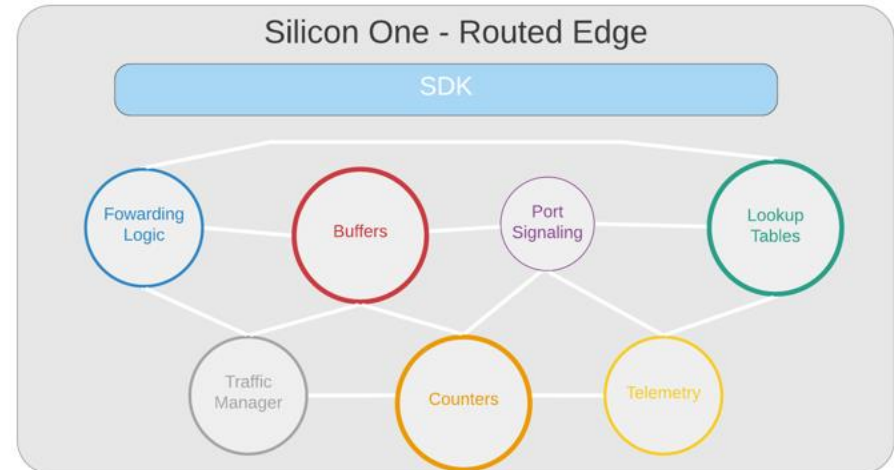
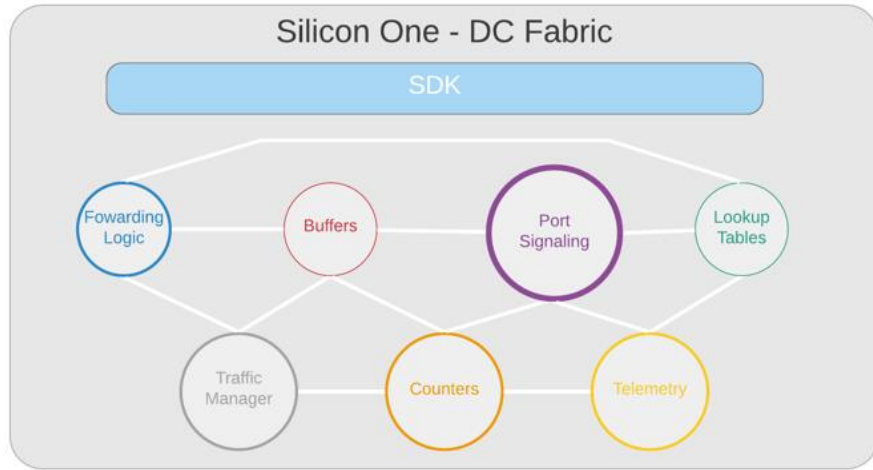


Cisco Silicon One Family

Cisco Silicon One
One Architecture. Multiple Devices. No Compromise.

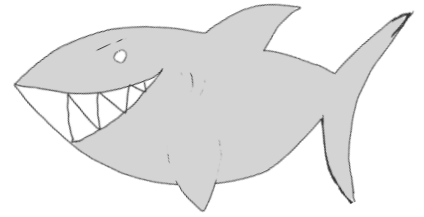


Hardware - Divergent Evolution of Roles



KNEEL BEFORE THE ALMIGHTY RETICLE LIMIT!

And Now –
A brief interlude on
where Techno-Shark is
really going to bite you...



Efficiency Through Consistency

Things worth noodling on!



Hardware Telemetry

- **Counters:** Can these be correlated to pinpoint packet loss?
- Resource Utilization: Are forwarding or filtering tables increasing at a manageable pace?
- **Buffer Monitoring:** Can you tell when you have congestion?
- Inline Monitoring: Can you diagnose problems by embedding telemetry in packets?

Efficiency Through Consistency

Things worth noodling on!



Traffic Flow

- **Hashing:** Are you getting efficient load balancing?
- Programmatic Steering: Can you influence traffic flow through an API?
- Forwarding Tables: Can you understand exactly how a packet will traverse the network?
- **Life of a packet, including QoS behavior:** Are you getting consistent performance?

Efficiency Through Consistency

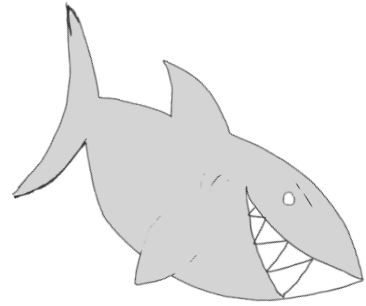
Things worth noodling on!



Provisioning

- Hardware Feature Configurations: Are there special modes for certain data plane flows?
- Resource Carving: Do you have to pick between one feature and another?
- **Power:** Will you need a CapEx build out for just network equipment? What better use could you put those watts towards?

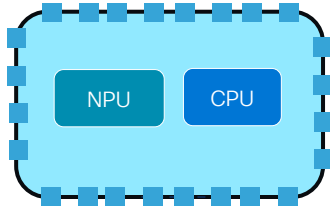
And Now –
Back to our regularly
scheduled presentation



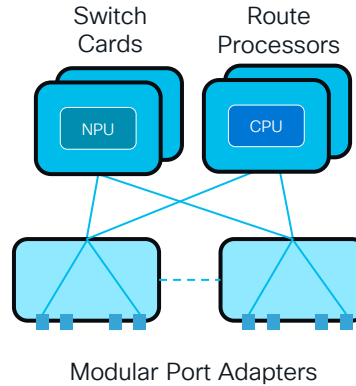
Cisco 8000 Options



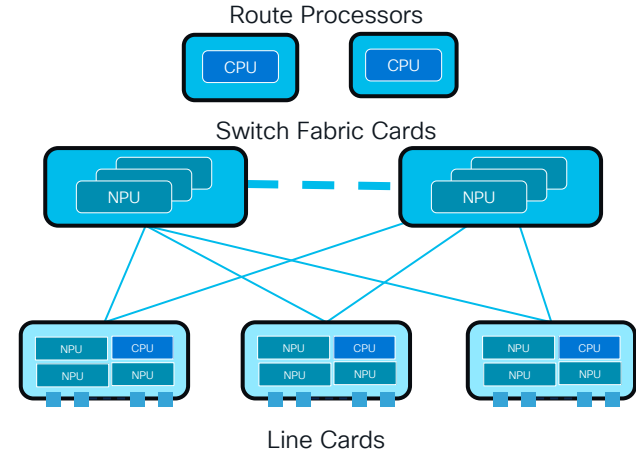
Fixed



Centralized



Distributed



Cisco 8800 Modular Routers

Portfolio



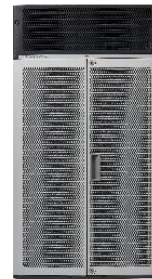
Reference



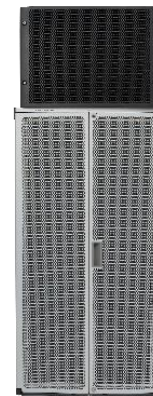
8804








8808



8812



8818

FCS	Shipping		Shipping		Shipping		Shipping	
Rack Units	10 RU		16 RU		21 RU		33 RU	
Slots	4		8		12		18	
Ports & Line Cards		48x100GE w/ MACsec		36x400GE w/ Q200 - MACsec		34x100GE & 14x400GE w/ Q200		
		36x400GE w/ Q100		36x400GE w/ Q200				
Total Throughput	57.6 Tbps		115 Tbps		172 Tbps		259.2 Tbps	
Typical Power	4.2 KW		9.3 KW		16.3 KW		22 KW	

Cisco 8100 and 8200 Fixed Routers

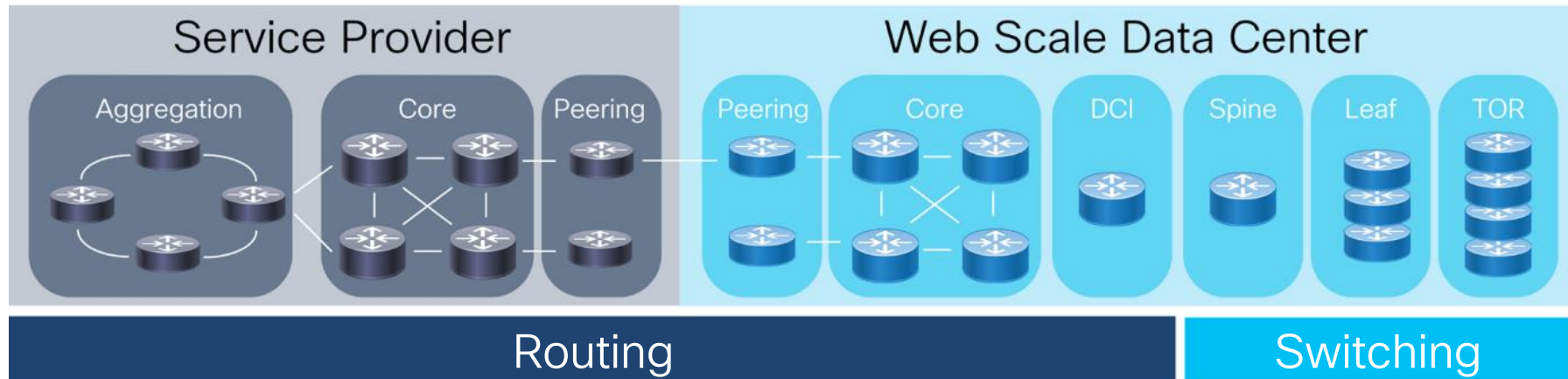
Portfolio



Reference

						
	8201	8202	8101-32H	8102-64H	8101-32FH	8201-32FH
FCS	Shipping	Shipping	Q4 2021	Q3 2021	Q3 2021	Q3 2021
Rack Units	1 RU	2 RU	1 RU	2 RU	1 RU	1 RU
Ports	24 QSFP56-DD 400 GbE + 12 QSFP28 100 GbE	12 QSFP56-DD 400 GbE + 60 QSFP28 100 GbE	32 QSFP28 100 GbE	64 QSFP28 100 GbE	32 QSFP56-DD 400 GbE	32 QSFP56-DD 400 GbE
Total Throughput	10.8 Tbps		3.2 Tbps	6.4 Tbps	12.8 Tbps	
NPU	Q100		Q202L	Q201L	Q200L	Q200
Memory	HBM	HBM	No HBM	No HBM	No HBM	HBM
Typical Power	415 W	750 W	172 W	256 W	288 W	

Cisco 8000 - End to End Architecture



THERE IS NO GOD BOX!

...but consistency STILL matters.

Today it comes down to feature alignment.

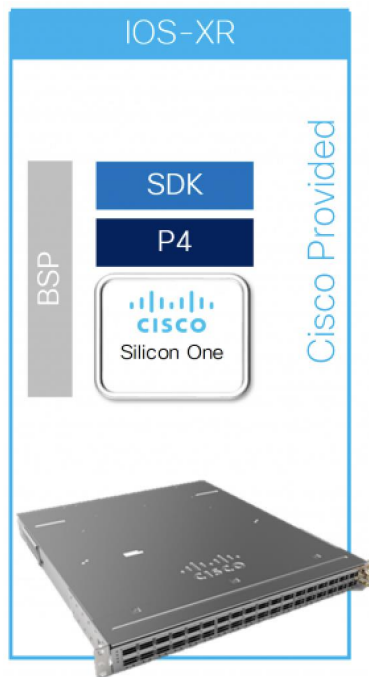
Operational Value in Software:

Cisco 8000 software models and
benefits to your operations.

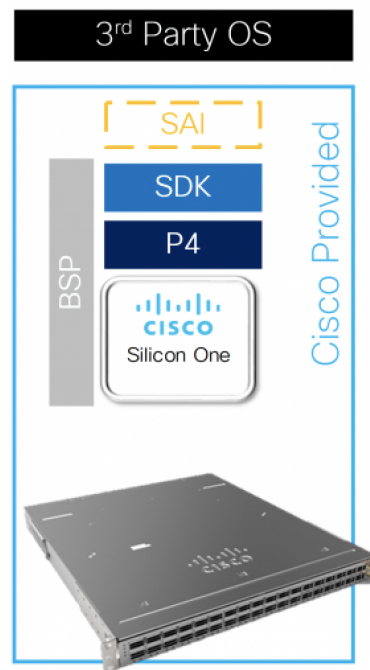


Cisco 8000 – Software Models

Full System

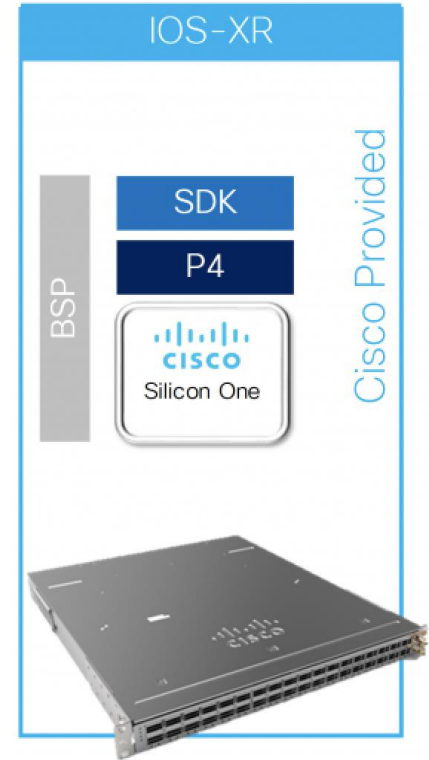


Hardware Only



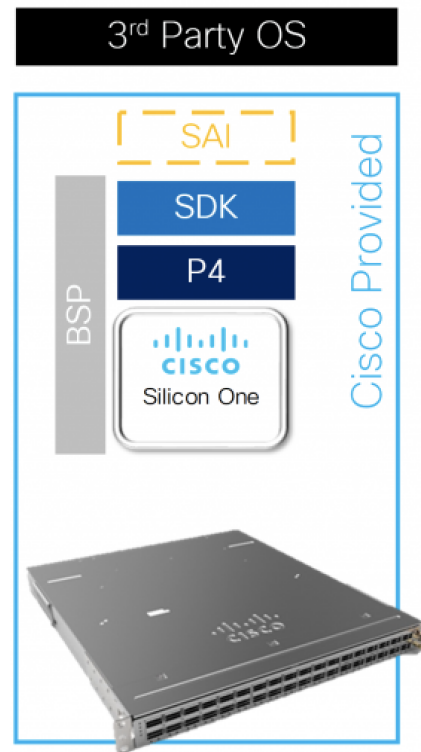
Cisco 8000: Full System

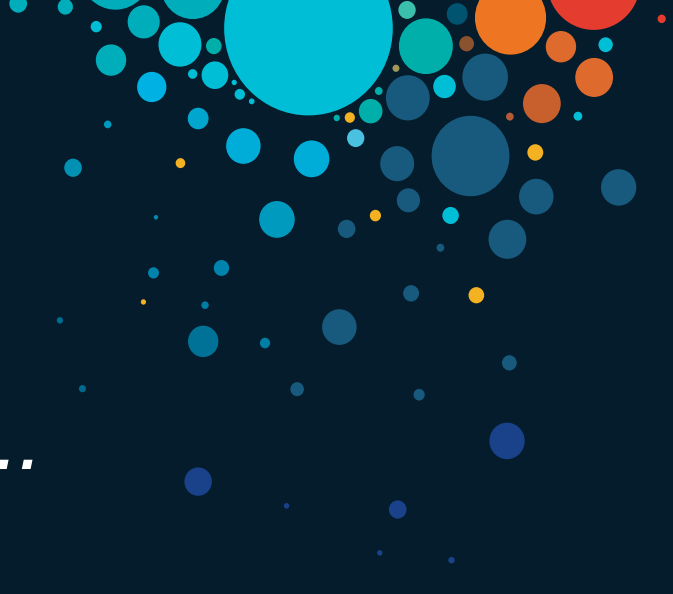
- It's the simplest route to market, is fully globally supported, and has the flexibility of the IOS XR 7 licensing solutions available.
- Customers familiar with IOS XR will have a low barrier of entry.
- Cisco 8000 supports LXC and Docker containers for your own apps.
- Cisco provides support on all components.



Cisco 8000: Hardware Only

- Customer brings their own NOS
- Each hardware platform needs to have SAI specific support. Not yet supported on all models.
- Fixed switching available today.
- Cisco provides support through the SAI layer.



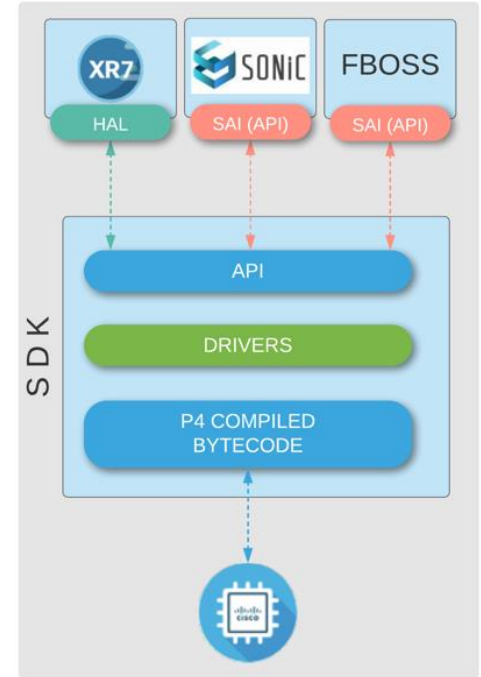


*“60% of the time it works ...
every time.”*

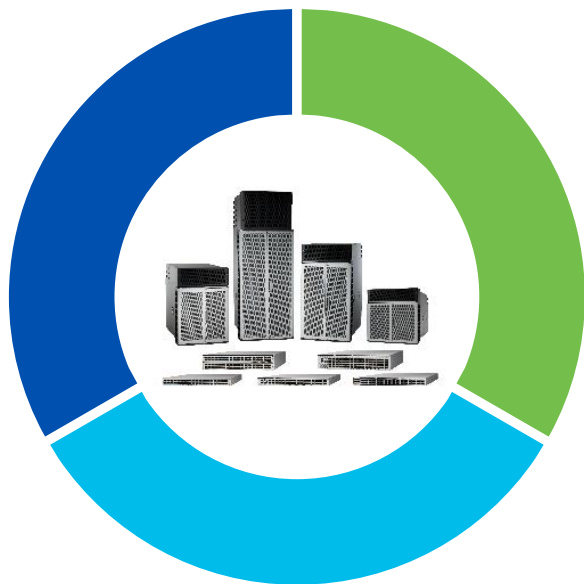
Brian Fontana
Anchorman

Software Stacks

- Support XR7, SONiC, FBOSS
- Same SDK for all NOS, Same API
- Enables software disaggregation
- Operational savings through single stack across roles
- Cisco 8000 Open PID hardware can run multiple OS variants



SONiC on Cisco 8000



SONiC Silicon One

- One Silicon, One Software, Multiple Use cases
- Cisco 8000 series for end-to-end positioning
- 400G DC Fabrics, DCI, Core & more

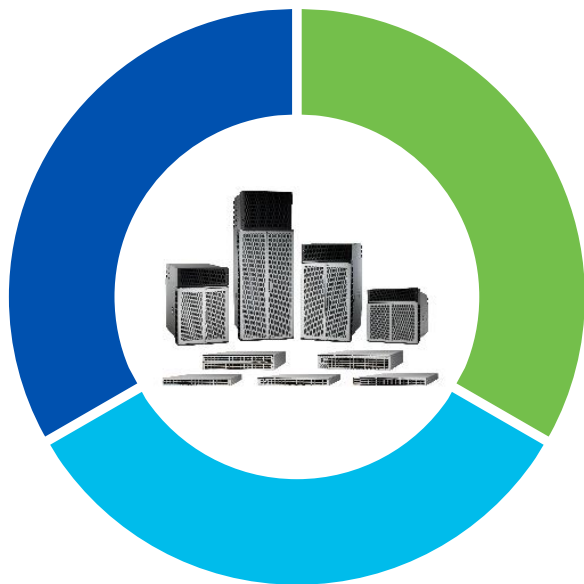
SONiC Ecosystem

- Large open source community
- Value added open-source ecosystem
- Develop and upstream your own features

SONiC Availability

- 8101-32H
- 8102-64H
- 8201-32FH (HBM)
- 8808: 2H CY2022

SONiC on Cisco 8000



Why SONiC

- Features can be developed in house
- Greater control of NOS releases
- Single NOS across vendors hardware

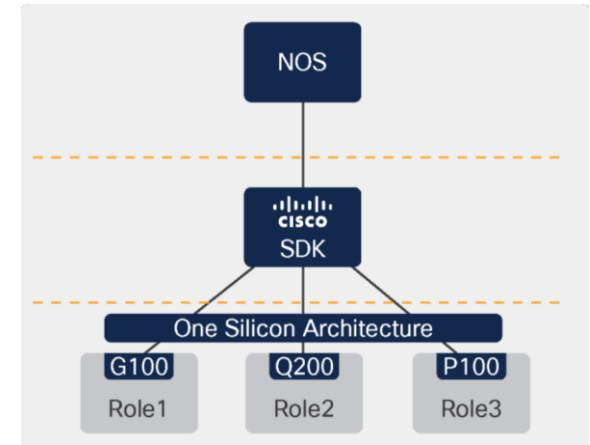
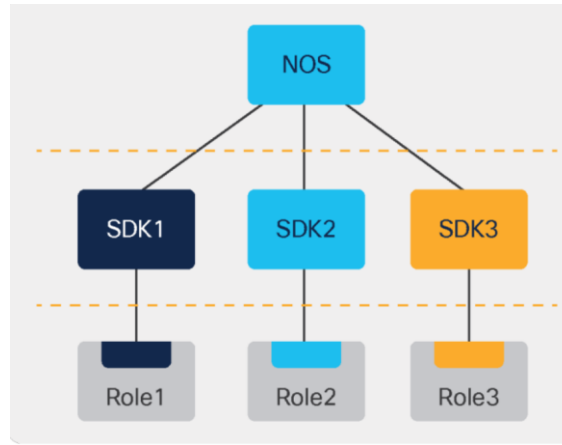
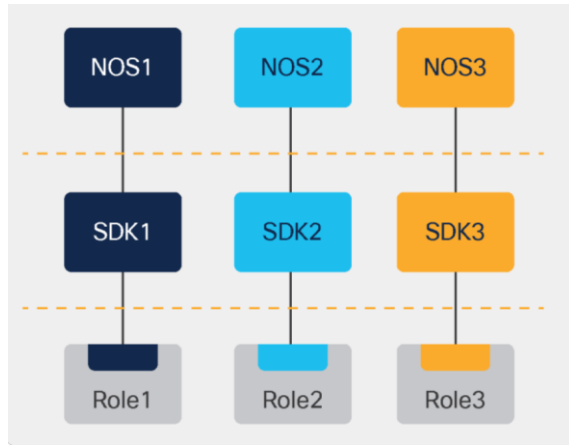
Why Not SONiC

- Does not save OpEx/CapEx
- In House Development Team Required
- Support model shifts weight from Cisco -> You

SONiC Right for Me?

- Shift mindset from operators -> developers
- Are MY features supported in SONiC yet?
- Will this solve operational problems

Value of Single SDK



OpEx Reduction



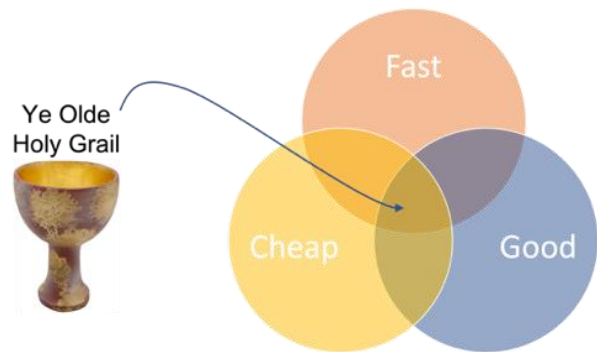
*“Without deviation from the norm,
progress is not possible.”*

Frank Zappa

Cisco 8000 + Cisco Silicon One

Liberation from the traditional way of operating networks

- **Erase** the dividing line between routing & switching devices
- **Simplify** your life with a single software/hardware architecture
- **Reduce** the operational burden





*Engage Cisco engineering to enable
your path to a Web-scale network.*

Technical Session Surveys

- Attendees who fill out a minimum of four session surveys and the overall event survey will get Cisco Live branded socks!
- Attendees will also earn 100 points in the Cisco Live Game for every survey completed.
- These points help you get on the leaderboard and increase your chances of winning daily and grand prizes.



Cisco Webex App

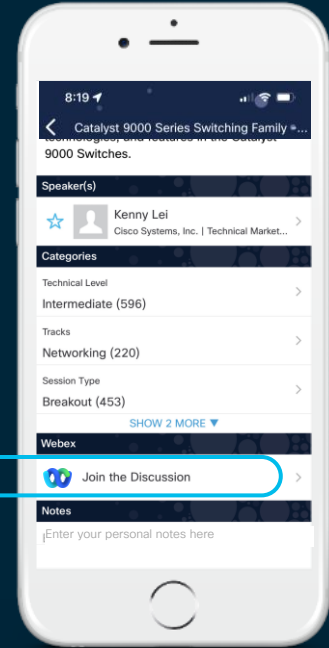
Questions?

Use Cisco Webex App to chat with the speaker after the session

How

- 1 Find this session in the Cisco Live Mobile App
- 2 Click “Join the Discussion”
- 3 Install the Webex App or go directly to the Webex space
- 4 Enter messages/questions in the Webex space

Webex spaces will be moderated by the speaker until June 17, 2022.



<https://ciscolive.ciscoevents.com/ciscolivebot/#BRKSPG-1020>



The bridge to possible

Thank you



Additional Session Recommendations

[IBOSPG-2001] Future Vision of SP Networking

[BRKSPG-2031] Deploying XR Programmability in Production Networks

[LABSPG-2002] Getting Started with Next-Generation Service Provider Networking

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certifications and learning



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Cisco technology and career certifications

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Accelerated curriculum of product,
technology, and certification courses



Certify

Cisco Certifications and Specialist Certifications

Award-winning certification
program empowers students
and IT Professionals to advance
their technical careers

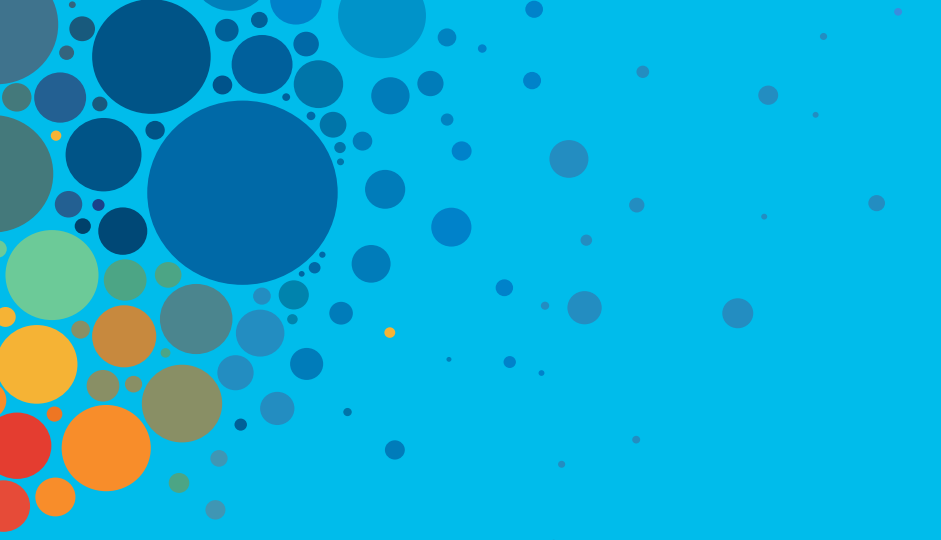
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