

# 400G in več

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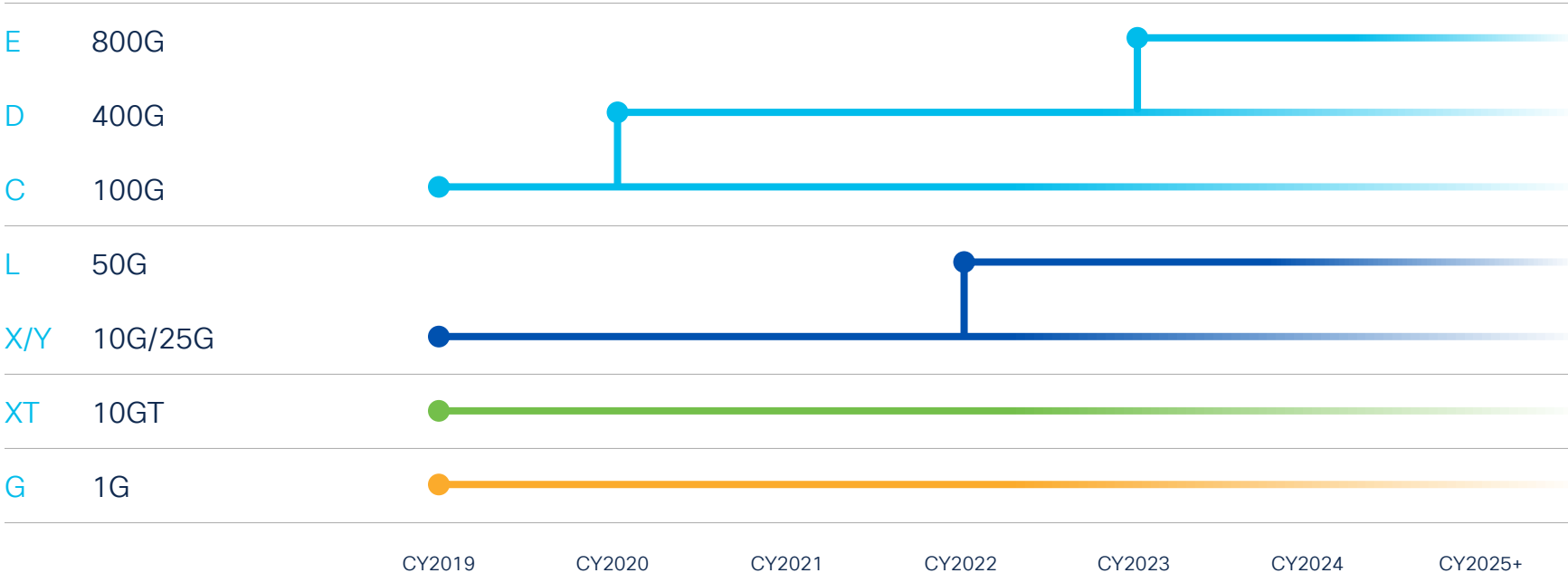
Silvo Lipovšek, Sistemski inženir

Ingram Micro

Januar 2025



# Cloud and data center speed transitions



# Cisco cloud networking ASICs



# Addressing the growing challenges in the data center



## Distributed apps

Distributed apps drive more E/W traffic within and between data centers and clouds; network is the backplane of the system/app



## Data growth

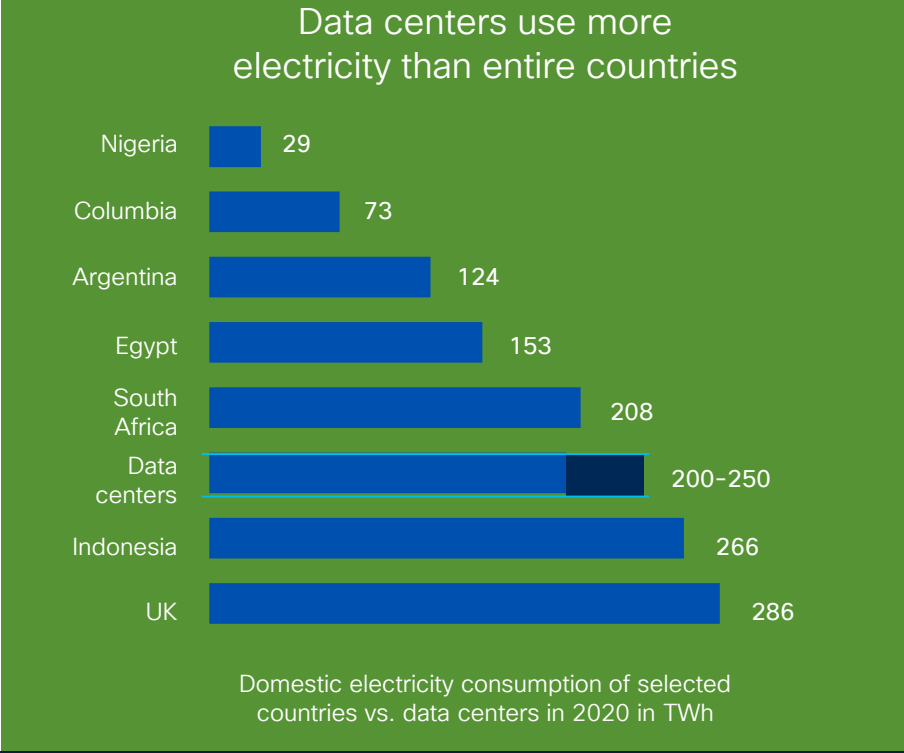
Growth of data intensive workloads:  
AI/ML, analytics



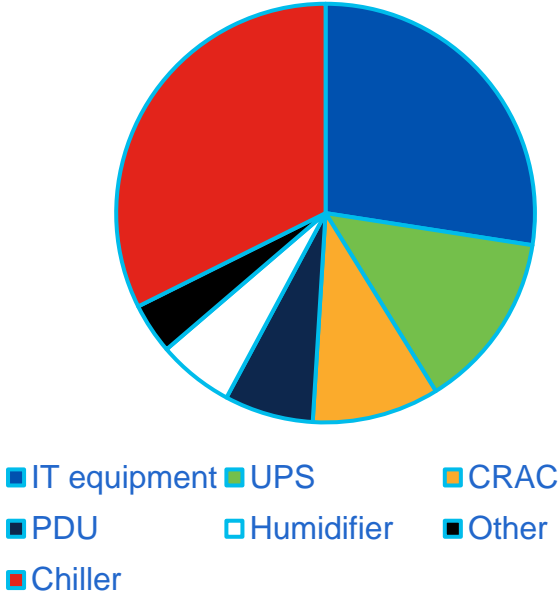
## Sustainable operations

Need for more sustainable data center operations, need to drive better performance/watt

# Data center power consumption



Energy use breakdown in data centers



International Energy Agency (IEA) estimates 1% of all global electricity used by data centers

Rising energy use over past years, increasing 10%-30% per year (IEA 2022)

# 400G/800G use cases



## Cloud service providers

Scale-out fabrics

Transition from 10/40G to  
25/50/100G server NICs

Lower power per gigabit



## Telco service providers

100G/400G/800G fabrics

Space constrained SP DC  
and edge locations

Ready for NFV/5G adoption cycle

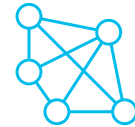


## Enterprise

High performance IO

AI/ML compute clusters  
requiring 400G fabrics

Enhanced flow level visibility



## Media networks

IP Fabric for Media (IPFM)

8K uncompressed video  
is driving 100G endpoints

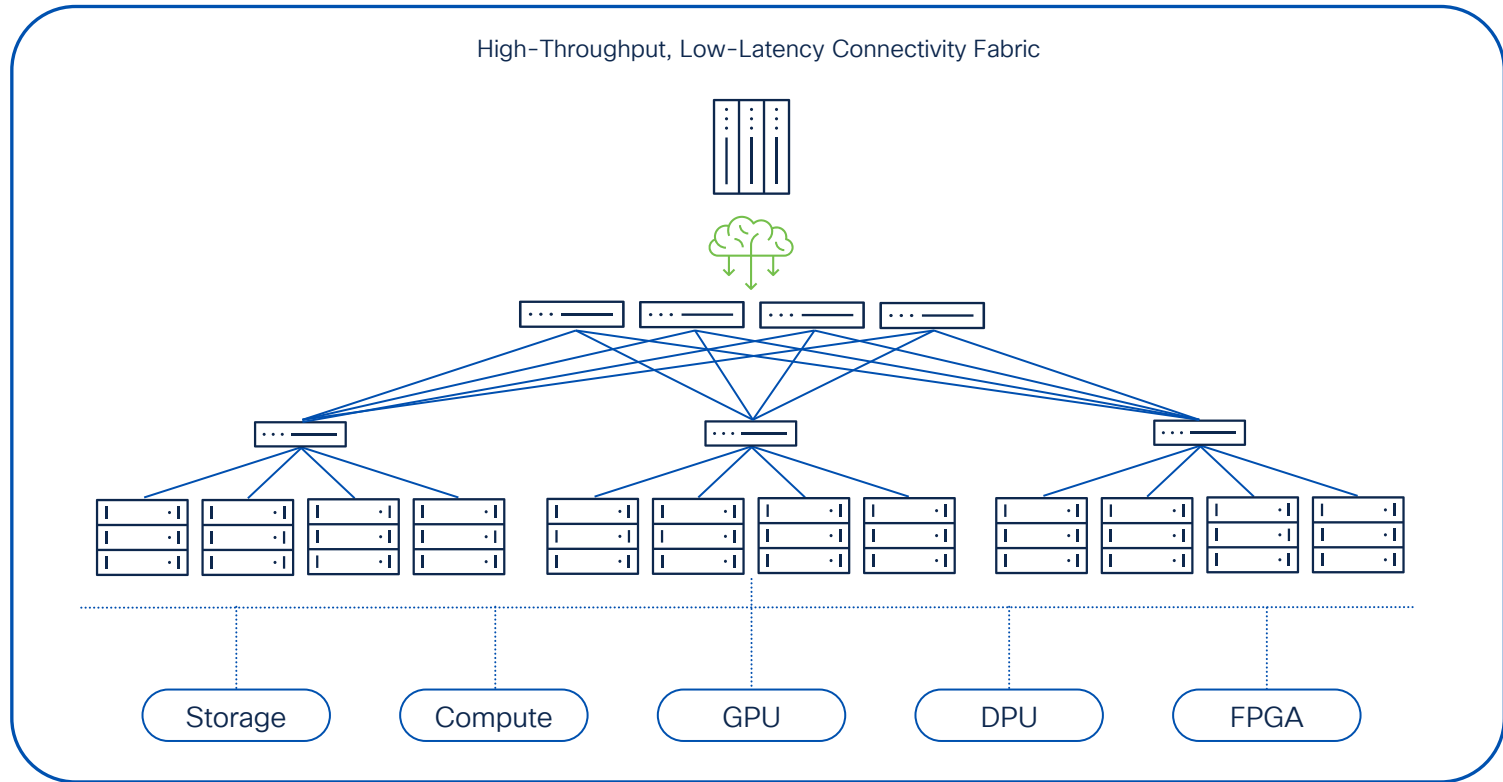
Need for 400G/800G uplinks



2x AMD EPYC 9575F 3.3 GHz (Max Boost 5 GHz) CPUs, 8x AMD MI300X OAM GPUs, 24x 96GB up to 6,000MT/s DIMMs, 1x 1TB M.2 NVMe Boot Drive, 16x 2.5" 1.92TB NVMe SSD Server Drives, 8x NVIDIA ConnectX-7 (1x400G) for East-West N/W, 1x NVIDIA BlueField-3 B3220 (2x200G) for North-South N/W, 1x Intel X710-T2L

<b>UCSC-885A-M8-H12</b>	2x AMD EPYC 9575F 3.3 GHz (Max Boost 5 GHz) CPUs, 8x NVIDIA HGX H100 SXM GPUs, 24x 96GB up to 6,000MT/s DIMMs, 1x 1TB M.2 NVMe Boot Drive, 16x 2.5" 1.92TB NVMe SSD Server Drives, 8x NVIDIA BlueField-3 B3140H SuperNIC (1x400G) for East-West N/W, 1x NVIDIA BlueField-3 B3220 (2x200G) for North-South N/W, 1x Intel X710-T2L
<b>UCSC-885A-M8-H22</b>	2x AMD EPYC 9575F 3.3 GHz (Max Boost 5 GHz) CPUs, 8x NVIDIA HGX H200 SXM GPUs, 24x 96GB up to 6,000MT/s DIMMs, 1x 1TB M.2 NVMe Boot Drive, 16x 2.5" 1.92TB NVMe SSD Server Drives, 8x NVIDIA BlueField-3 B3140H SuperNIC (1x400G) for East-West N/W, 1x NVIDIA BlueField-3 B3220 (2x200G) for North-South N/W, 1x Intel X710-T2L

# High-Performance Computing - Fabric





# High-Performance Computing - Use Cases

Quantitative Modelling



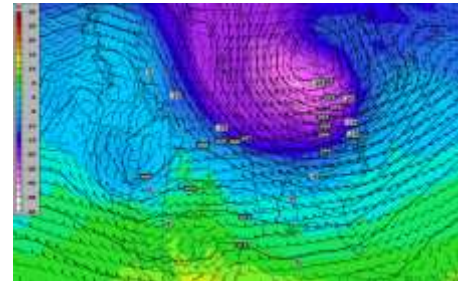
Life Sciences



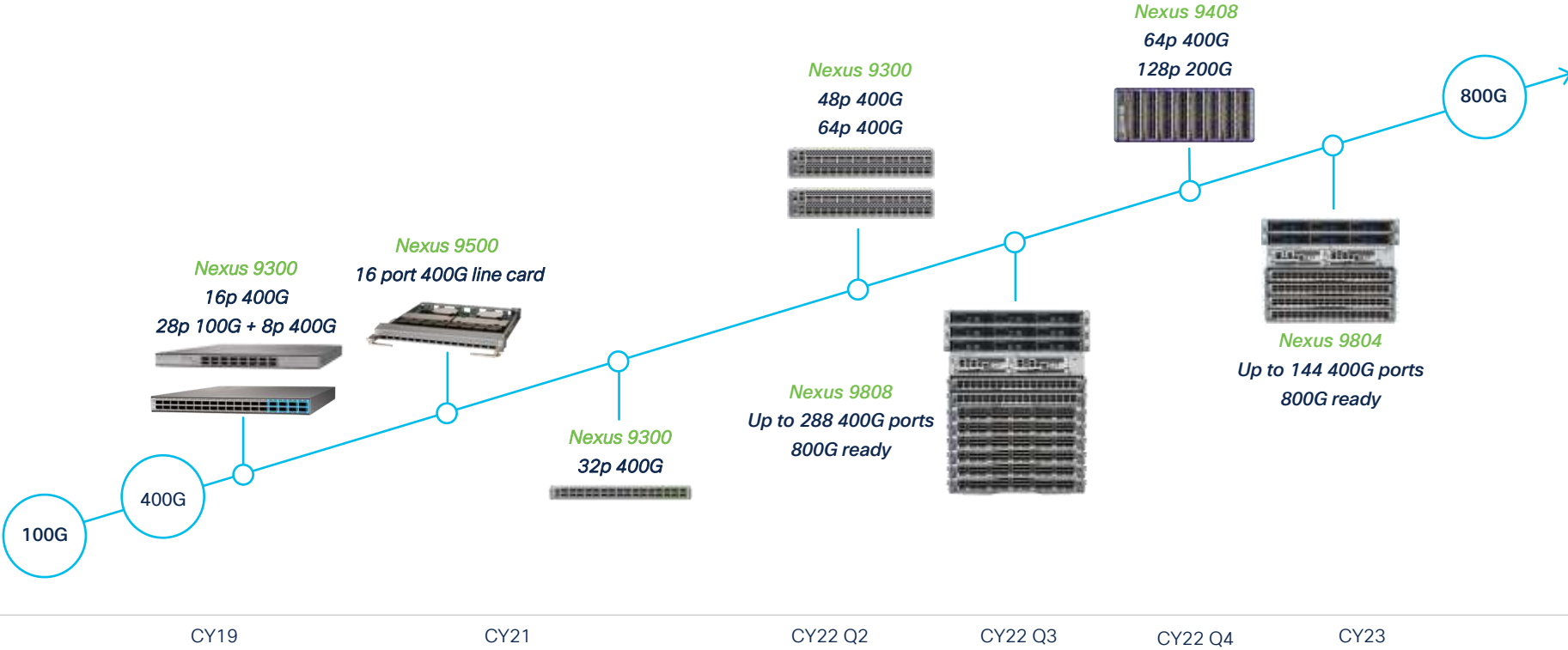
Automotive Development



Meteorology Modelling



# Nexus 9000 400G/800G portfolio evolution



# Introducing Cisco Nexus 9800 Series

Performance, flexibility, and efficiency

High performance | High port density |  
Scalable | Low power

14.4 Tbps per slot | 36 400G ports per slot

8-slot and 4-slot modular switches

Cisco ACI spine and NX-OS capable

**Line rate MACsec**

Industry leading  
12.8Tb switch on a chip



# Cisco Nexus 9800: Redundancy capabilities

n + n power supply redundancy  
Dual input power supply for input source redundancy

1 + 1 supervisor redundancy

n + 1 fabric module redundancy  
fan tray redundancy



16RU

GIR (graceful insertion and removal) SW

# Cisco Nexus 9800 Series

36-port 400G MACsec line card

36 QSFP56-DD Ports | 14.4Tbps

Line-rate MACsec on all ports

**ZR and ZR+ support**

3x 108MB on-die + 8GB HBM packet buffer

4x 100G, 4x 25G, and 4x 10G breakout

7+1 fabric module redundancy



# Introducing Nexus 9408: Centralized modular

! Cisco Cloud Scale 25.6 Tbps (GX2A) ASIC

## Speed and density

Up to 64 400G ports or 128 200G ports  
Breakout support for 10G, 25G, 50G, 100G, and 200G

## Enhanced telemetry

FT, FTE, SSX, INT-XD at 400G speeds

## Secure fabric connectivity

MACsec and CloudSec at 400G speeds

## Supervisor

x86 6-core | 32GB DDR4 | 128GB SSD



## Specifications

Depth	24"
Switch card	1 (25.6 Tbps: field replaceable)
Supervisor	1 (field replaceable)
Expansion slots	8
Port cards	8p QSFP-DD 400G or 16p QSFP56 200G (field replaceable)



# Cisco Nexus 9300 Series



# Cisco Nexus high density 400G fixed switches

ACI Leaf, ACI Spine, and NX-OS  
25.6T, 19.2T, and 12.8T 400G switches  
120MB smart buffer

Security  
MACsec and CloudSec

Telemetry  
FT, FTE, SSX, INT-XD



N9K-C9364D-GX2A



N9K-C9348D-GX2A



N9K-C9332D-GX2B





# Nexus 9300 high density 400G switches



Nexus 9332D-GX2B  
32p 400G  
8p MACsec/CloudSec



Nexus 9348D-GX2A  
48p 400G  
48p MACsec/CloudSec



Nexus 9364D-GX2A  
64p 400G  
16p MACsec/CloudSec











Nexus 9316D-GX  
16p 400G



Nexus 93600CD-GX  
28p 100G + 8p 400G

# Cisco Nexus 9300 cloud scale 100/400G switches

ACI leaf	ACI spine	ACI spine or leaf	
 <p>Nexus 9336C-FX2 36p 100G</p>	 <p>Nexus 9364C 64p 100G</p>  <p>Nexus 9332C 32p 100G</p>	 <p>Nexus 9364D-GX2B 64p 400G</p>  <p>Nexus 9364C-GX 64p 40/100G</p>	 <p>Nexus 9332D-GX2B 32p 400G</p>  <p>Nexus 9316D-GX 16p 400G</p>  <p>Nexus 93600CD-GX 28p 40/100G &amp; 8p 400G</p>

NX-OS



# Cisco Nexus 9232E Switch

Compact 1RU 25.6T Switch | 32 800G capable ports  
Up to 64 line rate 400G ports (2x400G breakout)

25.6T G100 ASIC (7nm) | 112G SERDES  
108MB fully shared packet buffer

QSFP-DD800 Ports—backward Compatible  
with QSFP-DD, QSFP28, QSFP+

Quad Core x86 CPU | 32GB RAM | 128GB SSD

Cisco NX-OS leaf/spine Capable



# Introducing high density 400G with QSFP-DD800 modules



QSFP-DD 8x100G FR



QSFP-DD 2x400G FR4

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Increased density

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Investment protection

Reuse existing cabling infrastructure: Dual Duplex LC and Dual MPO-12 SMF connectors

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Backwards compatibility

Connect existing pluggable transceivers: QSFP+, QSFP28, QSFP56, QSFP112, QSFP-DD

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Flexible design support

800G port to port | Breakout to 400G or 100G ports

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Improved sustainability

Supports over 30W of power dissipation and riding heatsink in host platform

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Standards compliant

QSFP-DD 800 MSA, IEEE 400GBASE-FR4, 100GBASE-FR1

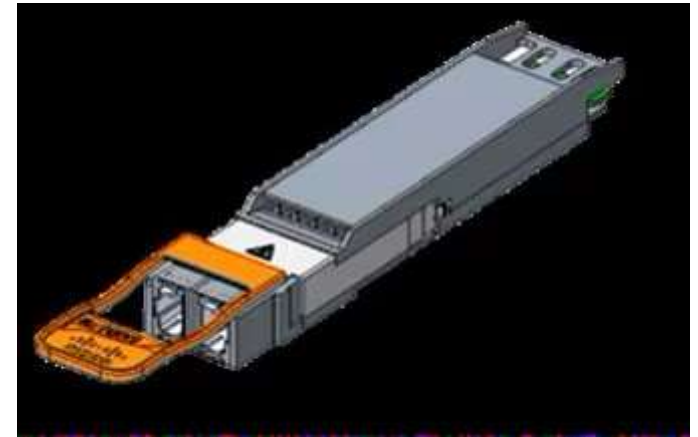
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# Cisco Nexus 9364E-SG2 Switch

## Product specifications

Table 2. Cisco Nexus 9364E-SG2 Switches Specifications

Item	Cisco Nexus 9364E-SG2 switch
Technical	<ul style="list-style-type: none"><li>• 64-port 800G QSFP-DD ports (N9364E-SG2-Q)</li><li>• 64-port 800G OSFP ports (N9364E-SG2-O)</li><li>• Supports 2x400, and 8x100 breakout</li><li>• On-die buffer: 256MB fully shared</li><li>• System memory: 64GB</li><li>• SSD: 240 GB</li><li>• USB: 1 port</li><li>• RS-232 serial console ports: 1</li><li>• Management ports: 1</li><li>• CPU (N9364E-SG2-Q)<ul style="list-style-type: none"><li>• Intel® Broadwell 4-core 2.4 GHz CPU</li></ul></li><li>• CPU (N9364E-SG2-O)<ul style="list-style-type: none"><li>• Intel Broadwell 8-core 2 GHz CPU</li></ul></li></ul>



# Cisco Silicon G200

Uniquely efficient and optimized for AI/ML

<b>One architecture</b>		<b>51.2 Tbps</b> 5nm Technology 		<b>Advanced 112 Gbps SerDes</b>
<b>High performance</b>				<b>Advanced load balancing</b>
<b>Sustainability via technology</b>				<b>Link failure avoidance</b>
<b>Ultra-low latency</b>				<b>Programmable processor</b>
<b>Optimal network design</b>			<b>435B+</b> 	<b>Lookups per second</b>
<b>Fully shared packet buffer</b>				<b>Deep visibility and analytics</b>

## Steering Members



## General Members

# For more information

[cisco.com/go/nexus](https://cisco.com/go/nexus)







The bridge to possible