



**RELAX,  
WE CARE**

**CISCO – LIVE**

29.02.2024

# CISCO – LIVE 2024



**COLLABORATION**  
**NETWORK**  
**DATA CENTER**  
**SECURITY**

# CISCO – LIVE & ISE

## COLLABORATION



# CISCO LIVE & ISE 2024

NTS

## COLLABORATION

- 57 Sessions + World of Solutions + Labs
- Artificial Intelligence
- Cisco Devices & Open Platform
- Webex Control Hub Enhancement

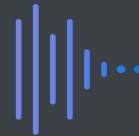
# AI ANNOUNCEMENTS



Introducing  
the all new  
Webex AI Assistant



Industry-first  
Real-time Media  
Models (RMM)



Crystal clear  
audio quality with  
Webex AI Codec

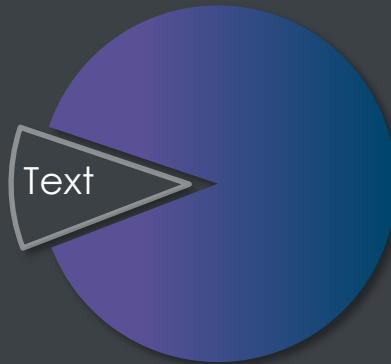


Revolutionizing  
video with  
Super Resolution

# Real-time Media Models (RMM)

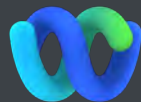
LLM

Email  
Messages  
Transcripts  
Documents  
Translations



Audio  
Video  
Reactions  
Gestures  
Voice tones  
Inflections

RMM



# AI Assistant

Webex Suite

Cisco Devices

Webex Contact Center

Webex Connect

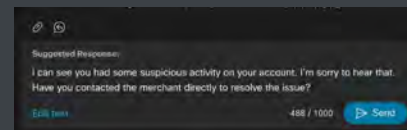
Webex Control Hub



## AI Assistant

### WEBEX CONTACT CENTER

- Conversation Summaries
  - Virtual agent handoff
  - Dropped calls
  - Agent summary & wrap-up
- Suggested responses
- Agent answers
- Real-time transcription
- Agent burnout detection



Coming Soon

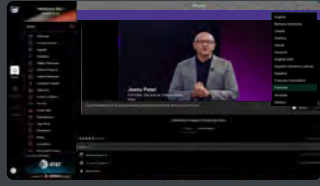


# INNOVATION ACROSS THE PORTFOLIO



AI Assistant

Personalized meeting summaries



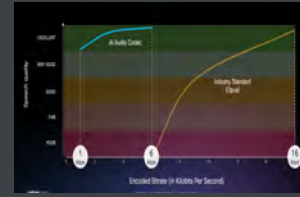
AI Assistant

Real-time Translations in Events

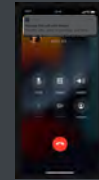


AI Assistant

Real-time Catch up on missed part of meetings

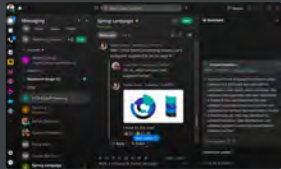


Webex AI Codec



AI Assistant

HD Voice & PSTN Noise Removal



AI Assistant

Personalized message summaries



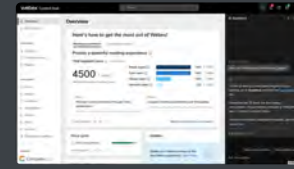
AI Assistant

Translate messages & adjust tone

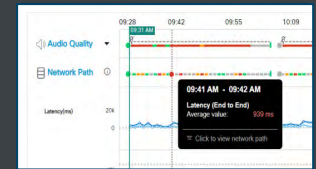


AI Assistant

Meeting Chapters and Highlight Reels



Get the most out of Webex with AI Assistant for Control Hub



Network Insights with Meraki Integration



Room Kit EQX



Cinematic Meetings



Video super-resolution



Campfire



AI Assistant  
Call summaries and transcripts

NTS

## CISCO COLLABORATION DEVICES

- Why Cisco Devices
- Cisco for MS TEAMS Rooms
- Cisco & Apple

## DISTANCE ZERO

### RoomOS

Optimized AI software for image processing, speech recognition, face detection



Purpose built Cisco devices - designed for collaboration use cases with intelligent cameras, mics, and codecs



Most powerful AI/ML engines – up to 20x faster - to power next generation intelligent workflows



### AI Assistant

AI at the edge

Cloud scale AI

- People Focus
- Multistream experiences
- Language Intelligence

# CISCO LIVE & ISE 2024



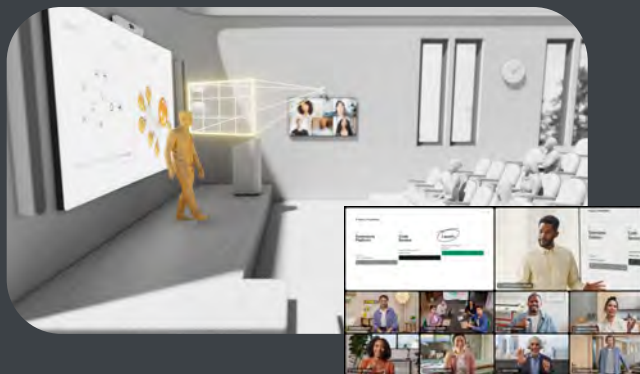
### CROSSVIEW



### MEETING ZONE



### PRESENTER & AUDIENCE



### CAMPFIRE



- Multiple cameras
- Cinematic meetings
- Designed for any workspace
- Changing AVoIP technology

# CISCO LIVE & ISE 2024

NTS

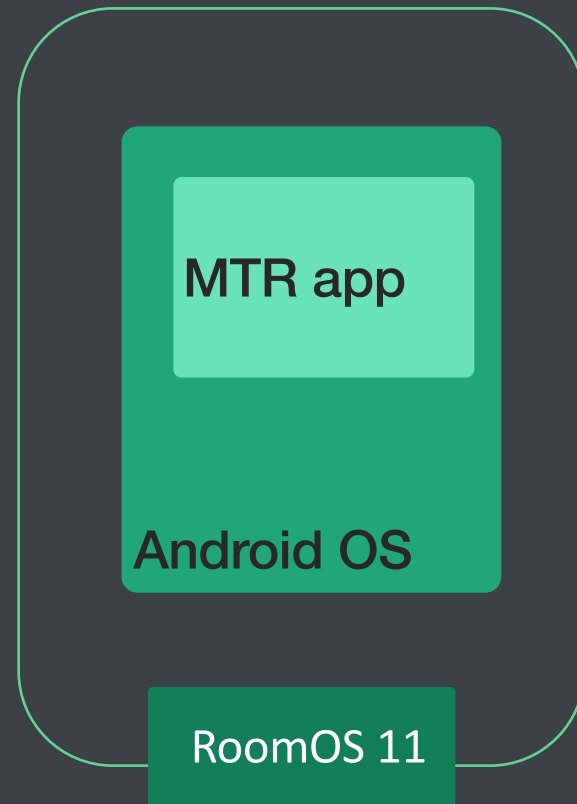
CONTROL HUB

INTEGRATION &  
SECURITY

CAMERA  
INTELLIGENCE

AUDIO  
INTELLIGENCE

INTEROPERABILITY



## 21:9 DISPLAY SUPPORT FOR MTR

9:35 AM Conference room 14567/12

Contoso Weekly Project Briefing 9:00 AM - 10:00 AM

**Raised hands (4)**

- Charlotte de Crum
- Aaron Buxton
- Babek Shamas
- Kayo Miwa

**Chat**

design for the July promotional splash page. Could you make those edits before our Wednesday client sync?

Charlotte de Crum 11:23 AM  
Out today for family time!  
@Cortana, Send me any follow up items.

Babek Shamas 11:23 AM  
Can you guys please send me the options that we are proposing to the client tomorrow?

Charlotte de Crum 11:23 AM  
Daniela, Daichi mentioned that the client had some changes to our design for the July promotional splash page. Could you make those edits before our Wednesday client sync?

**Partnership**

In the flat-screen TV category, VanArsdel brand TV's manufactured by Fabrikam comprised 41.2% of VanArsdel sales, an increase of 5.4% compared to 2016.

Meanwhile, in the stress category, Fabrikam produced Van-Arsdel-branded made up 41.4% of Van-Arsdel sales.

01 Flat screen 02 Stress 03 Furniture

Reta Taylor Krystal McKinney Charlotte de Crum Danielle Booker Daniela Mander Nathan Rigby +2

# CISCO LIVE & ISE 2024

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## APPLE & CISCO BETTER TOGETHER



Apple Vision Pro & Webex

Apple & Cisco Integration

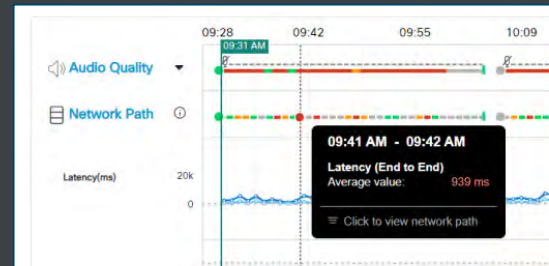
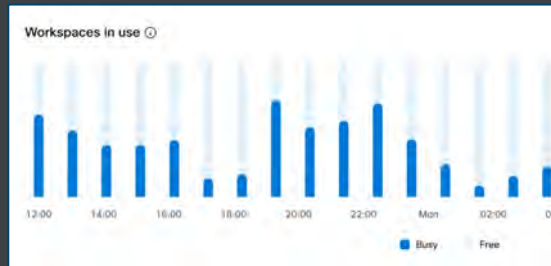
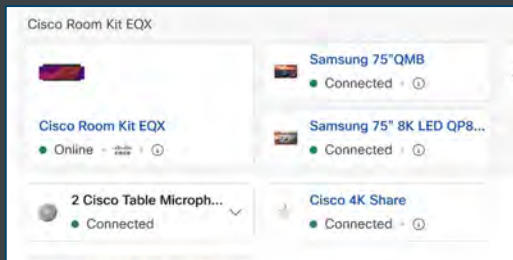
Apple TV 4k & Webex







# Meraki



## Webex Control Hub

Control and monitor your mixed environment with a single view

Manage video endpoints and peripheral on a single admin portal

Real-time and historic environmental, device and occupancy metrics

Carbon emission insights to keep track of energy footprint

End-to-end troubleshooting, bulk config & automatic upgrades

Multi-tenant management, alerts & integration APIs





**RELAX,  
WE CARE**



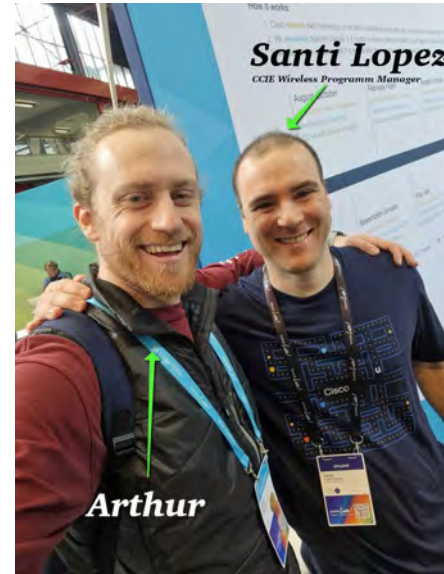
# ENTERPRISE NETWORKING

# AMSTERDAM 2024



**Felix Wech**

- [felix.wech@nts.eu](mailto:felix.wech@nts.eu)
- Senior Architect (NTS Wien)

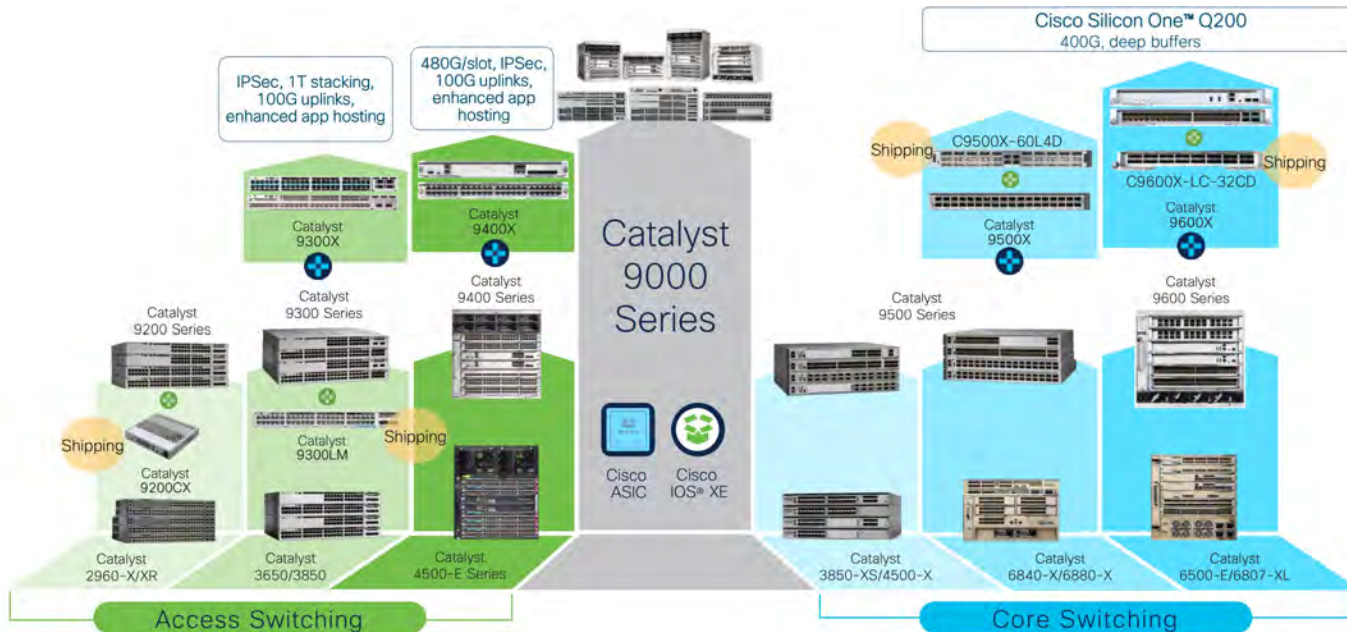


**Arthur Spähle**

- [arthur.spaehnle@nts.eu](mailto:arthur.spaehnle@nts.eu)
- Senior Systems Engineer (NTS Friedrichshafen)

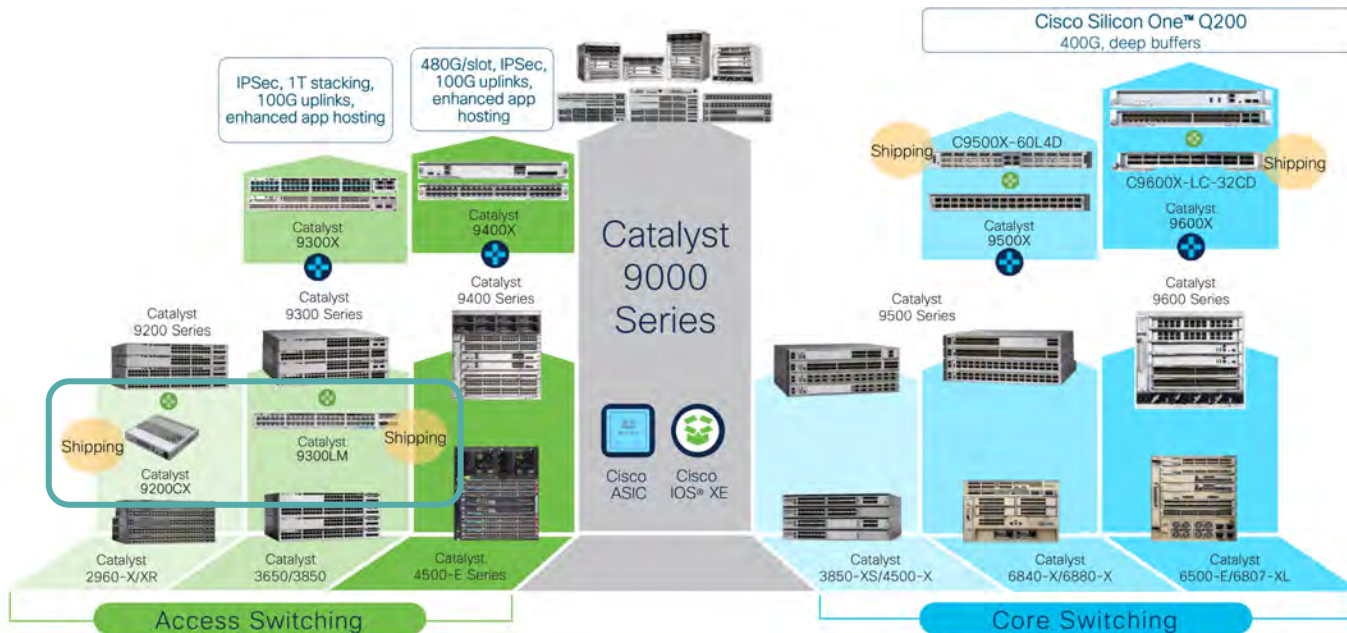
# CATALYST 9000 SWITCHING FAMILIE

BRKENS-2163



# CATALYST 9000 SWITCHING FAMILIE

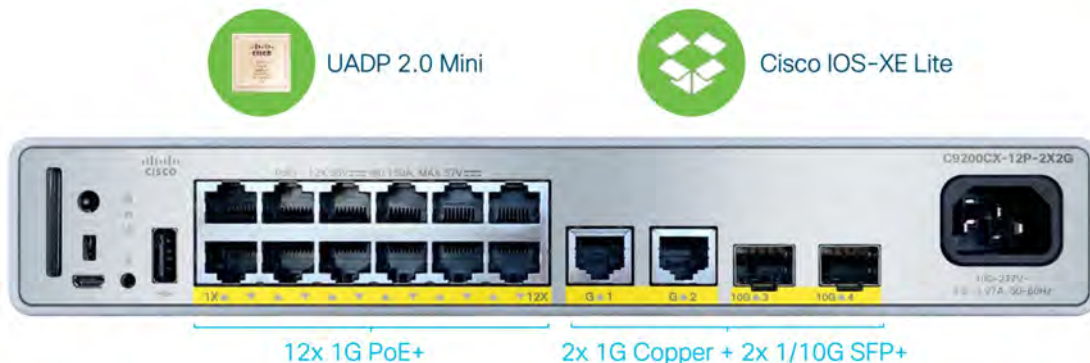
BRKENS-2163



- 9300LM ersetzt 3650 Mini
- 9200CX als "neue" compact switch platform

# CATALYST 9200CX

BRKARC-2098



  
6MB  
Packet Buffer


  
Up to 60GE  
Bandwidth

  
Enhanced Security  
MACsec 256


  
Smart building ready  
Green builds, 802.3bt  
PoE


## Flexible Deployment Option

 Architecture options  
Fabric or Traditional 2-Tier

 Flexible powering  
Traditional Outlet, UPOE+

 Deployment flexibility  
Any space, mount or enclosure

 Fiber to the edge  
Shorter copper runs

 Small branches  
Zero touch provisioning

Catalyst 9000 Feature Richness Packed in a Compact Form Factor

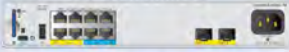


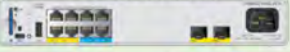






# CATALYST 9200CX

BRKARC-2098

## Catalyst 9200CX Family

Now also with mGig and HVDC Models

<p><b>mGig/UPOE Model</b> <span>Q3 CY23</span></p> <p><b>C9200CX-8UXG-2X</b></p>  <ul style="list-style-type: none"> <li>4x mGig/10G + 4 x 1G (802.3bt Type 3 Class 6 60W all ports)</li> <li>2x 1/10G SFP+</li> <li>Internal AC power supply</li> <li>240W PoE power budget</li> </ul>	<p><b>HVDC mGig/UPOE</b> <span>Q3 CY23</span></p> <p><b>C9200CX-12P-2X2GH</b></p>  <ul style="list-style-type: none"> <li>12 x 1G PoE+</li> <li>2 x 1G copper and 2 x SFP+ uplinks</li> <li>Internal HVDC power supply</li> <li>240W PoE power budget</li> </ul>	<p><b>HVDC 1G/PoE+ Models</b> <span>Orderable</span></p> <p><b>C9200CX-8P-2X2GH</b></p>  <ul style="list-style-type: none"> <li>8 x 1G PoE+</li> <li>2x 1G copper and 2 x SFP+ uplinks</li> <li>Internal HVDC power supply</li> <li>240W PoE power budget</li> </ul>	<p><b>HVDC 1G/PoE+ Models</b> <span>Orderable</span></p> <p><b>C9200CX-8UXG-2XH</b></p>  <ul style="list-style-type: none"> <li>4x mGig/10G + 4 x 1G (802.3bt Type 3 Class 6 60W all ports)</li> <li>2x 1/10G SFP+</li> <li>Internal HVDC power supply</li> <li>240W PoE power budget</li> </ul>
<p><b>PoE+ Models</b> <span>Shipping</span></p> <p><b>C9200CX-12P-2X2G</b></p>  <ul style="list-style-type: none"> <li>12 x 1G PoE+</li> <li>2 x 1G copper and 2 x SFP+ uplinks</li> <li>Internal AC power supply</li> <li>240W PoE power budget</li> </ul>	<p><b>PoE+ Models</b> <span>Shipping</span></p> <p><b>C9200CX-8P-2X2G</b></p>  <ul style="list-style-type: none"> <li>8 x 1G PoE+</li> <li>2 x 1G copper and 2 x SFP+ uplinks</li> <li>Internal AC power supply</li> <li>240W PoE power budget</li> </ul>	<p><b>Data-Only Model</b> <span>Shipping</span></p> <p><b>C9200CX-12T-2X2G</b></p>  <ul style="list-style-type: none"> <li>12 x 1G data</li> <li>3 x 1G copper and 2 x SFP+ uplinks</li> <li>Powered by 802.3bt Class 6 60W UL OR External 80W PS (LVDC support)</li> </ul>	<p><b>Pass-through Model</b> <span>Roadmap</span></p> <p><b>C9200CX-8PT-2G</b></p>  <ul style="list-style-type: none"> <li>8 x 1G PoE+</li> <li>2 x 1G copper &amp; UPOE+ uplinks</li> <li>External power adapter (80W/150W) [LVDC support] &amp; 802.3bt UPOE+ ULs</li> <li>240W Max PoE power budget</li> </ul>

Powered by Cisco IOS-XE Lite

SD-Access (16 VNs)

Cold patching

Trustworthy solutions

Perpetual/Fast PoE

Full Flexible NetFlow

MACsec-256


Programmability

Bonjour Service Peering


# CATALYST 9300LM(MINI)

BRKARC-2098


Introducing 9300LM(mini) Series Switches in C9300L Family  
Fixed Uplink replacement for Catalyst 3650-mini



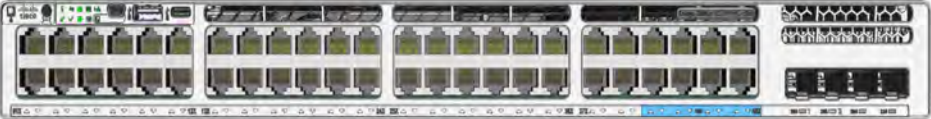
UADP 2.0



X86 CPU




Cisco Open IOS-XE




40 X 1G + 8 x mGig-10G


Fixed 25G Uplinks




UPOE  
Next-gen IT/OT Workspaces



Cisco StackWise 320  
Stackable with C9300L



mGig  
Wifi 6E deployments



USB type-A front Panel SSD\*  
Application hosting

\*Roadmap

IBN Innovations

- 

HA, Hot Patching, UPOE
- 

MACsec 256, ETA
- 

On-box App hosting
- 

SD-Access, BGP EVPN, AVC, FNF



Catalyst C9300L: 19.2 inches  
Catalyst C9300LM: 12-13.2 inches

Platform Depth <14 inches		
	AC PSU	DC PSU
UPOE	13.2 in	12.8 in
Data	12.4 in	12.0 in



# ASAC FIREWALL ON CAT9300

BRKENS-2163

GA Dec 2023  
 IOS-XE 17.12.2  
 ASA 9.20.2

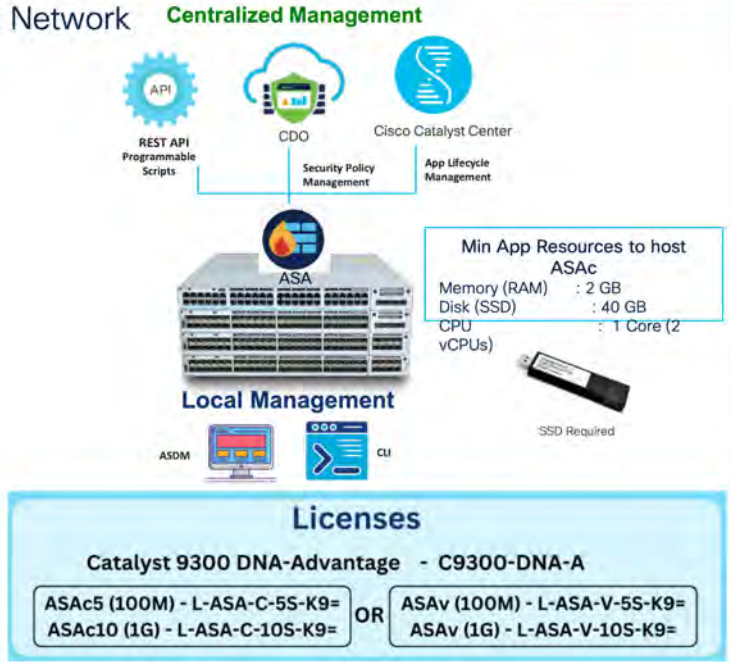
## Cisco ASAc Hosted on Catalyst 9300/L(LM)/X

Seamless Firewall Service Insertion in the Network **Centralized Management**

**Technical Specifications**

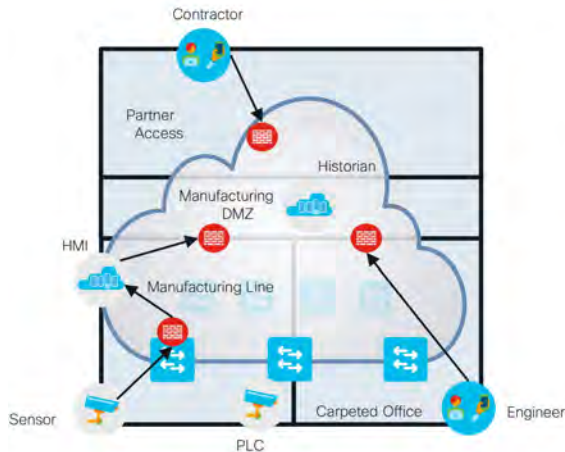
- ★ ASAv Feature parity
- 📄 Reuse ASAv license
- 📊 500 Mbps\* Throughput on C9300
- 📊 900 Mbps\* Throughput on C9300X
- 📊 250 IPSec / VPN Connections
- 🌐 10 logical interfaces
- 📍 Routed Mode Firewall
- 🕒 App Hosting HA (Cold)

\* ASAc Throughput with 450-byte packet

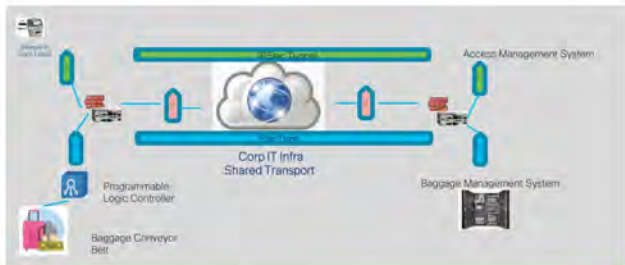


# USE CASES FOR ASAC

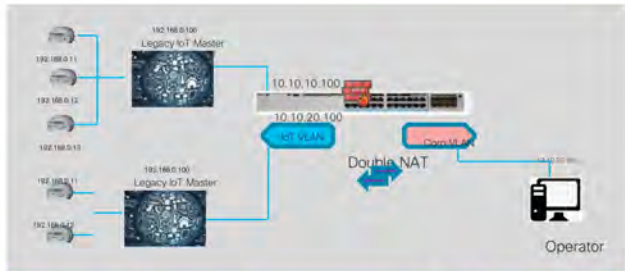
BRKENS-2163



Stateful Inspection & Segmentation



Add Encryption for IoT devices



Secure Remote Management (VPN) & NAT

# CATALYST CLOUD MONITORING & MGMT

BRKMER-2562/1415

Migrate to Catalyst Center Managed or CLI



or

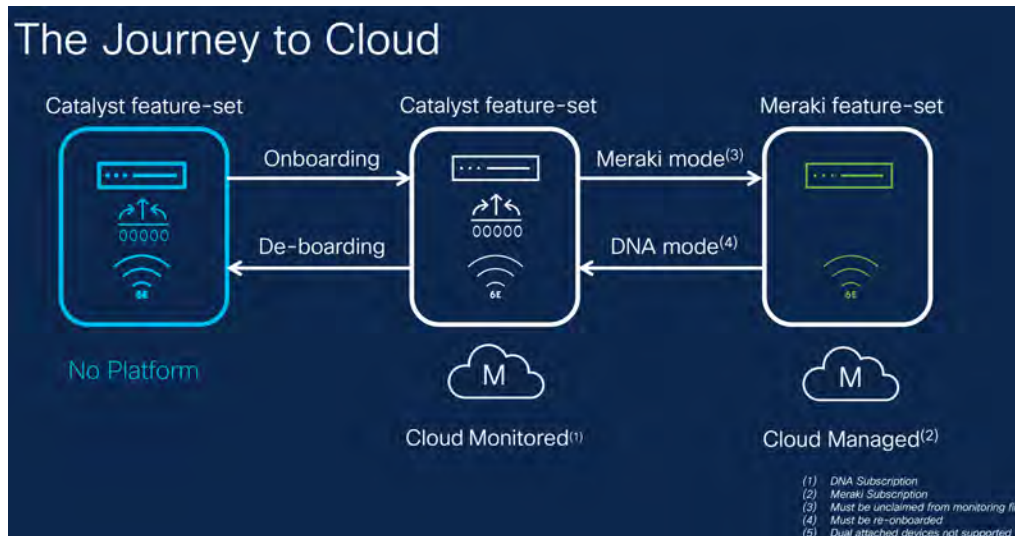


Migrate to Meraki Cloud Managed



# CATALYST CLOUD MONITORING & MGMT

BRKMER-2562/1415



# CATALYST CLOUD MONITORING & MGMT

BRKMER-2562

Cloud Monitoring for  
Catalyst



Cloud Management for  
Catalyst

## Meraki Dashboard Experience

### Catalyst Feature-set

Requires DNA subscription

Onboarding App (Switches)

9200/9300/9500

IOS XE 17.3.1 – 17.9.4

CLI (Wireless)

9800 (WLC) & 28/38/4800

IOS XE 17.12.3 – 17.15.1

### Meraki Feature-set

Requires Meraki license

CLI (Switches)

9300/9300-M

IOS XE 17.10.x

CLI (Wireless)

CW9162/64/66

IOS XE 17.9.1



# CATALYST 9300-M SKU'S

BRKMER-1415

### Gigabit

Up to 1 GbE

**C9300 24/48 T**

- 24/48x 1G copper
- Data only
- 40G/10G/1G fiber modular uplink options

**C9300 24/48 P**

- 24/48x 1G copper
- 30 W PoE+
- 40G/10G/1G fiber modular uplink options

**C9300 24/48 U**

- 24/48x 1G copper
- 60 W UPOE
- 40G/10G/1G fiber/10G mGig copper modular uplink options

### Multigig

Up to 10 GbE (mGig)

**C9300 24 UX**

- 24x 10G mGig
- 60 W UPOE
- 40G/10G/1G fiber modular uplink option

**C9300 48 UXM**

- 36x 2.5G mGig and 12x 10G mGig
- 60 W UPOE
- 40G/10G/1G fiber uplink option

**C9300 48 UN**

- 48x 5G mGig
- 60 W UPOE
- 40G/10G/1G fiber/10G mGig copper modular uplink option

### Fiber aggregation

10/1 GbE SFP+ fiber

**C9300 24S/48S**

Coming Soon

**C9300X 12Y**

- 10G/1G (SFP2B)
- 100G hardware-based IPsec

**C9300X 24Y**

- 10G/1G (SFP2B)
- 100G hardware-based IPsec

100G SFP+ is not a Cisco product. Please refer to the Cisco website for more information.
   
 \*M/SKU are coming in Early 2024.

Gigabit and multi-gig SKUs FCS: Nov 15 2023

### Gigabit

Up to 1 GbE

**C9300L 24/48T-4X**

- 24/48x 1G copper
- Data only
- 4x SFP+ 10G fixed fiber uplink

**C9300L 24/48 P-4X**

- 24/48x 1G copper
- 30W PoE
- 4x SFP+ 10G fixed fiber uplink

**C9300L 48 PF-4X**

- 48x 1G copper
- 30W PoE
- 4x SFP+ 10G fixed fiber uplink

**C9300 24/48 T**

- 24/48x 1G copper
- Data only
- Modular uplink options

**C9300 24/48 P**

- 24/48x 1G copper
- 30W PoE+
- Modular uplink options

**C9300 24/48 U**

- 24/48x 1G copper
- 60W UPOE
- Modular uplink options

### Multigig

Up to 10 GbE (mGig)

**C9300L 24/48 UXG-4X**

- 24/48x 10G mGig
- 60W UPOE
- 4x SFP+ 10G fixed fiber uplink

**C9300X 48TX**

- 48x 10G mGig
- Data only
- Modular uplink options

**C9300X 24/48HX**

- 24/48x 10G mGig
- 90W UPOE+
- Modular uplink options

**C9300X 48 HXN**

- 40x 5G & 8x 10G mGig
- 90W UPOE+
- Modular uplink options

**C9300 24 UX**

- 24x 10G mGig
- 60W UPOE
- Modular uplink options

**C9300 48 UXM**

- 36x 2.5G & 12x 10G mGig
- 60W UPOE
- Modular uplink options

**C9300 48 UN**

- 48x 5G mGig
- 60W UPOE
- Modular uplink options

### Fiber aggregation

10/1 GbE SFP+ fiber

**C9300 24S/48S**

- 24/48 port 1G SFP
- 40G/10G/1G fiber modular uplink options

**C9300X 12/24Y**

- 25G/10G/1G (SFP2B)
- 100G hardware-based IPsec

Gigabit and multi-gig SKUs FCS: Nov 15 2023

But there's more to it....




# CATALYST CLOUD MONITORING & MGMT

BRKMER-1415

RE-LIVE 2024

NTS

## Firmware upgrades Coming Soon for Cloud-Monitored Catalyst



**IOS XE 17.9.2**  
Released Mar 15, 2023

[Release notes](#)

### Firmware upgrades

Overview | [Schedule upgrades](#) | [Scheduled changes](#)

[Cloud Managed](#) | [Cloud Monitored](#)

Search:  All networks:  Any status:

2 Items selected [Select all 25 items](#)

Device	Network	Current firmware
<input checked="" type="checkbox"/> C9200-1	San Jose - Building 23 - switch	IOS-XE
<input checked="" type="checkbox"/> Stack1234	San Jose - Building 23 - switch	IOS-XE 17.3.1
<input type="checkbox"/> test [2]	Stack Testing - switch	IOS-XE 17.9.2
<input type="checkbox"/> sw2018	Shanghai - Lab - switch	IOS-XE 17.3.4b
<input type="checkbox"/> xSW3-9300LM	Wireless Test - VX - switch	IOS-XE 17.9.2
<input type="checkbox"/> C9200-24-16-2038	San Jose - MM - Midgard - switch	IOS-XE 17.9.4
<input type="checkbox"/>	Test Network - switch	IOS-XE null

View current IOS-XE version

Select a target IOS-XE version

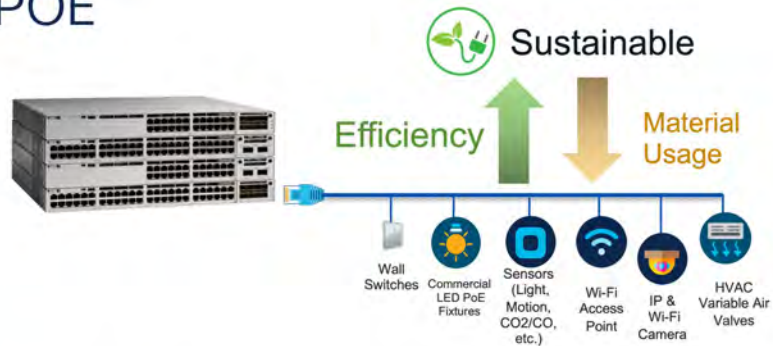
Upgrade on your schedule



# SUSTAINABILITY – 9300X 90W POE

BRKENS-2091

## 90 Watt POE



POE Displays

UHD IP Cameras

HVAC VAV's

**High Power PoE End-points**

**Daisy-chaining**  
(Cost saving with 90W)

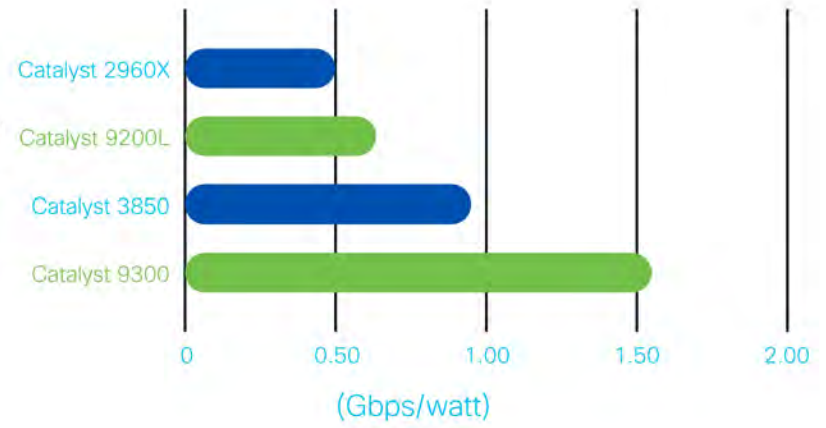
**UPOE Pass-through**  
(for extended reach 60W)

**USB-C power**  
(laptop charging + data)

Significant reduction in "home run" wiring with a >10:1 daisy chain ratio compared to line voltage

# SUSTAINABILITY – THROUGHPUT PER WATT

BRKOPS-1958



# SUSTAINABILITY - EFFICIENCIES

BRKOPS-1958

## Silicon One & Power Supply Efficiency

Consumes less energy, delivers more bandwidth



**Silicon One**  
uses

**96%**

less power than its predecessor, while supplying 35% more bandwidth



350W AC-P

Supports both 110V and 220V input  
Platinum rate power supply  
Redundant mode: Combined and N+1



715W AC-P/DC

Supports both 110V and 220V input  
Platinum rate power supply  
Redundant mode: Combined and N+1



1100W AC-P

Supports both 110V and 220V input  
Platinum rate power supply  
Redundant mode: Combined and N+1



1900W AC-P

Supports both 110V and 220V input  
110V-1500W PDE, 220V-1800W PDE  
Platinum rate power supply  
Redundant mode: Combined and N+1

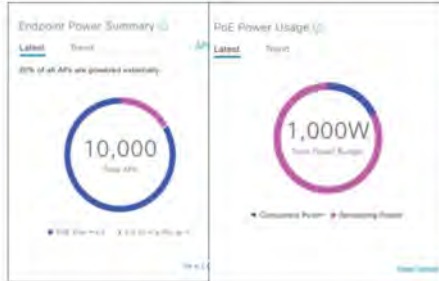
# SUSTAINABILITY – CATALYST CENTER DASHBOARDS

RE-LIVE 2024



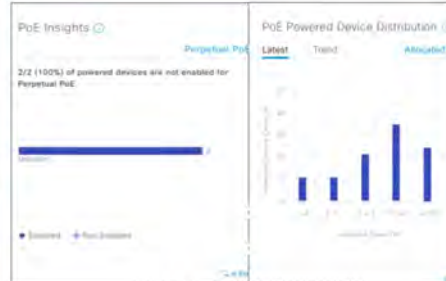
## Plan

- Dashboards with meaningful aggregated data
- Understand current trends that allowing to plan or forecast for the future



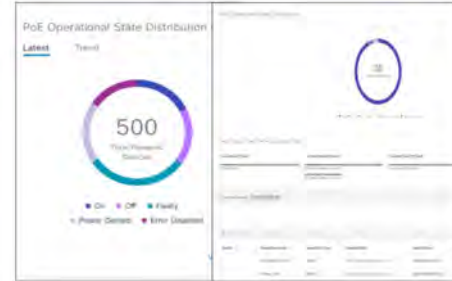
## Monitor

- PoE insights to understand how the network is behaving
- Understand the power consumption distribution across devices



## Troubleshoot

- Operational Status highlighting faulty states
- Troubleshoot individual devices that are presenting problems

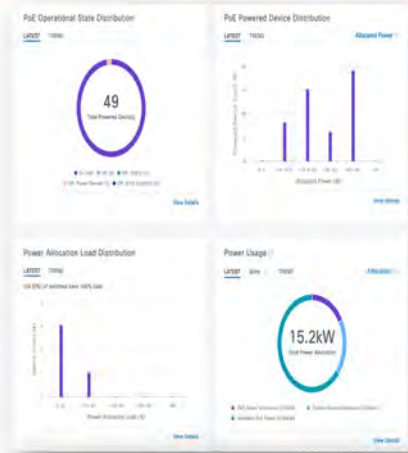


# SUSTAINABILITY – CATALYST CENTER DASHBOARDS

RE-LIVE 2024



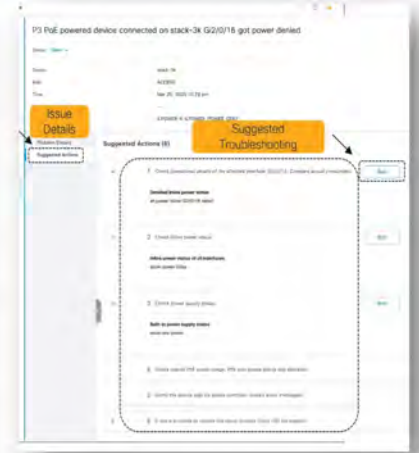
## 1 PoE/Power Widgets



## 2 Switch/Stack/Port Insights



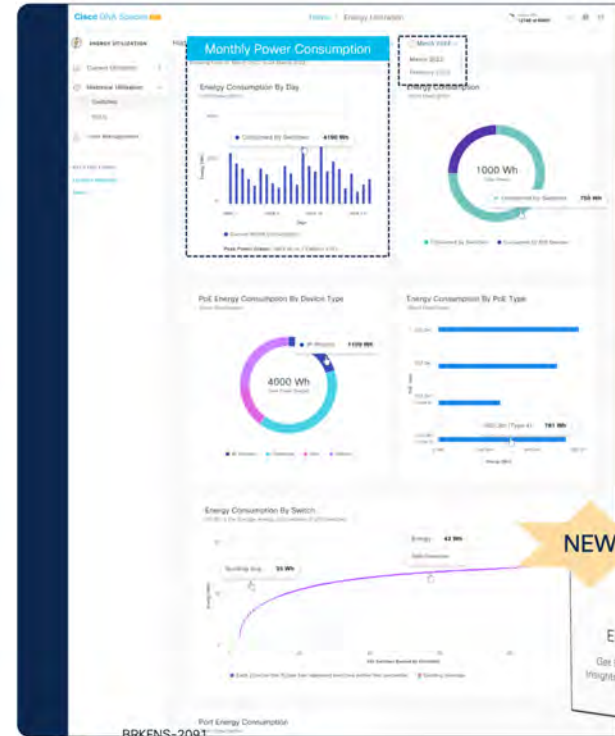
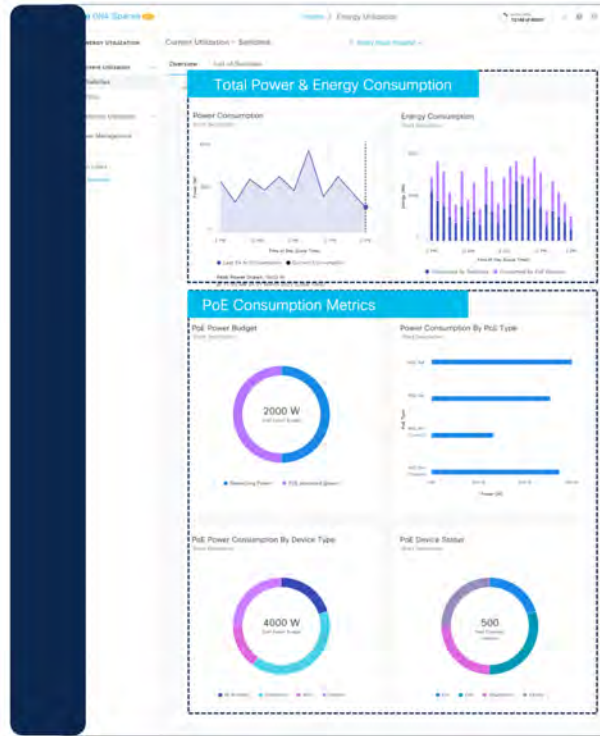
## 3 Automated Troubleshooting



# SUSTAINABILITY – CISCO SPACES DASHBOARDS

RE-LIVE 2024

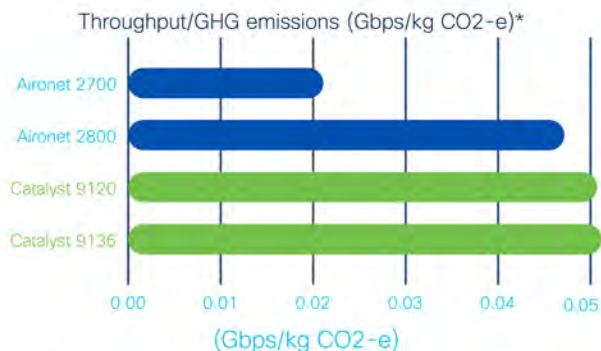
NTS



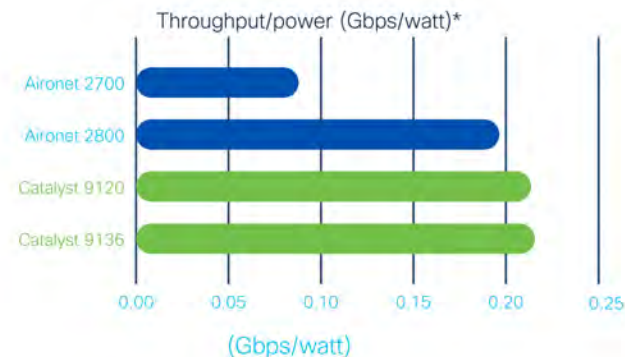


## SUSTAINABILITY – WIFI

RE-LIVE 2024



Throughput efficiency relative to CO<sub>2</sub>-e emissions in the Catalyst series



Throughput efficiency relative to power (W) required in the Catalyst series

(\*) based on internal testing

NTS

## SUSTAINABILITY – WIFI

### AP Power Save Mode

Lower AP Power Usage

- Create a calendar profile for off-peak hours.
- Create a power profile to lower the power consumption budget during off-peak hours.
- Power Profile: Shut AP Radio or lower spatial Stream, lower port speed, disable USB port.

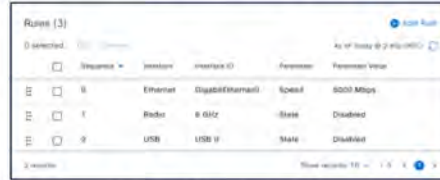


IOS-XE 17.8

### AP Power Distribution

Control over how power is used

- Reallocate extra AP Power to different radios while operating on PoE+ (30W).
- Example: Disable 2.4 GHz radio -> use extra power for 6 GHz radio.
- Power Profiles: Control the speed of the radio, e.g., from 4x4 to 1x1 spatial stream



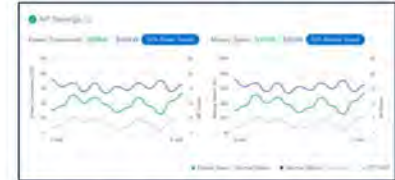
IOS-XE 17.10

Supported only on Catalyst APs: 9115, 9120, 9130, 9136, 9166, 9164, 9162

### AP Power Savings Insight

Power, Money, and Emissions Savings on Cisco DNA Center\*

- Catalyst Center PoE dashboard integration.
- Power Savings, Money Savings, Emissions Reductions.
- Visibility into trends and insights.
- Both site level and AP level view.



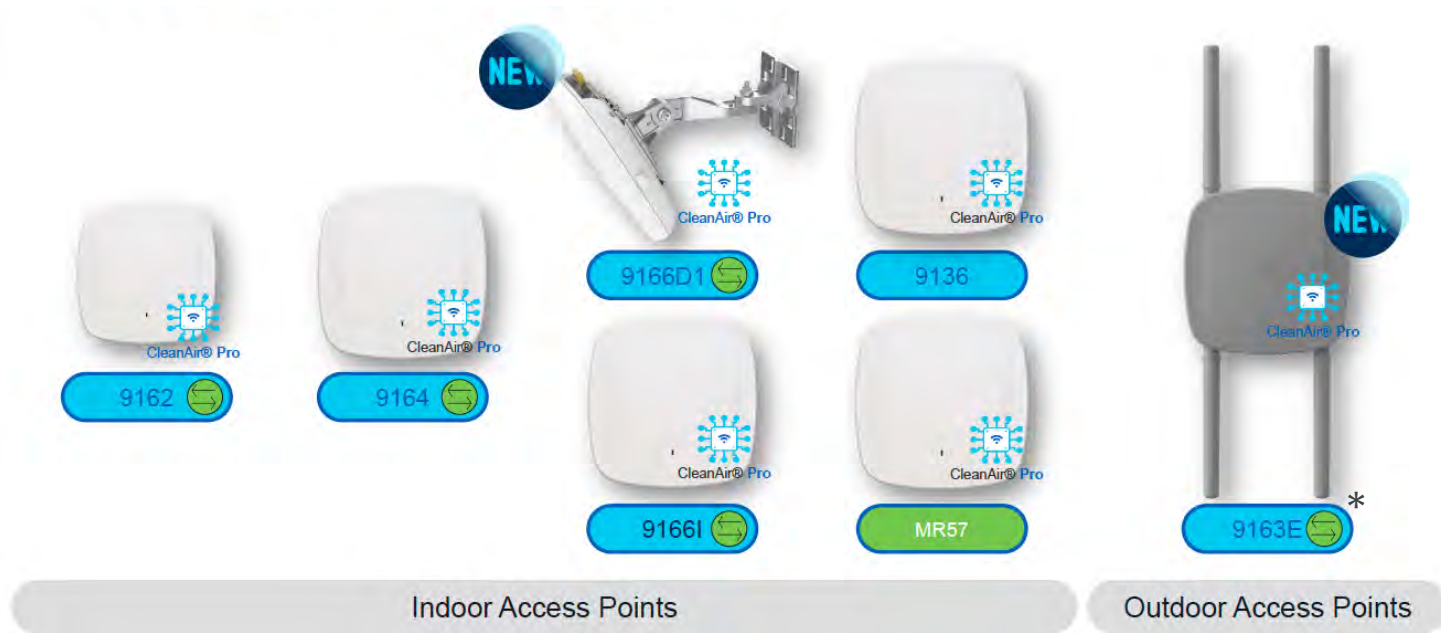
(\* DNA Center Automation and Assurance PoE Visibility is in release 2.3.6, Visibility of \$ and CO2 is later in the roadmap)



# COMPLETE WI-FI 6E PORTFOLIO

RE-LIVE 2024

NTS



\* Europa: Wifi6E ist ausgeschaltet

# COMPLETE WI-FI 6E PORTFOLIO

Nicht möglich auf Meraki  
Mode zu wechseln

RE-LIVE 2024

NTS



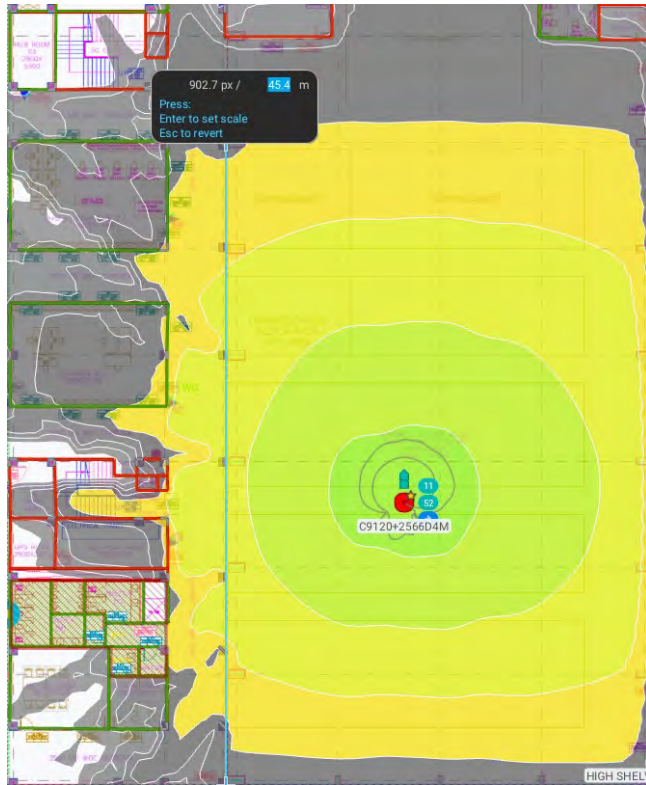
Indoor Access Points

Outdoor Access Points

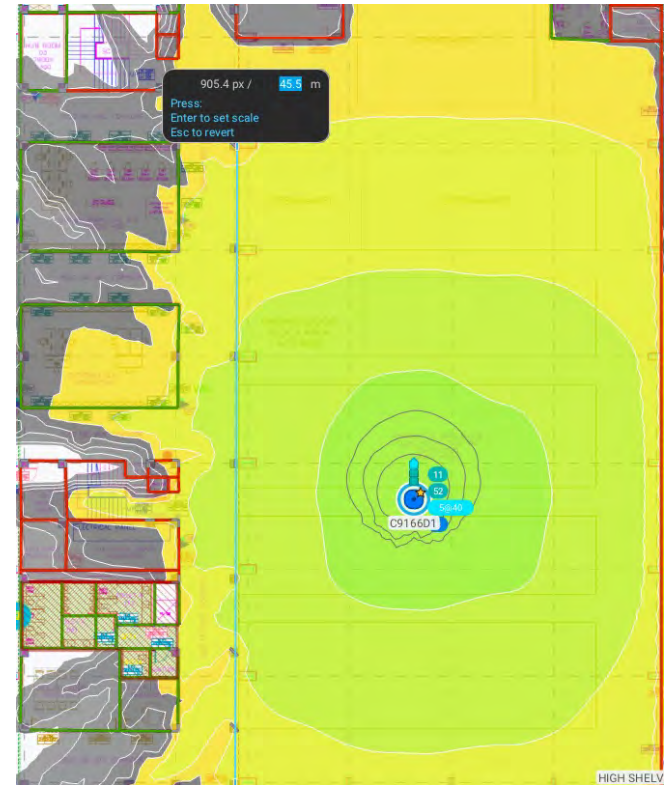
\* Europa: Wifi6E ist ausgeschaltet

9164 ist der beste Allrounder, wenn 2,4 GHz noch im Einsatz ist 😊

# KEINE EXTERNEN ANTENNEN FÜR 6 GHZ



C9120 + ANT2566D4M / 14 dBm / 12 m



C9166D1/ 14 dBm / 12 m

# AI ENHANCED RRM\*

Areas	Traditional RRM	AI Enhanced RRM
RF Telemetry Inputs	<b>Snapshot</b> [10 mins]	<b>RF Trends</b> [14 days]
Config Workflow	<b>Manual</b> [50+ RF Savvy knobs]	<b>Automated (AI Assisted)</b> [Minimal Config Knobs]
Segment Services	<b>No</b> [Cannot Segment within WLC ]	<b>Yes</b> [Service Segmentation by Buildings]
Visualization	<b>Controller UI</b> [List View/ Does not group radios by site]	<b>RRM Control Center</b> [Group collocated radios by Building/Site]
Interrupt Cognizant	<b>No</b> [Reactive optimizations]	<b>Yes</b> [Scheduled RF Tuning]
Reward Based Decisions	<b>No</b> [Decisions based on composite RRM Metrics]	<b>Yes</b> [Maximize WCAE Performance Score]
Emulate What-If Scenarios	<b>No</b> [Doesn't support emulation mode]	<b>Yes</b> [RRM Simulator]
Troubleshooting	<b>Complex</b> [Requires multiple service logs from WLC/AP]	<b>Simplified</b> [Integrated One-Click Service Bundle]

\* Aktuell nur mit WLCs möglich die über das Catalyst Center konfiguriert werden

# AI ENHANCED RRM

## Nach AI RF Profile

- Catalyst Center wird RF Leader
- RF Group Name wird „Open RRM“
- Andere WLCs, die Mitglied in dieser WLCs RF-Gruppe als Mitglied waren, werden einen einen neuen RF-Gruppenleiter zu und verwenden weiterhin die bestehenden Konfigurationen

### Vor AI RF Profile

Configuration -> Radio Configurations -> RRM

6 GHz Band | **5 GHz Band** | 2.4 GHz Band | FRA

General | Coverage | DCA | TPC | **RF Grouping**

Group Mode:  Automatic,  Leader,  Off

Group Role: Auto-Leader

Group Update Interval: 600 second(s)

Last Group Update: 328 second(s) ago

Group Leader: C9800-L\_17\_7 (192.168.10.2)

Group Members:

Total Group Members: 3

Group Name: test1

Protocol Version: 0

Controller Name	IPv4 Address
C9800-L_17_7	192.168.10.21
C9800-L_17_7_a	192.168.10.31
C9800-L_17_7_b	192.168.10.41

Configuration -> Radio Configurations -> RRM

6 GHz Band | **5 GHz Band** | 2.4 GHz Band | FRA

General | Coverage | DCA | TPC | **RF Grouping** | Spatial Reuse

Restart

Group Mode:  Automatic,  Leader,  Off

Group Role: Remote-Member

Group Update Interval: 600 second(s)

Last Group Update: 328 second(s) ago

Group Leader: DNAC\_Rocks\_RRM (172.16.xxx.xxx)

Group Members:

Total Group Members: 1

Group Name: Open RRM

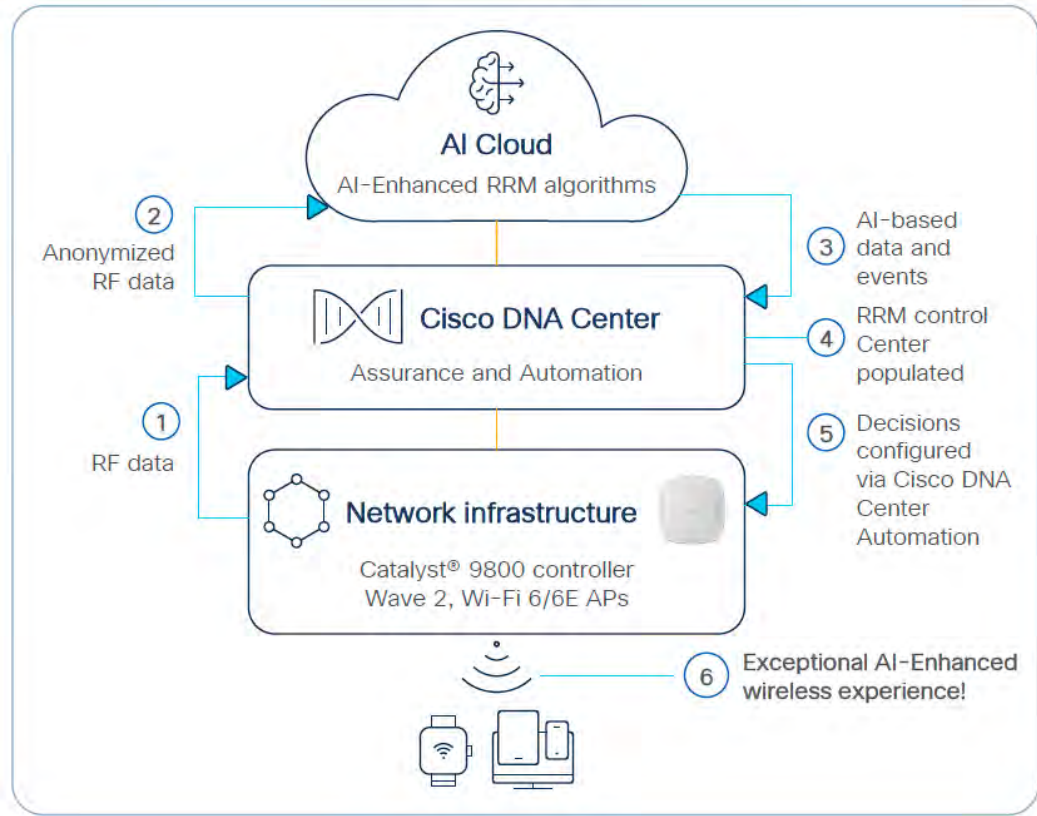
Protocol Version: 0

Controller Name: C9800-L\_17\_7 | IPv4 Address: 192.168.10.21



# AI ENHANCED RRM

RE-LIVE 2024



## AI ENHANCED RRM

APs with High Co-Channel Interference Decreased by 28%!



RE-LIVE 2024

NTS

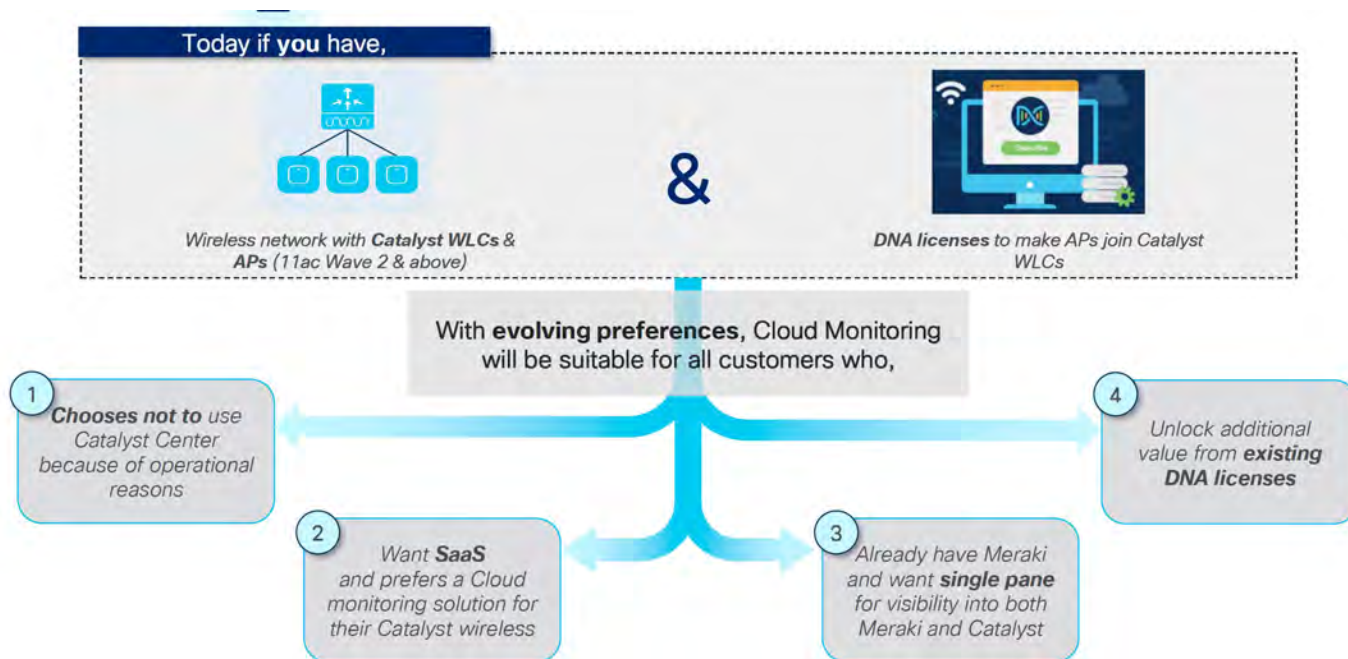


# MONITORING WLC MIT DEM MERAKI DASHBOARD



BRKEWN-2097

Für wen macht dies Sinn?



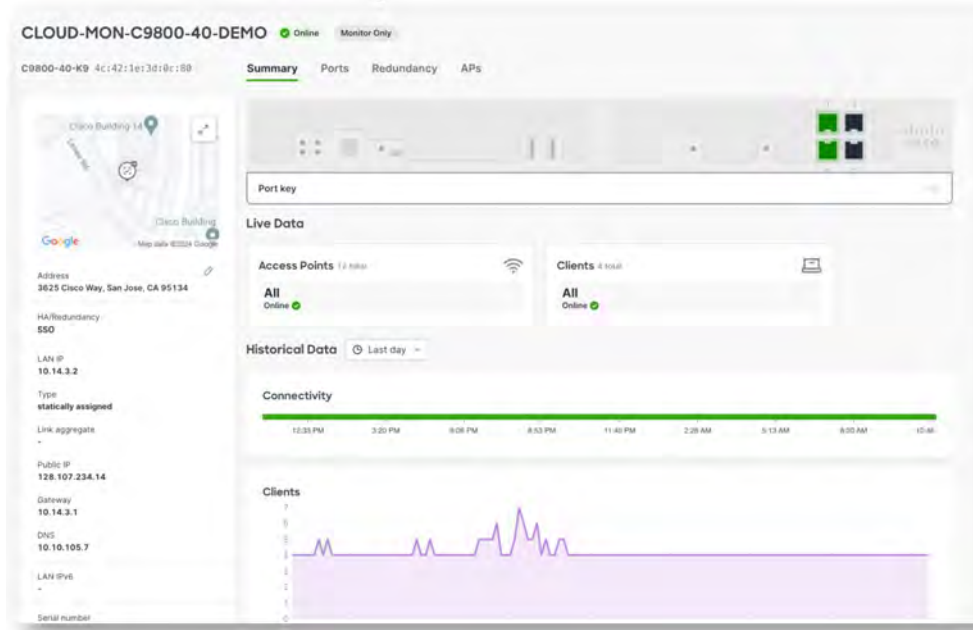
# MONITORING WLC MIT DEM MERAKI DASHBOARD



BRKEWN-2097

RE-LIVE 2024

NTS



## Supported Hardware<sup>1</sup>

C9800-80  
C9800-40  
C9800-L-C  
C9800-L-F

<sup>1</sup> C9800-CL support is on the roadmap

## IOS-XE Software

17.12.3 / 17.15.1 or later

# MONITORING WLC MIT DEM MERAKI DASHBOARD



BRKEWN-2097

RE-LIVE 2024

NTS

### Wi-Fi 6E

C9136	CW9163
CW9166I/D1	CW9162
CW9164	

### Wi-Fi 6

C9130	C9117
C9124	C9115
C9120	C9105

### Wave 2

AP4800
AP3800
AP2800

**AP-Bldg-14-HQ-01**

CW9164I-B

Wireless Controller

Live data

Ports

AP port profile

use network default (none currently set) [add](#)

[load all profiles](#)

Current clients 200

Description	IP address	VLAN	MAC address	Usage	Associated for	SSID
<a href="#">2c:33:11:7a:2b:20</a>	10.14.140.76	140	2c:33:11:7a:2b:20	5.6 MB	17 minutes	CLUS
<a href="#">2c:33:11:7a:2b:21</a>	10.14.140.78	140	2c:33:11:7a:2b:21	39 KB	18 minutes	CLUS
<a href="#">2c:33:11:7a:2b:22</a>	10.14.140.83	140	2c:33:11:7a:2b:22	39 KB	18 minutes	CLUS

Utilization on current channels

Channel 1 (2.4 GHz): 100% (Very high, likely a problem)

Channel 161 (5 GHz): 30% (Acceptable)

Channel 5 (6 GHz): 1% (Acceptable)

**BSSIDs**

local-mode

2.4 GHz: 1 (20 MHz; 2 dBm)

5 GHz: 161 (40 MHz; 23 dBm)

6 GHz: 117 (80 MHz; 2 dBm)

# MONITORING WLC MIT DEM MERAKI DASHBOARD



BRKEWN-2097

## Lizenzen

### Cisco DNA Advantage



Full monitoring suite for Catalyst Switches, Wireless LAN Controllers and Access Points + *Client Traffic Analytics provided by IOS XE NBAR and NetFlow*

### Cisco DNA Essentials

Full monitoring suite for Catalyst Switches, Wireless LAN Controllers and Access Points



\* Keine extra Kosten für das Meraki Dashboard

RE-LIVE 2024

NTS

# MONITORING WLC MIT DEM MERAKI DASHBOARD



BRKEWN-2097

The screenshot displays the Meraki dashboard for a Wireless LAN Controller (WLC) with the following components:

- Summary:** Overview of the WLC configuration, including address (500 Terry A. Francisco Blvd, San Francisco, CA 94158), HA/Redundancy (550 enabled), and Mobility group (WLC\_MOBILITY\_GROUP).
- Live data:** Shows 83 Access Points Online and 355 Clients Online.
- Historical data:** A connectivity bar at the top shows 100% connectivity over the last 12 hours.
- Client count:** A line graph showing client trends over the last 12 hours, with a total of 4558 clients. A callout indicates 962 clients at 20:47:00.
- CPU utilization:** A line graph showing CPU usage over the last 12 hours, with a callout indicating 1.02% at 00:02:00.
- Memory utilization:** A line graph showing memory usage over the last 12 hours, with a callout indicating 51.0% at 00:02:00.

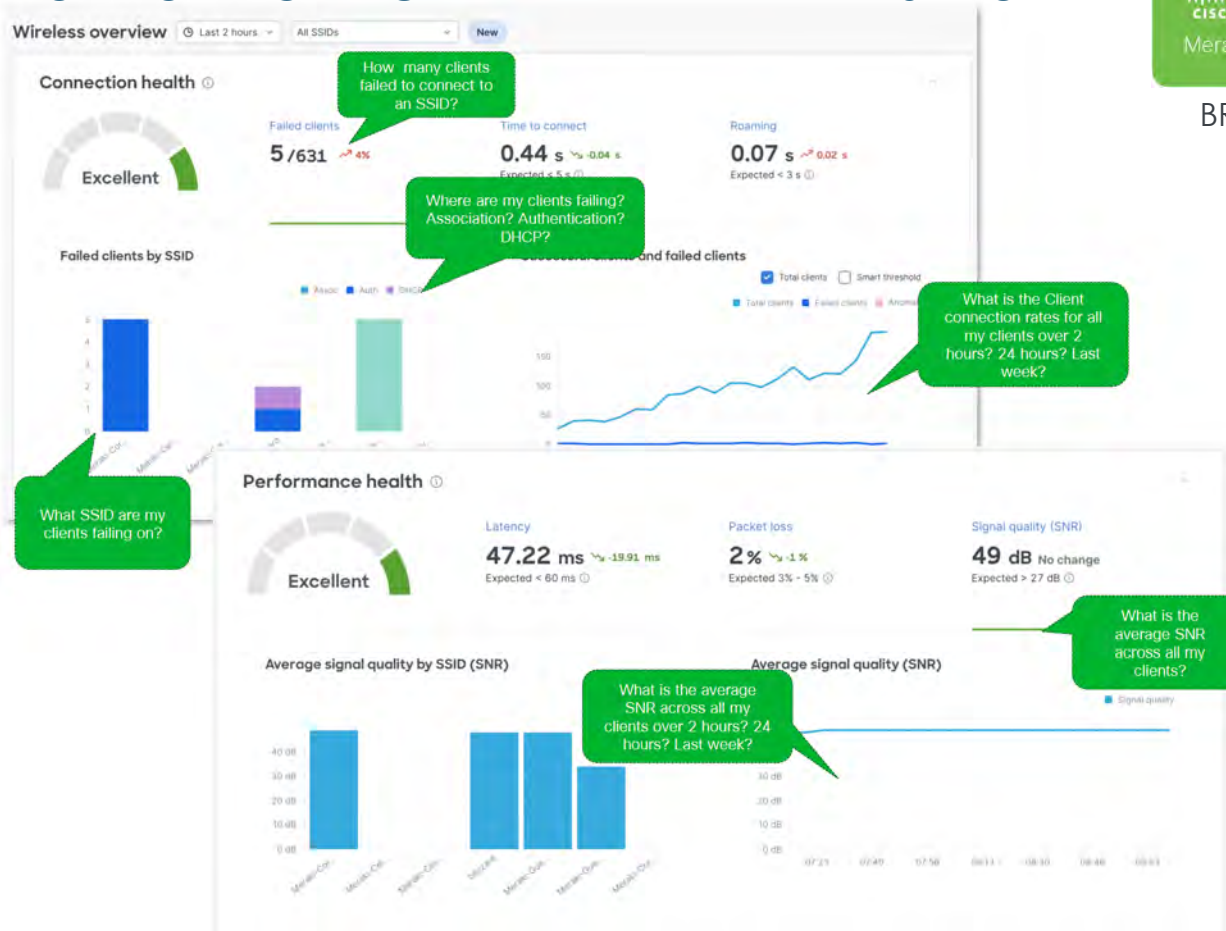
Callouts from the image:

- What is my current AP load?
- Are my interfaces up? Are they accruing CRC or input errors?
- What is my current client load?
- What are my client load trends over the last 12 hours? Week? Month?
- What is my average CPU load trends over the last 12 hours? Week? Month?
- What is my memory usage over the last 12 hours? Week? Month?
- Has my CPU or Memory crossed a warning or critical threshold?

# MONITORING WLC MIT DEM MERAKI DASHBOARD



BRKEWN-2097





# MONITORING WLC MIT DEM MERAKI DASHBOARD



BRKEWN-2097

Ekahau Surveys können in das Meraki Dashboard hochgeladen werden







**THANK YOU!**

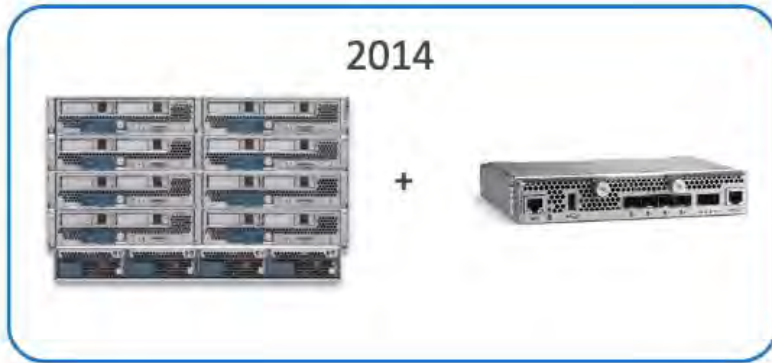


**RELAX,  
WE CARE**



# DATA CENTER COMPUTE

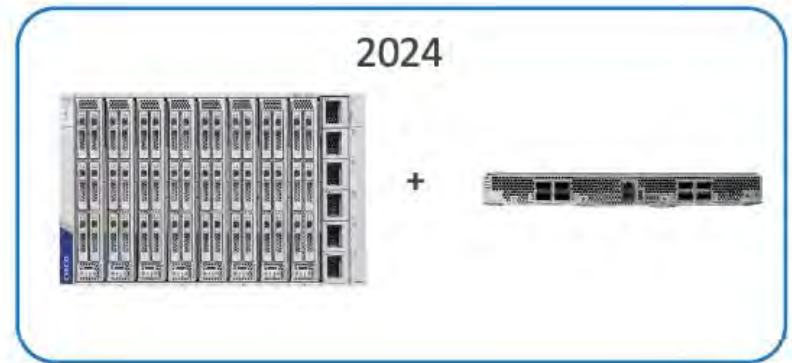
# COMPUTE SIMPLIFIED



## UCS Mini

Innovation rund um

- Compute, Netzwerk , Storage
- Management
- Unified-Fabric
- basierend auf Standard UCS-Chassis, -Blades, PSU & Fans

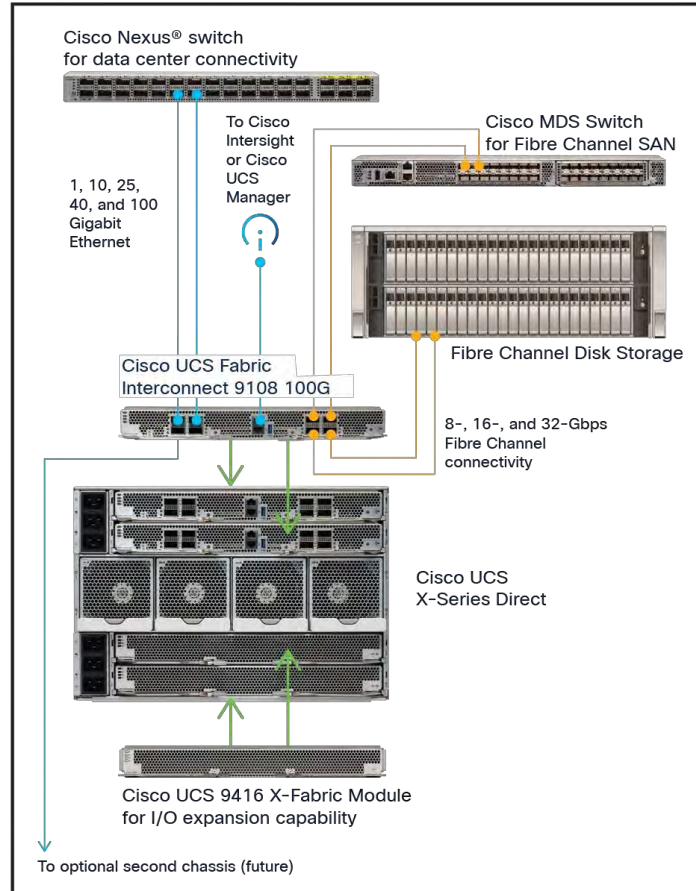


## UCS X-Direct

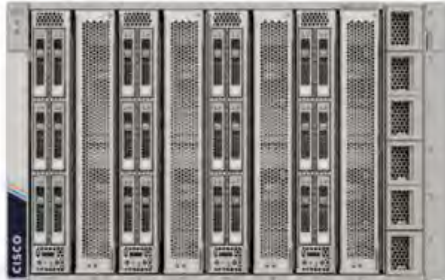
Evolution von UCS Mini

- Mehr Compute, Netzwerk , Storage
- Unified- & X-Fabric Fabric
- GPUs
- UCS-Manager oder Intersight

# UCS X-DIRECT CONNECTIVITY



# UCS X-SERIES & UCS X-DIRECT



X210c M6/M7



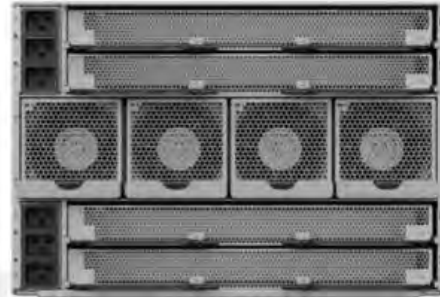
X210c M6/M7 - GPU mezz



X410c M7



X440p PCIe Node



9108 25G Intelligent Fabric Module (IFM)



9108 100G Intelligent Fabric Module (IFM)



Fabric Interconnects 9108 100G



9416 X-Fabric Module (XFM)

# AMD IN UCS

## UCS C245 M8 Rack-Server



bis zu 2 x 4<sup>th</sup> Gen AMD EPYC™ CPUs  
→ maximal 256 Cores

24 DIMM Slots  
→ maximal 6 TB RAM

PCIe Gen5

Cisco VICs & OCP 3.0 NICs

## UCS X215c M8 Modular-Server



bis zu 2 x 4<sup>th</sup> Gen AMD EPYC™ CPUs  
→ maximal 256 Cores

24 DIMM Slots  
→ maximal 6 TB RAM

PCIe Gen5

Cisco VICs





# UCS MANAGEMENT



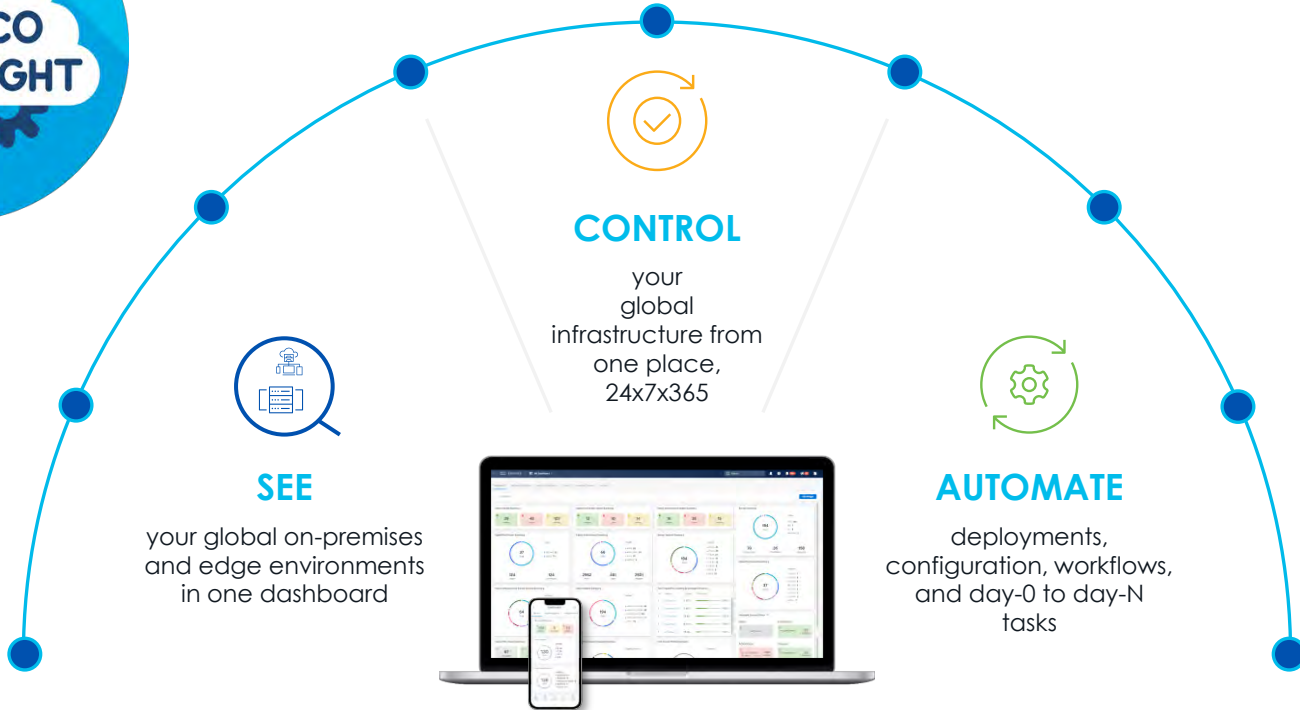
oder



UCSM voraussichtlich bis inklusive UCS M8...

# INTER-SIGHT

...IS THE FUTURE



## SEE

your global on-premises and edge environments in one dashboard



## CONTROL

your global infrastructure from one place, 24x7x365

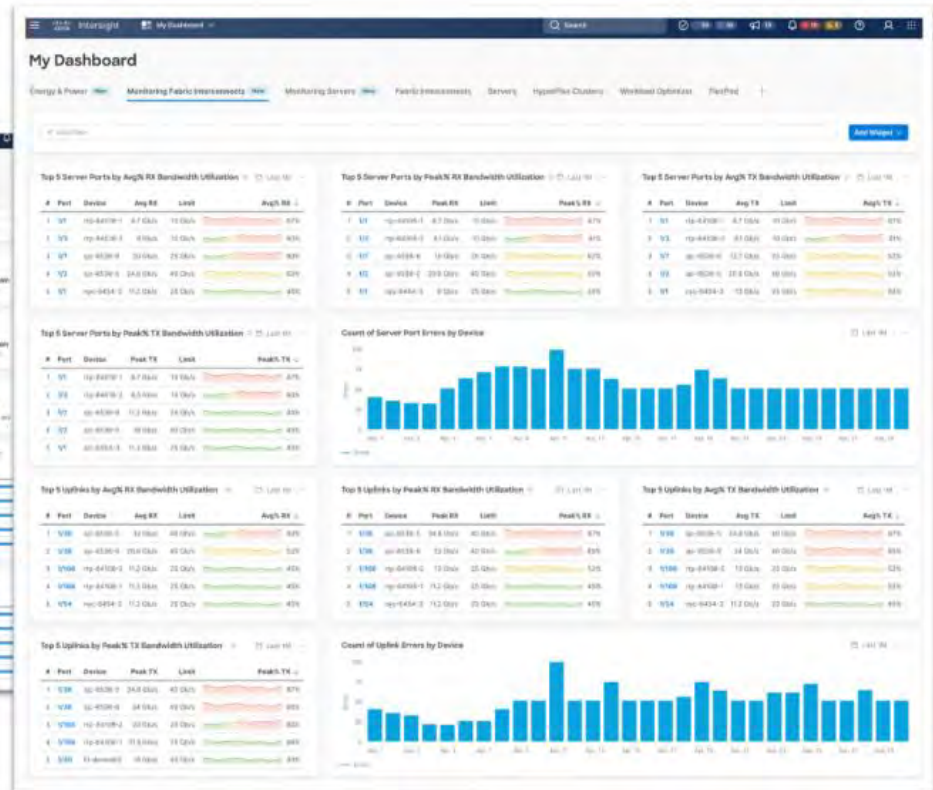
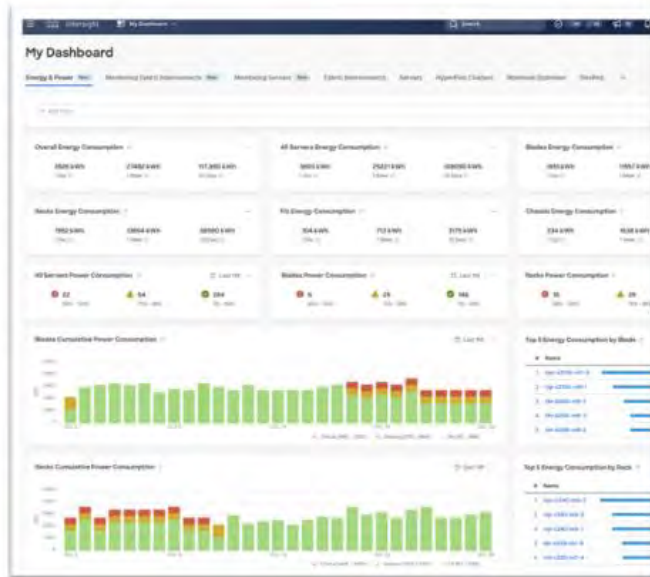


## AUTOMATE

deployments, configuration, workflows, and day-0 to day-N tasks



# INTERSIGHT LATEST NEWS METRICS DASHBOARD





# INTERSIGHT UPDATES

## INTERSIGHT SAAS EMEA

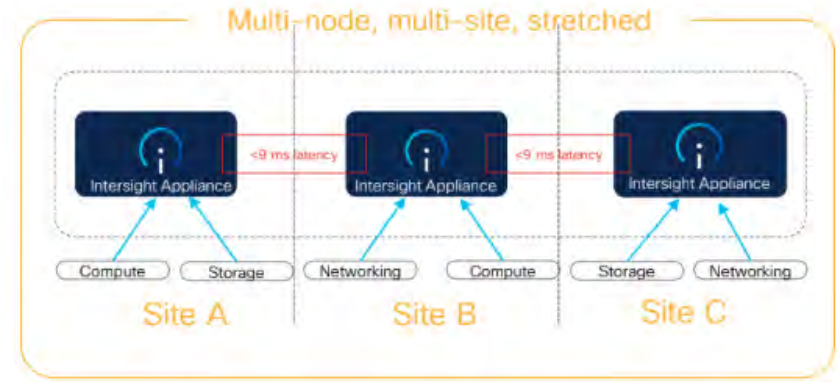


**DATEN:** bleiben in EU

**GERINGERE LATENZ:** kürzere Wege zur Infrastruktur & flüssigere User-Experience

**ZERTIFIZIERUNGEN:** ISO, SOC2 Typ2, GAIA-X, ENISA

## INTERSIGHT APPLIANCE CLUSTER



**HOCHVERFÜGBARKEIT:** auf einer Site oder stretched

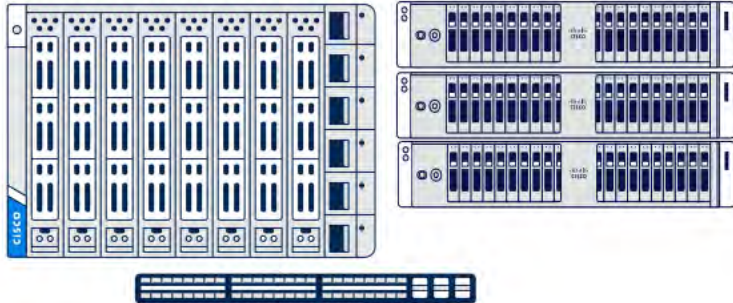
**MULTISITE APPLIKATIONSREDUNDANZ**

# HCI PORTFOLIO UPDATE

## CISCO VSAN READY NODES

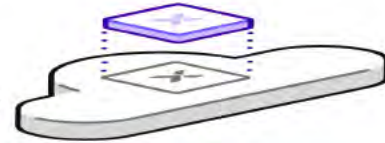


VMware vSAN™

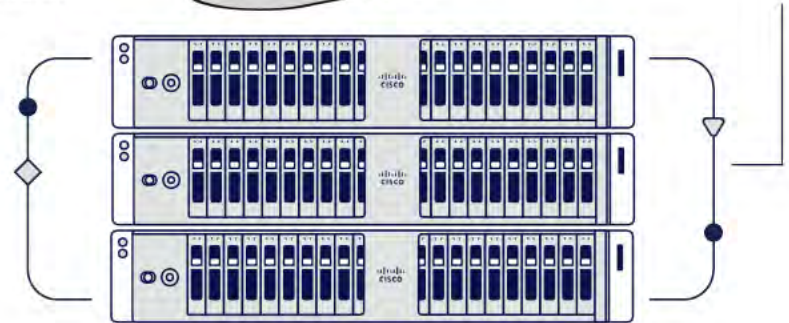


## CISCO COMPUTE HYPERCONVERGED MIT NUTANIX

Nutanix  
Cloud Platform



Cisco Intersight





# CISCO & NUTANIX STRATEGIC PARTNERSHIP



**Best-in-class compute, network, and SaaS-based infrastructure management**

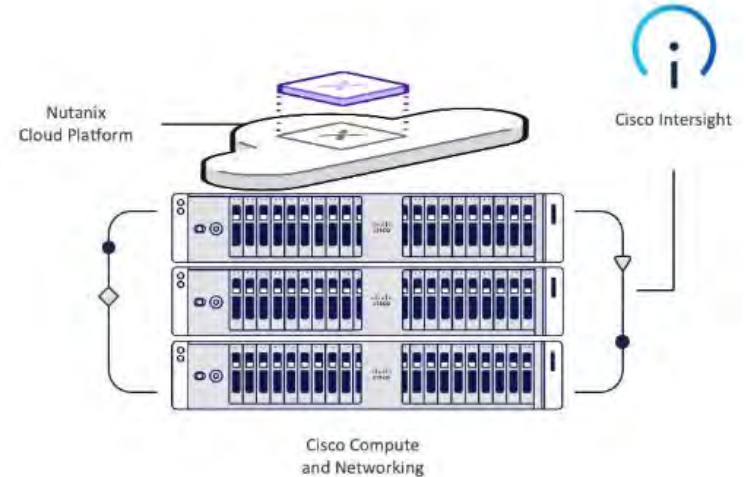
- Stateless, programmable policy-based systems
- See, control, and automate infrastructure from one place
- Proactive, automated health monitoring and support capabilities



**NUTANIX**

**Leader in hyperconverged software**

- One unified platform enables seamless workload mobility
- A complete set of enterprise and cloud features
- Enterprise grade disaster recovery and security capabilities





# AI INFRASTRUCTURE



## Ecosystem

 **nvidia.**  
AI Enterprise

 **Red Hat**  
OpenShift for AI

 **NUTANIX**  
GPT-in-a-box

## Cisco Validated Designs

 **FlexPod**  
OpenShift for AI

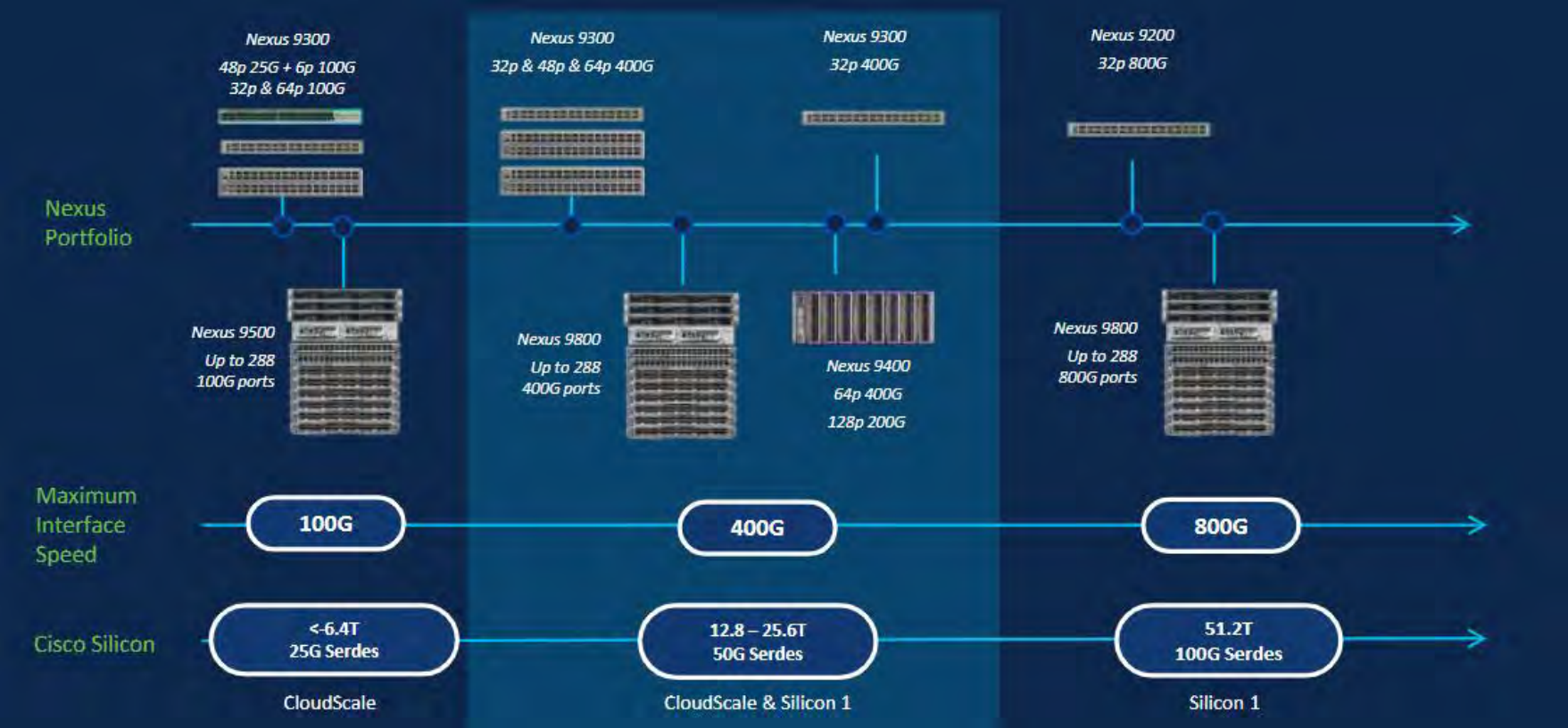
 **cisco**  
AI Data Center Networking

    
AI Accelerators



# DATA CENTER NETWORKING

# THE POWER OF NEXUS



# HARDWARE HIGHLIGHTS

## Nexus C9332D-GX2B



32-Port 400G 1 HE-Switch

400G ZR & ZR+ Support

6k Ingress & 3K egress TCAM

ACI Spine, ACI Leaf oder NX OS-Modus

## Nexus C9332D-H2R



32-Port 400G 1 HE-Switch

8GB HBM Packet Buffer

14K shared TCAM

Line-rate MACsec auf allen Ports

aktuell nur für NX-OS

# NEXUS OPERATIONS

## NEXUS DASHBOARD

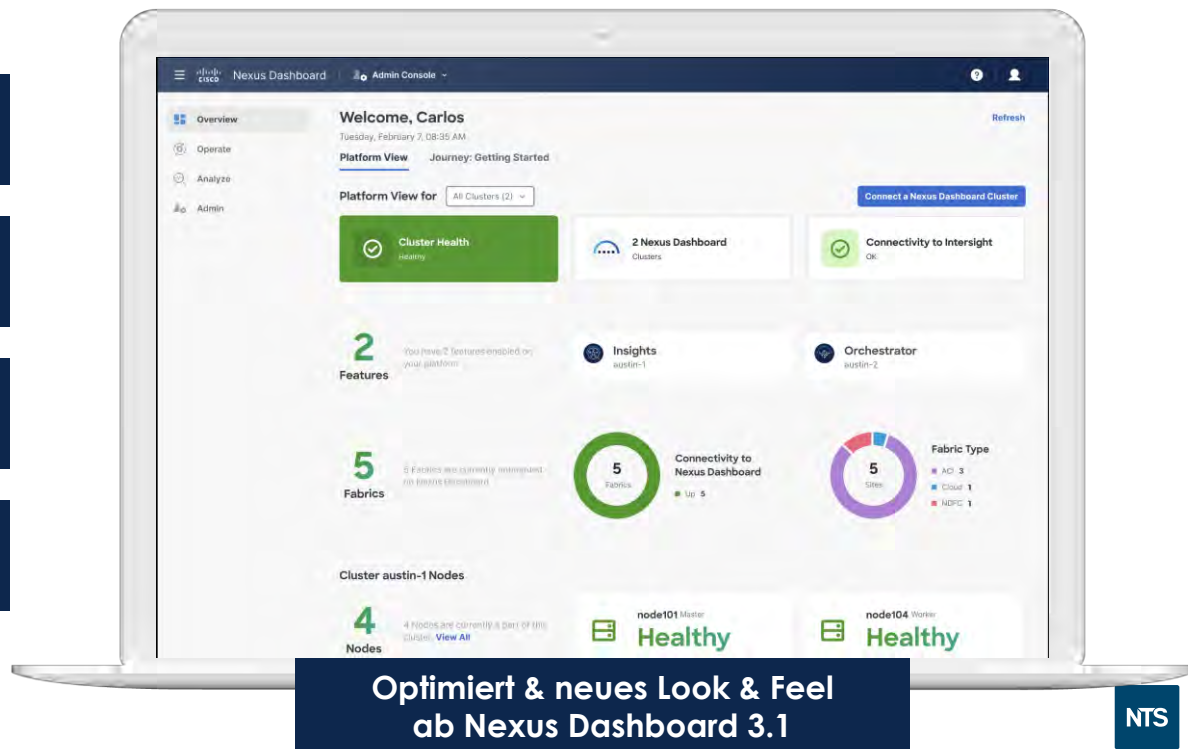
### LATEST NEWS

reduzierter Footprint (1-Node Cluster), höhere Skalierbarkeit

Optimierte Lizenzierung und UI

Nexus Dashboard Insights bei allen NX-OS- oder ACI-Switches inkludiert

Vereinheitlichung für Upgrade-, Product- & Services-Zyklus



Optimiert & neues Look & Feel  
ab Nexus Dashboard 3.1

NTS

# NEXUS DASHBOARD

## USE CASES & HIGHLIGHTS



### Cisco Nexus® Dashboard

#### Services

#### Provisioning

Controller

Orchestrator



Initial setup



Automation



Custom configuration

Integrations

servicenow  
splunk>

Terraform  
ANSIBLE

vmware  
VMWARE VRO

kubernetes  
openstack

#### Operations

Insights

Visibility



Analytics



Troubleshooting



Compliance



Access to Nexus Dashboard services/features is based on the Cisco Nexus 9000 [switch license tier](#)

NTS

# NEXUS DASHBOARD

## ONBOARDING STANDALONE NX-OS-SITES

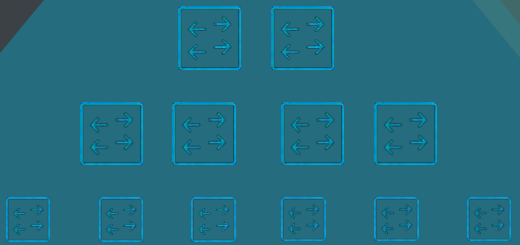


Nexus Dashboard  
Insights

ND 3.1

NXOS

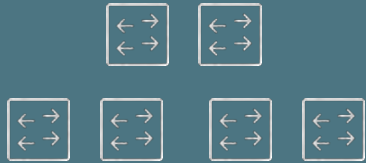
Standalone



ACI



NDFC





# NEXUS DASHBOARD

## NEW INSIGHTS LICENSING



Nexus Dashboard  
Services

Essentials

Advantage

Premier



Insights



Orchestrator









Controller





# NEXUS DASHBOARD INSIGHTS

## FEATURES & LICENSES

Capabilities		Essentials	Advantage	Premier 
Conformance 	Hardware/software lifecycle & EoS	✓	✓	✓
	Verified scale		✓	✓
Topology 	One fabric at a time	✓	✓	✓
	Across fabrics		✓	✓
Anomalies + Advisories 	Switch/interface down + Sev-1 PSIRT & EoS	✓	✓	✓
	All anomalies and advisories		✓	✓
Software Upgrade Support <sup>3</sup> 	Basic upgrade checks & TAC Assist	✓	✓	✓
	Full upgrade analytics		✓	✓
Analytics and Troubleshooting 	Sustainability		✓ <sup>1</sup>	✓ <sup>2</sup>
	Bug Scan, CAM Analyzer		✓	✓
	Flow and Traffic			✓
	Connectivity and Explorer			✓
	Delta (pre/post)			✓
	Compliance			✓

<sup>1</sup> Fabric-Level Sustainability only

<sup>2</sup> Integration with Panduit

<sup>3</sup> Software Upgrade from Insights in roadmap, only Pre-Upgrade Analysis available on ND 3.0 and 3.1

# END-TO-END APPROACH FOR THE AI-ERA

Web-scale components

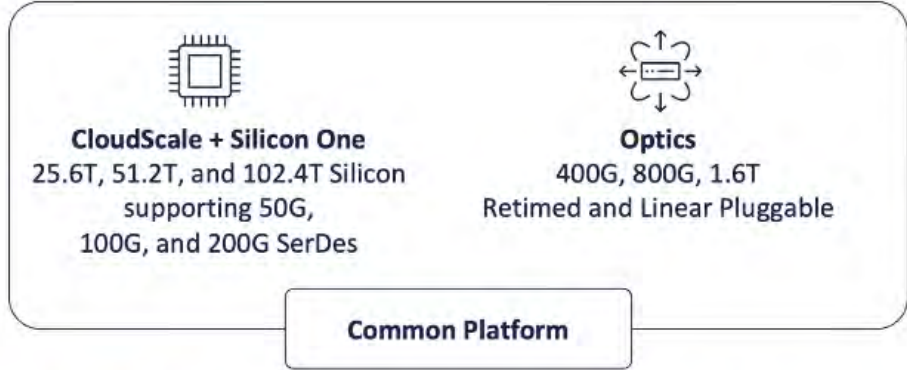


**Software for Open Networking in the Cloud (SONiC)**  
Open network infrastructure management

Enterprise Components



**Purpose-built data center fabric with Nexus managed by Nexus Dashboard**



Enterprise end-to-end integrated system

**Data Center Platform**

Fabric automation

Visibility

Compute + Network

Generative AI

**Networking**

100G/400G/800G switching

Cisco Silicon

Optics

Enhanced, Scheduled Ethernet

**Network Interface Controllers (NICs)**

Multi-vendor NICs

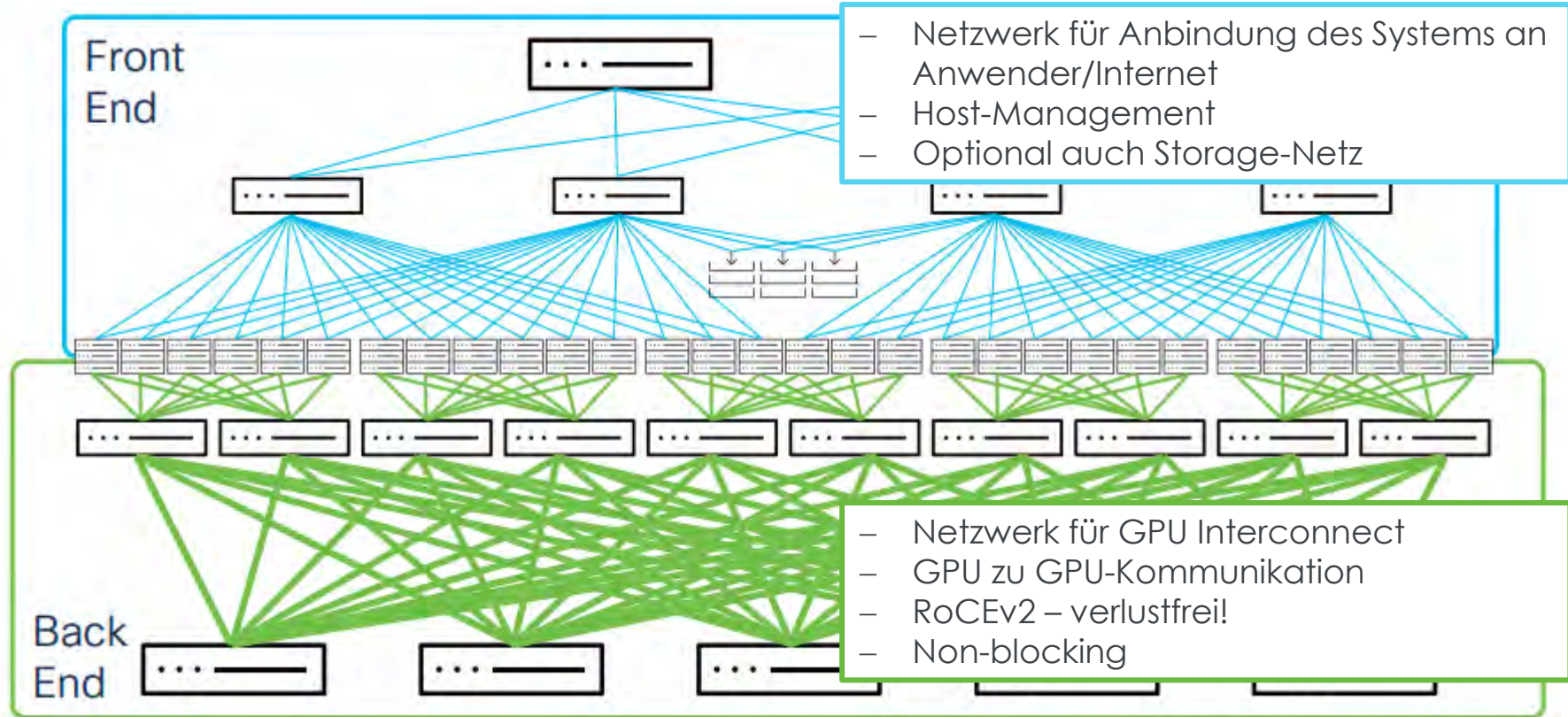
Interop testing

Cisco NICs

**Compute**

Multi-vendor accelerated compute and graphic processing units (GPUs)

# AI NETWORKS → NON-BLOCKING!



# BEST PRACTICES FOR AI NETWORKS

**CISCO DATA CENTER NETWORKING  
BLUEPRINT FÜR AI/ML ANWENDUNGEN**



**GITHUB REPO FÜR AI/ML BLUEPRINT**



**INTELLIGENT BUFFER MANAGEMENT FÜR  
NEXUS 9000 SWITCHES**



**ROCE ÜBER NX-OS VXLAN FABRICS**





# SECURITY REDELIVERY



IDENTITY-FIRST APPROACH TO SECURITY

# CISCO IDENTITY INTELLIGENCE



# ... when you can simply login?

## Authentication

Cisco Duo

- Entdecken von vulnerablen Accounts.
- Erkennen von ungewöhnlichen Mustern, basierend auf **Verhaltens- und Drittanbieter-Signalen**.

Private Vorschau: Jetzt!  
Begrenzte GA: Mai 2024

## Access

Cisco Secure Access

- Überprüfen und **ungewöhnliche oder riskante** Verhaltensweisen **blockieren**.

Begrenzte GA: August 2024

## Threat Detection

Cisco XDR

- **Korrelieren von Signalen** aus Endpoints, Netzwerken und E-Mails.
- **Detektieren und reagieren** auf mögliche Bedrohungen.

Begrenzte GA: Mai 2024



# CISCO AI ASSISTENT FÜR SECURITY

# AI ASSISTANT FÜR SECURITY

NTS

## Umfassende Integration von AI in die Cisco Security Cloud



Assist



Augment



Automate

# AI ASSISTANT FÜR SECURITY

NTS

AI Assistant für  
Secure Access

Secure Access +  
Secure Usage von AI

Secure Email + AI

- AI und **natural Language processing vereinfachen** die Verwaltung von Policies.
- Reduktion der Komplexität
  
- **Sichere Verwendung von Generativen AI-Anwendungen** durch Discovery, Block/Allow
  
- Fortschrittliche **Detektoren und Markierungen**
- **Geschwindigkeit und Genauigkeit** der E-Mail-Bedrohungsabwehr zu **erhöht.**

# AI ASSISTANT FÜR SECURITY

NTS

AI Assistant für  
Firewall-Policy

Cloud-delivered Firewall-Management-Center und Cisco Defense Orchestrator bieten **natural language processing** bei der Erstellung von Firewall-Policies an

AI-powered  
Encrypted Visibility  
Engine

**Analysiert den verschlüsselten Datenverkehr, um Malware zu identifizieren.**

Für die Analyse werden **Milliarden von Samples**, einschließlich Sandboxed-Malware, verwendet.



# CISCO SECURITY SUITS

## Verbesserung der Effizienz und Wirtschaftlichkeit



„Nein, es sind keine Bundles“

Cisco (2024)



## User Protection

Sicherer, nahtloser Zugriff auf jede App.  
**Jederzeit und auf jedem Gerät.**

## Cloud Protection

**Schützt Hybrid- und Multicloud-Umgebungen** mit End-to-End-Sicherheit für Anwendungen, Workloads, Netzwerk und Cloud-Umgebungen.

## Breach Protection

Ermöglichen es Sicherheitsteams, **Abläufe zu vereinfachen** und dadurch auch **schneller zu reagieren.**

# Cisco Security Cloud

## Cisco Breach Protection

Extended Detection & Response

Ransomware Recovery

## Cisco User Protection

Posture & Auth Management

Endpoint Security

Email Security

Experience Insights

Remote Browser Isolation

Security Service Edge

## Cisco Cloud Protection

Workload Security

Application Security

Vulnerability Management

Attack Surface Management

Multicloud Defense

Firewall Protection

## Cisco Breach Protection



XDR



Email  
Threat Defense



Secure  
Endpoint



Secure  
Network Analytics  
with Cisco Telemetry Broker



Cisco MDR



Talos IR



Technical  
Security Assessments

## Cisco User Protection



Email Threat  
Defense



Secure  
Access



Duo



Secure  
Endpoint

## Cisco Cloud Protection



Multicloud  
Defense



Secure  
Workload



Vulnerability  
Management



Cloud  
Application  
Security  
(Panoptica)



Attack Surface  
Management  
(SCI)

**Essentials**

**Advantage**

**Premier**



**XDR**

# Cisco XDR

Telemetrie von **nativen und von Drittanbieter** Kontrollpunkten



Endpoint



Network



Email



Cloud



Identity



Firewall ...



Threat intel

Asset & user context

MITRE



## Outcomes

Optimierte Untersuchungen, Verkürzung der Zeit von der Erkennung bis zur Reaktion

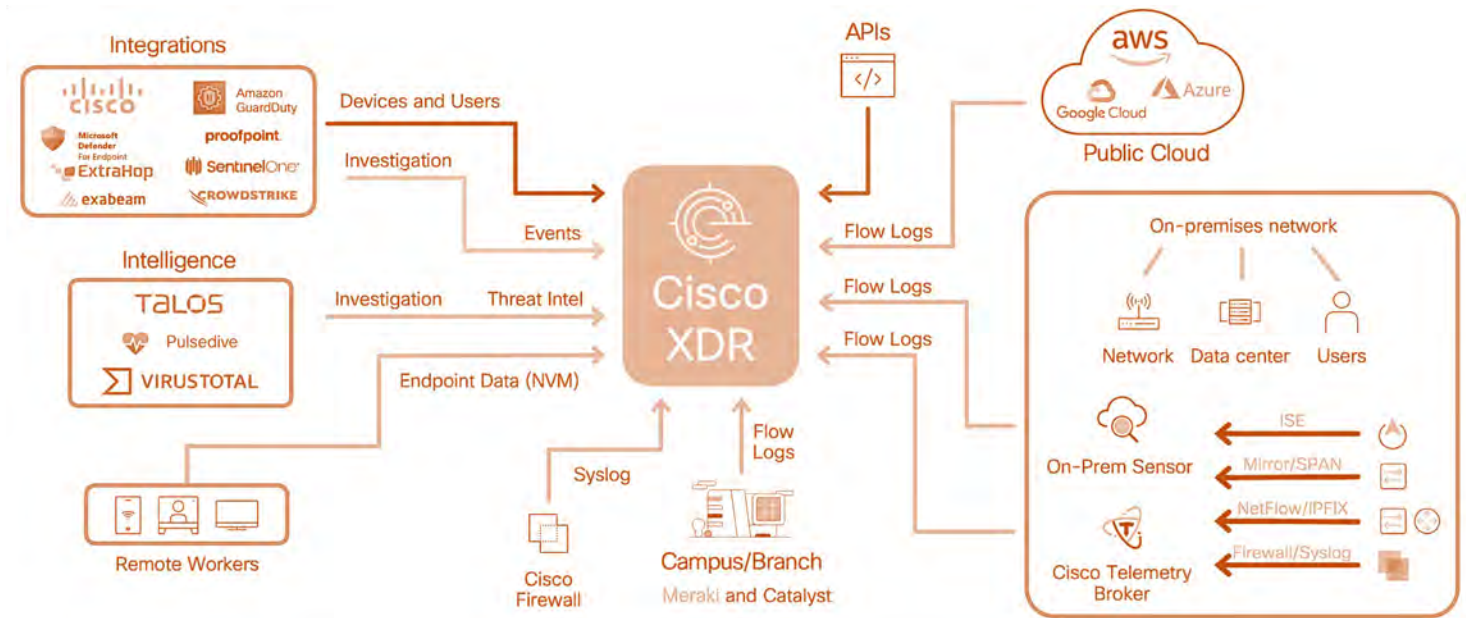
Priorisierte Alerts, damit das SOC sich auf die "echten" Bedrohungen konzentrieren kann

Automatisierte Maßnahmen, um schnell proaktiv die Bedrohung zu entschärfen

# Extended Detection and Response (XDR)

XDR

NTS



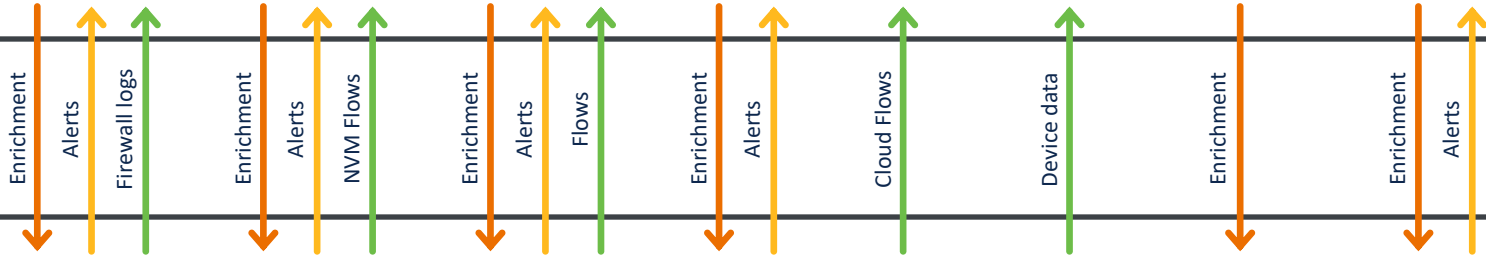
Quelle: 2024 Cisco, Cisco Public

# Telemetry and enrichment



Alerts, raw telemetry, and logs are stored in the XDR data warehouse for analytics and incident creation

Events and intelligence are fetched from integrated products and added to incidents and investigations



Firewall



Endpoint +  
Secure Client



SNA  
Flows via ONA  
or CTB



Email



Public Cloud



Meraki  
and others...  
jamf PRO



splunk >  
and others...  
VIRUSTOTAL  
ALIEN VAULT



Microsoft  
Defender  
For Endpoint.  
proofpoint.

CROWDSTRIKE

ExtraHop

SentinelOne

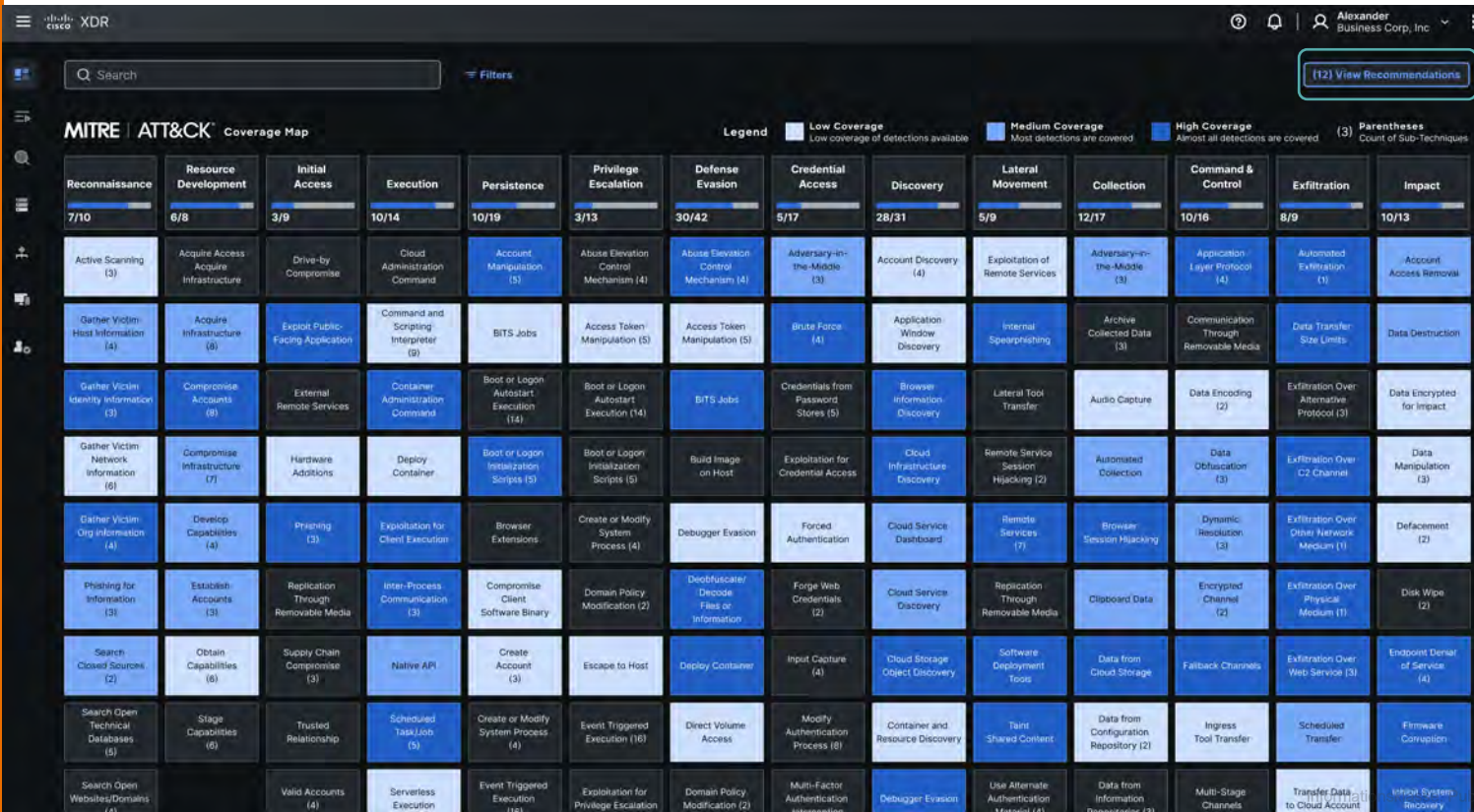
and others...



# XDR: MITRE ATT&CK MAPPING

NTS

- Automatisierte Zuordnung von **Tactics, Techniques, and Procedures (TTPs)**.
- Rasches Identifizieren von potenziellen Anzeichen einer Kompromittierung, basierend auf **bekanntem Verhaltensweisen von Angreifern**.





# MULTICLOUD DEFENSE

# Cisco Multicloud Defense

## Asset Discovery & Visibility

Egress  
Security

Ingress  
Security

Segmentation

← Simplified, automated protection across all environments →



## Unmatched Agility

Cloud-native design; built-in automation and orchestration

## Reduced Risk

Unified security controls across clouds managed in one place

## Lower Cost

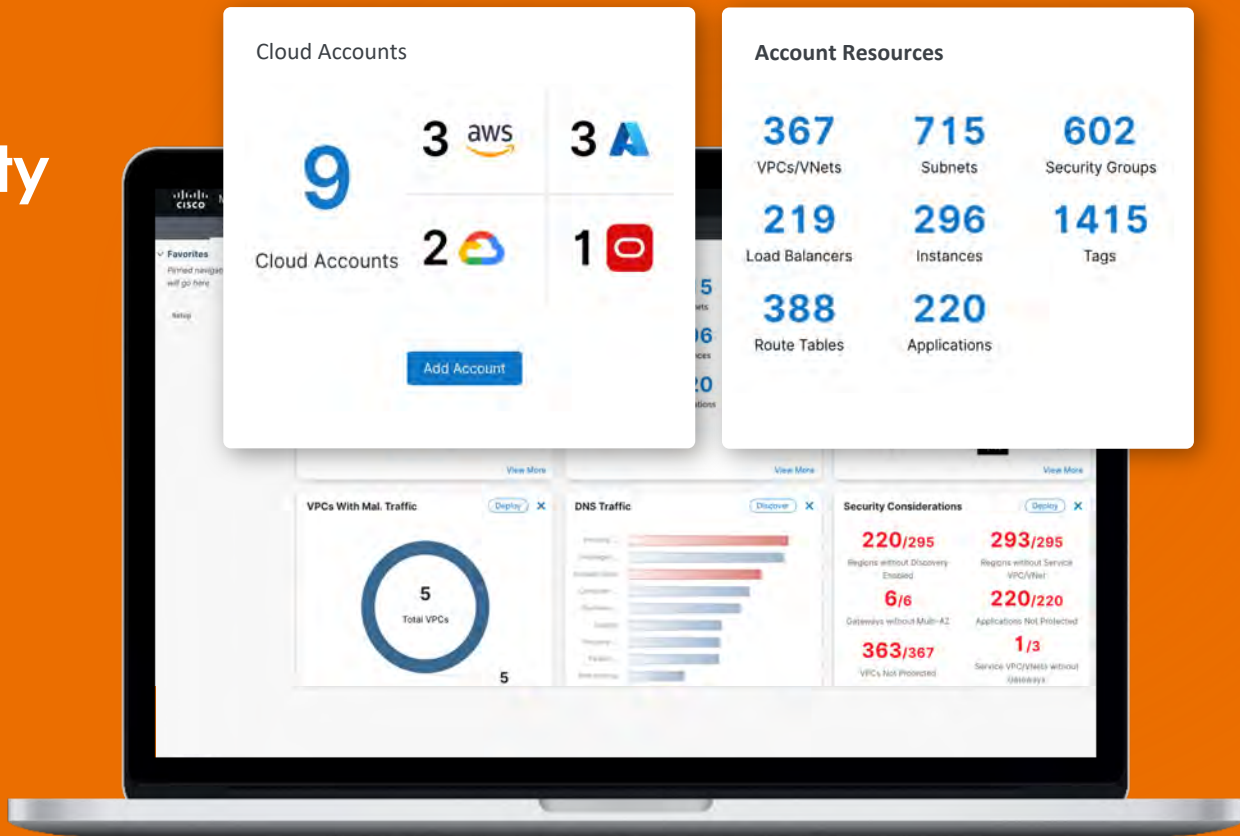
Replace multiple redundant tools; protect faster, train less

# Complete visibility across clouds

Quickly onboard new cloud accounts with automation

View all cloud assets and accounts in one place

Confidently place security controls where needed



# Cisco Multicloud Defense is the multicloud network security platform



Consolidated security for cloud networks to consistently connect and protect workloads and data



**Inbound**

Stop Inbound Threats for Web & Non-Web Apps



**Outbound**

Block Command & Control, Botnets, Data Exfiltration



**Lateral**

Mitigate Attacker Movement



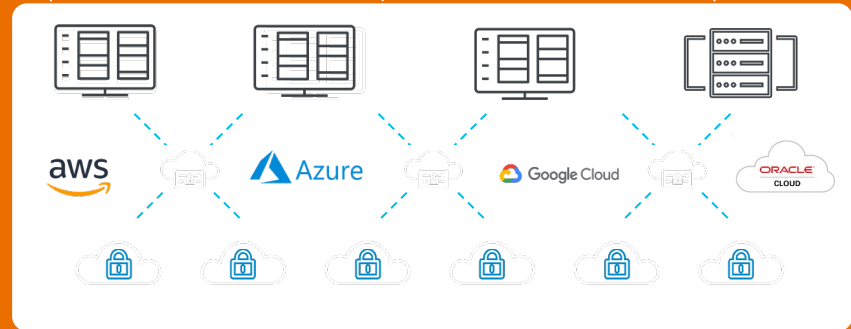
**100% Automated**



**Policy That Adapts**



**Centralized Across Clouds**



**Reduce Risks**

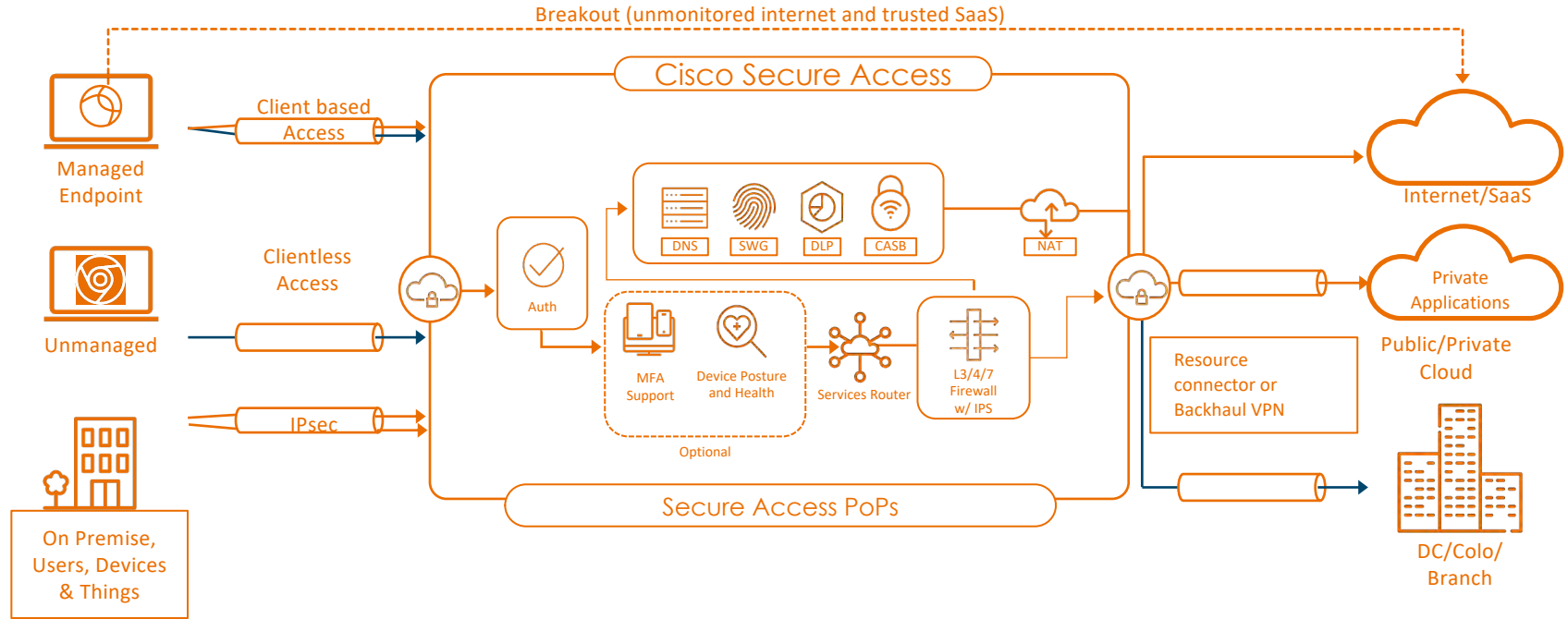
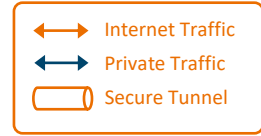
**Enable Agility**

**Gain Efficiencies**



# SECURE ACCESS CISCO SASE SOLUTION

# Architecture Overview







## User protection

- Powered by Cisco ThousandEyes
- Beispiel: Konnektivitätsprobleme schneller aufdecken.

MacBook Pro 16" (M1 Pro) iPhone 12

Device Details	VPN Access	Disconnect VPN	Zero Trust Access	Unenroll device	
Device name	Lee's Laptop	Connection status	Connected	Enrollment status	Enrolled
Public IP address	1156.487.548	Last connected	4.10.0761	Certificate status	Enrolled
Client version	4.10.0761	Last connected	Mar 14 2023 09:14:35	Client module version	5.5.01023
OS Version	macOS Ventura 13.4.1 (c)	Last location	San Jose, CA	Last connected	Mar 14 2023 09:14:35

Wifi Signal Quality

**70dBm** ↘ 20% mean

Wireless - Signal Quality

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Memory Usage

**56%** ↘ 1% mean

System - Memory

---

CPU Usage

**43%** ↘ 1% mean

System - CPU Load

Endpoint Agent to Cisco Secure Access Cloud ⓘ

IP Address	Avg Latency (ms)	Maximum Latency (ms)	Minimum Latency (ms)	Jitter (ms)	Loss (%)
192.168.1.1	10.0	13.0	7.0	1.0	0.0