CISCO *Live!*

Let's go

#CiscoLive

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 9, 2023.

https://ciscolive.ciscoevents.com/ciscolivebot/#CSSEWN-1053
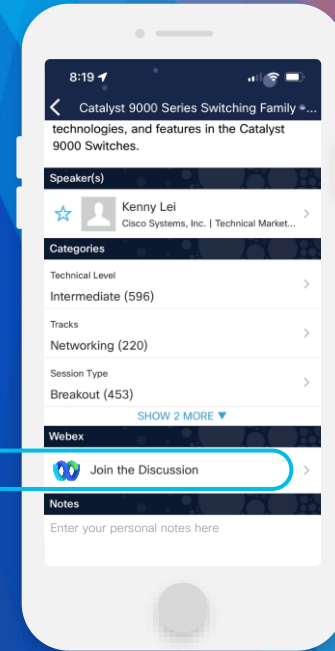
Agenda

- Introduction

- The University

- Campus Challenges

- Infrastructure

- Let's play helpdesk

- Conclusion

Who are We?

Agasthian Ponnambalam

Systems Architect, ex TAC, CCIE, India

Trail Running, Yoga, Rock Climbing

David Hunt

Wireless Architect, Patent author, Opinionator

Swimmer, Pilot, Pizza Chef

Michael Usher

Network Manager, ex CA, Remover of Obstacles

Traveler, Father, Student

University of California, Santa Cruz

Who are We? What are we doing?

- First to assemble the DNA sequence of the human genome

- Mascot – Banana Slug

- Our Main campus is home to more than 500 plant species on 2000 acres

      6

University of California, Santa Cruz

Wireless Diversity

- Main Campus, over 2000 acres in the redwoods

- 2nd largest residential population within the UC system

- 8000 acres of research in Big Sur with 100% Solar Powered

- 1000 acres of oceanfront Marine research

- Remote campuses in Scotts Valley, Marina, Santa Clara

Where are we?
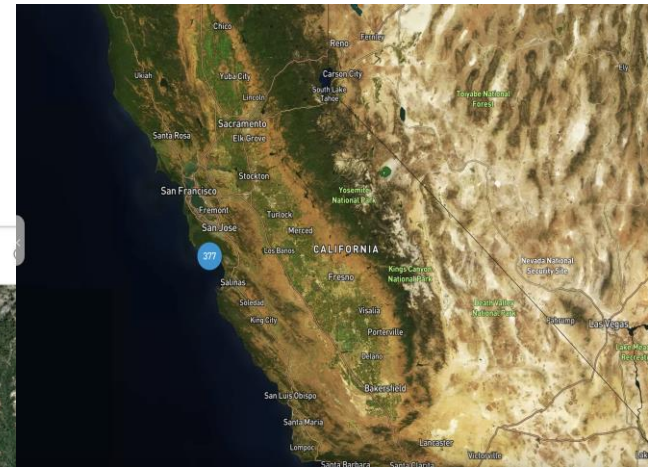
IT Operations
and Challenges

CISCO Live!

The Network Team

Tiered support architecture
1. ITS Help Desk & ResNet
2. Core Tech Services
3. Network Operations Team

Network Services
- Wireless Access
- Residential Networks
- Data Centers
- Network Security

"We use technology, operational excellence, information and innovation to maximize UCSC's global impact."

Operational Challenges

- "Nice to have" → "Wireless First"

- Constantly changing expertise

- Technology Refresh

- Migrating from Prime Infrastructure

- 24*7 problems to be solved by 8 to 5 staff

- 7 people for backbone support

The Network Infrastructure

The Network Infrastructure

- 4344 APs – Mix of legacy up to 9136

- Catalyst switching infrastructure

- WLCs - Catalyst 9800 Controllers

- ISE Cluster – Multiple nodes

- Total Endpoints - 25,000 to 41,000 endpoints

- Services - eduroam, UCSC-Guest, ResWiFi

- DNA Center Appliance– Running Version 2.3.3.7

Why migrate to Cisco DNA Center?

- Common dashboard for Wireless, Switching and Clients

- Remediated Steps

- Client reporting/Increasing partnerships

- Location and Maps

- Configuration Consistency

Other tools used

- Ekahau
- WiFi Explorer
- InSSIDer
- AKiPS
- speedtest.ucsc.edu

Let's play help desk

Gunnar our Backstop

Gunnar is our one-man army who protects us from all escalations

Core Tech Help Desk - LEAD

"Beer is the best, but DNA Center comes close." – *Gunnar Amundson*

Incident 1

Incident 1: User unable to login

- Ticket received at 4:43 PM on May 25th, 2023

- User unable to login to the Wi-Fi network on his phone

- User can login on his laptop

- userid has been provided

What other information is needed?

How would you troubleshoot?

Client / Client 360

24 Hours ⌄

Intelligent Capture   Webex 360

3:42p
3:42p

10

Health

5

0

Events

4p   6p   8p   10p   5/26   2a   4a   6a   8a   10a   12p   2p

May 25, 2023 3:42 PM - May 26, 2023 3:42 PM

— — /10 ⓘ **CLIENT DETAILS**

Device: **Un-Classified Device**   OS: **iOS 15.6.1**   MAC: 🔒 **92:84:D6:68:79:5F**   IPv4: **169.233.144.168**   IPv6: **fe80::1c02:f51c:df8f:a491**   L3 Virtual Network: **--**   L2 Virtual Network: **--**   VLAN ID: **480**

Status: **Disconnected**   Capability: **Wi-Fi 6**   Last seen: **May 26, 2023 3:11:00 PM**   Connected Network Device: **wap7194-120**   SSID: **eduroam**   View All Details

Issues   Onboarding   Path Trace   Application Experience   Device Info   Connectivity   RF   iOS Analytics   Event Viewer

⌄ **Issues (1)**

Onboarding

P3   Wireless client failed to roam (AAA Server: 128.114.129.53) – AAA Server Rejected Client   May 26, 2023 10:21 AM - 10:23 AM
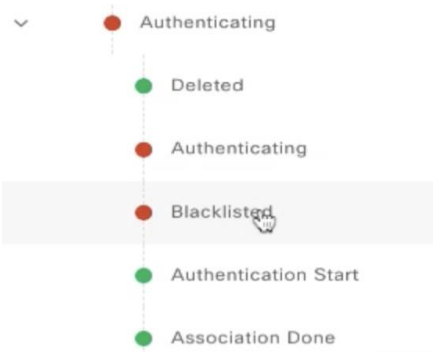Instance Count: 2

Incident 1: Analysis

Onboarding

Status	🔴 Failed
Failure Type	Authentication
Failure Reason	Client Connect Timeout

- 🔴 Authenticating
  - 🟢 Deleted
  - 🔴 Authenticating
  - 🔴 Blacklisted
  - 🟢 Authentication Start
  - 🟢 Association Done

Description

This client failed to complete authentication during onboarding because the 128.114.129.53 AAA server rejected the client. The client was roaming on 'eduroam' SSID on 5.0 GHz radio from 'wap7155-206' AP to 'wap7155-206' AP in Global/Crown Merrill Admin/7155 Crown Classroom/2. 'wap7155-206' AP is connected to 'noc-wlcx-1.ucsc.edu' WLC and 'wap7155-206' AP is connected to noc-wlcx-north.ucsc.edu WLC.

Last Occurred: May 26, 2023 10:23 AM

ⅴ Issues (1)

P3 Onboarding
Wireless client failed to roam (AAA Server: 128.114.129.53) - AAA Server Rejected Client
Instance Count: 2

Incident 1: Resolution

Suggested Actions (3)

1   Verify whether the client provided the correct credentials and if the client, AAA and the authentication database are in sync. Has there been any recent configuration changes or batch password updates? If there are any recent changes, the AAA server may have trouble verifying the client credentials.

2   Verify if there has been any failure on the AAA Server or authentication database.

Authentication Details

Source Timestamp	2023-05-26 13:23:01.992
Received Timestamp	2023-05-26 13:23:01.992
Policy Server	prd-ise-sc-psn4
Event	5440 Endpoint abandoned EAP session and started new
Failure Reason	24408 User authentication against Active Directory failed since user has entered the wrong password

ISE Log

Incident 2

Incident 2: User having poor Wi-Fi at library

- Ticket received at 5:33 PM on May 16th, 2023

- User having poor Wi-Fi on her phone at the UCSC library from 12 pm till 4:30 pm

- User says she has had this problem for quite a few days and decided to open a ticket.

- User shared no issues with her laptop and said others are having the same issue with their phones

- Wi-Fi keeps dropping

What other information is needed?

How would you troubleshoot?

sc.edu

10 □ 169.233.232.174   10 □ 169.233.214.236   10 □ Kelseys-Air   □ □ 169.233.184.17   □ □ Kelseys-iPhone   □ □ 169.233.208.81   More ⌄

🕐 24 Hours ⌄

Intelligent Capture   Webex 360

11:56a   4:34p

10

Health

5

Events

0

5/16   2a   4a   6a   8a   10a   12p   2p   4p   6p   8p   10p

May 16, 2023 11:56 AM - 4:34 PM

10/10 ⓘ CLIENT DETAILS

Device: Un-Classified Device   OS: --   MAC: 🔗 6A:58:0A:E8:16:1B   IPv4: 169.233.232.174   IPv6: fe80::88:e77b:1a43:b05c   L3 Virtual Network: --   L2 Virtual Network: --   VLAN ID: 480

Status: Connected   Capability: 11ac   Last seen: May 16, 2023 4:31:00 PM   Connected Network Device: wap7782-212-new   SSID: eduroam   View All Details

Issues   Onboarding   Path Trace   Application Experience   Device Info   Connectivity   RF   Event Viewer
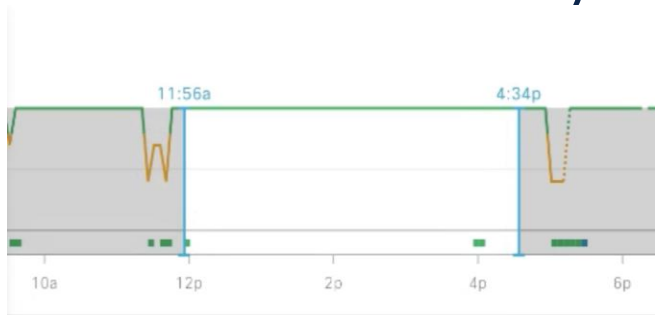
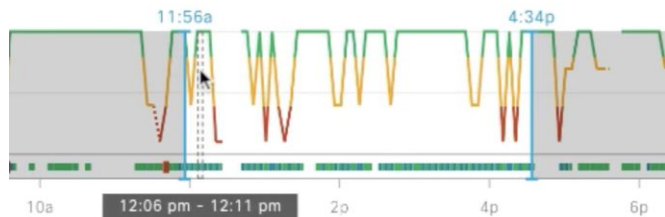⌄ Issues (1)

P3   Onboarding
       This 802.11r client is roaming slowly 16.0 out of 16.0 times in 30 min(s)

May 9, 2023 12:00 PM - May 18, 2023 12:00 PM
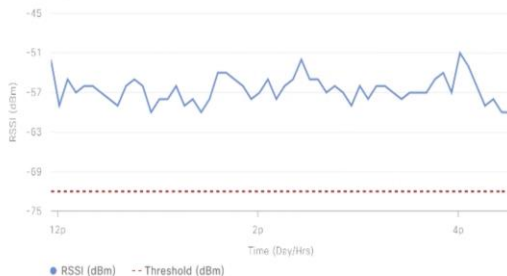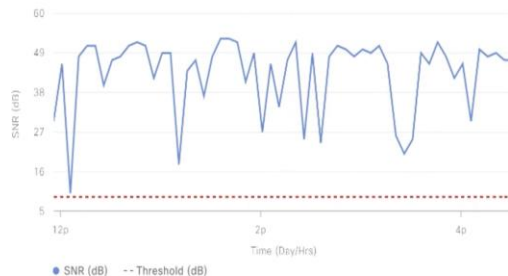
Incident 2: Analysis

Laptop

iPhone
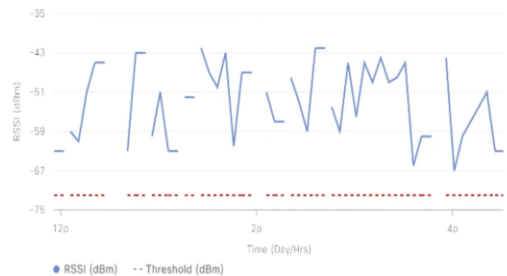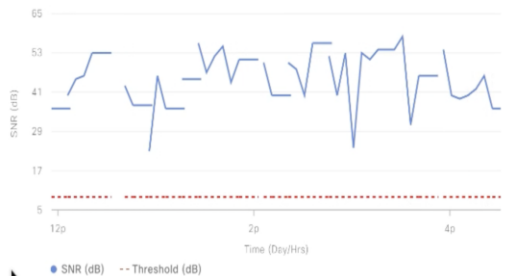
Incident 2: Resolution

Device   Un-Classified Device

OS   iOS 16.4.1 ⬅

MAC   52:5C:C9:AB:53:EB

SSID   eduroam

IPv4   169.233.214.236

IPv6   fe80::471:cd51:cf55:a019

Location   Science Hill South/7782 Science and Eng Library/2

Status   CONNECTED

⌄ Issues (1)

P3   Onboarding

This 802.11r client is roaming slowly 26.0 out of 26.0 times in 30 min(s)

Instance Count: 86

Suggested Actions (1)

1   Update the client driver to the latest version because the client may have fixed its roaming behaviour in later updates.

Incident 2: Resolution

Community

Browse   Search   Sign in

iPhone

jwaters16   Author
Level 1 · 11 points

iOS 16.4.1 Problems

Has anyone else experienced severe iPhone problems since the iOS 16.4.1? My mobile data works off and on. My wi-fi goes in and out even though all other non iPhone devices stay connected just fine. Apps won't load. Now my message app is starting to not load. It gets stuck on a white screen and my messages do not load. Also, my battery life is draining rapidly. This update has been the worst!!! Is apple doing anything to fix these issues?

iPhone 12 Pro
Posted on Apr 20, 2023 8:32 PM

anyone else still having wifi issues on ios 16.4.1?

Discussion

I thought that 16.4.1 was supposed to fix wifi bugs. Since 16.4 my phone has been switching to cellular once it's in idle mode, and when I pick it up after like 10s it's back on wifi again. It definitely could be my wifi but does anyone else have this issue?

Incident 3

Incident 3: User having low speeds on Wi-Fi

- Ticket received at 10:13 PM on May 5th 2023

- User lives in Apartment Building 12 7546, 3rd Floor, bedroom C

- User says poor speeds from his bedroom

- Result shared from speedtest.ucsc.edu :-
  Kitchen: 51.2 Mbps Download / 35.3 Mbps Upload
  Living Room: 84.2 Mbps Download / 43.1 Mbps Upload
  User's Bedroom: 15.1 Mbps Download / 10.7 Mbps Upload

What other information is needed?

How would you troubleshoot?

ucsc.edu

7 Days

Intelligent Capture   Webex 360

12:34p   5:42a

10

Health

Events

0

12p 6p **4/29** 6a 12p 6p **4/30** 6a 12p 6p **5/1** 6a 12p 6p **5/2** 6a 12p 6p **5/3** 6a 12p 6p **5/4** 6a 12p 6p **5/5** 6a

Apr 30, 2023 12:34 PM - May 2, 2023 5:42 AM

— —/10 **CLIENT DETAILS**

Device: **Apple-Device**	OS: **Macintosh; Intel Mac OS X 10_15_7**	MAC: **1C:91:80:ED:66:AE**	IPv4: **100.64.24.191**	IPv6: **fe80::c7f:5c00:3702:1a65**	L3 Virtual Network: **--**	L2 Virtual Network: **--**	VLAN ID: **267**
Status: **Disconnected**	Capability: **Wi-Fi 6**	Last seen: **May 2, 2023 5:34:00 AM**	Connected Network Device: **wap7546-204**	SSID: **ResWiFi**	View All Details		

Issues   Onboarding   Path Trace   Application Experience   Device Info   Connectivity   RF   iOS Analytics   Event Viewer
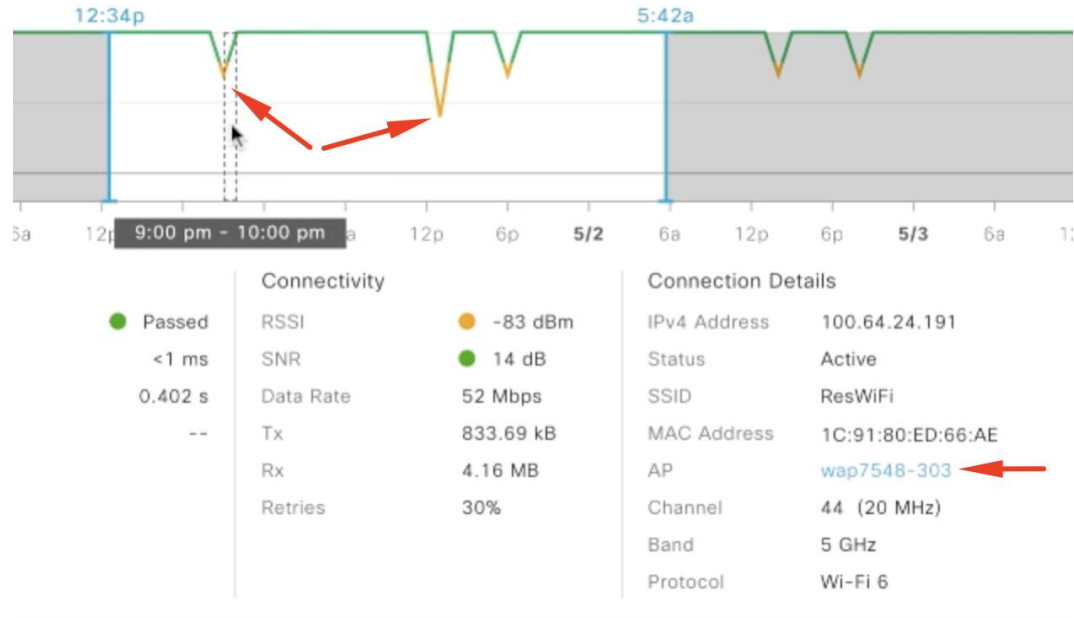
Issues (3)

P3   Onboarding
This 802.11r client is roaming slowly 16.0 out of 16.0 times in 30 min(s)
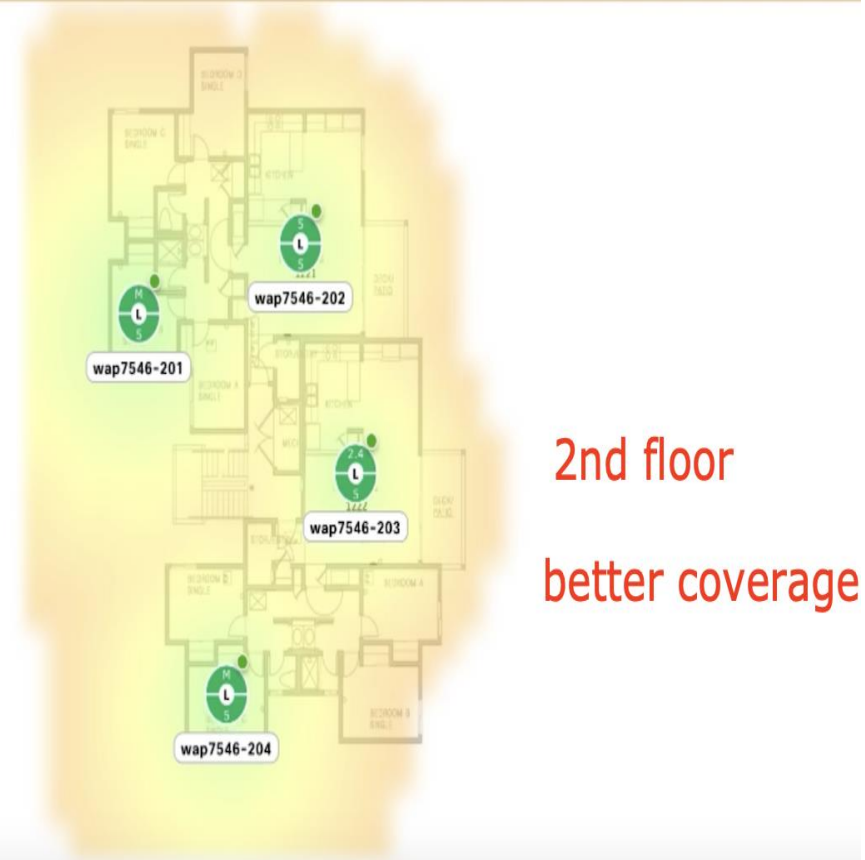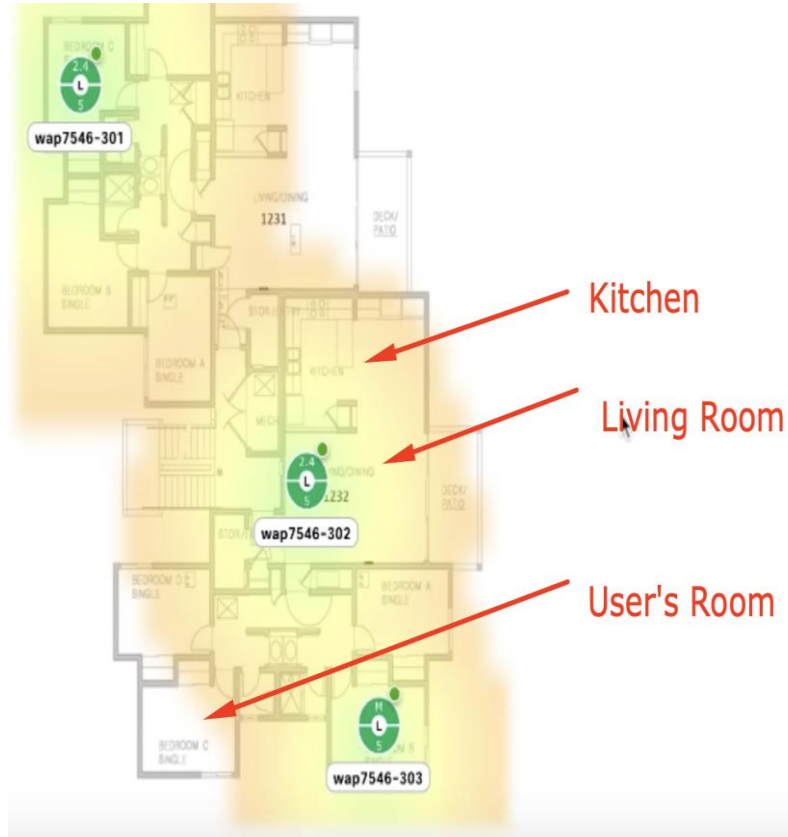Instance Count: 5

Apr 25, 2023 3:30 PM - May 16, 2023 5:00 PM
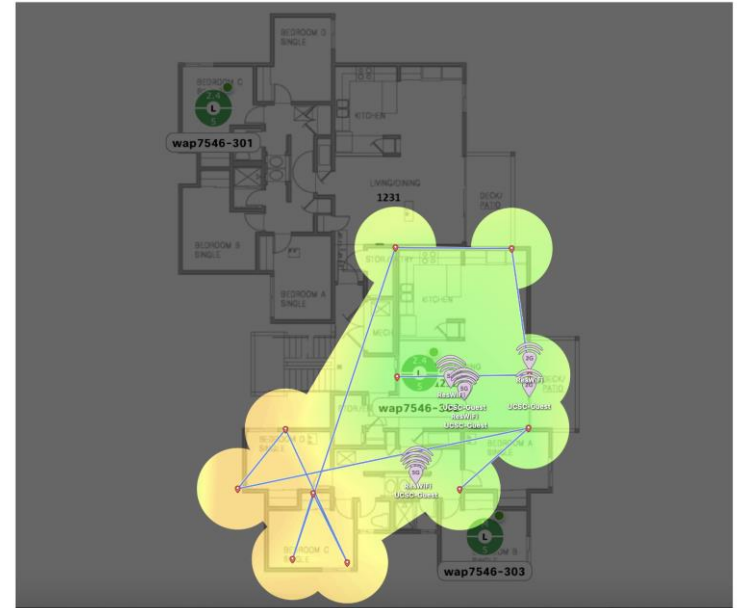
Incident 3: Analysis

Incident 3: Analysis

Kitchen

Living Room

User's Room

wap7546-301
wap7546-302
wap7546-303

wap7546-201
wap7546-202
wap7546-203
wap7546-204

2nd floor

better coverage

Incident 3: Resolution

Adding at least one AP for coverage issues

- From a manual survey

- At-least 30 minutes to do the survey and other logistics involved to enter rooms

Requirements: 10dB   34dB   59dB

Being Proactive

Assurance Summary

Health ⓘ

Healthy as of May 18, 2023 1:40 PM

88%
Network Devices

83%
Wireless Clients

90%
Wired Clients

View Details

Critical Issues

Last 24 Hours

4

P1

6

P2

View Details

Trends and Insights

Last 30 Days

3

AP Performance
Advisories

0

Trend Deviations

View Details

Network Snapshot

Sites

As of May 18, 2023 2:04 PM

1213

DNS Servers : 2
NTP Servers : 3

Add Sites

Network Devices

As of May 18, 2023 2:04 PM

4735

Unclaimed: 185
Unprovisioned: 4545
Unreachable: 127

Find New Devices

Application QoS Policies

As of May 18, 2023 2:05 PM

0

Successful Deploys: 0
Errored Deploys: 0
Stale Policies: 0

Add New Policy

What are our plans for DNAC

- Build out new cluster

- Add More nodes into architecture

- Moving to leverage more features such as…
  - Configuration Management
  - EoX (HW and SW)
  - Ekahau Integration

- Location Based Services

Conclusion

DNA Center makes
our life easier

- Visibility

- Guides us to resolution

- Allows us to be proactive

People love the network
experience

Q & A

Fill out your session surveys!

Attendees who fill out a minimum of four session surveys and the overall event survey will get **Cisco Live-branded socks** (while supplies last)!

Attendees will also earn 100 points in the **Cisco Live Challenge** for every survey completed.

These points help you get on the leaderboard and increase your chances of winning daily and grand prizes
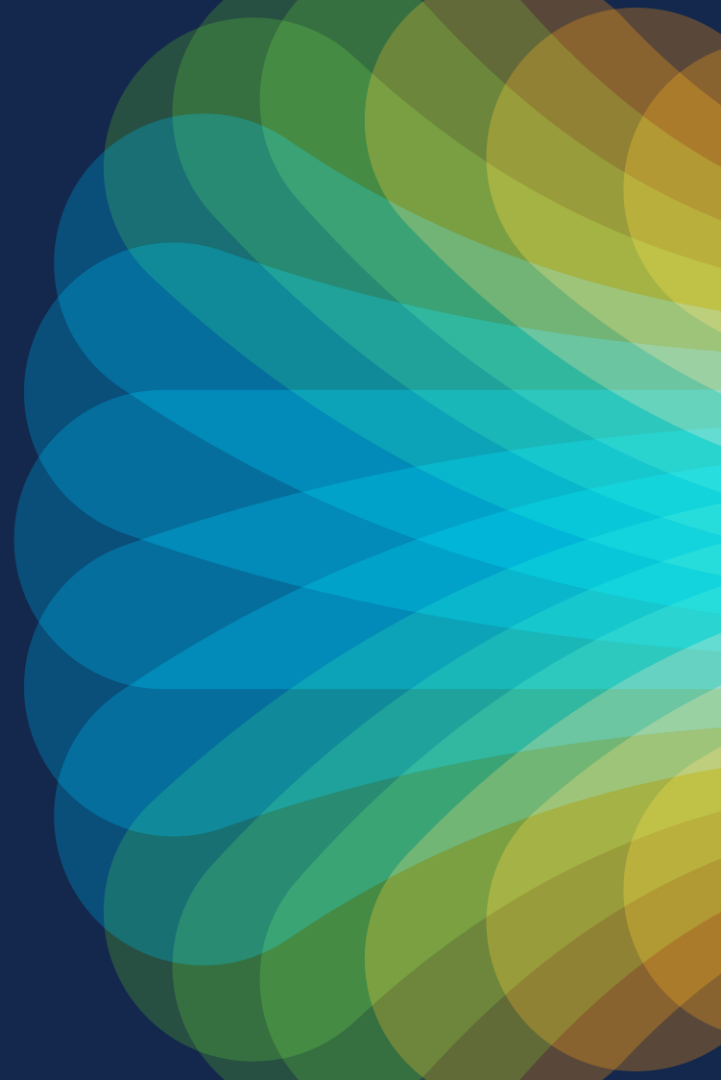
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