

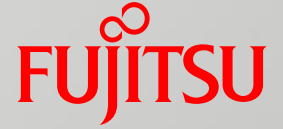


Fujitsu Data Center
Management &
Automation (DCMA)

Wifi Networking

Human Centric
Innovation

Who we are



Japan's largest IT services provider and
No. 5 in the world.
(based on vendor revenue 2015)*

We do everything in ICT. We use our experience and the power of ICT to
shape the future of society with our customers.

156,000 Fujitsu people support customers in more than 100 countries.

FORTUNE named Fujitsu as one of 'the World's Most Admired Companies' for
the fourth consecutive year.

* Source: Gartner, "Market Share: IT Services, 2015" 06 April 2016 (GJ16139)

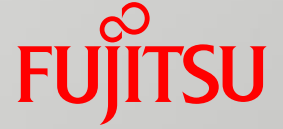


Alexander Zaeh
Senior Solution
Consultant

Fujitsu Distinguished Engineer

Our products and services

Technology Solutions



Services

Solution / SI

- Systems Integration
(system construction,
business applications)
- Consulting
- Front-end technologies
(ATMs, POS systems etc.)

Infrastructure Services

- Outsourcing services
(datacenters, ICT operation/management, SaaS, application
operation/management, business process outsourcing, etc.)
- Network services
(business networks, distribution of Internet/mobile content)
- System support services
(maintenance and surveillance services for information systems and
networks)
- Security solutions (installation of information systems and networks)

Systems platform


System Product

- Full range of servers
(mainframe, UNIX, mission-critical x86 servers and other x86 servers)
- Storage systems
- Software (operating system, middleware)

Network Products

- Network management systems
- Optical transmission systems
- Mobile phone base stations

Medical and Pharmaceutical Device Company

A background image showing a healthcare professional in blue scrubs and a cap, gently holding a newborn baby. The professional is looking down at the baby with a caring expression. The baby is wrapped in a white cloth.

Mission is to manufacture products to improve the quality of patient care while also helping healthcare professionals bring time and cost efficiencies to their practice.

Sharing expertise across hospitals is helping to set the highest standards for enhancing patient and healthcare professional in:

- Safety
- Reducing medication errors
- Protecting the environment
- Providing quality clinical training, best practices and information support for healthcare professionals

WLC Management is Essential for Success

Manage autonomous delivery vehicle

Manage production processes

Flexible information delivery

Manage logistic processes

It's All in the Numbers

- 25 wireless LAN controllers (WLC) – each manage up to 557 access points
- Total of 1286 APs are managed
- Over 1400 alarms in first 7 days
- 60 alarms being suppressed
- 135 million events in 45 days
- 60 million events from 8 alarm types



Analyze Alarm Types in Pre-Production

Type	Alarm Title	Abschalten	Anmerkung
6760010	ACCESS POINT INTERFACE DOWN EXCEEDED CONFIGURED THRESHOLD	ja	
6760002	ACCESS POINTS DISASSOCIATED FROM CONTROLLER EXCEEDED THRESHOLD	ja	
210e0c	AP ASSOCIATED SUCCESSFULLY AFTER REBOOT	ja	
210e14	AP CLIENT RADIO THRESHOLD EXCEEDED	ja	
210e13	AP INTERFACE DOWN	ja	
4b6005e	BSN RADAR CHANNEL DETECTED	ja	
6760008	DOWNLOAD VOLUME FOR CLIENT EXCEEDED CRITICAL THRESHOLD	ja	Über Schwellwerte abgeklemmt. Braucht als Alarm nicht ausgeschaltet werden
6760009	DOWNLOAD VOLUME FOR CLIENT EXCEEDED MAJOR THRESHOLD	ja	Über Schwellwerte abgeklemmt. Braucht als Alarm nicht ausgeschaltet werden
210e54	KTS VOIP CALL FAILURE	ja	
4b60007	LRADIF_DISASSOCIATED	ja	
4b6000c	LRADIF_INTERFERENCE_PROFILE_FAILED	ja	
4b6000a	LRADIF_LOAD_PROFILE_FAILED	ja	
4b6000b	LRADIF_NOISE_PROFILE_FAILED	ja	
Cat38xxStack	OSPF INTERFACE STATE CHANGE	ja	
210d26	RADIUS REQUEST TIMEOUT	ja	
210d23	RADIUS SERVER GLOBAL DEACTIVATED	ja	
210d25	RADIUS SERVER WLAN DEACTIVATED	ja	
4b60003	STATION_ASSOCIATE_FAIL	ja	
676000b	UPLOAD VOLUME FOR CLIENT EXCEEDED CRITICAL THRESHOLD	ja	Über Schwellwerte abgeklemmt. Braucht als Alarm nicht ausgeschaltet werden
676000c	UPLOAD VOLUME FOR CLIENT EXCEEDED MAJOR THRESHOLD	ja	Über Schwellwerte abgeklemmt. Braucht als Alarm nicht ausgeschaltet werden
6760006	UPLOAD VOLUME FOR CLIENT EXCEEDED MINOR THRESHOLD	ja	Über Schwellwerte abgeklemmt. Braucht als Alarm nicht ausgeschaltet werden
4b6002e	STATION_ASSOCIATE	ja no his	
210e2c	CISCO LWAPP DOT11 CLIENT ASSOC TRAP	ja no his	
210e27	CISCO LWAPP DOT11 CLIENT MOVED TO RUN STATE	ja no his	
210e2b	CISCO LWAPP DOT11 CLIENT SESSION TRAP	ja no his	
210e2e	CISCO LWAPP DOT11 CLIENT MOVED TO RUN STATE NEW TRAP	ja no his	
210e2d	CISCO LWAPP DOT11 CLIENT DE AUTHENTICATED TRAP	ja no his	
4b60001	STATION_DEAUTHENTICATE	ja no his	
4b60000	STATION_DISASSOCIATE	ja no his	
210e5b	RRM RF GROUP MEMBER REMOVED	ja	
210e5a	RRM RF GROUP MEMBER ADDED	ja	
210e08	RADIUS ACCT SERVER UNAVAILABLE	ja	
210d38	MOBILITY ANCHOR CONTROL PATH DOWN	ja	

DHCP Addresses for AP

The screenshot displays the NOC@FUJITSU Managed Network Monitoring Suite interface. The left sidebar shows a navigation tree with categories like IP Routing Manager, MPLS Transport Manager, Policy Manager, Service Performance Manager, VPLS Manager, VPN Manager, Chassis Manager, Enterprise VPN Manager, NOC@FUJITSU, QoS Manager, Service Manager, TopOrg, vPC Manager, WLC Manager, and Cisco (25). The main content area shows a list of Cisco WLCs with columns for Name, Date/Time, Name, Address, Secure Domain, Type, and Alarm Title. A detailed view of the device AP-DE08W-C2-E2-03 is shown, indicating a critical alarm: "DEVICE HAS STOPPED RESPONDING TO POLLS". The device is an IP Device with the address 172.29.247.119. The alarm was triggered on 26.04.2017 at 23:58:12 MESZ. The interface also shows a list of symptoms and probable causes for the alarm, along with actions to be taken.

Console - NOC@FUJITSU Managed Network Monitoring Suite

File View Tools Help

Device Search: Go ☒ by IP Address

Navigation

Explorer Locater Users

Name

IP Routing Manager

MPLS Transport Manager

Policy Manager (2)

Service Performance Manager (2)

VPLS Manager

VPN Manager (2)

bbmag337 (0x3f00000)

Chassis Manager (2)

Enterprise VPN Manager (4)

NOC@FUJITSU (47)

QoS Manager (15)

Service Manager (3)

TopOrg

vPC Manager (1)

WLC Manager (2)

Cisco (25)

BE01-WLC-01 (5)

DE01-WLC-01 (25)

DE03L-WLC-01 (5)

DE03M-WLC-01 (29)

DE03S-WLC-01 (21)

DE06-WLC-01 (55)

DE08-WLC-01 (557)

DE08-WLC-02 (174)

DE13-WLC-01 (178)

DE17-WLC-01 (4)

DE20-WLC-01 (32)

DE22-WLC-01 (4)

DE25K-WLC-01 (72)

DE28-WLC-01 (31)

DE28N-WLC-01 (9)

DE29-WLC-01 (20)

DEX1-WLC-01 (49)

NL01-WLC-01 (12)

172.29.160.233

172.29.246.56

172.29.247.116

172.29.247.16

172.30.245.208

172.30.245.213

DE08P-WLC-Test-01

Contents: Cisco of type WLCVendor

Alarms Topology List Events Information

Filtered By: Severity

Severity Date/Time Name Address Secure Domain Type Alarm Title Available Filters: Landscape

Critical 26.04.2017 23:58:12 MESZ AP-DE08W-C2-E2-03 172.29.249.150 Directly Managed IP Device DEVICE HAS STOPPED RESPONDING TO POLLS bbmag337 (0x3f00000)

Minor 27.04.2017 12:00:38 MESZ DE13-WLC-01 172.29.160.230 Directly Managed Cisco 8500 WLC An authenticationFailure trap received bbmag337 (0x3f00000)

Minor 21.04.2017 01:29:37 MESZ DE06-WLC-01 172.29.247.119 Directly Managed Cisco 5500 WLC Device has been rebooted or SNMP Agent has been initialized bbmag337 (0x3f00000)

Minor 21.04.2017 01:11:10 MESZ DE06-WLC-01 172.29.247.119 Directly Managed Cisco 5500 WLC SCHEDULED RESET NOTIFICATION bbmag337 (0x3f00000)

Component Detail: AP-DE08W-C2-E2-03 of type IP Device

Alarm Details Information Impact Host Configuration Root Cause Interfaces Performance Alarm History Neighbors Events Path View SDN Virtual Overlay SDN Service View

DEVICE HAS STOPPED RESPONDING TO POLLS

26.04.2017 23:58:12 MESZ

Device AP-DE08W-C2-E2-03 of type AccessPoint has stopped responding to polls and/or external requests. An alarm will be generated.

Severity Critical

Impact 1

Acknowledged set

Clearable No

Trouble Ticket ID set

Assignment set

Landscape bbmag337 (0x3f00000)

Status set

Web Context URL

Source SPECTRUM

Change Owner SPECTRUM

Alarm Modified Time 27.04.2017 08:31:05 MESZ

UIM Alarm Id

Symptoms Device has stopped responding to polls.

Probable Cause

- 1) Device Hardware Failure.
- 2) Cable between this and upstream device broken.
- 3) Power Failure.
- 4) Incorrect Network Address.
- 5) Device Firmware Failure.

Actions

- 1) Check power to device.
- 2) Verify status lights on device.
- 3) Verify reception of packets.
- 4) Verify network address in device and SPECTRUM.
- 5) Cycle power on device and recheck.
- 6) If above fails, call repair.

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Wireless Information at WLC and AP

The screenshot displays the NOC@FUJITSU Managed Network Monitoring Suite interface. The left sidebar shows a navigation tree with a list of devices, including WLCs and APs. The main panel shows the configuration and status of a selected Cisco 5500 WLC (DE29-WLC-01). The 'Wireless Information' section is expanded, showing details for Access Points and Mobile Stations.

Navigation Panel:

- Explorer: DE03M-WLC-01 (29), DE03S-WLC-01 (21), DE06-WLC-01 (55), DE08-WLC-01 (557), DE08-WLC-02 (174), DE13-WLC-01 (178), DE17-WLC-01 (4), DE20-WLC-01 (32), DE22-WLC-01 (4), DE25K-WLC-01 (72), DE28-WLC-01 (31), DE28N-WLC-01 (9), DE29-WLC-01 (20), AP-DE29-01, AP-DE29-02, AP-DE29-03, AP-DE29-04, AP-DE29-05, AP-DE29-06, AP-DE29-07, AP-DE29-08, AP-DE29-09, AP-DE29-10, AP-DE29-11, AP-DE29-12, AP-DE29-13, AP-DE29-14, AP-DE29-15, AP-DE29-16, AP-DE29-17, AP-DE29-18, AP-DE29-19, AP-DE29-20, DEX1-WLC-01 (49), NL01-WLC-01 (12), 172.29.160.233, 72.29.246.56, 72.29.247.116, 72.29.247.16, 72.30.245.208, 72.30.245.213

Contents: DE29-WLC-01 of type Cisco 5500 WLC

Alarms: Topology, List, Events, Information

Filtered By: Severity

Severity	Date/Time	Name	Network Address	Secure Domain	Type	Alarm Title
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Displaying 0 of 0

Component Detail: DE29-WLC-01 of type Cisco 5500 WLC

Information: Host Configuration, Root Cause, Interfaces, Performance, Neighbors, Alarms, Cleared Alarms History, Events, Attributes, Path View, SDN Virtual Overlay, SDN Service View

Cisco Light Weight Access Point Protocol

Wireless Information

Access Points

Get Next: 100 | Get All | Update | Stop | Edit | Print | Export | Show | Displaying 0 of 0

AP name	IP Address	Location	Ethernet MAC Address	Base Radio MAC Address	Number of Radio Interfaces	Monitor Only Mode	Operation Status	Software Version	Boot Version	Primary Mwar Na
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(More data available...)

Access Points Interface Table

Get Next: 100 | Get All | Update | Stop | Print | Export | Show | Displaying 0 of 0

Base Radio MAC Address	Slot ID	Interface Type	Number of active WLANs	Operation Status	Number of Users	Admin Status
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(More data available...)

Mobile Stations

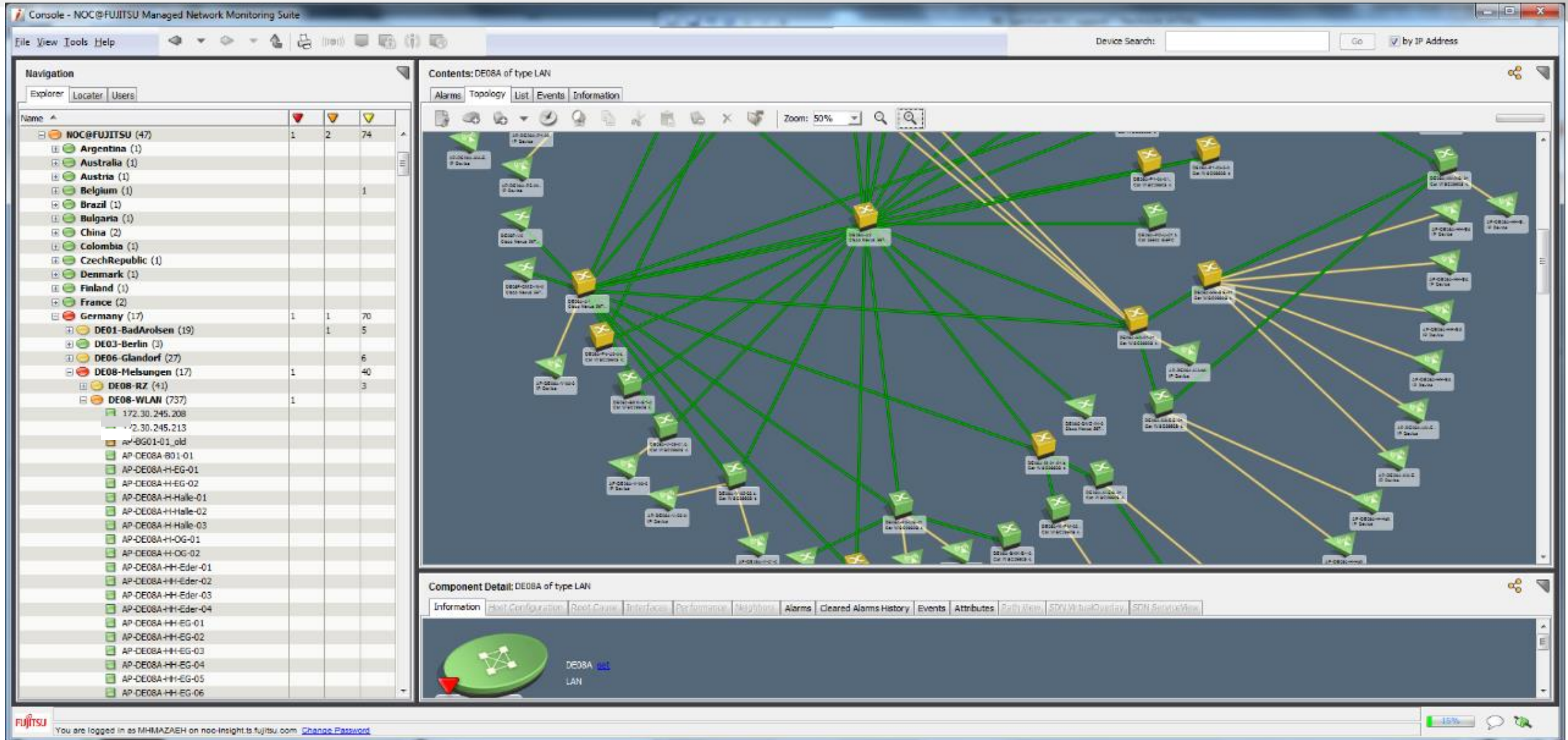
Get Next: 100 | Get All | Update | Stop | Edit | Print | Export | Show | Displaying 0 of 0

Client Name	IP Address	SSID	MAC Address	AP MAC Address	AP If Slot ID	Eas Index	AID	Status	Reason Code	Mobility Status	Anchor Address	CF Pollable	CF Poll Re
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(More data available...)

Footer: You are logged in as MHMAZAEH on noc-insight.fujitsu.com. Change Password

AP and WLC Container



Light Reporting

Console - NOC@FUJITSU Managed Network Monitoring Suite

File View Tools Help

Device Search: Go ☒ by IP Address

Navigation

Explorer Locator Users

Enterprise VPN
Global Collections
Integrations
Models
MPLS Transport Manager
Multicast
NAME
Network Configuration Manager
NPC
Policy Manager
Ports
Privilege Roles
Quality of Service
Remote Operations
Router Redundancy
SANIM
Schedules
SDN Manager
Secure Domain Manager
Services
SLAs
SPM
SucheName
System & Application Monitoring
Telco EMS Manager
UTM Manager
User defined Management
Virtual Host Management
VLAN
vPC Manager
VPLS Manager
VPN
whoDELMYFolder
WLC Manager
Access Points associated
To WLC IP
To WLC Name
All APs
All WLCs

Contents: WLC Manager -> All WLCs

Results

Showing 25 of 25 Thursday, April 27, 2017 12:06:13 PM CEST

Condition	Name	IP	Secure Domain	Manufacturer	Model Class	MAC Address	Type	Landscape
Normal	DE01-WLC-01	172.29.160.1	Directly Managed	Cisco Systems, Inc.	Wireless LAN Co...	a8:9d:21:03:a6:64	Cisco 5500 ...	bbmag337 (0x3f00000)
Normal	BE01-WLC-01	172.29.160.2	Directly Managed	Cisco Systems, Inc.	Wireless LAN Co...	c0:8c:60:c7:06:84	Cisco AirCt ...	bbmag337 (0x3f00000)
Normal	DE25K-WLC...	172.29.160.3	Directly Managed	Cisco Systems, Inc.	Wireless LAN Co...	30:f7:0d:30:c0:a4	Cisco 5500 ...	bbmag337 (0x3f00000)
Minor	DE06-WLC-01	172.29.160.4	Directly Managed	Cisco Systems, Inc.	Wireless LAN Co...	f4:cf:e2:84:89:44	Cisco 5500 ...	bbmag337 (0x3f00000)
Normal	172.29.160...	172.29.160.5	Directly Managed	Cisco Systems, Inc.	Wireless LAN Co...	10:05:ca:bf:36:29	IP Device	bbmag337 (0x3f00000)
Normal	DE08-WLC-02	172.29.160.6	Directly Managed	Cisco Systems, Inc.	Wireless LAN Co...	28:6f:7f:55:03:22	Cisco 8540 ...	bbmag337 (0x3f00000)
Normal	DE08-WLC-01	172.29.160.7	Directly Managed	Cisco Systems, Inc.	Wireless LAN Co...	10:05:ca:bf:36:a6	Cisco 8500 ...	bbmag337 (0x3f00000)
Normal	DE03L-WLC-01	172.29.160.8	Directly Managed	Cisco Systems, Inc.	Wireless LAN Co...	54:7c:69:9b:e3:c4	Cisco AirCt ...	bbmag337 (0x3f00000)
Normal	DE17-WLC-01	172.29.160.9	Directly Managed	Cisco Systems, Inc.	Wireless LAN Co...	54:7c:69:9b:e3:c4	Cisco AirCt ...	bbmag337 (0x3f00000)
Normal	DE20-WLC-01	172.29.160.10	Directly Managed	Cisco Systems, Inc.	Wireless LAN Co...	84:80:2d:f8:38:c4	Cisco AirCt ...	bbmag337 (0x3f00000)
Normal	172.30.245...	172.30.245.1	Directly Managed	Cisco Systems, Inc.	Wireless LAN Co...	24:e9:b3:47:90:84	IP Device	bbmag337 (0x3f00000)
Maintenance	DE08P-WLC...	172.30.245.2	Directly Managed	Cisco Systems, Inc.	Wireless LAN Co...	a8:9d:21:03:91:44	Cisco AirCt ...	bbmag337 (0x3f00000)
Normal	DE03M-WLC...	172.30.245.3	Directly Managed	Cisco Systems, Inc.	Wireless LAN Co...	a8:9d:21:03:91:44	Cisco 5500 ...	bbmag337 (0x3f00000)
Normal	DE28-WLC-01	172.30.245.4	Directly Managed	Cisco Systems, Inc.	Wireless LAN Co...	e0:2f:6d:5d:db:c4	Cisco 5500 ...	bbmag337 (0x3f00000)
Normal	DE28N-WLC...	172.30.245.5	Directly Managed	Cisco Systems, Inc.	Wireless LAN Co...	00:08:2f:10:60:44	Cisco AirCt ...	bbmag337 (0x3f00000)
Normal	172.29.246.56	172.29.246.56	Directly Managed	Cisco Systems, Inc.	Wireless LAN Co...	a8:9d:21:03:a4:af	IP Device	bbmag337 (0x3f00000)
Normal	172.30.245...	172.30.245.6	Directly Managed	Cisco Systems, Inc.	Wireless LAN Co...	a8:9d:21:03:a4:af	IP Device	bbmag337 (0x3f00000)
Normal	DE03S-WLC...	172.30.245.7	Directly Managed	Cisco Systems, Inc.	Wireless LAN Co...	f4:cf:e2:94:68:04	Cisco 5500 ...	bbmag337 (0x3f00000)
Minor	DE13-WLC-01	172.29.247.16	Directly Managed	Cisco Systems, Inc.	Wireless LAN Co...	10:05:ca:bf:36:86	Cisco 8500 ...	bbmag337 (0x3f00000)
Initial	172.29.247.16	172.29.247.16	Directly Managed	Cisco Systems, Inc.	Wireless LAN Co...	f4:cf:e2:84:89:cf	IP Device	bbmag337 (0x3f00000)
Normal	DE29-WLC-01	172.29.247.17	Directly Managed	Cisco Systems, Inc.	Wireless LAN Co...	e0:2f:6d:5d:d5:04	Cisco 5500 ...	bbmag337 (0x3f00000)
Normal	DEX1-WLC-01	172.29.247.18	Directly Managed	Cisco Systems, Inc.	Wireless LAN Co...	f4:cf:e2:84:87:e4	Cisco 5500 ...	bbmag337 (0x3f00000)

Component Detail: DE28N-WLC-01 of type Cisco AirCt 2504K9

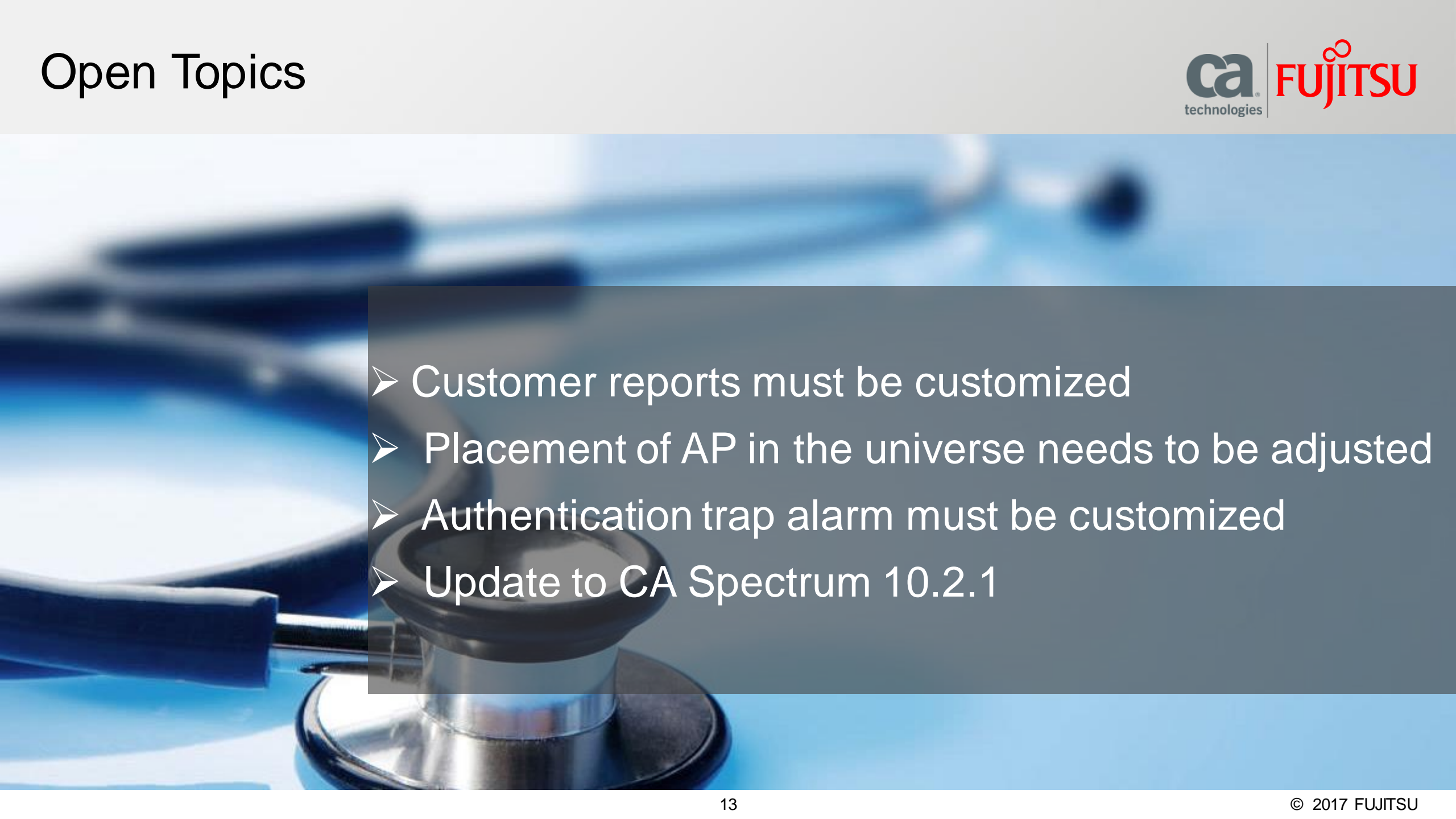
Information Host Configuration Root Cause Interfaces Performance Neighbors Alarms Cleared Alarms History Events Attributes Path View SDN Virtual Overlay SDN Service View

Cisco License Management

Cisco Light Weight Access Point Protocol

- AAA Server
- LDAP Server
- 802.11
- Mesh Node Statistics
- WLAN Configuration
- Access Control List
- Thresholds
- Wireless Information

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- Customer reports must be customized
 - Placement of AP in the universe needs to be adjusted
 - Authentication trap alarm must be customized
 - Update to CA Spectrum 10.2.1

Fujitsu Data Center Management and Automation

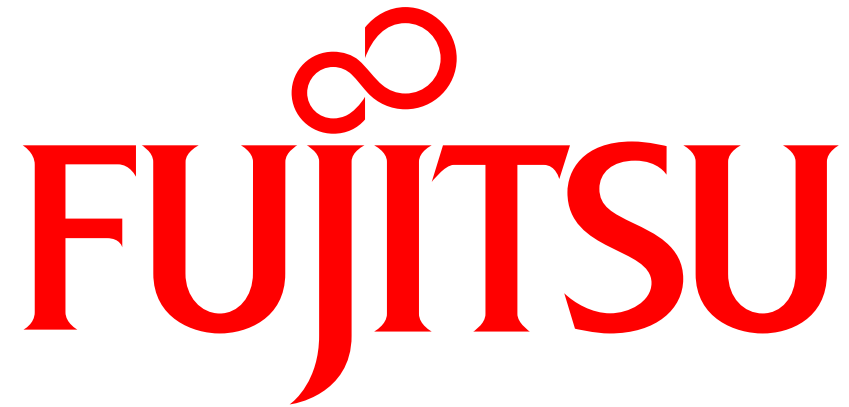
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Thank you