

# EM DevXchange 11 & 12<sup>th</sup> May 2016

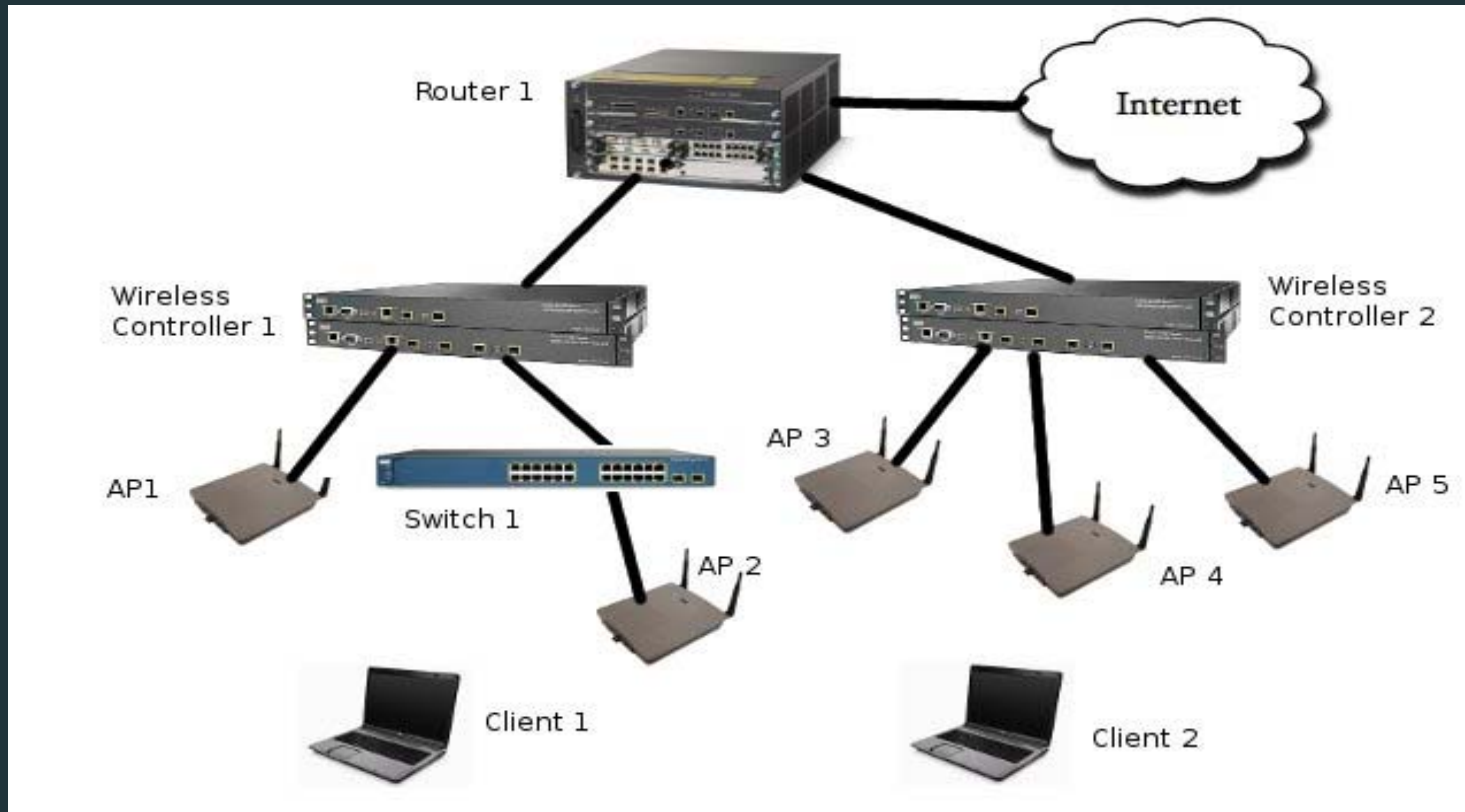
## Support for Cisco Wireless Controller and Access Points

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# Overview



## Wireless Key Features

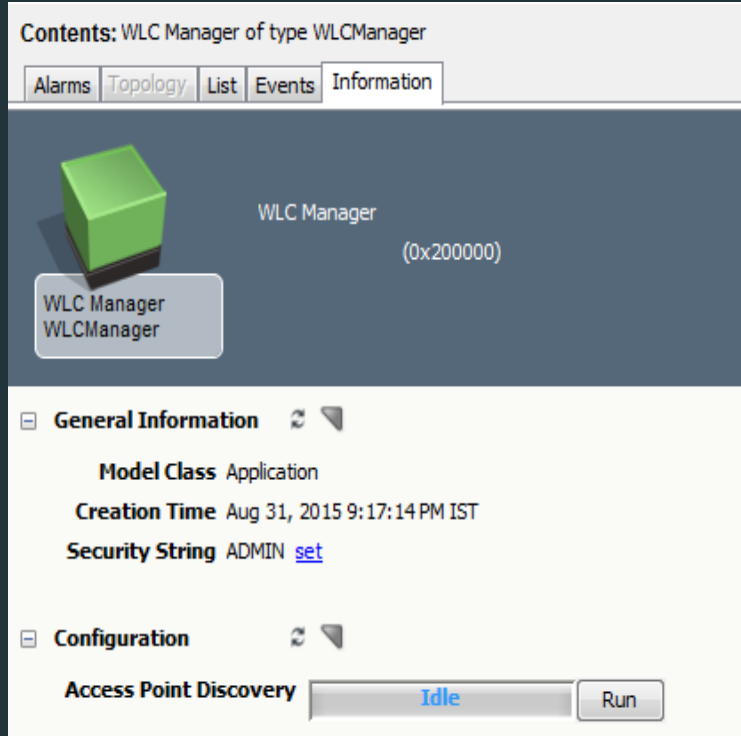
- Support for monitoring of Cisco Wireless LAN Controllers (WLC) and its connected Cisco Access Points (AP)
- Discovery and modelling of different series of Cisco WLC's and AP's
- Complete WLC network topology with connections in between WLC, L2/L3 devices and AP's
- WLC device information tabs have different views which provide insight into details of wireless configuration, access points, mobile stations and thresholds
- WLC devices can be monitored for different traps, events, alarms, thresholds

# Discovery and Modeling

- Enable the "Create Wireless Access Points" option in the Discovery Console > Modeling Options during initial discovery

The screenshot shows the 'Modeling Configuration - CA Spectrum OneClick' dialog box. The 'Destination Container' is set to 'Universe' of type 'Universe'. The 'Modeling Layout' has 'Placement' set to 'Hierarchical' and 'Arrangement' set to 'Radial'. In the 'Modeling Options' section, the 'Create Wireless Access Points' checkbox is highlighted with a red rectangle. Other options include 'Create Wide Area Link Models', 'Create LANS (IP subnets)', 'Remove Empty LANS', 'Create "802.3" (Fanout)', 'Create Physical Addresses', and 'New Devices in Maintenance Mode'. The 'Activation Timeout (in minutes)' is set to 5. The 'Protocol Options', 'Network Services Options', 'Filter', and 'Auto Export' sections are also visible, each with a corresponding 'Options...' button.

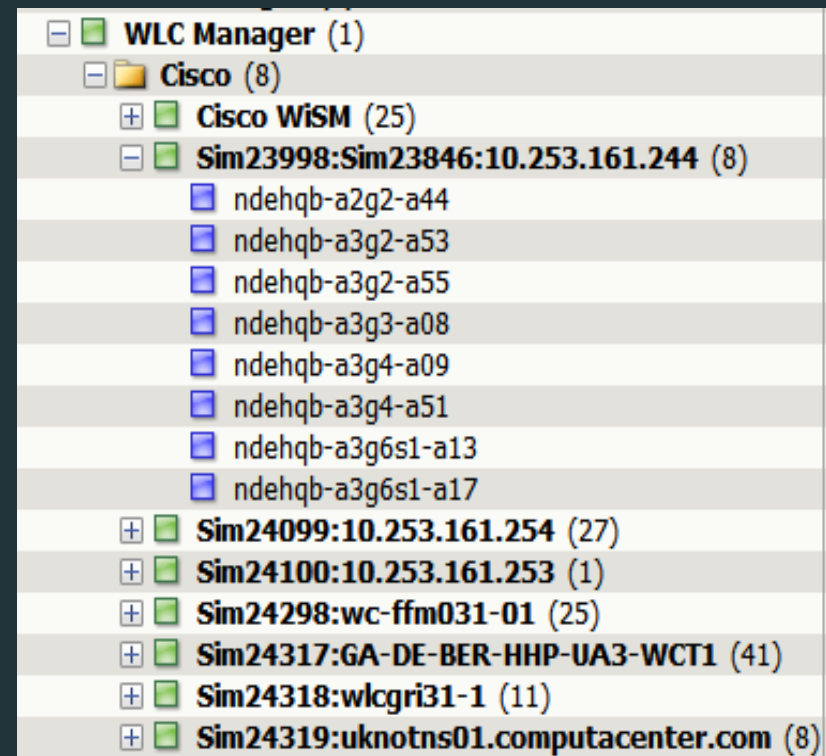
# Discovery and Modeling



- Navigate to Explorer View > WLC Manager > Information Tab > Configuration sub-view > Access Point Discovery: and then click Run
- All access points (APs) will be created under their corresponding WLC Device(s)

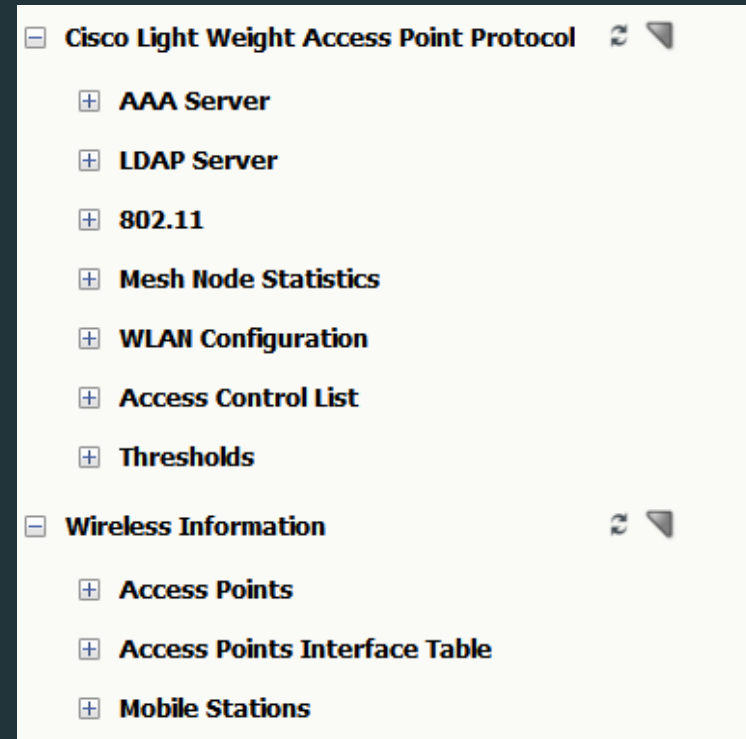
## OneClick Views

- WLC devices modeled are listed under new WLC Manager Hierarchy in OneClick Console with respective AP's



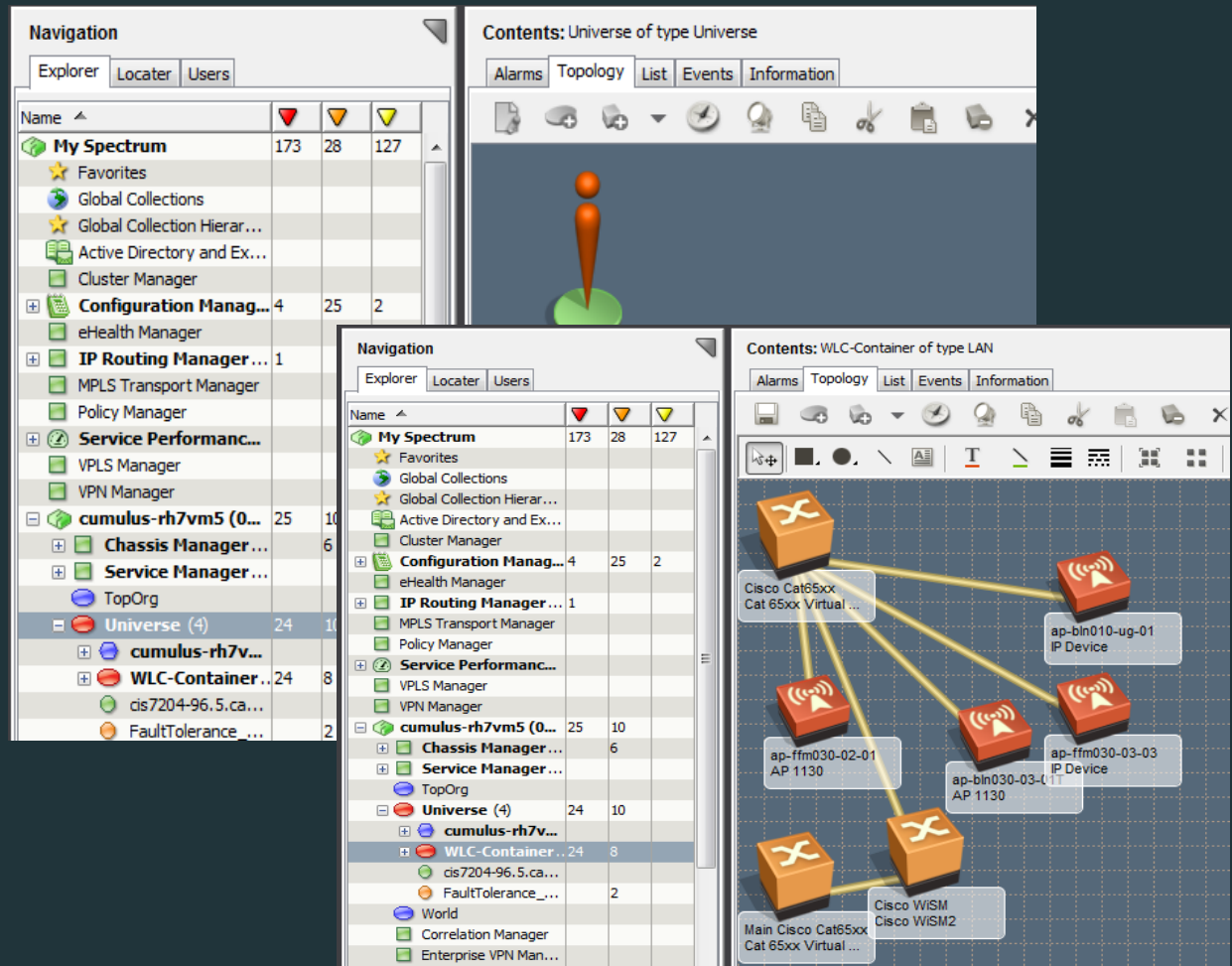
# OneClick Views

- The OneClick content pane has views for LWAP and Wireless information and its sub views



# Topology View of WLCs and APs

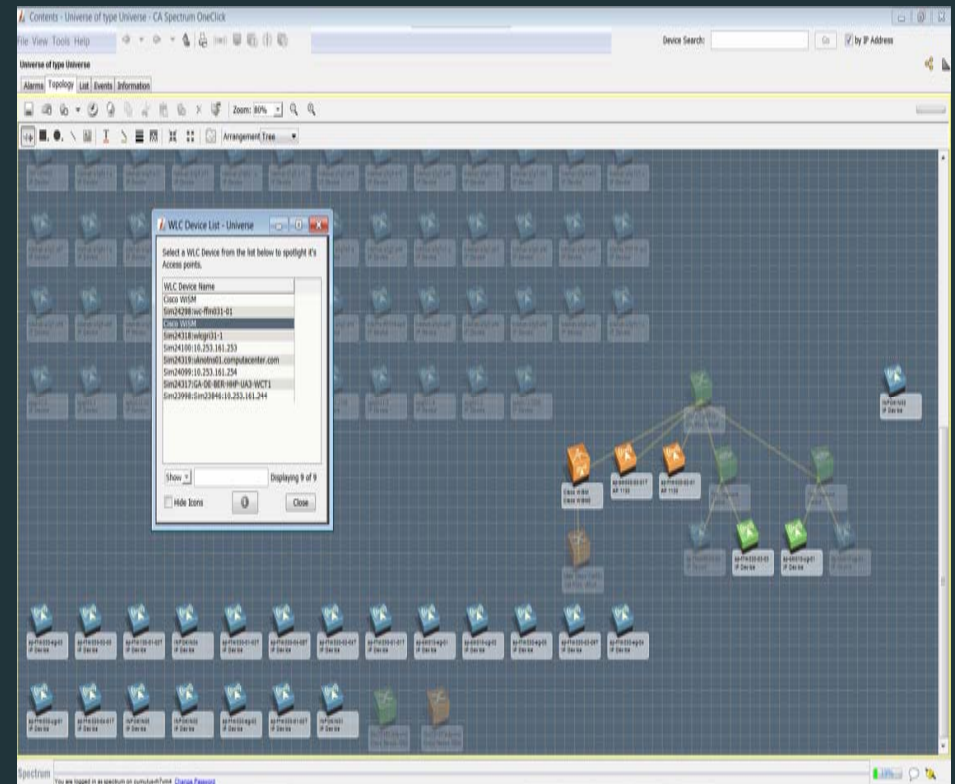
- Topology view which display Controller and its connected access points
- Wireless Controller can be copied to a Container and its respective Access Points also get copied automatically
- Provides ability to manage the devices in the OC views





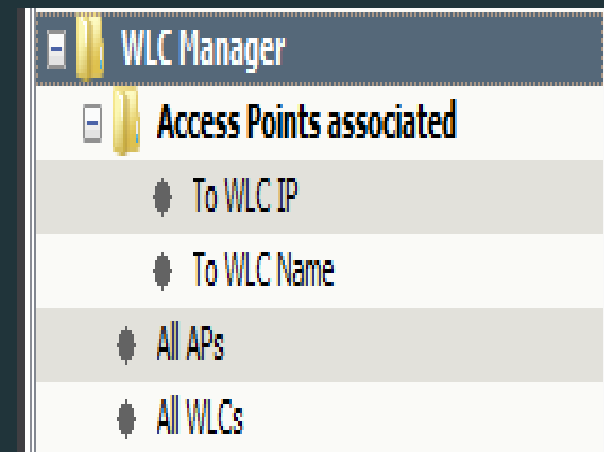
# Spotlight View within Topology View

- Spotighting Wireless Devices in the Topology view helps you determine relationships between WLC Devices and Access Points on your network
- Spectrum spotlights the WLC device selected from the list and its corresponding Access Points by dimming all other models/devices in the topology



## Locator Search for WLCs and APs

- Locator Search allows to use pre-configured searches to locate entities in the CA Spectrum database that are related to Wireless technologies
- Ability to search all Access Points which are associated to a Wireless Controller by specifying the name or IP Address
- Similarly allows to search all Wireless Controllers and Access Points in Spectrum



# Alarms, Events & Traps

- All alarms on AP's are asserted on respective WLC

Contents: Sim23998:Sim23846:10.253.161.244 of type Cisco 8500 WLC

Alarms Topology List Events Information

Filtered By: Severity

Severity	Date/Time	Name	Network Address	Secure Domain	Type	Alarm Title	Landscape
Critical	Oct 19, 2015 9:03:59 AM	Sim23998:Sim23846:10.253.161.244	10.253.161.244	Directly Mana...	Cisco 8500...	WIRELESS CLIENTS CONNECTED TO WLC CONTROLLER EXCEEDED CRITICAL THRESHOLD	cumulus-w12vm2 (0x4...

Displaying 1 of 1

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Component Detail: Sim23998:Sim23846:10.253.161.244 of type Cisco 8500 WLC

Alarm Details Information Impact Host Configuration Root Cause Interfaces Performance Alarm History Neighbors Events Path View

**WIRELESS CLIENTS CONNECTED TO WLC CONTROLLER EXCEEDED CRITICAL THRESHOLD**  
 Oct 19, 2015 9:03:59 AM IST  
 The number of wireless clients connected to WLC Controller Sim23998:Sim23846:10.253.161.244 exceeded the critical threshold limit.

**Clients**  
 Critical Threshold: 90%  
 Connected : 1412  
 Maximum Supported : 1466

**Severity** Critical  
**Impact** 0  
**Acknowledged** [set](#)  
**Clearable** Yes  
**Trouble Ticket ID** [set](#)  
**Assignment**  
**Landscape** cumulus-w12vm2 (0x400000)  
**Status** [set](#)  
**Web Context URL**

**Symptoms** Number of wireless clients connected to WLC Controller exceeded the critical threshold limit.  
**Probable Cause** Total number of wireless clients connected to WLC Controller exceeded the critical threshold limit. Refer to the corresponding event message for more details.  
**Actions** 1) Watch out for further increase of clients connections on this WLC Controller.  
 2) Consider distribution of clients to other WLC Controllers.  
 3) Consider addition of a new WLC Controller before number of client connections reaches maximum supported limit.

# Alarms, Events & Traps

- Events for the selected Alarm

Contents: Sim23998:Sim23846:10.253.161.244 of type Cisco 8500 WLC

Alarms Topology List Events Information

Show [v] Displaying 167 of 167

167 event(s) from Oct 19, 2015 6:27:44 AM IST - now

Severity	Created On	Name	Event	Created By	Cleared On	Cleared By
Minor	Oct 19, 2015 10:09:04 A...	Sim23998:Sim238...	Sim23998:Sim23846:10.253.161.244 exceeded the minor threshold limit.	System	Oct 19, 2015 10:14:04 A...	System
			Access Points Minor Threshold: 70% Connected : 1876 Maximum Supported : 2396			
	Oct 19, 2015 10:08:44 A...	Sim23998:Sim238...	Auto-discovery mapping process finished on model Sim23998:Sim23846:10.253.161.244 of type Rtr_Cisco	System		
	Oct 19, 2015 10:08:24 A...	Sim23998:Sim238...	Auto-discovery mapping process started on model Sim23998:Sim23846:10.253.161.244 of type Rtr_Cisco	System		
	Oct 19, 2015 10:07:52 A...	Sim23998:Sim238...	Auto-discovery mapping process can not run on model Sim23998:Sim23846:10.253.161.244 of type Rtr_Cisco because another mapping process is currently running, So it is queued	System		
Major	Oct 19, 2015 10:04:03 A...	Sim23998:Sim238...	The number of Access Points connected to WLC Controller Sim23998:Sim23846:10.253.161.244 exceeded the major threshold limit.	System	Oct 19, 2015 10:09:04 A...	System
			Access Points Major Threshold: 80% Connected : 1875 Maximum Supported : 2227			
	Oct 19, 2015 10:03:37 A...	Sim23998:Sim238...	Auto-discovery mapping process finished on model Sim23998:Sim23846:10.253.161.244 of type Rtr_Cisco	System		

# Support for Maintenance Mode

- WLC Manager can be put into maintenance mode
- The respective AP's will also be put into maintenance mode

The screenshot displays the Cisco WLC Manager interface. The top section shows a network topology with various devices including IP Devices (e.g., apgr31-4, apgr31-2, apbeh11-2506), Cisco WISM2, and Main Cisco Cat65xx. The bottom section shows the 'Component Detail' for a Cisco WISM2 device, with the 'Maintenance' tab selected. The 'Maintenance' tab shows the device is in 'Maintenance' mode, with a 'Schedule...' button and a list of 'Assigned Maintenance Schedules'.

**Component Detail: Cisco WISM2 of type Cisco WISM2**

**Information** | **Host Configuration** | **Root Cause** | **Interfaces** | **Performance** | **Neighbors** | **Alarms** | **Cleared Alarms History** | **Events** | **Attributes** | **Both View**

**Condition** Maintenance

**Contact Status** Established

**Network Address** 10.241.119.2 [set](#)

**Secure Domain** Directly Managed

**MAC Address** 11:22:03:04:05:07

**Last Successful Poll** Oct 19, 2015 11:12:10 AM IST

**In Maintenance** Yes [set](#) [Schedule...](#)

**Assigned Maintenance Schedules**

**System Up Time** 22 Days + 09:56:42

**System Name** Cisco WISM [set](#)

**Contact** IDG1459340, SL3-PL4, UV, SapNr= [set](#)

**Device Location** Fm\_Eschb\_Landstr.100\_E-Shelter [set](#)

**Value When Yellow** 1 [set](#)

**Value When Orange** 3 [set](#)

**Value When Red** 7 [set](#)

**Notes** [set](#)

# Proactive Management of the Wireless Environment

- Configure Thresholds for:
  - Access Points
  - Mobile Nodes / Clients
  - Access Point Users
  - Download and Upload Volume per Client

Component Detail: Cisco WSM of type Cisco WSM2

Information Host Configuration Root Cause Interfaces Performance Neighbors Alarms Cleared Alarms History Events Attributes Path View

### Thresholds

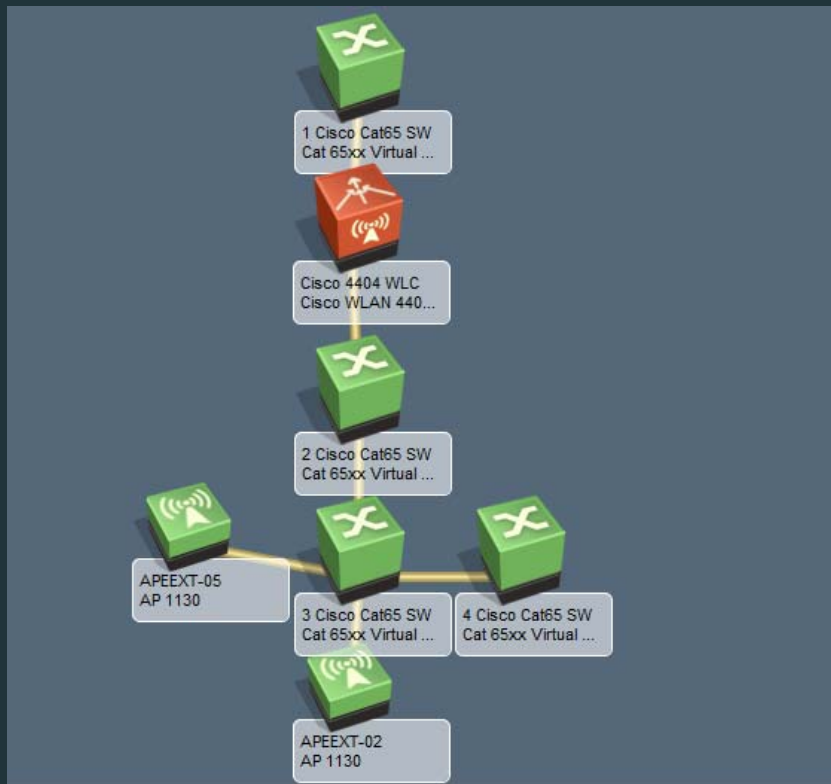
Thresholds can be configured here so that an alarm is generated if a given threshold is exceeded. To disable a threshold from generating alarm, set that threshold value to zero.

Note: "--" will be displayed when threshold values are incorrectly set.

Connected Access Points 0  
Connected Clients 0

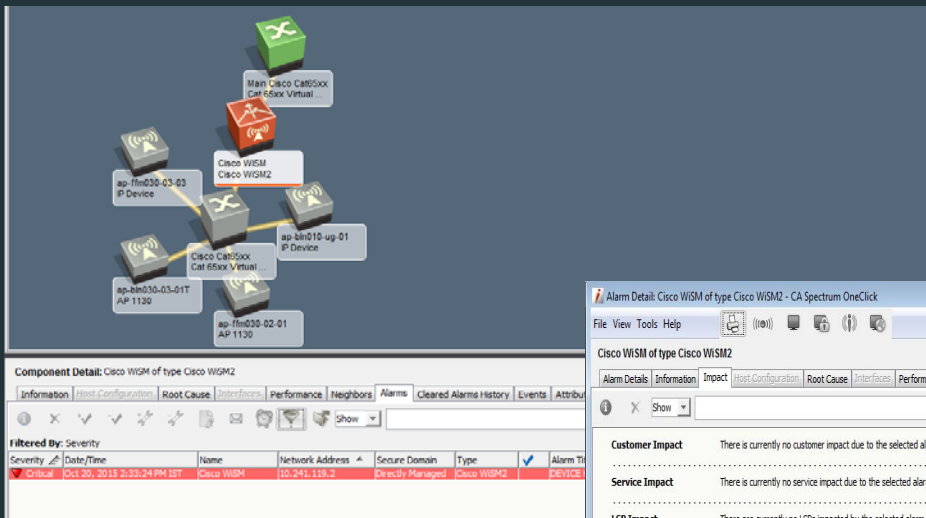
	Maximum Supported	Minor Threshold(%)	Major Threshold(%)	Critical Threshold(%)
Access Points	0	70 <a href="#">set</a>	80 <a href="#">set</a>	90 <a href="#">set</a>
Mobile Nodes/Clients	0	70 <a href="#">set</a>	80 <a href="#">set</a>	90 <a href="#">set</a>
Access Point Users	500 <a href="#">set</a>	70 <a href="#">set</a>	80 <a href="#">set</a>	90 <a href="#">set</a>
Download Volume Per Client (MB)	300 <a href="#">set</a>	70 <a href="#">set</a>	80 <a href="#">set</a>	90 <a href="#">set</a>
Upload Volume Per Client (MB)	1000 <a href="#">set</a>	70 <a href="#">set</a>	80 <a href="#">set</a>	90 <a href="#">set</a>

## Root Cause Analysis – Case 1



- WLC is down but AP's are reachable
  - Critical alarm raise on WLC

## Root Cause Analysis – Case 2



- WLC is down and AP's also not reachable
  - Critical alarm raise on WLC and AP's will be greyed out

Alarm Detail: Cisco WISM of type Cisco WISM2 - CA Spectrum OneClick

File View Tools Help

### Cisco WISM of type Cisco WISM2

Alarm Details
Information
Impact
Root Cause
Interfaces
Performance
Alarm History
Neighbors
Events
Path view

?
X
Show

#### Customer Impact

There is currently no customer impact due to the selected alarm.

#### Service Impact

There is currently no service impact due to the selected alarm.

#### LSP Impact

There are currently no LSPs impacted by the selected alarm.

#### Symptoms

The selected alarm did not result from any symptoms.

☒ **Management Lost Impact** 6 device(s) have lost management with a total management impact of 6.
 

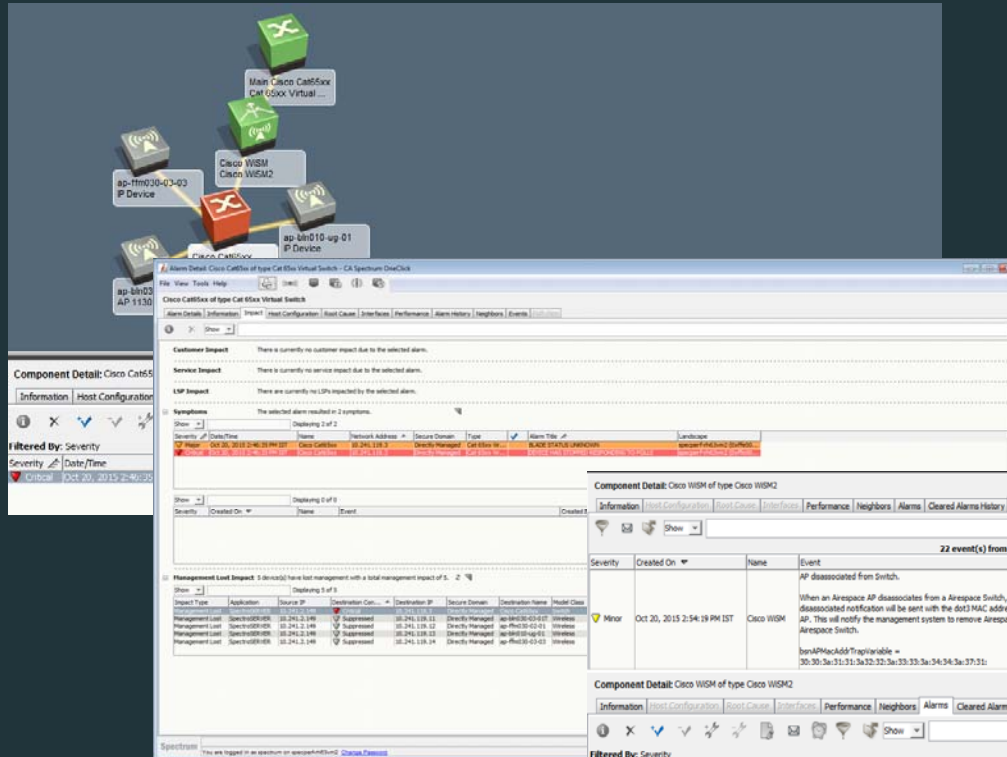
Show
Displaying 6 of 6

Impact Type	Application	Source IP	Destination Con...	Destination IP	Secure Domain	Destination Name	Model Class	Device ...
Management Lost	SpectroSERVER	10.241.2.149	Critical	10.241.119.2	Directly Managed	Cisco WISM	Wireless LAN	1
Management Lost	SpectroSERVER	10.241.2.149	Suppressed	10.241.119.11	Directly Managed	ap-bh030-03-03-01T	Wireless	1
Management Lost	SpectroSERVER	10.241.2.149	Suppressed	10.241.119.12	Directly Managed	ap-fhm030-02-01	Wireless	1
Management Lost	SpectroSERVER	10.241.2.149	Suppressed	10.241.119.3	Directly Managed	Cisco Cat650x	Switch	1
Management Lost	SpectroSERVER	10.241.2.149	Suppressed	10.241.119.13	Directly Managed	ap-bh010-05-01	Wireless	1
Management Lost	SpectroSERVER	10.241.2.149	Suppressed	10.241.119.14	Directly Managed	ap-fhm030-03-03	Wireless	1

You are logged in as spectrum on specterfm3vm2 [Change Password](#)
16%



# Root Cause Analysis – Case 3



- Intermediate Switch is down
  - AP's connected to switch greyed out
  - RCA Alarm on Switch
  - Suppressed APs will be listed as symptoms of this alarm
  - WLC will raise "AP down/disassociated" alarm for each unreachable AP

Component Detail: Cisco WISM of type Cisco WISM2

22 event(s) from Oct 20, 2015 10:49:25 AM IST - now

Severity	Created On	Name	Event	Created By	Cleared On	Cleared By	Event Type
Minor	Oct 20, 2015 2:54:19 PM IST	Cisco WISM	AP disconnected from Switch. When an AireSpace AP disassociates from a AireSpace Switch, the AP disassociated notification will be sent with the dot3 MAC address of the AireSpace AP. This will notify the management system to remove AireSpace AP from this AireSpace Switch. bonAPMacAddrTrapiVariable = 30:30:3a:31:31:3a:32:32:3a:33:33:3a:34:34:3a:37:34	System			0x460007

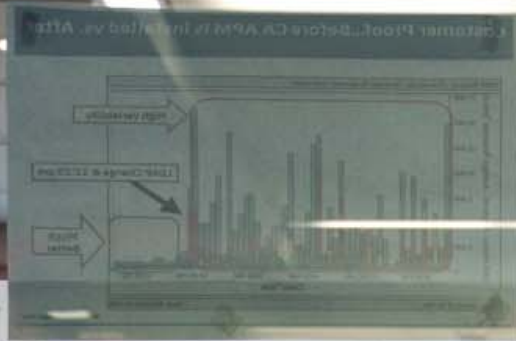
Component Detail: Cisco WISM of type Cisco WISM2

Filtered By: Severity

Severity	Date/Time	Name	Network Address	Secure Domain	Type	Alarm Title	Landscaper
Minor	Oct 20, 2015 2:49:51 PM IST	Cisco WISM	10.241.119.2	Directly Managed	Cisco WISM2	LRAD_DISASSOCIATED	lspecper-f-h63-m2 (0x4600...
Minor	Oct 20, 2015 2:51:43 PM IST	Cisco WISM	10.241.119.2	Directly Managed	Cisco WISM2	LRAD_DISASSOCIATED	lspecper-f-h63-m2 (0x4600...
Minor	Oct 20, 2015 2:52:40 PM IST	Cisco WISM	10.241.119.2	Directly Managed	Cisco WISM2	LRAD_DISASSOCIATED	lspecper-f-h63-m2 (0x4600...
Minor	Oct 20, 2015 2:54:19 PM IST	Cisco WISM	10.241.119.2	Directly Managed	Cisco WISM2	LRAD_DISASSOCIATED	lspecper-f-h63-m2 (0x4600...

AP associated with Switch.  
When an AireSpace AP Associates to a AireSpace Switch, the AP associated notification will be sent with the dot3 MAC address of the AireSpace AP. This will help the management system to discover the AireSpace AP and add it to system.  
bonAPMacAddrTrapiVariable = 30:30:3a:31:31:3a:32:32:3a:33:33:3a:34:34:3a:37:34  
bonAPPortNumberTrapiVariable = bonAPName =

Who can get  
computer clunkers  
off the road?  
We can



A table titled "Service Assurance" with multiple columns and rows of data, likely representing various performance metrics or service levels.

DC  
NCA 313  
ATV AJ  
M & M

Top 3 things you want to know about  
Service Assurance

Top 3 things you want to know about  
Service Assurance

## Roadmap Enhancements

Service Assurance

# Demo

## Responding to Feedback

- Support for WLC Fault Tolerance
  - Creates new Standby Model
  - Pairs Active and Standby WLC Models
  - Supports AP migration, maintenance and hibernation
- Support for DHCP enabled Access Points
  - Detects IP address change of AP
  - Avoids creating duplicate model of AP

## Support for More Vendors

- Support for Aruba Wi-Fi
- Ability to discover and model Aruba wireless controllers and connected access points
- Proactive tracking, monitoring and troubleshooting of wireless controllers, access points, and corresponding mobile stations
- Ability to monitor number of users connected to the AP, upload/download volume of data and other parameters

# Support for More Vendors

Sim10778:Aruba3200 of type Aruba a3200

Information Host Configuration Root Cause Interfaces Performance Neighbors Alarms Cleared Alarms History Events Attributes Path View SDN VirtualOverlay SDN ServiceView

Sim10778:Aruba3200 [set](#)  
Aruba a3200  
ArubaOS (MODEL: Aruba3200-US), Version 5.0.0.1 (24178)

**General Information**

Condition ▼ Normal  
Contact Status Established  
Network Address 10.241.250.231 [set](#)  
Secure Domain Directly Managed  
MAC Address 00:0b:86:61:b4:49  
Last Successful Poll May 5, 2016 9:36:34 PM IST  
In Maintenance No [set](#) [Schedule...](#)  
Assigned Maintenance Schedules  
In Hibernation No [set](#)  
Hibernate After Maintenance No [set](#)

System Up Time 28 Days + 12:37:13  
System Name Sim10778:Aruba3200 [set](#)  
Contact MNS TEST ARUBA [set](#)

**Aruba Controller Information**

Host Name cal-wlan-sw01a  
Model Name A3200  
Fan Tray Assembly Number  
Fan Tray Serial Number  
Internal Temperature 34.00 degrees Celsius (NORMAL)  
License Serial Number AK0007021  
Hardware Version A1.0  
Software Version 6.3.1.9

Switch IP 10.6.6.4  
Switch Role local  
Switch Master IP 10.5.255.2  
Switch Date 2014-10-22 11:51:25  
Switch License Count 4  
Switch Base MAC Address 00:0b:86:61:e6:d0

**System Information**

- Processor
- Memory
- Power Supply
- Fan
- Card
- Storage
- Switch List
- Interface
- Switch System Information
- Authentication Server
- ESI Server
- WLAN Information
  - Access Points
  - Wireless Stations
- AM Monitored Access Points
- Mesh Node

**WLC Manager (1)**

**Aruba (3)**

Sim10778:Aruba3200			
Sim18459:IAP-Test			
Sim22060:cal-wlan...			

