



DEVOPS – AGILE OPERATIONS

# Explore What's New in CA Performance Management 3.0 and CA Virtual Network Assurance 2.0

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# Agenda

1

**CISCO ACI SDDC MONITORING**

2

**MSP ADVANTAGE**

3

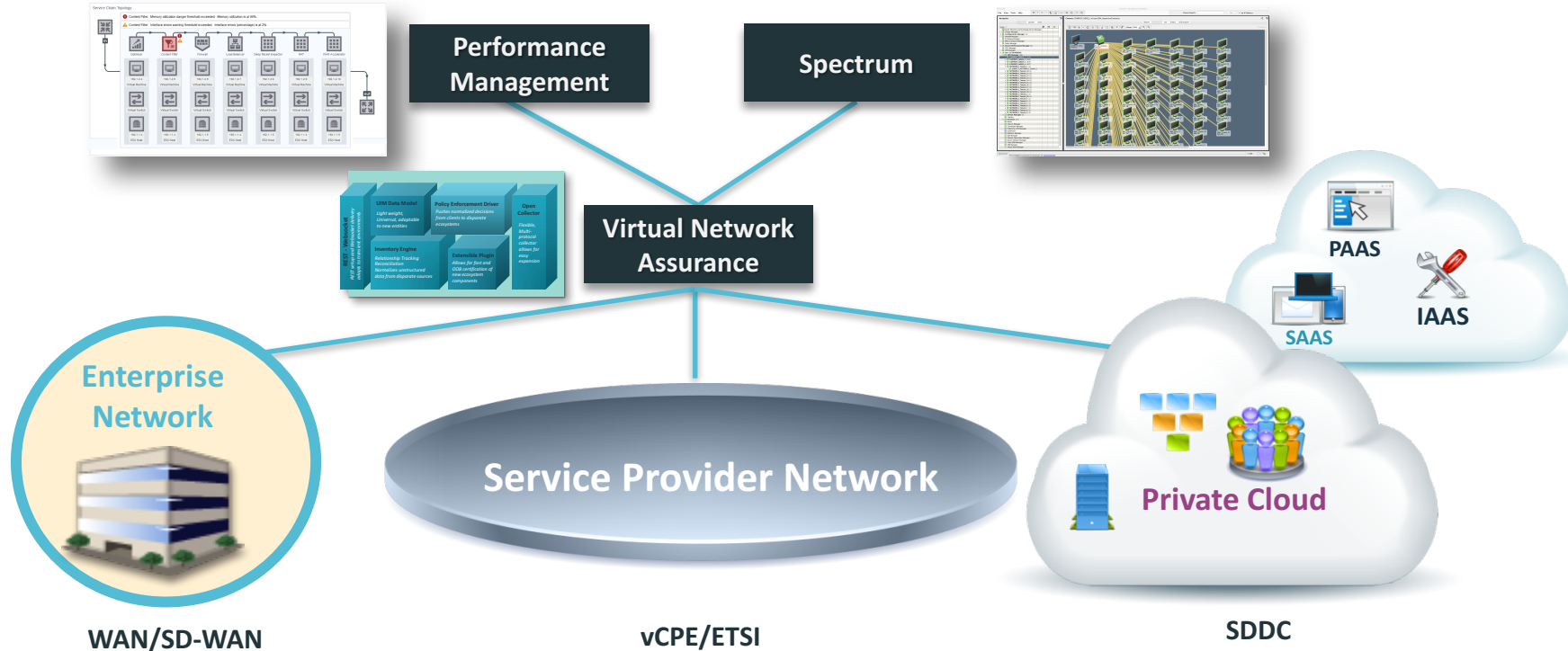
**OPERATIONAL UI ENHANCEMENTS**

5

**CA PM LITE, MEGA-SCALE AND CPE MONITORING**



# Network Performance Monitoring - Path to the Cloud



# Feature Area - Cisco ACI/SDDC Monitoring

SDDC = Software Defined Data Center

## *What is* **Cisco ACI**

- Cisco ACI is an SDN/NFV architecture designed for the cloud data center
- Automates cloud network based on application modeling
- As of July 2016, there currently 7200 ACI ready customers out there
- ACI is a key component of our CA World Launch for Software Defined Data Centers

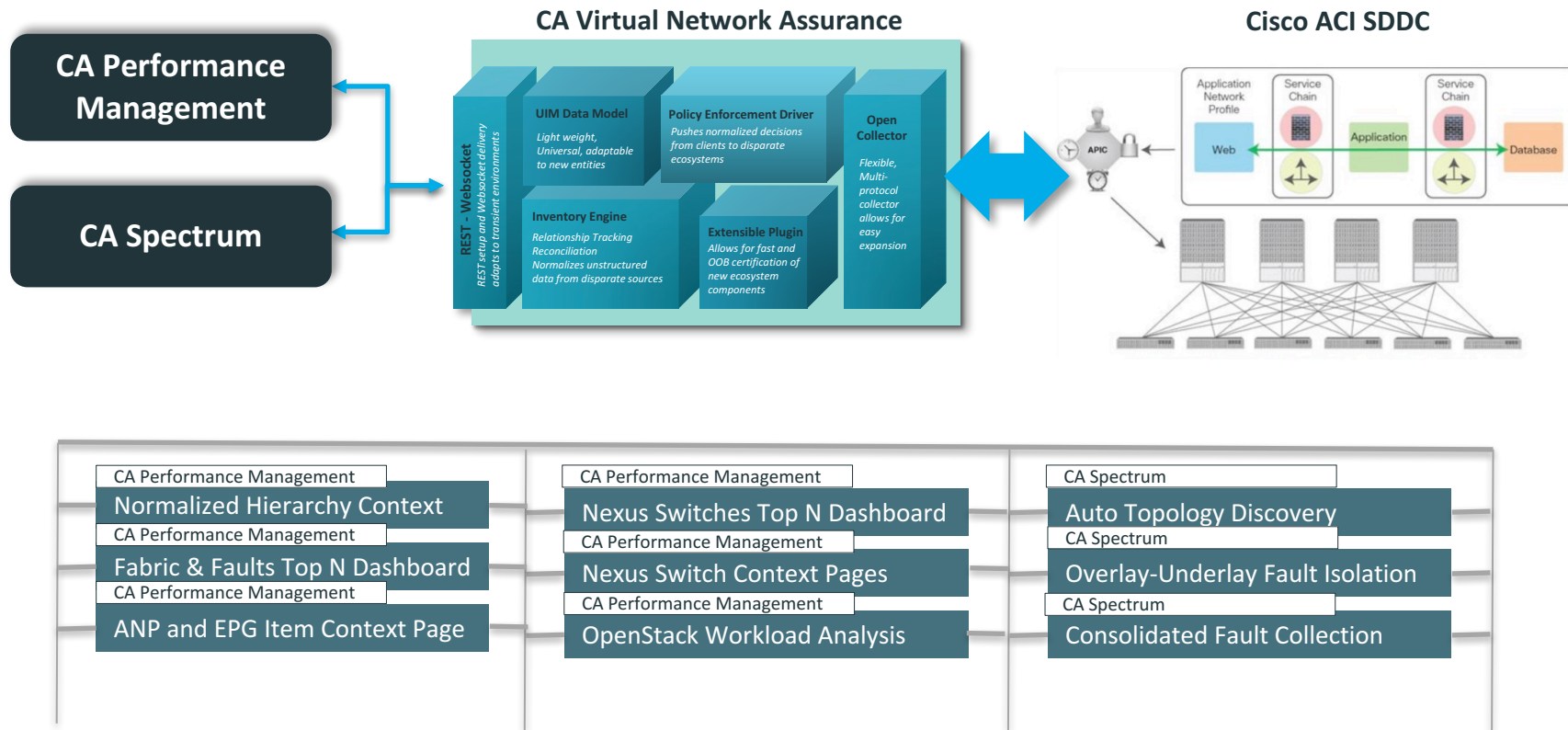
## *What is the* **Problem**

- SDDC is based on ACI and is abstract and very complex to visualize and monitor
- Application model automation introduces many more items to monitor
- ACI components are tightly inter-dependent and sensitive to neighboring issues

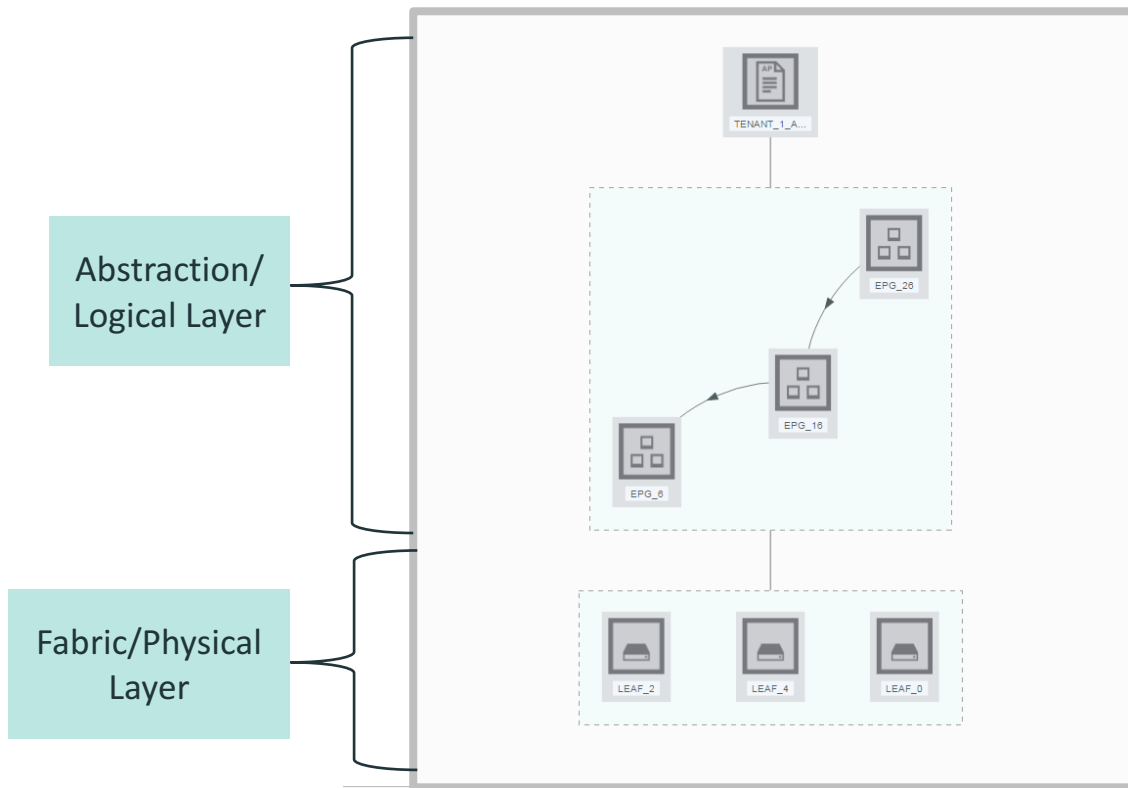
## *What is the* **Benefit**

- Global health views of Cisco ACI ecosystem
- End-point relationship mapping for confidence in provisioning
- Application profiles for fast troubleshooting of ACI supported business services
- CA's ACI Monitoring solution is unique and endorsed by Cisco

# High-Level Feature Summary



# New Relationship Map View



Quickly determine how each item is related to neighboring items

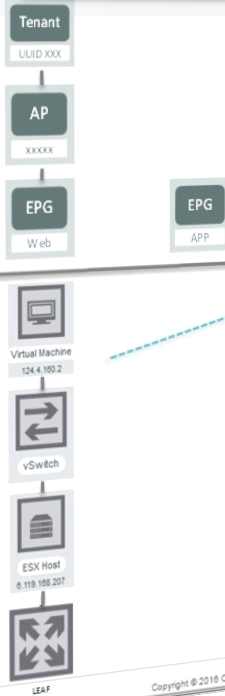
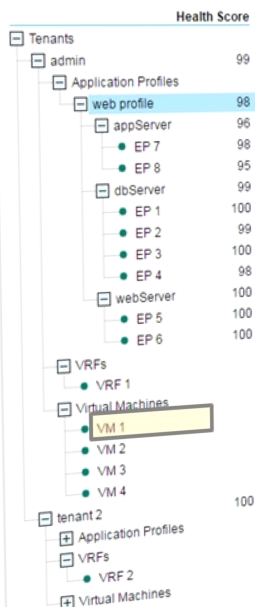
Validate a configuration is provisioned correctly

Visually root cause or isolate an event or issue

Displays relationship between fabric layer, logical layer, virtualization layer, and compute layer

# ACI Console

Filter /VNA Domains/User Domain/Tenants



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ACI Console is a launch pad to get a global view of all ACI objects and from here, drill into specific ones of interest

End point relationship map shows relationship to logical configuration as well as to virtual & physical components. User can quickly assess the right relationship has been provisioned

## ACI Health

Group: All Groups > VNA Domains > DefaultConfiguration > Tenants > admin > Application Profiles

Current Counts

Critical Faults 17

Lowest Health Scores (Trend Table)

Automatic Group: Application Profiles

Resolution: As Polled Data

EPG\_3

Name Type Health Score #

EPG\_3 0 0

EPG\_17 0 0

EPG\_10 14 14

EPG\_2 10 10

admin\_AC1\_AP\_3 31 31

EPG\_15 34 34

100 80 60 40 20 0

10:00 10:05 10:10 10:15 10:20 10:25 10:30 10:35 10:40 10:45 10:50 10:55 11:00 11:05 11:10 11:15 11:20 11:25 11:30 11:35 11:40 11:45 11:50 11:55 12:00

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100 80 60 40 20 0

10:00 10:05 1

DEMO

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# Feature Area – MSP Advantage

## *What is* **MSP Advantage**

- MSP Advantage is a collection of capabilities that allow MSPs to cost effectively offer differentiated network monitoring services to many end customers in a multi-tenant environment

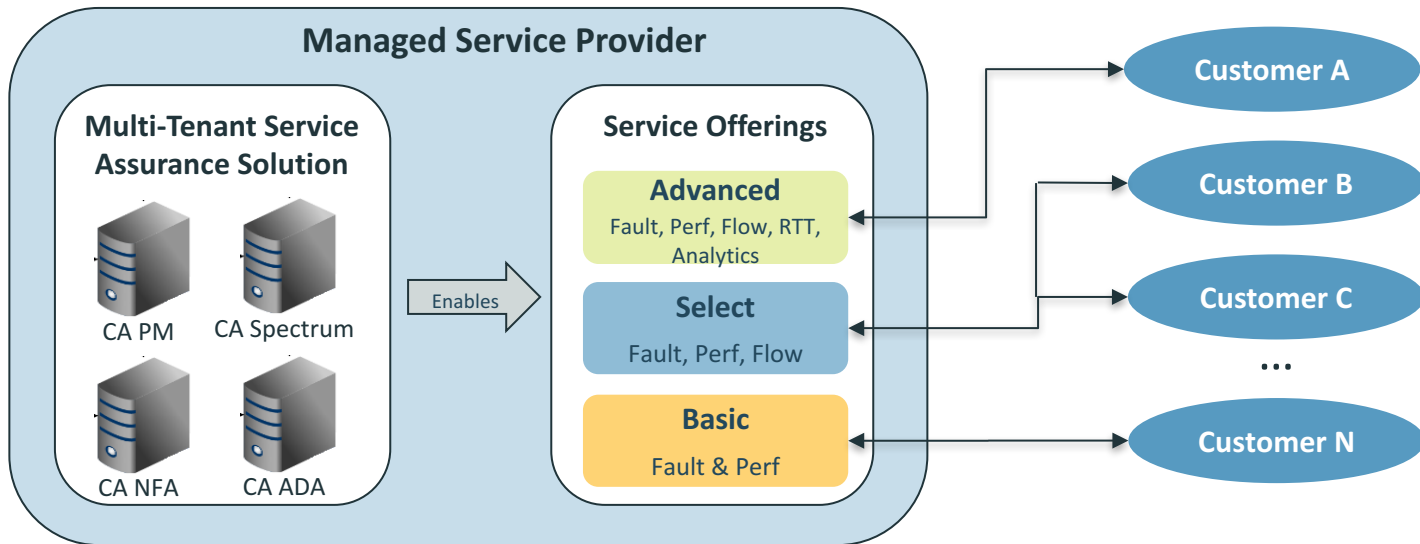
## *What is the* **Problem**

- Minimize the costs of hosting many tenants in a secure manner
- Seek to maximize revenue opportunities by offering tiered classes of monitoring capabilities

## *What is the* **Benefit**

- Reduced footprint for improved TCO
- Reduced administrative overhead
- Enhanced per-tenant security
- Custom data modeling for the right data to the right people, fast!

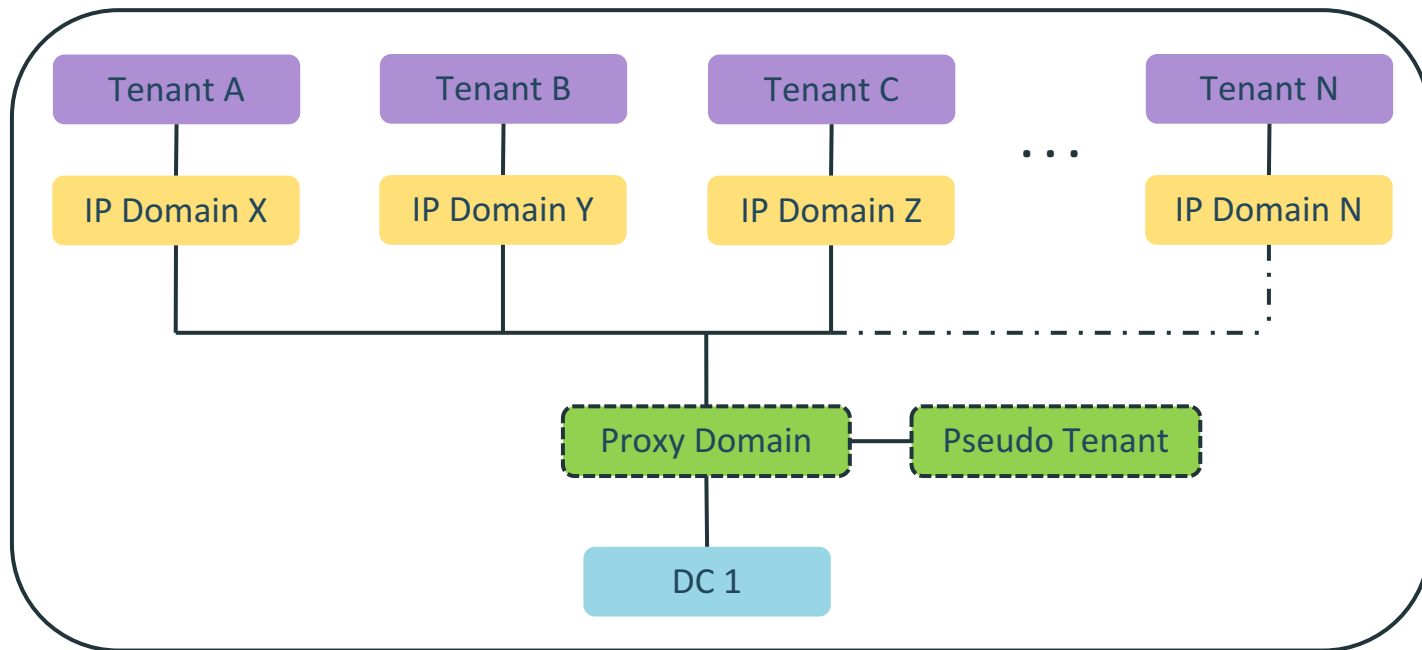
# High-Level Feature Summary






# Multi Tenant Data Collector

Multiple small tenants sharing a DC



# Multiple NFA Data Sources

 Performance Center

Dashboards

Inventory

Reports

My Settings

System Health

Administration

## Manage Data Sources

### Global Synchronization Status

Last Run Status: Success  
Last Start Time: Sep 16, 2016 8:54:10 AM EDT  
Last End Time: Sep 16, 2016 8:54:15 AM EDT  
Last Success Time: Sep 16, 2016 8:54:15 AM EDT  
Last Failure Time:

Multiple CA Network Flow Analysis data sources allows flow monitoring to scale as needed

Source Name	↑ Status	Last Polled On	Source Type
Data Aggregator@samurai-reg-da2	Available	September 16, 2016 8:54:20 AM EDT	Data Aggregator
EventManager@samurai-reg-pc2.ca.com	Available	September 16, 2016 8:54:19 AM EDT	Event Manager
Network Flow Analysis@10.242.22.177	Available	September 16, 2016 8:54:50 AM EDT	Network Flow Analysis
Network Flow Analysis@10.242.23.209	Synchronizing	September 16, 2016 8:53:56 AM EDT	Network Flow Analysis
Network Flow Analysis@10.242.23.227	Available	September 16, 2016 8:54:45 AM EDT	Network Flow Analysis

# Data Source Role Rights for Tenants

ca Performance Center

Dashboards Inventory Reports My Settings System Health Administration

## Edit Role

**Edit Role**

Name: \* IT Director

Description: Directs IT strategy, manages IT staff, and reviews high-level performance reports.

Role Status: Enabled

	View Inventory and Search	Lets users access the Inventory tab and S...
	View Protocols	Lets users see protocol information where ...
	View ToS	Lets users see the Type of Service informa...
Network Flow Analysis@10.242.23.161	Run Reports	User can execute defined reports
	View Hosts	User can view host data
	View Protocols	User can view protocol data
	View ToS	User can view ToS data
Network Flow Analysis@10.242.23.185	Run Reports	User can execute defined reports
	View Protocols	User can view protocol data

Edit

Save Cancel

Data source (e.g. CA Network Flow Analysis) role rights can be configured for tenants

# Leverage custom attributes in group definitions

**Edit Rule**

Rule Name:

Add **Devices** *Any device connected to the network with an address*

**+ Add Condition**

Device Item  is a member of  [delete]

**Device Customer Service Tier**  is equal to  [delete]

Device Contact  
Device Customer Service Tier  
Device Description  
Device Item  
Device Last State Change  
Device Life Cycle State  
Device Location  
Device Model  
Device Name  
Device Name Alias  
Device SubType  
Device sysObjectID

[show advanced]

OK Cancel

Leverage custom attributes in group definitions

# Display custom attributes in inventory & table views

Display custom attributes in  
inventory or table views

ca Performance Center

System health: good admin log out ? Help

Dashboards Inventory Reports My Settings System Health Administration Search All

## Devices

Group: My Assigned Groups > All Groups > Managed Customer Tiers [change]

Devices

User Group: Managed Customer Tiers

<input type="checkbox"/>	Name	Model	Type	Address	Life Cycle State	Customer Service Tier
<input type="checkbox"/>	Cisco-3945_10.251.15.1	Cisco 3945 SPE250	Router	10.251.15.1	Active	Bronze
<input type="checkbox"/>	Cisco-3945_10.251.16.1	Cisco 3945 SPE250	Router	10.251.16.1	Active	Bronze
<input type="checkbox"/>	Cisco-3945_10.251.17.1	Cisco 3945 SPE250	Router	10.251.17.1	Active	Silver
<input type="checkbox"/>	Cisco-3945_10.251.18.1	Cisco 3945 SPE250	Router	10.251.18.1	Active	Silver
<input type="checkbox"/>	Cisco-3945_10.251.19.1	Cisco 3945 SPE250	Router	10.251.19.1	Active	Gold
<input type="checkbox"/>	Cisco-3945_10.251.20.1	Cisco 3945 SPE250	Router	10.251.20.1	Active	Gold

Search

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On Demand Manage Life Cycle

# Metric Filtering

The screenshot displays the CA Performance Center interface with the 'Administration' tab selected. The 'Monitoring Profiles' section is active, showing a list of monitoring profiles on the left and a 'Monitoring Profile' configuration area on the right. The 'Add / Edit Collected Metrics' dialog box is open, allowing users to select metrics to be collected for a specific interface. The dialog is divided into two main sections: 'Available (not collected)' and 'Selected (collected)'. The 'Available' list includes metrics such as Availability, Bits, Bytes, and various interface statistics. The 'Selected' list includes metrics like Bits Per Second In, Discards In, and Errors In. The 'Edit Collected Metrics' button is highlighted with a red circle. The background interface shows a search bar and a table of collections.

Performance Center

System health: good admin log out ? Help

Dashboards Inventory Reports My Settings System Health Administration Search All

### Monitoring Profiles

Monitored Inventory Monitoring Configuration

- Monitoring Profiles
- Threshold Profiles
- Metric Families
- Vendor Certifications
- Collections

System Status

Monitoring Profile

Name

- Availability
- DA Health (Fast)
- DA Health (Normal)
- DA Health (Slow)
- Device Polling Statistics
- F5 Networks Systems
- Inter-Networking Functions
- Microsoft Cluster Services
- Mobile Wireless
- MPLS
- Network Interface
- Network Interface - Configuration
- Network Interface - Performance
- Physical Server
- QoS
- Reachability
- Response Path
- Router
- Switch

Search

New Copy

#### Add / Edit Collected Metrics

Select metrics to be collected for 'Interface':

Available (not collected)

- Availability
- Bits
- Bits In
- Bits Out
- Bits Per Second
- Bytes
- Bytes In
- Bytes Out
- Carrier Signal Transitions
- Collisions Out
- Discards
- Errors
- Frame Size
- Frame Size In
- Frame Size Out
- Frames
- Frames In
- Frames Out
- Historical Interface Speed (bps)
- Inbound Octet Rate for Interface
- Inbound Packet Rate for Interface
- Interface Current Administrative Status
- Interface Current Operational Status

Selected (collected)

- Bits Per Second In
- Bits Per Second Out
- Discards In
- Discards Out
- Errors In
- Errors Out
- Speed In
- Speed Out
- Utilization In
- Utilization Out

Save Cancel

#### Collections

Component Filter	Collected Metrics
Administrative Status does not equal down(2)	10 of 76 metrics collected Bits Per Second In; Bits Per Second Out; Discards In; Discards Out; Errors In; ...

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Edit Collected Metrics

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# Feature Area – Enhanced User Experience

## *What is* **Operational UI**

- Network Performance Management tools are used by a wide range of roles with a wide range of knowledge and experience
- Easy has become the table-stakes in the App Economy

## *What is the* **Problem**

- Flexibility and simplicity is critical for MSP and enterprise end-users
- Advanced controls and sophisticated use cases are required for power-users/admins
- Complex technologies elevates administrative burden
- Need out of the box and abundant customization opportunities
- Need to isolate problems fast

## *What is the* **Benefit**

- Operational simplicity powered by easy to understand visualizations of complex technologies
- Easier for users out of the box with abundant customization opportunities
- Less clicks to find problems



# Dynamic Context Pages that Suppress the Display of Unrelated Data

- To ensure efficiency and clarity of information, context pages should only contain information relevant to the specific item being views
  - Applicable to all device and component pages
  - Suppression of tabs and individual views based on support of the specific data source
  - Suppression of tabs and individual views based on support of the specific metric family within that tab or view

# Smarter and Easier Workflows

*Less Clicks to the Data that Matters*

Switches  
Permission Group: My Assigned Groups

Name Alias	Address	Description
brnme2test	138.42.94.66	Cisco Systems WS-C2900
cls5000-94-82.ca.com	138.42.94.82	Cisco Systems WS-C5000 Cisco Catalyst Operating System Software, Version 6.4(17) Copyright (c) 1995-2005 by Cisco Systems
EnterasysE1	138.42.94.95	Enterasys Networks, Inc. 1H582-25 Rev 03.02.08.1 05/06/2004-16.04 o/c G-IP bipmkof16e.yourbusiness.com BIG-IP 4.5.13 BIG-IP Kernel 4.388 Jundry Networks, Inc. FES2402, IronWare Version 04.0.007c1 Compiled on Dec 18 2007 at 10:46:14 labeled as FES04000 Jundry Networks, Inc. FES2402, IronWare Version 03.2.00a7c1 Compiled on Oct 15 2004 at 20:13:44 labeled as FES03200a J4121A ProCurve Switch 4000M, revision C.08.22, ROM C.06.01 (jsw/code/build/vgn/c08)
F5 10.231.20.10	10.231.20.10	F5 LTM-6400 10.231.20.11 Custom View - Infrastructure Management
F5 10.231.20.11	10.231.20.11	Cisco Systems WS-C5000 Cisco Catalyst Operating System Software, Version 5.5(21) Copyright (c) 1995-2005 by Cisco Systems

Search [ ] Page 1 of 2 Displaying 1 - 10 of 13

On Demand Manage Life Cycle

...e.. only show F5 context info for F5 devices

History Reports My Settings System Health Administration environment  
View Suppression (on) Auto Refresh (off) Print Email  
Last Hour: Sep 19, 2016 1:52 PM - 2:52 PM

ACTIVE

Recent Records Top Interface Errors Top Interface Utilization Custom View - Infrastructure Management F5 Virtual Info F5 Pool Connections F5 CPU/Node

Bytes Table

Description	Bits In - Total	Bits Out - Total	Bytes In - Total	Bytes Out - Total
F5 Virtual Server Session	10.7 Tb	4.8 Tb	6.1 Tb	1.2 Tb
			538.5 GB	707 GB

Bytes Trend Chart

5-Minute Resolution Time Zone: EDT

Bits In - Total Bits Out - Total Bytes In - Total Bytes Out - Total

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Switches  
Permission Group: My Assigned Groups

Name Alias	Address	Description
brnme2test	138.42.94.66	Cisco Systems WS-C2900
cls5000-94-82.ca.com	138.42.94.82	Cisco Systems WS-C5000 Cisco Catalyst Operating System Software, Version 6.4(17) Copyright (c) 1995-2005 by Cisco Systems
EnterasysE1	138.42.94.95	Enterasys Networks, Inc. 1H582-25 Rev 03.02.08.1 05/06/2004-16.04 o/c BIG-IP bipmkof16e.yourbusiness.com BIG-IP 4.5.13 BIG-IP Kernel 4.388 Foundry Networks, Inc. FES2402, IronWare Version 04.0.007c1 Compiled on Dec 18 2007 at 10:46:14 labeled as FES04000 Foundry Networks, Inc. FES2402, IronWare Version 03.2.00a7c1 Compiled on Oct 15 2004 at 20:13:44 labeled as FES03200a HP J4121A ProCurve Switch 4000M, revision C.08.22, ROM C.06.01 (jsw/code/build/vgn/c08)
F5 10.231.20.10	10.231.20.10	F5 LTM-6400 10.231.20.11 Custom View - Infrastructure Management
F5 10.231.20.11	10.231.20.11	Cisco Systems WS-C5000 Cisco Catalyst Operating System Software, Version 5.5(21) Copyright (c) 1995-2005 by Cisco Systems

Search [ ] Page 1 of 2 Displaying 1 - 10 of 13

On Demand Manage Life Cycle

F5 Virtual Info

Description	Bytes In - Total	Bytes Out - Total	Frames In - Total	Frames Out - Total	Current Connections - Average	Total Connections - Total	Maximum Connections - Average
F5 Virtual Server (v4.5) 155.199...	907 B	1,001 B	1.4 K Pkts	1.2 K Pkts	0	1,481 Thousand	0
F5 Virtual Server (v4.5) 155.199...	1 KB	1.2 KB	1.2 K Pkts	1.2 K Pkts	0	1,299 Thousand	0
F5 Virtual Server (v4.5) 155.199...	1.3 KB	1.2 KB	1.2 K Pkts	1.2 K Pkts	0	1,204 Thousand	0
F5 Virtual Server (v4.5) 155.199...	1.4 KB	1.2 KB	1.3 K Pkts	1.2 K Pkts	0	1,358 Thousand	0
F5 Virtual Server (v4.5) 182.223...	1.1 KB	1.2 KB	1.3 K Pkts	1.3 K Pkts	0	1,087 Thousand	0
F5 Virtual Server (v4.5) 182.223...	970 B	1 KB	1.2 K Pkts	1.1 K Pkts	0	1,208 Thousand	0
F5 Virtual Server (v4.5) 182.223...	1.4 KB	1.010 B	1.4 K Pkts	1.1 K Pkts	0	1,056 Thousand	0
F5 Virtual Server (v4.5) 182.223...	899 B	1.2 KB	965 Pkts	1.3 K Pkts	0	1,458 Thousand	0
F5 Virtual Server (v4.5) 182.223...	1.2 KB	1.1 KB	1.3 K Pkts	1.5 K Pkts	0	1,211 Thousand	0

Dynamic context pages provide a custom experience  
focusing on the technology you want to see

# Multi-Metric Scorecards can Reflect Aggregate Health Based on Multiple Metrics

- CA Performance Management scorecards provide a great overview of the health of individual or grouped items based on user defined thresholds
  - Users can select up to 5 metrics for including in our new multi-metric scorecard
  - Users can define individual thresholds on a per metric basis
  - Limited to a single metric-family in CA Performance Management 3.0

# Multi-Metric Scorecards

ca Performance Center

**Dashboards** Inventory Reports My Settings System Health Administration

## Firewall Health

Group: My Assigned Groups > All Groups > Firewalls [\[change\]](#)

IM Custom View Scorecard Table - Firewall

User Group: Firewalls  
Timeframe: Last Hour Metric Calculate Level: by Device

☒ Critical Status Start ☒ Major Status Start ☒ Minor Status Start ☒ Normal Status Start

Group/Device Name	Accepted packets rate. - Average	Dropped packets rate. - Average	Active Connections Peak - Average	Total Connections - Average
Firewalls	2.4 G Pkts	404.1 M Pkts	93.7596 Thousand	64.7871 Thousand
Sim11971-PF-US203	3.8 G Pkts	5.5 M Pkts	178.862 Thousand	
Sim7420.mynznf000300088	959.8 M Pkts	842.5 M Pkts	147	137

Scorecards allow multiple-metrics with independent threshold values!

IM Custom View Scorecard Table - Interface

User Group: Firewalls  
Timeframe: Last Hour Metric Calculate Level: by Component

☒ Critical Status Start ☒ Major Status Start ☒ Minor Status Start ☒ Normal Status Start

Group/Item Name	Device Name	Bits - Average Rate	Bits In - Total	Bits Out - Total	Errors - Total	Discards - Total
Firewalls	Firewalls	5.7 bps	176.2 Kb	178 Kb	42.1 K Pkts	41.9 K Pkts
eth4 - eth4	Sim7420.mynznf000300088	9.2 bps	16.4 Kb	16.7 Kb	3.5 K Pkts	4.1 K Pkts
eth1 - eth1	Sim7420.mynznf000300088	8.8 bps	17.1 Kb	14.7 Kb	3.5 K Pkts	3.8 K Pkts
eth0 - eth0	Sim7420.mynznf000300088	8.7 bps	15.4 Kb	15.8 Kb	3.4 K Pkts	3.8 K Pkts
eth3 - eth3	Sim7420.mynznf000300088	8.7 bps	16.3 Kb	14.8 Kb	3.8 K Pkts	3.3 K Pkts

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# Enhanced Summary Statistics Table Provides Greater Reporting Flexibility

- CA Performance Management summary statistics views provide a powerful analytical view into key performance metrics; the analytics provided within those views are driven off of the analytic options for each metric
  - Summary statistics views will now include the configured percentile metrics for all of the selected metrics
  - Users can choose to hide/show percentiles by selecting the columns to view in the rendered report

# Summary Statistic Views

Summary Statistics will now automatically display configured Percentiles per metric!

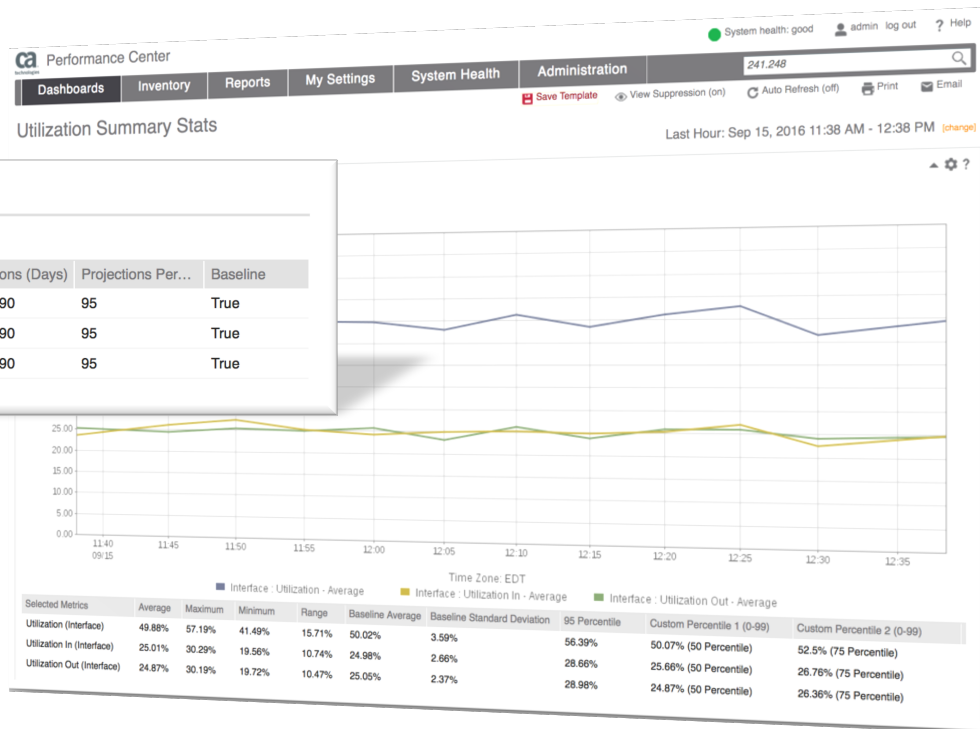
Metrics

Vendor Certification Priorities

Monitoring Profiles

Metrics

Name	↑	Polled	Min	Max	Percentiles	Projections (Days)	Projections Per...	Baseline
Utilization		True	True	True	95, 50, 75	30, 60, 90	95	True
Utilization In		True	True	True	95, 50, 75	30, 60, 90	95	True
Utilization Out		True	True	True	95, 50, 75	30, 60, 90	95	True



# Visualize Maintenance Windows on Trend Views

- Users need the ability to add additional annotations to site views related to outage or maintenance periods
  - Users can now configure new maintenance indicators for site groups which provide shading with annotation for configured periods of time
  - Can be added retroactively or proactively
  - Can be used in conjunction with business hours

## Site Maintenance Indicators

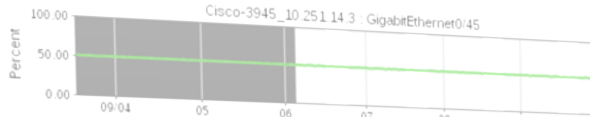
Group: My Assigned Groups Site: North America [\[change\]](#)

Phoenix Data Center - WAN Utilization - Interface - Utilization - Average...

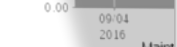
Page 1 of 16 ▶ ▶ |

Site: Phoenix Business Hours Filter: Banking Hours

Utilization - Average [Time Zone: EDT]



Maintenance Indicator - Memorial Weekend Data Center Shutdown  
155 Samples (1-Hour Resolution)



Maintenance Date	Name	Description
9/3	Memorial Weekend Data Center Shutdown	Data Center shutdown scheduled over Memorial Day week...
9/4	Memorial Weekend Data Center Shutdown	Data Center shutdown scheduled over Memorial Day week...
9/5	Memorial Weekend Data Center Shutdown	Data Center shutdown scheduled over Memorial Day week...

Search [ ] Page 1 of 1 Displaying 1 - 3 of 3 Max Per Page 10

Close

Austin Data Center - WAN Utilization - Interface - Utilization - Average...

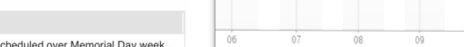
Page 1 of 16 ▶ ▶ |

Site: Austin Business Hours Filter: Corporate Hours

Utilization - Average [Time Zone: EDT]



Maintenance Indicator - Memorial Weekend Data Center Shutdown  
155 Samples (1-Hour Resolution)



The all new maintenance indicators provide simple yet informative annotation

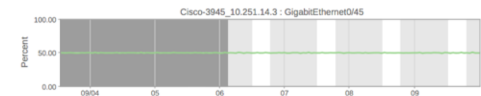


CA Performance Center - Site Maintenance Indicators  
Site: North America  
Timeframe: Custom Time Range Start time: Sep 3, 2  
Generated On: Thursday, September 15, 2016 1:15:4

### Phoenix Data Center - WAN Utilization - Interface - Utilization - Average - Descending

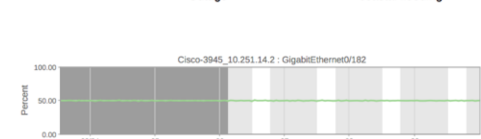
Site: Phoenix Business Hours Filter: Banking Hours

Utilization - Average  
[Time Zone: EDT]



Maintenance Indicator - Memorial Weekend Data Center Shutdown  
155 Samples (1-Hour Resolution)

Maintenance Date	Name	Description
9/8	New York FEMA Emergency Outage	NY Data center issues due to coastal flooding



Maintenance Indicator - Memorial Weekend Data Center Shutdown  
155 Samples (1-Hour Resolution)

Maintenance Date	Name	Description
9/8	New York FEMA Emergency Outage	NY Data center issues due to coastal flooding



DEMO

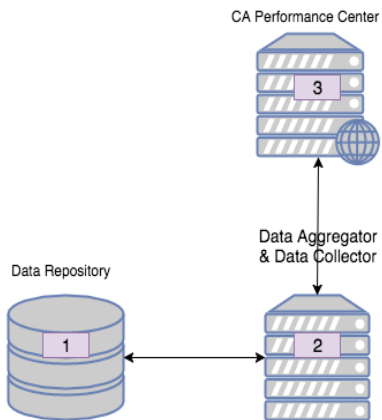
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# Additional Feature Areas

- CA Performance Management “Lite”
- Monitoring the last mile
- Doubling of scale to 4M monitored items
- Monitoring Nuage Network-as-a-Service

# CA Performance Management “Lite”

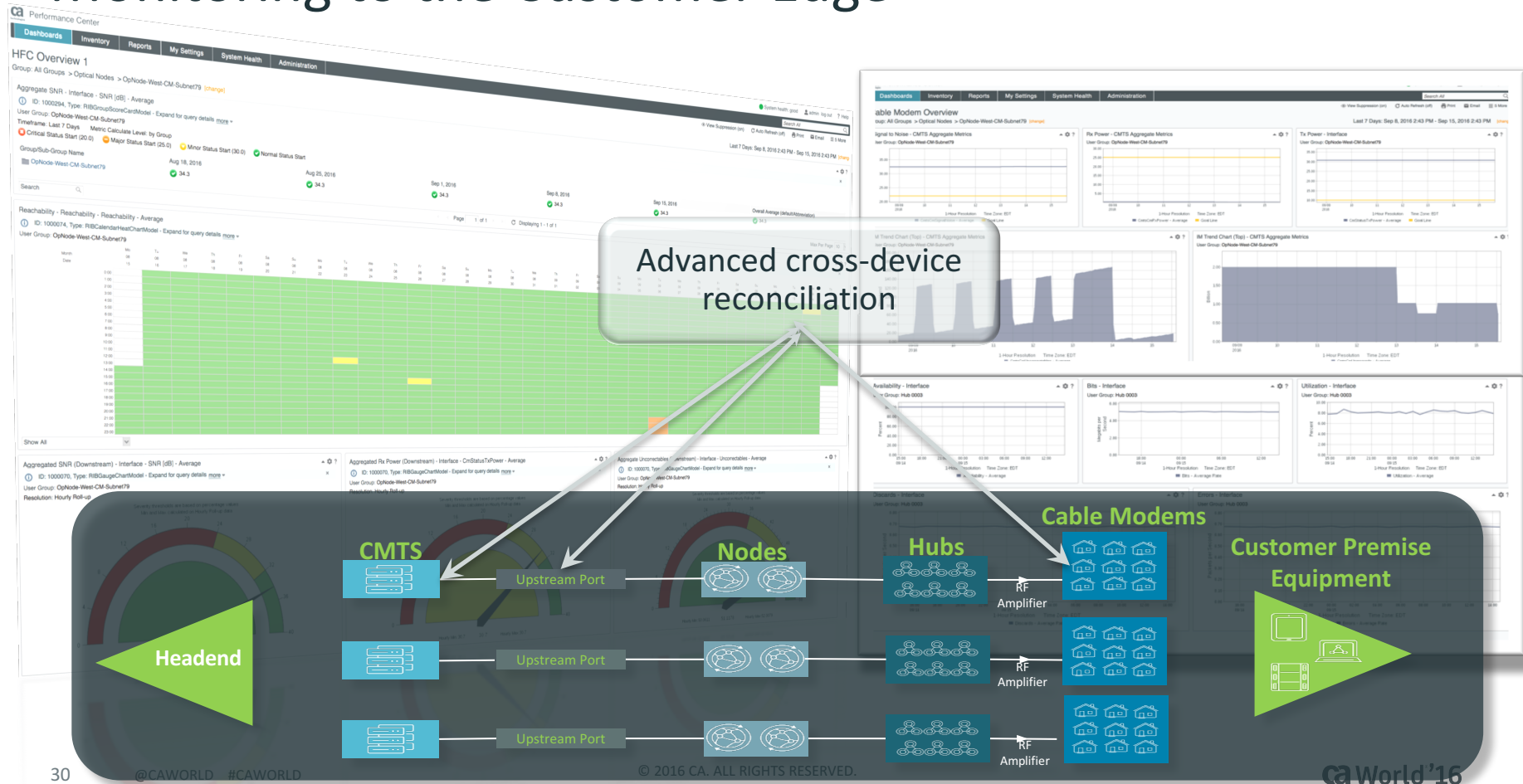
## CA Performance Management-Light Deployment



Component	vCPUs	Memory	Disk Space	IO Speed
DR	8	60 GB	2.5TB	240 MB/s
DA & DC	4	10 GB	500GB	
PC	4	16 GB	600GB	

- Same software used in a smaller compute & storage environment
- Limited to 150K monitored items or ~4000 devices
- All features are available in “lite” environment

# Monitoring to the Customer Edge



# 4 Million Monitored Items at 500,000 Metrics per Second

- Comprehensive across all core services
  - Data ingestion, Thresholding, Concurrent Users, OpenAPI, CAMM/Multiple Metric Family
- Total # of Items: 4M
- Concurrent Users: 100 L1, 2 CP
- OpenAPI: 4 concurrent queries
- CAMM: 1K metric families

# Let Your Voice Be Heard!

*The CA Performance Management Product Feedback Survey – [ca.com/productfeedback](https://ca.com/productfeedback)*



- A 2-3 minute questionnaire to obtain your feedback
- Your partnership in the future of CA Performance Management is important to us
- Your feedback will be key in helping us innovate
- We will prioritize and build out action plans based on your feedback to further improve your overall satisfaction and loyalty
- *[ca.com/productfeedback](https://ca.com/productfeedback)*

# CA Network Performance Management Comic and Blog Series

visit [ca.com/networkcomics](http://ca.com/networkcomics) and CA PM Community



**Download the EMA  
White Paper Today!**  
[ca.com/networkcomics](http://ca.com/networkcomics)

## Successful Network Operations in a Cloud-Centric, Software-Defined World with CA Performance Management

An ENTERPRISE MANAGEMENT ASSOCIATES (EMA) White Paper  
Prepared for CA  
October 2016

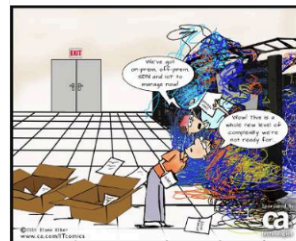
EMA IT & DATA MANAGEMENT RESEARCH  
INDUSTRY ANALYSTS & CONSULTANTS



## Network Funnies: LOL with the daily challenges of monitoring modern networks

Blog Post created by [Jeremy\\_Rossbach](#) on Dec 12, 2016

Like • 0 Comment • 0



### #2 - Modern Network Performance Monitoring Doesn't Have to Be as Complex as You Think

Every holiday season, we decorate our tree from top to bottom with ornaments we've collected over the years. And every holiday season, the decorations get a bit more intricate as we layer them on top of each other.

Organizations around the world are building similarly complicated stacks in their data centers as they invest in new modern network technologies that support their IoT, Cloud or software-defined networking (SDN) initiatives.

### Multiple layers breed complexity and complexity breeds

**bottlenecks**. Just one bottleneck in any part of the new modern network stack can have a rapid impact on application performance and the customer experience. To decrease this complexity, organizations need to be able to not only see but also assure every layer in the new network stack. They need to know when a new network function is spun up, its utilization and relationships and when it is decommissioned.





What  
Questions  
Do You  
Have?



**THANK YOU.**

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