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5 Tips for Creating Your Own Network Operations Center (NOC)

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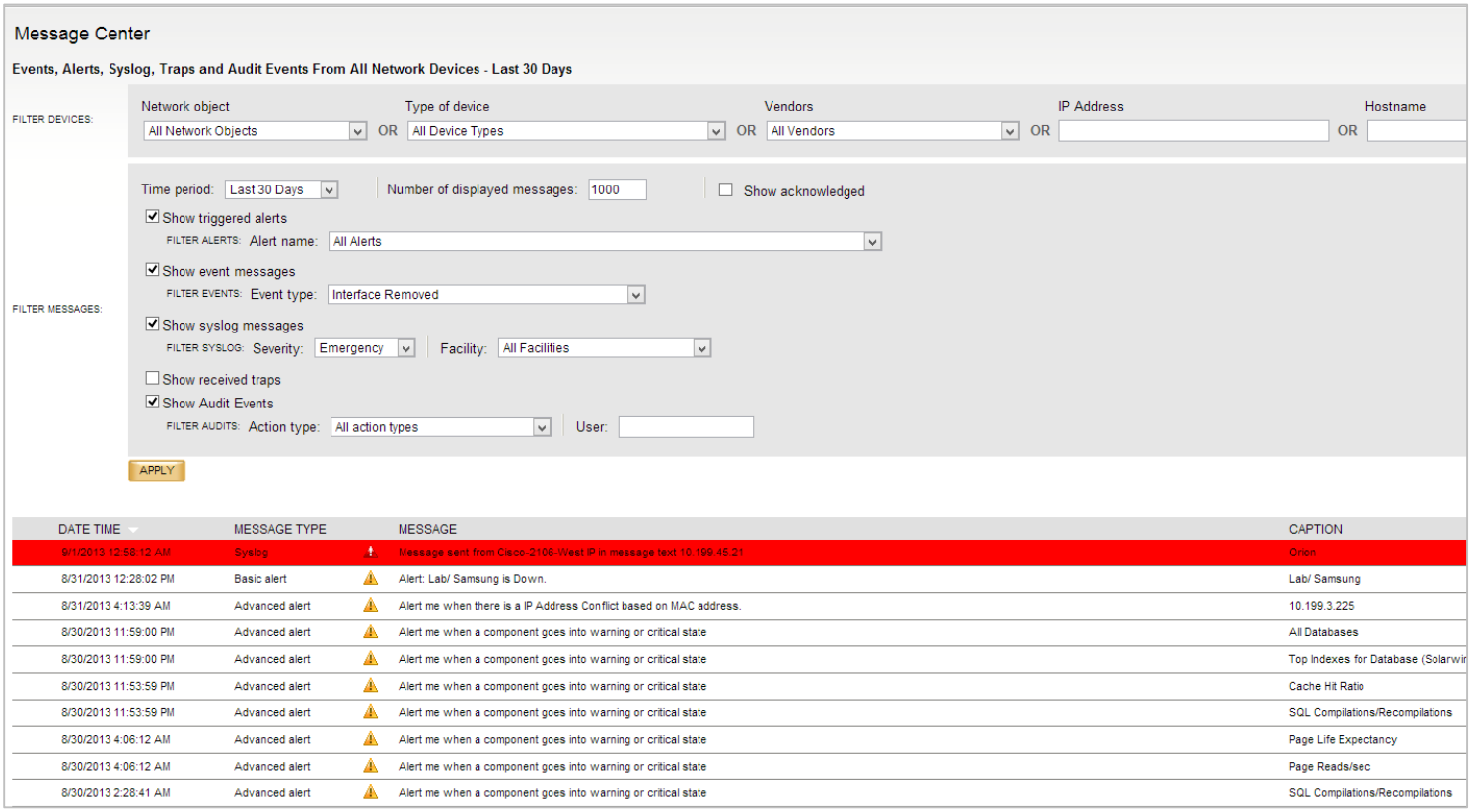
A network operations center (NOC) is a central focal point for monitoring your network and ensuring uptime and optimal performance. Whether you manage your own network or if you are an MSP managing your clients' networks, NOC is always a necessity. Networks of all sizes will greatly benefit from an NOC because it's important to have a clear view of the availability and performance of your network. NOC doesn't always have to be an elaborate room full of expensive high-tech gear for network surveillance. You can create your own NOC sanctuary just about anywhere and always be aware of and able to repair network issues before they impact your organization. Now, how could you do that? This document discusses some useful capabilities that you would want to build into your network management system (NMS) to get NOC field of vision at all times.

#1 Centralize Alert Management

Alerts can be a handful when you're dealing with a growing network with hundreds of different devices from different manufacturers. You need to be able to see all your devices from a central location to ensure easy access and quick problem resolution. A centralized alert management system provides the visibility you need for accurate performance monitoring and troubleshooting efforts. Alerts include, but are not limited to, availability statistics, performance metrics (including device fault tolerance), errors and discards, hardware thresholds, syslog messages, and SNMP traps. The challenge with alert management is not just receiving them in a timely fashion, but also managing them at a centralized level to help compare alerts, eliminate false positives, track alert history, and deduce alert patterns.

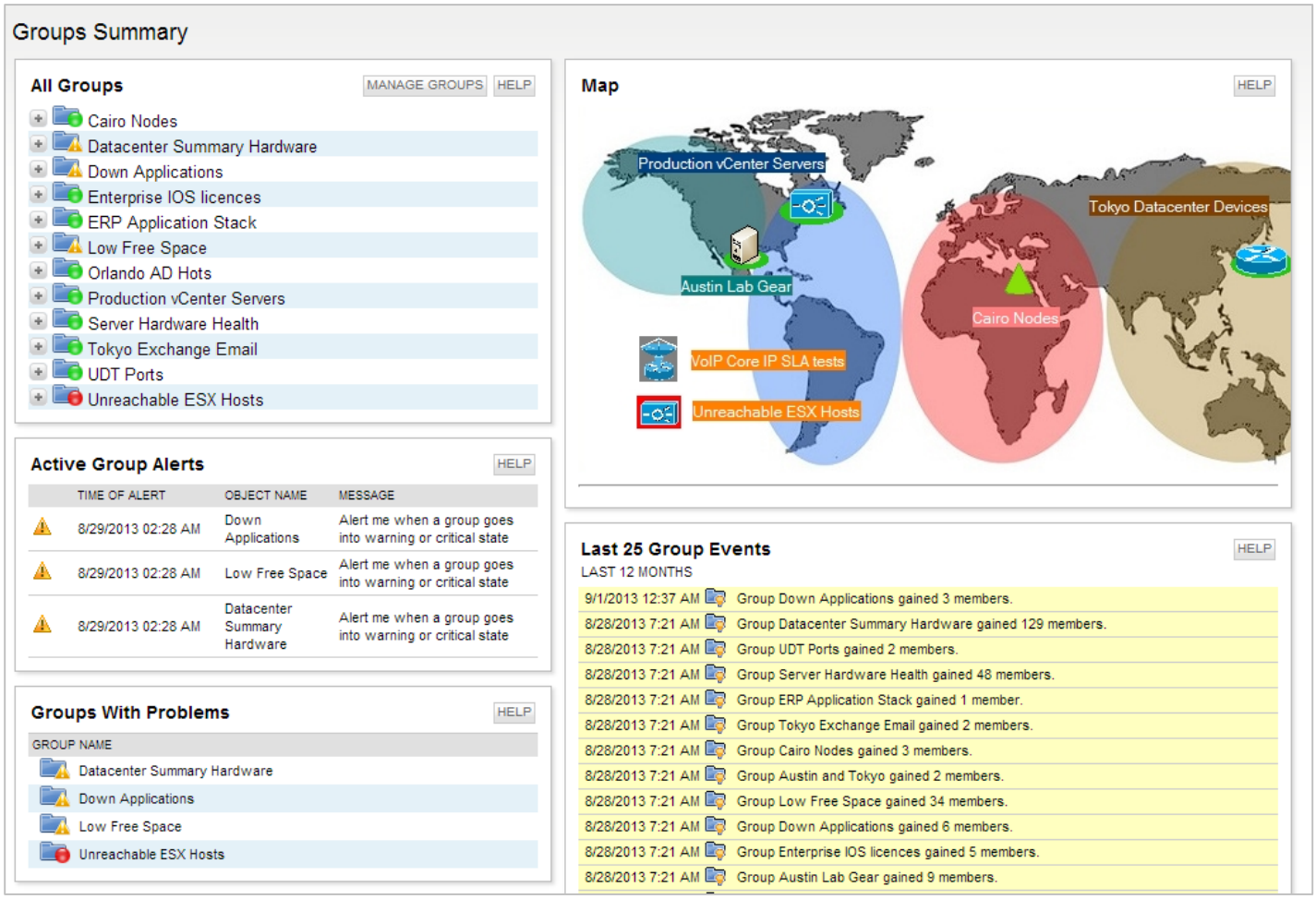


#2 Group Your Network Elements

It's possible that you could have network hardware of different types, models, and versions in various locations. Also, with components from different vendors, you could have compatibility issues. Given this medley of network devices, it's difficult to get a logical understanding of network issues. A good solution is to create a logical grouping of your devices and monitor them as a group instead of disparate entities. Some of the groups you can create include **static groups** where you manually add network nodes to them, **dynamic groups** that add devices automatically based on a pre-defined condition, and **nested groups** that can contain groups within a group.

- Grouping devices for network monitoring helps you get a logical understanding of your overall network status.
- Grouping helps you set parent-child dependencies between network elements allowing you to eliminate redundant alerts and understand the impact of a faulty device on its dependents.

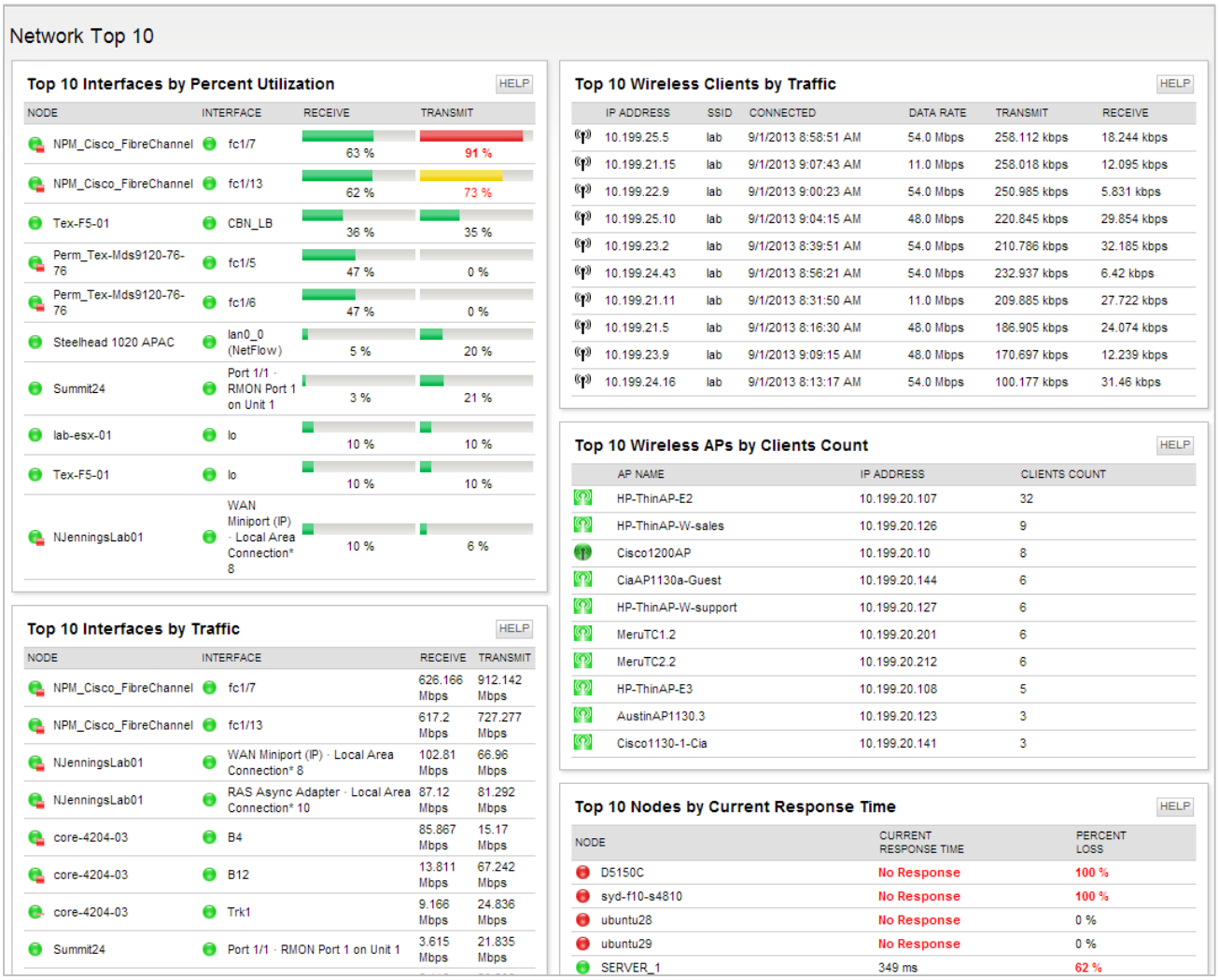
For example, if you have a group for your location with sub-groups for data centers that are further divided into sub-groups based on device type or vendor, it'll be easier and faster to pinpoint issues and determine corrective actions.



#3 Customize How You Want to View Network Diagnostics

The lack of diagnostic dashboards needed to fully scan and view network device performance data can prevent you from obtaining critical statuses as fast as you need. It's good to use Web-based dashboards for NOC as you can access them from anywhere. A network monitoring tool that offers built-in NOC views with charts, graphs, and top 10 views, will be useful and time-saving to network teams. You should be able to configure the NOC view to display whatever needs your attention first such as:

- What are the top interfaces facing maximum percent utilization?
- What are the top interfaces by traffic?
- What are the top nodes' response time, packet loss, CPU load, or memory used?
- What are the top errors and discards today?



Network Top 10

Top 10 Interfaces by Percent Utilization

NODE	INTERFACE	RECEIVE	TRANSMIT
NPM_Cisco_FibreChannel	fc1/7	63 %	91 %
NPM_Cisco_FibreChannel	fc1/13	62 %	73 %
Tex-F5-01	CBN_LB	36 %	35 %
Perm_Tex-Mds9120-76-76	fc1/5	47 %	0 %
Perm_Tex-Mds9120-76-76	fc1/6	47 %	0 %
Steelhead 1020 APAC	lan0_0 (NetFlow)	5 %	20 %
Summit24	Port 1/1 · RMON Port 1 on Unit 1	3 %	21 %
lab-esx-01	lo	10 %	10 %
Tex-F5-01	lo	10 %	10 %
NJenningsLab01	WAN Miniport (IP) · Local Area Connection* 8	10 %	6 %

Top 10 Wireless Clients by Traffic

IP ADDRESS	SSID	CONNECTED	DATA RATE	TRANSMIT	RECEIVE
10.199.25.5	lab	9/1/2013 8:58:51 AM	54.0 Mbps	258.112 kbps	18.244 kbps
10.199.21.15	lab	9/1/2013 9:07:43 AM	11.0 Mbps	258.018 kbps	12.095 kbps
10.199.22.9	lab	9/1/2013 9:00:23 AM	54.0 Mbps	250.985 kbps	5.831 kbps
10.199.25.10	lab	9/1/2013 9:04:15 AM	48.0 Mbps	220.845 kbps	29.854 kbps
10.199.23.2	lab	9/1/2013 8:39:51 AM	54.0 Mbps	210.786 kbps	32.185 kbps
10.199.24.43	lab	9/1/2013 8:56:21 AM	54.0 Mbps	232.937 kbps	6.42 kbps
10.199.21.11	lab	9/1/2013 8:31:50 AM	11.0 Mbps	209.885 kbps	27.722 kbps
10.199.21.5	lab	9/1/2013 8:16:30 AM	48.0 Mbps	186.905 kbps	24.074 kbps
10.199.23.9	lab	9/1/2013 9:09:15 AM	48.0 Mbps	170.697 kbps	12.239 kbps
10.199.24.16	lab	9/1/2013 8:13:17 AM	54.0 Mbps	100.177 kbps	31.46 kbps

Top 10 Wireless APs by Clients Count

AP NAME	IP ADDRESS	CLIENTS COUNT
HP-ThinAP-E2	10.199.20.107	32
HP-ThinAP-W-sales	10.199.20.126	9
Cisco1200AP	10.199.20.10	8
CiaAP1130a-Guest	10.199.20.144	6
HP-ThinAP-W-support	10.199.20.127	6
MeruTC1.2	10.199.20.201	6
MeruTC2.2	10.199.20.212	6
HP-ThinAP-E3	10.199.20.108	5
AustinAP1130.3	10.199.20.123	3
Cisco1130-1-Cia	10.199.20.141	3

Top 10 Interfaces by Traffic

NODE	INTERFACE	RECEIVE	TRANSMIT
NPM_Cisco_FibreChannel	fc1/7	626.166 Mbps	912.142 Mbps
NPM_Cisco_FibreChannel	fc1/13	617.2 Mbps	727.277 Mbps
NJenningsLab01	WAN Miniport (IP) · Local Area Connection* 8	102.81 Mbps	66.96 Mbps
NJenningsLab01	RAS Async Adapter · Local Area Connection* 10	87.12 Mbps	81.292 Mbps
core-4204-03	B4	85.867 Mbps	15.17 Mbps
core-4204-03	B12	13.811 Mbps	67.242 Mbps
core-4204-03	Trk1	9.166 Mbps	24.836 Mbps
Summit24	Port 1/1 · RMON Port 1 on Unit 1	3.615 Mbps	21.835 Mbps

Top 10 Nodes by Current Response Time

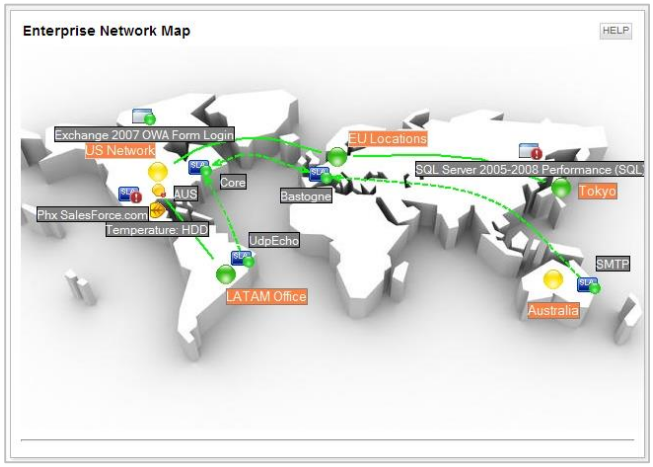
NODE	CURRENT RESPONSE TIME	PERCENT LOSS
D5150C	No Response	100 %
syd-f10-s4810	No Response	100 %
ubuntu28	No Response	0 %
ubuntu29	No Response	0 %
SERVER_1	349 ms	62 %

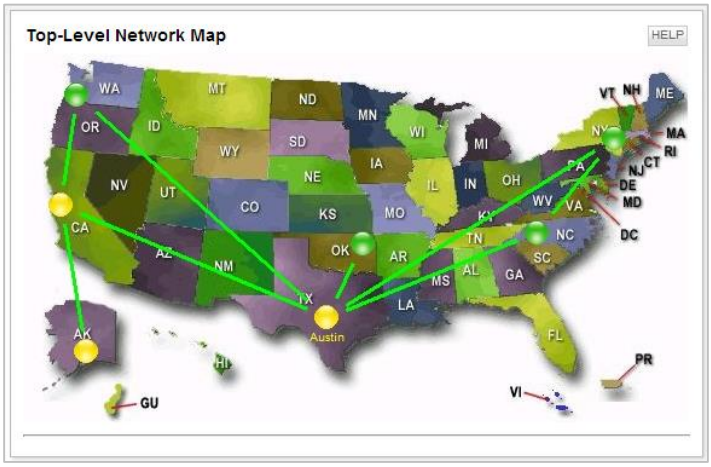
#4 Map Device Topology

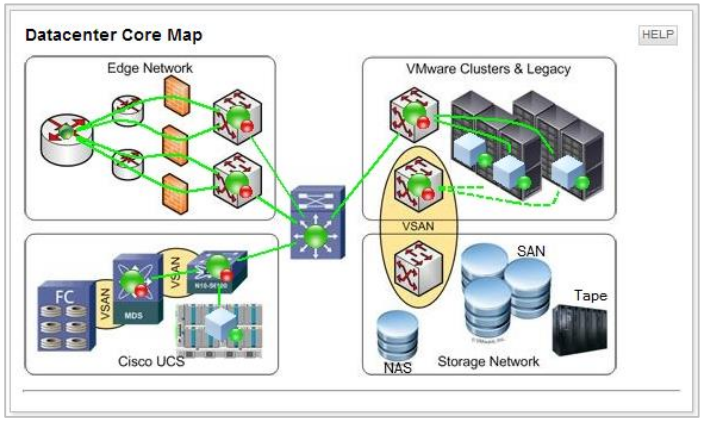
As a network administrator, it's often a daunting task trying to figure out what caused your network to go down. This is where being able to easily pinpoint the problem on a map and trace its source. An effective NOC quickly identifies network issues and provides you with complete visibility of your network and notifies you of what's causing the problems. Mapping the network topology will help you monitor network availability by just having to look at a geographical map. Here is how you can do it:

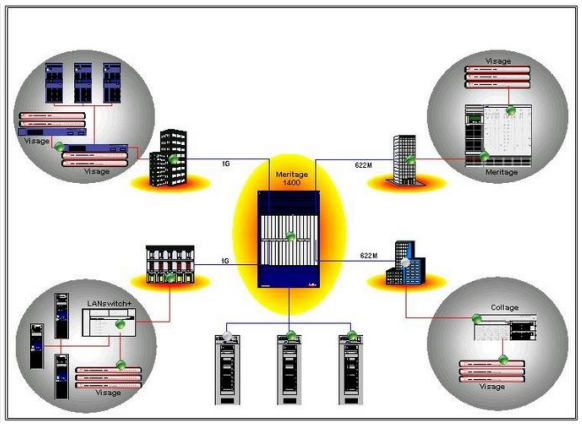
- Discover your network nodes (network devices, interfaces, servers, etc.).
- Place network nodes on a custom-map (could be the map of your network site, data center, or physical location).
- Connect your network elements based on the ARP table data for a graphical depiction of both physical and virtual links.

Network management software will help you build network maps at both layer 2 (MAC address level) and layer 3 (IP address level) so you can just look at the map and know which site is down, which node is down, and later drill down to identify causes. A network map is a key ingredient to a successful NOC.



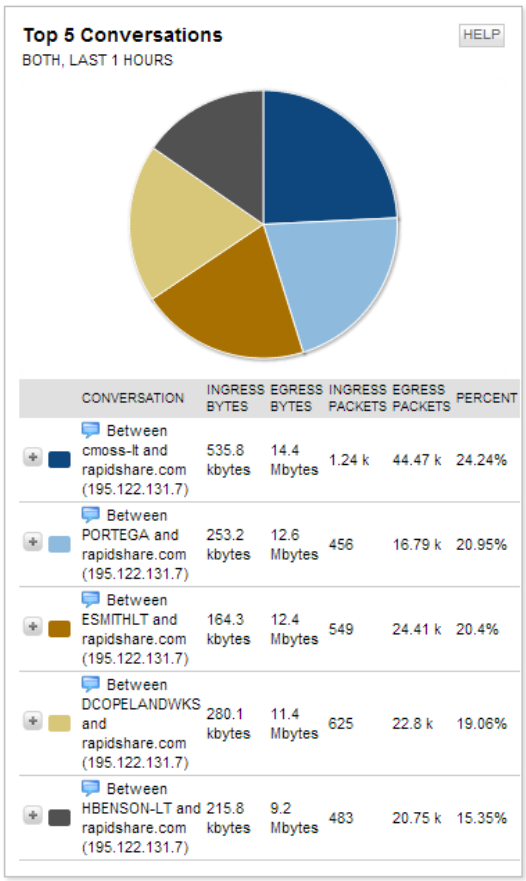


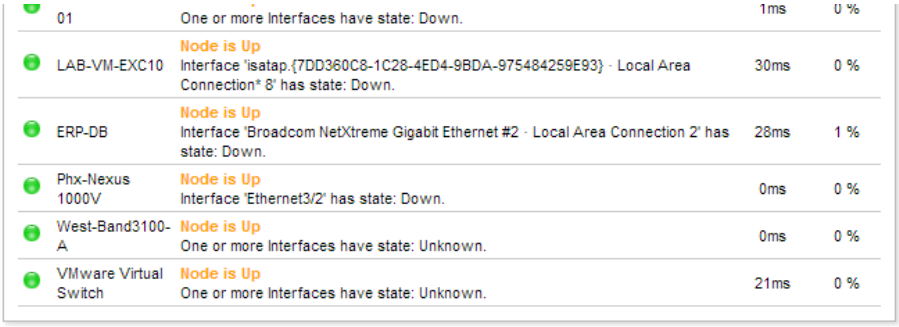


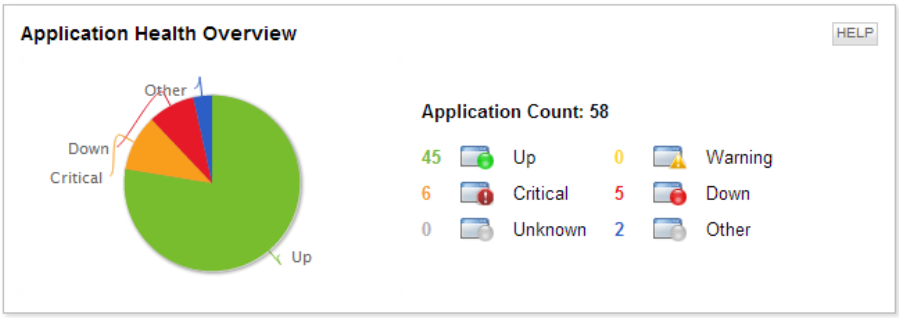


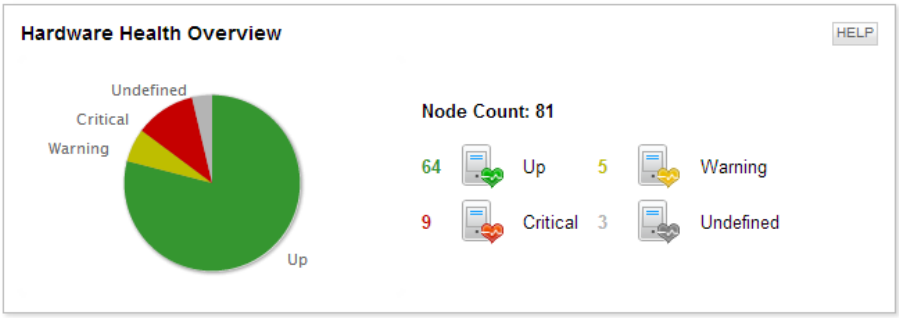
#5 Unify Network Management Platforms

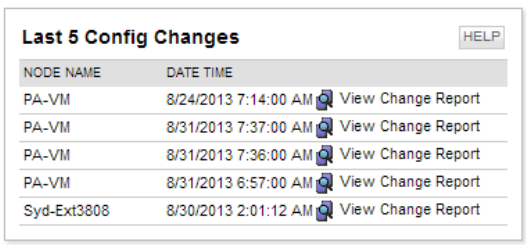
Running different network management platforms for different network management platforms can be costly and require a high level of operational expertise. Unifying the management platform can reduce both time and expenditures and give you a single-pane-of-glass overview of your NOC functions. Look for a solution that can stand alone and is compatible with other IT management modules for network configuration management, VoIP monitoring, and systems management, virtualization management. Having the same management platform simplifies operations, allows you to customize your interface conveniently, and does not require more workforce just to manage your NOC.

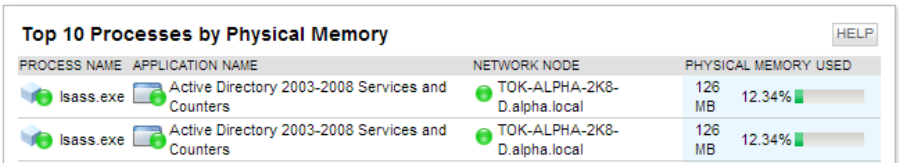








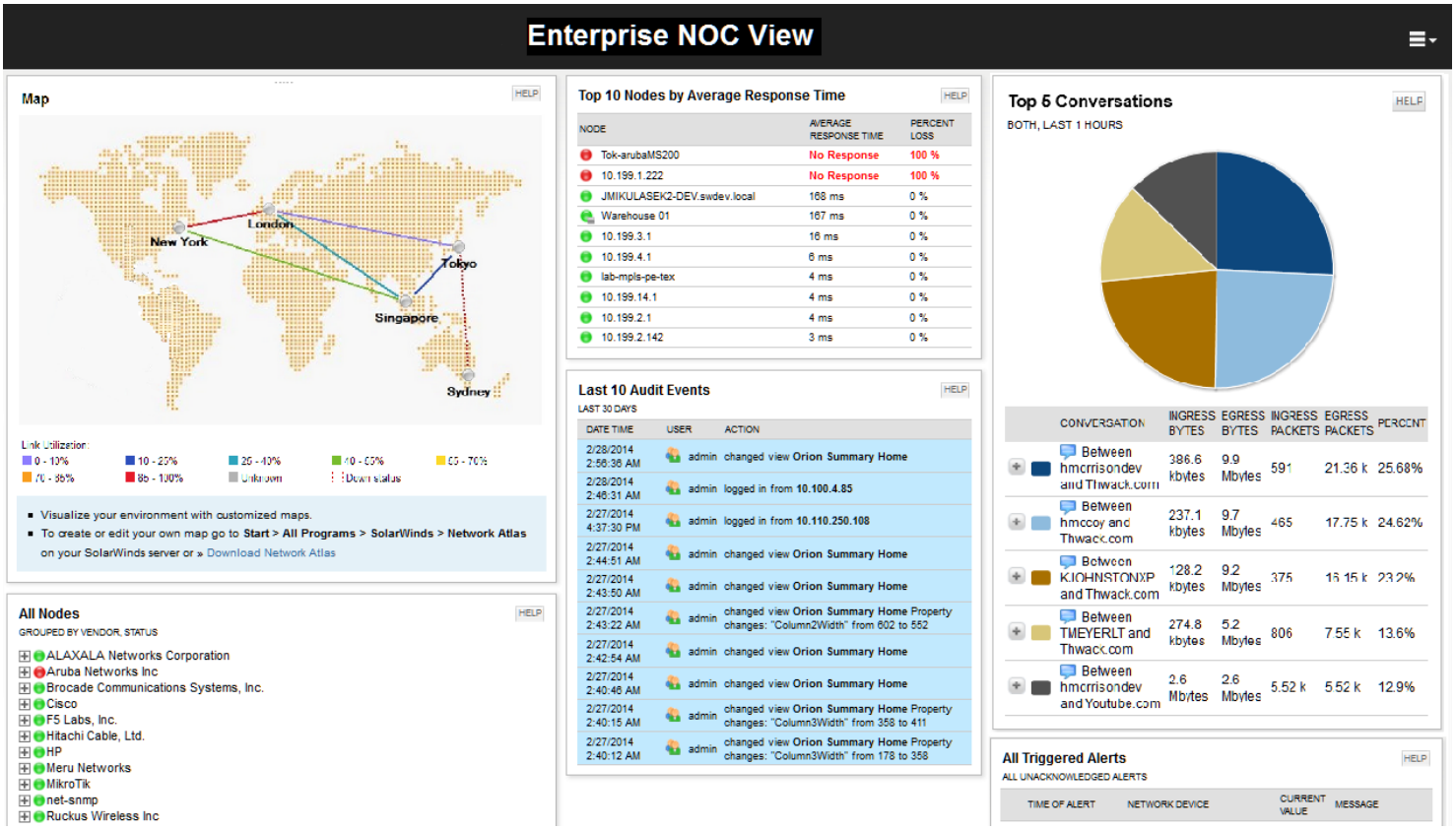




Being able to access network performance monitoring data from the comfort of your workstation could be the most effective NOC that a network administrator can have. A NOC view is right in front of you and shows how your network devices are performing and what is causing your network downtime. You don't need a chief network engineer to design your NOC. You can do it yourself and create your own network administration HQ right on your workstation.

Enterprise NOC View in SolarWinds Network Performance Monitor

SolarWinds Network Performance Monitor (NPM) is a comprehensive network fault, availability, and performance monitoring software that makes it easy to quickly detect, diagnose, and resolve performance issues before outages occur. SolarWinds NPM delivers **real-time, out-of-the-box NOC view** and dashboards that enable you to visually track and monitor network performance at a glance. The NOC view is easily customizable allowing you to add any chart or metric based on your requirement. For high-level network management and network performance status, NPM's NOC view will help you stay ahead of the curve and provide visibility into your network issues for faster troubleshooting.



Network Performance Manager Feature Highlights:

- Out-of-the-box NOC view and customizable and interactive charts and diagnostic displays
- Simplifies detection, diagnosis, and resolution of network issues—before outages occur
- Tracks response time, availability, and uptime of routers, switches, and other SNMP-enabled devices
- Shows performance statistics in real time via dynamic, drillable network maps
- Includes out-of-the-box dashboards, alerts, reports, and expert guidance on what to monitor and how
- Automatically discovers SNMP-enabled network devices and typically deploys in less than an hour

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About SolarWinds

SolarWinds (NYSE: SWI) provides powerful and affordable IT management software to customers worldwide. Focused exclusively on IT Pros, we strive to eliminate the complexity in IT management software that many have been forced to accept from traditional enterprise software vendors. SolarWinds delivers on this commitment with unexpected simplicity through products that are easy to find, buy, use, and maintain, while providing the power to address any IT management problem on any scale. Our solutions are rooted in our deep connection to our user base, which interacts in our online community, thwack®, to solve problems, share technology and best practices, and directly participate in our product development process. Learn more at http://www.solarwinds.com.

Resources for Additional Learning

1. Video: Advanced Network Monitoring
2. Video: How to Configure NetFlow on Cisco® Router
3. White Paper: Network Management Back to the Basics
4. White Paper: Rightsizing Your Network Performance Management