

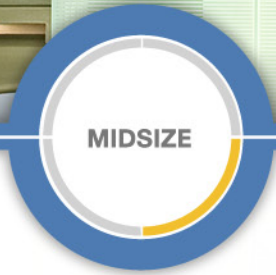


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ScienceLogic EM7 Network Management Guide



● ● ● SMART BUSINESS ARCHITECTURE

February 2012 Series

Preface

Who Should Read This Guide

This Cisco® Smart Business Architecture (SBA) guide is for people who fill a variety of roles:

- Systems engineers who need standard procedures for implementing solutions
- Project managers who create statements of work for Cisco SBA implementations
- Sales partners who sell new technology or who create implementation documentation
- Trainers who need material for classroom instruction or on-the-job training

In general, you can also use Cisco SBA guides to improve consistency among engineers and deployments, as well as to improve scoping and costing of deployment jobs.

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All Cisco SBA guides include the series name on the cover and at the bottom left of each page. We name the series for the month and year that we release them, as follows:

month year Series

For example, the series of guides that we released in August 2011 are the “August 2011 Series”.

You can find the most recent series of SBA guides at the following sites:

Customer access: <http://www.cisco.com/go/sba>

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How to Read Commands

Many Cisco SBA guides provide specific details about how to configure Cisco network devices that run Cisco IOS, Cisco NX-OS, or other operating systems that you configure at a command-line interface (CLI). This section describes the conventions used to specify commands that you must enter.

Commands to enter at a CLI appear as follows:

```
configure terminal
```

Commands that specify a value for a variable appear as follows:

```
ntp server 10.10.48.17
```

Commands with variables that you must define appear as follows:

```
class-map [highest class name]
```

Commands shown in an interactive example, such as a script or when the command prompt is included, appear as follows:

```
Router# enable
```

Long commands that line wrap are underlined. Enter them as one command:

```
wrr-queue random-detect max-threshold 1 100 100 100 100 100  
100 100 100
```

Noteworthy parts of system output or device configuration files appear highlighted, as follows:

```
interface Vlan64  
ip address 10.5.204.5 255.255.255.0
```

Comments and Questions

If you would like to comment on a guide or ask questions, please use the forum at the bottom of one of the following sites:

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Partner access: <http://www.cisco.com/go/sbachannel>

An RSS feed is available if you would like to be notified when new comments are posted.

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What's In This SBA Guide

About SBA

Cisco SBA helps you design and quickly deploy a full-service business network. A Cisco SBA deployment is prescriptive, out-of-the-box, scalable, and flexible.

Cisco SBA incorporates LAN, WAN, wireless, security, data center, application optimization, and unified communication technologies—tested together as a complete system. This component-level approach simplifies system integration of multiple technologies, allowing you to select solutions that solve your organization's problems—without worrying about the technical complexity.

For more information, see the *How to Get Started with Cisco SBA* document:

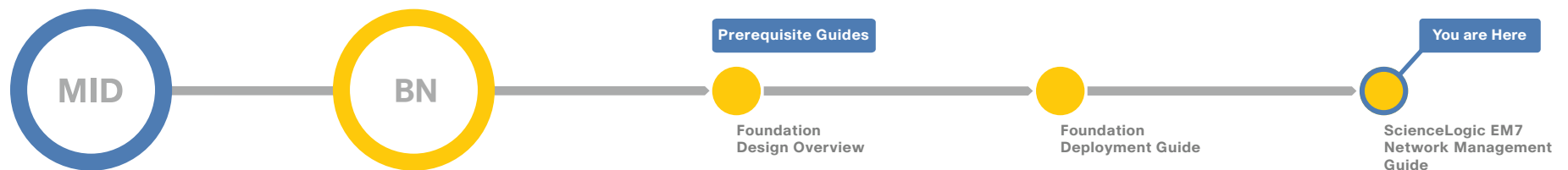
http://www.cisco.com/en/US/docs/solutions/Enterprise/Borderless_Networks/Smart_Business_Architecture/SBA_Getting_Started.pdf

About This Guide

This *additional deployment guide* includes the following sections:

- **Business Overview**—The challenge that your organization faces. Business decision makers can use this section to understand the relevance of the solution to their organizations' operations.
- **Technology Overview**—How Cisco solves the challenge. Technical decision makers can use this section to understand how the solution works.
- **Deployment Details**—Step-by-step instructions for implementing the solution. Systems engineers can use this section to get the solution up and running quickly and reliably.

This guide presumes that you have read the prerequisites guides, as shown on the Route to Success below.



Route to Success

To ensure your success when implementing the designs in this guide, you should read any guides that this guide depends upon—shown to the left of this guide on the route above. Any guides that depend upon this guide are shown to the right of this guide.

For customer access to all SBA guides: <http://www.cisco.com/go/sba>
For partner access: <http://www.cisco.com/go/sbachannel>

Introduction

Network management systems allow you to automate configuration tasks and monitor network health, giving you the visibility you need to quickly troubleshoot issues.

Cisco offers a number of options to provide network management capabilities. This guide describes ScienceLogic EM7, a highly scalable, easy-to-use network management solution for the Cisco data center.

Figure 1 - ScienceLogic EM7: Highly scalable, easy-to-use network management solution available as physical or virtual appliance



Business Overview

The demands on the network and the people who manage them have never been greater. From voice and video to server virtualization and cloud computing, data center networks have undergone tremendous change over the last few years as adoption of new technologies has required new, detailed, and comprehensive management to optimize quality of service.

It is not a small task to deploy the configuration modules outlined in the *Cisco Smart Business Architecture (SBA) for Midsize Organizations—Borderless Networks Foundation Deployment Guide* in an efficient manner while maintaining the availability and performance of the network infrastructure when everything is constantly changing. You need the right tools.

The technologies may be new, but the challenges are still the same. As you add new infrastructure and applications to the network, you are usually adding new management tools to your ever-growing toolset. Beyond the costs—such as maintenance, training, and deployment—associated with each new tool, these point solutions also cost your team when it comes to efficiency. Point solutions were never designed to work together, so when it comes to troubleshooting all the components that can make up service delivery, the tools can actually slow you down instead of making your job easier.

And don't forget your core network infrastructure. Video is just one example of an application that can exponentially increase the demands on your network. More stress and strain on your infrastructure requires smarter management to:

- Proactively monitor health and performance.
- Ensure that you know about problems and can resolve them before they impact your users.
- Automate where possible. Solutions should help you spend less time on fire drills even with the increased demands on the network.

Technology Overview

ScienceLogic EM7 provides integrated fault and performance management, ticketing and service desk functions, and asset management and capacity planning in a single solution for Cisco data centers in midsize organizations. It is a comprehensive suite of monitoring solutions in a single, easy-to-deploy, and cost-effective solution. All functionality is delivered in an easy-to-use physical or virtual appliance model that supports automated workflow of daily IT operations.

ScienceLogic EM7 is available in a highly scalable, distributed architecture ideally suited for the Cisco data center. The ScienceLogic solution supports application growth on the network, availability and business continuance requirements, and optimization of the investment in server resources via technologies such as virtualization.

ScienceLogic EM7 Benefits

The three primary benefits of ScienceLogic EM7 are:

- **Ease of use**—As a physical or virtual appliance, ScienceLogic EM7 starts working out of the box.
- **Customization**—You can easily customize ScienceLogic EM7 with your own monitoring policies.
- **Scalability**—ScienceLogic EM7's single monitoring solution is designed to easily extend to new Cisco devices, services, and technologies as your data center operations grow.

The award-winning ScienceLogic EM7 product provides both comprehensive and simplified management across the spectrum of Cisco network gear and services. It is preconfigured with a centralized data repository, integrated management applications, default settings based on best practices co-developed with Cisco, reports, and automated alerts for a wide range of devices and systems, from routers and switches to wireless and security, to video and TelePresence. Designed to be installed and operational within a few hours, ScienceLogic EM7 is a complete solution for day 2 management designed to work out of the box.

Typically, ScienceLogic EM7 replaces from three to five existing management solutions, delivering immediate return on investment (ROI) and lowering total cost of ownership. This comprehensive solution simplifies and consolidates the tools needed to get the job done and provides a “single pane of glass” view of all of your Cisco network gear and applications.

Figure 2 - ScienceLogic EM7 features

Application

Real-time and trended availability and performance data on application delivery components to keep business-critical apps up and running

System

High-level and detailed reporting of key system metrics for all operating systems; device summary views provide at-a-glance view of system performance, availability, tickets, and events

Network

Detailed analysis and reporting to maximize availability and optimize performance of converging network infrastructure, including VoIP; supports dual-stack IPv4/IPv6 networks

Cloud

Chargeback, multi-tenant views, web services monitoring, automation, and integration with self-service portals — just a few of the features that make ScienceLogic ideal for monitoring public, private, and hybrid clouds



Simplify data center and cloud management in a single solution — **for your IT operations today, tomorrow, and beyond**

Asset

Auto-populated asset and software inventory to manage asset lifecycles; automated hardware and config change detection to support IT troubleshooting

Service Desk

Automated ticketing workflow and tools to document and accelerate the problem resolution process and to build business-specific change management processes right into operations

Fault & Event

Customizable alert notification, escalation, and automated remediation for proactive management; open development platform for integration with third-party tools

Virtualization

Performance and availability of virtual infrastructure combined with physical infrastructure monitoring for the complete dynamic IT operations picture — all in a single tool

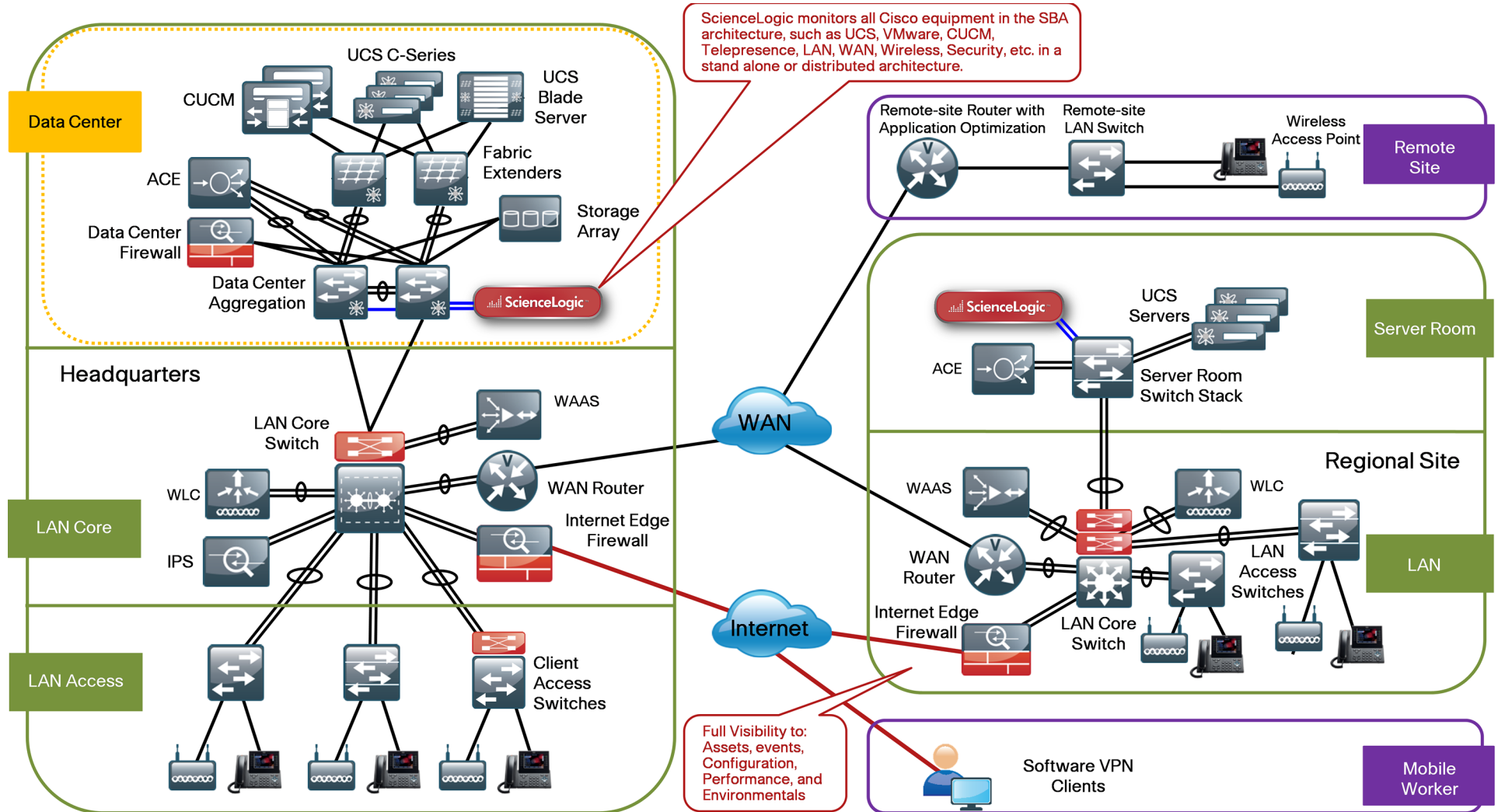
Key Features

Key features of ScienceLogic EM7 include Dynamic Discovery, a centralized data repository, and ease-of-use features including views, reports, and dashboards:

- **Dynamic Discovery**—Next-generation automatic discovery provides intelligent automation by matching known agents, devices, applications, and systems with best-practice monitoring rules, thresholds, events, and alerts. ScienceLogic EM7 is shipped with Dynamic Applications monitoring templates (data collection via Simple Network Management Protocol [SNMP], SQL queries, XML, and SOAP) for Cisco products and devices. Or you can create your own custom monitoring templates that are automatically applied in the Dynamic Discovery process.
- **Centralized Data Repository**—ScienceLogic EM7 includes an embedded, performance-tuned database, providing a single IT operations management data store that is preloaded, pretested, and preconfigured for optimal performance in the appliance and with all pre-integrated management applications. Acting as an operational configuration-management database (CMDB), the centralized data repository stores fault and performance data, configuration data, asset information, and more, providing built-in data integration for better troubleshooting and reporting across the infrastructure. The data store is self-managed and self-healing; ScienceLogic EM7 does not require additional database administrator (DBA) resources to operate.
- **Views, Reports, and Executive Dashboards**—A customizable, web-based portal gives you access to ScienceLogic EM7 anytime, anywhere. You can customize views and access for a company, a department, or even a user, making it easier to create executive dashboards that show application or IT process performance at a glance. In addition, ScienceLogic EM7 includes hundreds of preset reports along with tools that make it simple to create more reports of your own. For further analysis, many reports can be downloaded as Adobe PDF files or as Microsoft Excel files.

Notes

Figure 3 - ScienceLogic EM7 in the Cisco SBA data center



Deployment Details

ScienceLogic EM7 is designed for quick and easy setup. Appliances include an operating system, EM7 management applications, a firewall, and a database, all preinstalled, preconfigured, and pretested.

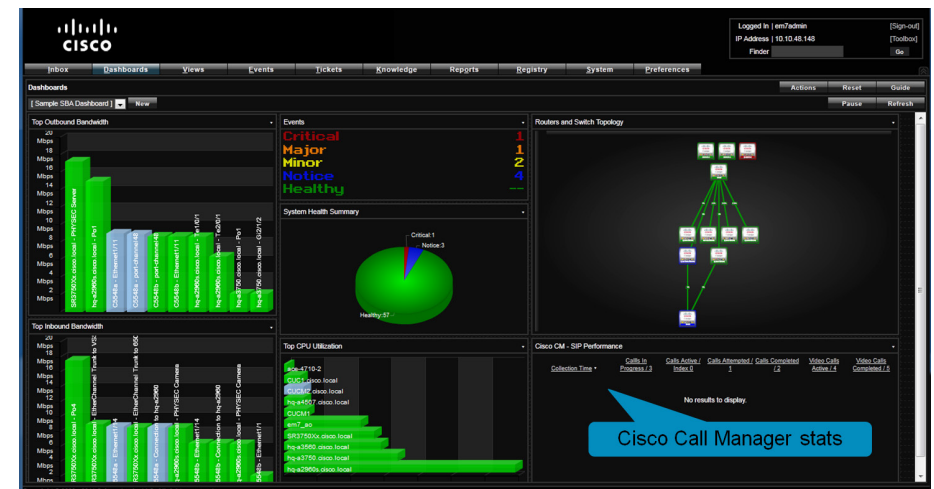
You deploy ScienceLogic EM7 in three phases, which are typically completed in two days: day 0 (set up the system and configure devices and systems), day 1 (baseline and begin to monitor the network), and day 2+ (optimize and maintain network health). Day 2 activities can be completed anytime, but ScienceLogic and Cisco recommend that you complete them immediately after the day 1 activities. Following is a summary of the setup and deployment processes:

- **Day 0: Set up the Network Management System and configure network devices and systems for monitoring**—This section walks you through procedures for installing the EM7 appliance, configuring the initial settings of your network environment in EM7, and discovery of your environment. It then describes the initial setup of the EM7 network management system, which should take less than an hour, and describes how to use the system to assess and manage the device configurations of your Cisco SBA data center network.

Cisco recommends that you perform the steps in this section immediately following the activities described in the “Ethernet Data Center,” “Resilient Wide-Area Network (WAN),” and “Resilient Wireless” modules in the *Cisco SBA for Midsize Organizations—Borderless Networks Data Center Deployment Guide* and the “Global Configuration” module in the *Foundation Deployment Guide*. Completing the steps in this order allows you to use EM7 to provide asset management, performance monitoring, event management, ticketing, and process workflow automation across all hardware, systems, and key applications within your Cisco SBA deployment.

- **Day 1: Baseline the network and begin monitoring.**—This section guides you through the steps necessary to baseline the network and start monitoring. Perform this section immediately following the deployment of all required modules so that you can back up your configurations and gain visibility into any problems affecting network performance.
- **Day 2+: Optimize and maintain the health of the network**—This section guides you through the steps necessary to optimize and maintain the health of your network. The activities in this section can be performed at any time, but Cisco and ScienceLogic recommend that you complete them immediately after the tasks in the day 1 section. This sequence allows you to determine if there are opportunities for performance optimization and if there are any capacity issues that need to be resolved.

Figure 4 - Example of a fully deployed ScienceLogic EM7 performance dashboard



Process

Installing and Configuring ScienceLogic EM7: Day 0

1. Install ScienceLogic EM7
2. License ScienceLogic EM7
3. Discover your network

The installation and configuration of ScienceLogic EM7 should take less than an hour if you follow the steps outlined in the procedures below.

Before you begin the setup, make sure your virtual machine (VM) or hardware meets all of the ScienceLogic hardware and software requirements.



Tech Tip

ScienceLogic's hardware specifications enable monitoring of 500 devices. Monitoring fewer devices requires less CPU and memory. You can use as few as two CPU cores and 4 GB of RAM for small production or lab environments.

During the installation and configuration of EM7, the system prompts you for the following information, which you should keep for future reference:

- Admin username
- Admin password
- Community string or strings

Procedure 1

Install ScienceLogic EM7

Step 1: Obtain an EM7 ISO from ScienceLogic Sales: sales@sciencelogic.com.

Step 2: Boot the appliance from the ISO or from a DVD burned from the ISO.

Step 3: To initiate the All-in-One Appliance installation, at the installation menu, type **ao**, and then press Enter. This step automatically formats the drive, installs the 64-bit CentOS, installs EM7, and reboots the system to the log-in prompt.

Step 4: Log in using **em7admin** as the username and password. You are immediately asked for a new password. You can change this password after initial installation or reuse the default **em7admin** when prompted.

Step 5: Follow the steps in the configuration wizard to assign the appropriate TCP-IP configuration to the system.

Procedure 2

License ScienceLogic EM7

Step 1: Connect to the EM7 Management console by pointing your browser to:
<https://x.x.x.x:7700>

Step 2: When prompted, enter the username and password that you used in Procedure 1, Step 4.

Step 3: Click the **Settings** icon, and then copy your registration key. To generate your license key, send this registration key to the contact at ScienceLogic who provided the ISO.

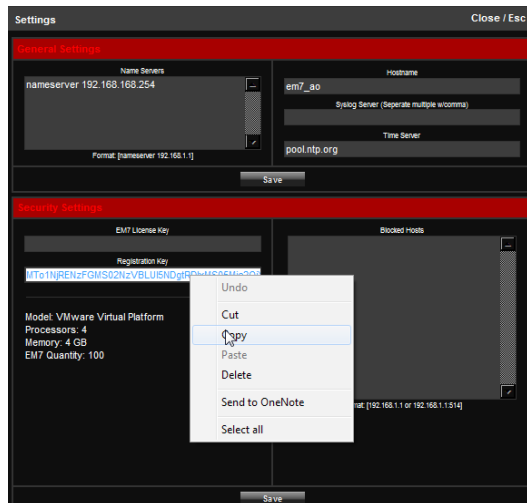


Tech Tip

Double-clicking the registry key and then using a copy command may not work, depending on the characters in your unique key. ScienceLogic recommends that you click the registration key once, press Ctrl-A to select all, then press Ctrl-C to copy. This key sequence ensures that all characters of the registration key are properly copied.

Step 4: Under **Security Settings**, in the **Registration Key** box, paste in your license key, and then click **Save**.

Step 5: If applicable to your environment, complete the **Syslog Server** and **Time Server** fields, and then click **Save** for those fields. The system is now ready for use.



Procedure 3

Discover your network

Step 1: Connect to the EM7 web console by pointing your browser to: <http://x.x.x.x>

Step 2: When prompted, enter the username and password that you used in Procedure 1, Step 4.

Step 3: Review and accept the license agreement.

Step 4: Click the **System** tab, and then in the Navbar, click **Credentials**.

Step 5: Click the **Create** tab, and then select **SNMP Credential**.

Step 6: Assign a credential name, and enter your SNMP version (typically v2), SNMP RO community string (and security details if you are using SNMPv3), and then click **Save**.

Step 7: Click the **System** tab, and then in the Navbar, click **Discovery**.

Step 8: Click the **Create** tab.

Step 9: Enter an IP range to be discovered, and then select your SNMP credential.

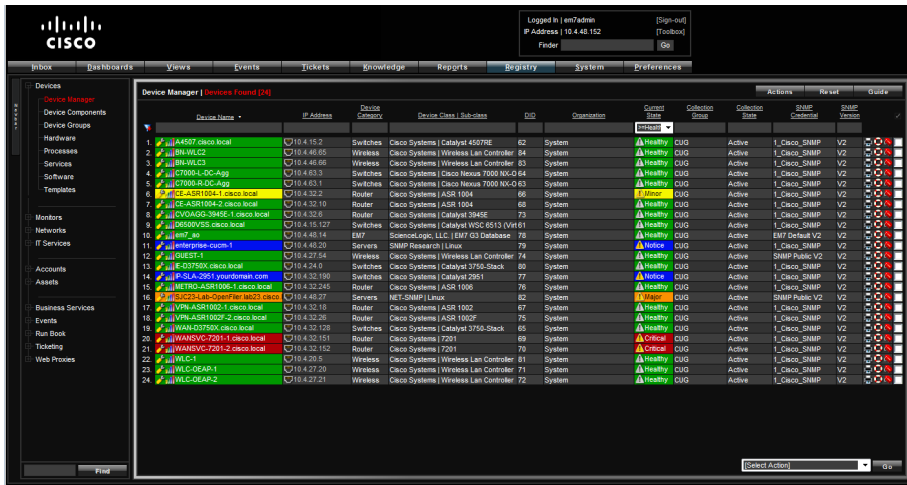
Step 10: If you want to discover pingable devices, click **Discover Non-SNMP**, and then click **Save**.

Step 11: Close the window.

Step 12: If you do not see your new discovery scope, click the **Reset** tab.

Step 13: Click the lightning bolt icon. A window appears and is updated as discovery progresses.

Step 14: To view your discovered network devices, click the **Registry** tab. After 10–30 minutes, reporting graphs are populated (polling occurs every 5–15 minutes).



Notes

Process

Baselining and Monitoring the Network: Day 1

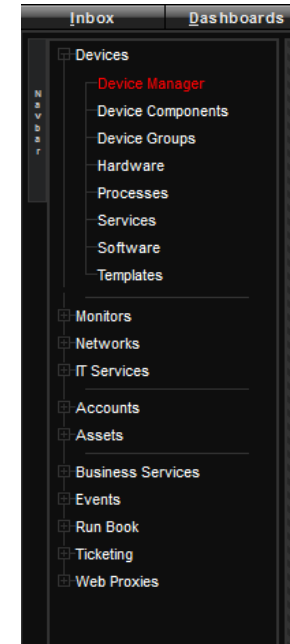
1. Review the registry (inventory)
2. View events and create custom events
3. Generate reports
4. Build a custom dashboard
5. Add a topology map
6. Add the routers and switches map
7. View topology maps

You can use the Guide button in the EM7 interface to see details of many areas of the product. To help you get up and running quickly, the procedures in this section describe a few key areas of the product. All areas of the product should be working at this stage without any additional configuration.

Procedure 1

Review the registry (inventory)

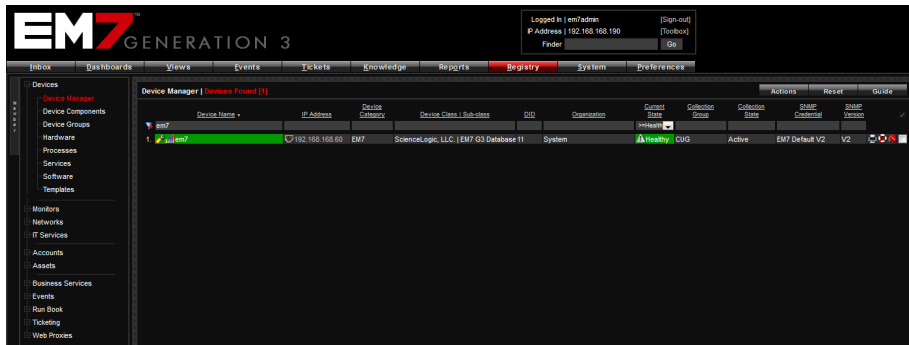
Step 1: To review your network inventory (called the *registry* in EM7), click the **Registry** tab, and then, in the Navbar, review the items in the list.



The Device Manager on the Registry tab is an inventory listing of the devices in EM7; the devices are color-coded by their current event notification state. This tab is probably the page that system administrators will access most frequently.

The information is organized in a tabular view. You can sort each column by clicking the header, and each column has a search field that is a live filter for any criteria typed into the field. The search field works like the Google search field, where matches are presented as you type. You can enter multiple filters so that you can organize the inventory any way you wish.

The Navbar, located on the left side of the EM7 window, is visible throughout the user interface. The Navbar is context-sensitive and displays items based on which tab is selected. You can find all of the inventory and information that the administrators enter on the **Registry** tab.

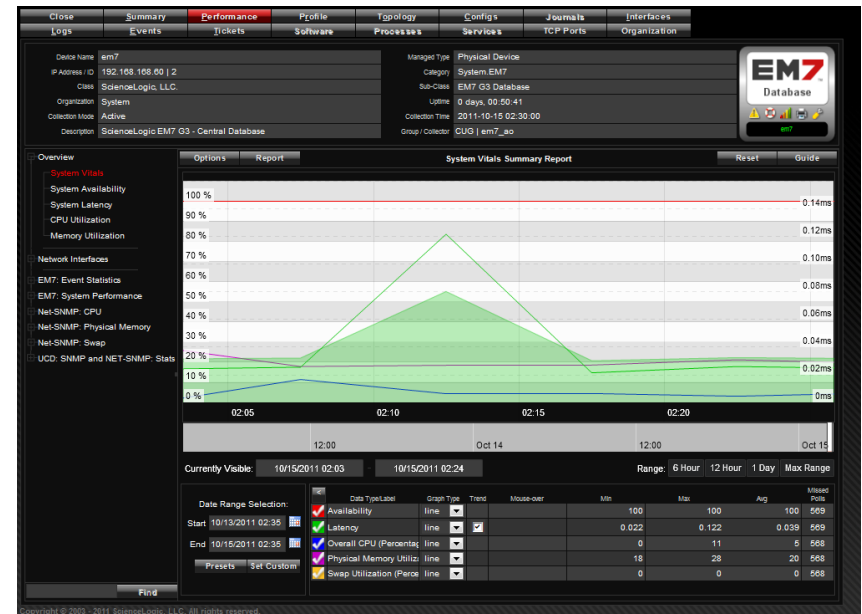


Next to the name of each monitored device, you can click icons that take you to important device information:

- The wrench takes you to the Device Toolbox, which includes the configuration details of the selected device, including its monitoring configuration and multiple tabs that contain additional configuration details and utilities.



- The bar graph takes you to the performance summary window, which shows overall health vitals and device status. The performance summary also includes several tabs providing detailed performance metrics, device configuration details, interfaces, logs, tickets, installed software, running processes and services, and open TCP ports.



- The caution sign opens a window of all active events for the selected device.
- The printer icon opens a window with quick reports that can be generated for the selected device.
- The life ring lets you create a new ticket for the device.
- The asset tag lets you access the asset information for each device as part of the included asset management database. The asset records are not available until the system has been running for several hours.

Procedure 2

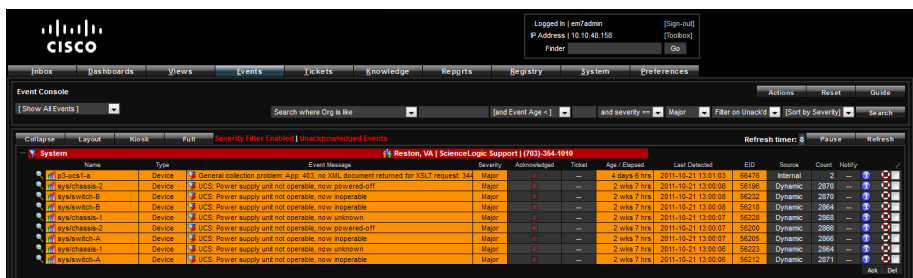
View events and create custom events

One of the easiest ways to monitor the health of your network is to look at events. This is commonly referred to as *management by exception*. Events are messages that are triggered when specific conditions are met. For example, an event can signal that a server has gone down, a device is exceeding CPU or disk-space thresholds, or communication with a device has failed. An event can also simply display the status of a managed element. EM7 generates log messages from incoming trap and syslog data and when EM7 executes user-defined policies. EM7 then uses these log messages to generate events. EM7 examines each log message and compares it to each event definition. If a log message matches an event's definition, EM7 generates an event instance and displays the event on the Event Console page.

EM7 includes predefined events for over 1000 of the most commonly encountered conditions on the most common platforms, ranging from notification messages about configuration changes to major and critical operational alarms.

Step 1: Click the Events tab in the Events Console:

- To view events, at the top of the console, use the filters to define the events you want to see.
- To edit preset events or define new event policies, click the **Registry** tab, and in the Navbar, go to **Events > Event Manager > Create**.



Procedure 3

Generate reports

You use the **Reports** tab to generate instant, weekly, or monthly management reports enabling you to present data collected by EM7 in many different analysis formats.

Step 1: Click the **Reports** tab, and in the Navbar, select the type of report you want to create.

Step 2: The most popular reports are the Quick Reports and Leaderboards:

- Quick Reports**—After you select a Quick Report, a selection screen appears so that you can choose the data of interest. Reports can be output in several formats. A sample network usage report is illustrated here.

Organization: System [0]			
Categories: Network:Switches			
Device: C3750X-24P.cisco.local [1]			
ID	Description	Total	Average
1026	Vlan1	0.00 kB	0.00 kB/day
1033	Vlan100	2.02 MB	81.29 kB/day
1034	Vlan102	1.32 MB	53.14 kB/day
1035	Vlan115	116.07 kB	4.67 kB/day
1036	Vlan116	690.64 kB	27.81 kB/day
1037	Vlan120	690.70 kB	27.81 kB/day
1038	Vlan127	37.55 MB	1.51 MB/day
1039	Vlan132	0.00 kB	0.00 kB/day
1040	Vlan148	2.11 GB	84.97 MB/day
1041	Vlan149	690.69 kB	27.81 kB/day
1042	Vlan150	6.91 MB	278.08 kB/day
1043	Vlan163	1.16 MB	46.56 kB/day
1062	Port-channel6	123.53 MB	4.97 MB/day
1103	Port-channel9	961.77 MB	38.73 MB/day
1104	Port-channel10	43.68 MB	1.76 MB/day
1105	Port-channel11	156.11 MB	6.29 MB/day
1106	Port-channel22	0.00 kB	0.00 kB/day

- **Leaderboard Reports**—Leaderboards are Top-N style analysis of popular system and network resources. These include: Assets, Bandwidth, CPU, Devices, File Systems, Memory, Availability, Tickets, and Web Statistics.

After you choose a Leaderboard, you can use the **Select Graph** list for different analyses of the data you chose.

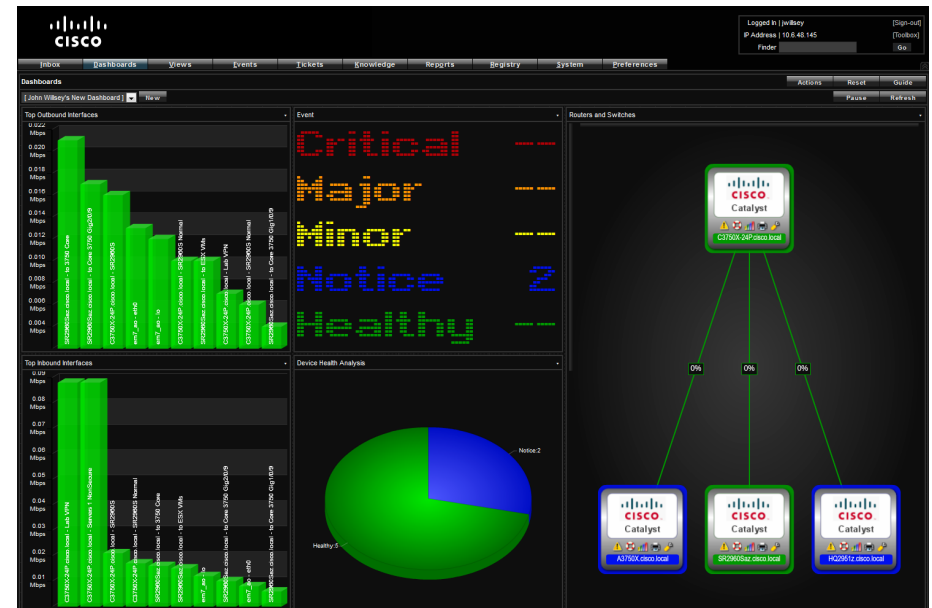


Procedure 4

Build a custom dashboard

You create dashboards by dragging and dropping data you would like to have displayed and specifying how the data should look. EM7's flexibility enables each user to have personalized dashboards that provide with the data that is most important to that user.

Figure 5 - Example custom dashboard



Use the dashboard in Figure 5 as an example to complete this procedure.

Step 1: Click the **Dashboard** tab, and then click **New**. This displays a blank dashboard with a background grid.

Step 2: To create your first widget, drag and drop a box in the upper-left corner of desired size. The Widget Configuration menu opens.

Step 3: Choose a widget type of **Network Leaderboard**, and then choose a display type of **Column**.

Step 4: Change the widget title to **Top Outbound Interfaces**, and then click **Save**.

Step 5: Repeat Step 2 to create a widget under the first one you created.

Step 6: Choose a widget type of **Inbound Bandwidth**, choose a display type of **Column**, and then change the widget title to **Top Inbound Interfaces**.

Step 7: Create a new box to the right of the **Top Outbound Interfaces** widget.

Step 8: Choose widget type of **Event Counts by Severity**, choose a display type of **Scoreboard**, and then change the widget title to **Events**.

Step 9: To add a health status widget, create a new box to the right of the **Top Inbound Interfaces** widget.

Step 10: Choose a widget type of **System Health Summary**, choose a display type of **Pie**, and then change the widget title to **Device Health Analysis**.

Procedure 5 Add a topology map

Step 1: Go to **Registry > Navbar > Devices > Device Groups**, and then click **Create**.

Step 2: Choose the device group name **Routers and Switches**, choose the visibility **Select All**, and then choose the sharing permissions **h**.

Step 3: To create a Dynamic Group, under **Dynamics Rules**, click **Add**. The Rule Editor window opens.

Step 4: In the Active Selectors list, choose **Device Category**, choose **Network Switch**, choose **Network Router**, and then click **Save**. You have now defined a custom group that is visible as a map.

Procedure 6 Add the routers and switches map

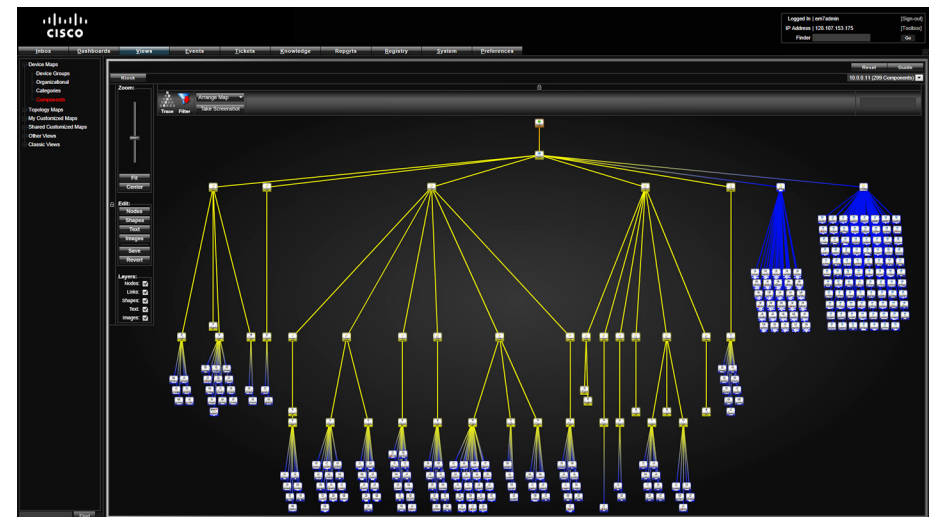
Step 1: Click the **Dashboard** tab, and then on the right side of the dashboard, create a tall box

Step 2: Choose a widget type of **Topology Map**, a map type of **Custom Group**, change the map title to **Routers and Switches**, and then click **Save**. This step produces a topology map of your routers and switches. The link-ages and utilization should be drawn within four hours of discovery.

Procedure 7 View topology maps

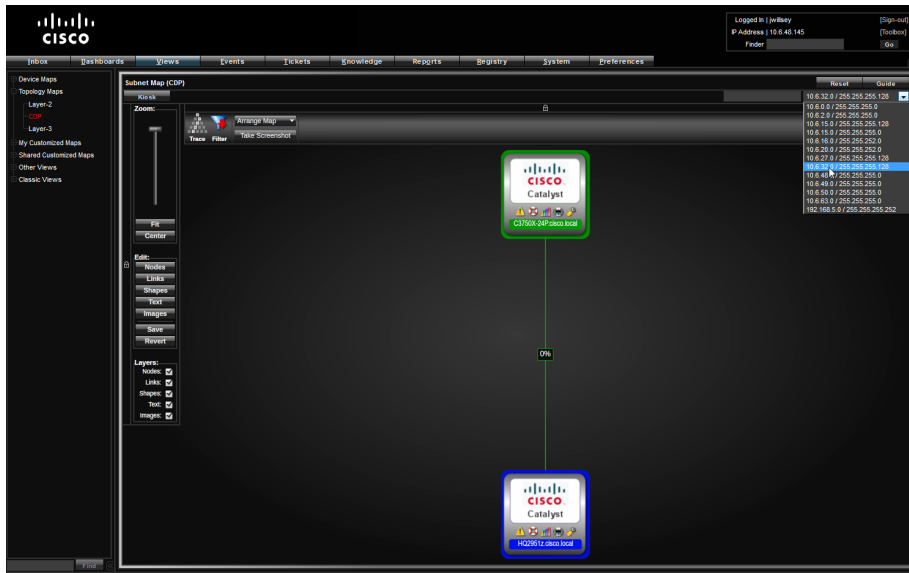
You can view topology maps that are automatically created using technologies such as vSphere for visualizing virtual infrastructure that leverages Cisco Unified Computing System implementations, or you can view a network topology map based on Cisco Discovery Protocol for a visual understanding of the connectivity between devices.

Figure 6 - vCenter component map view

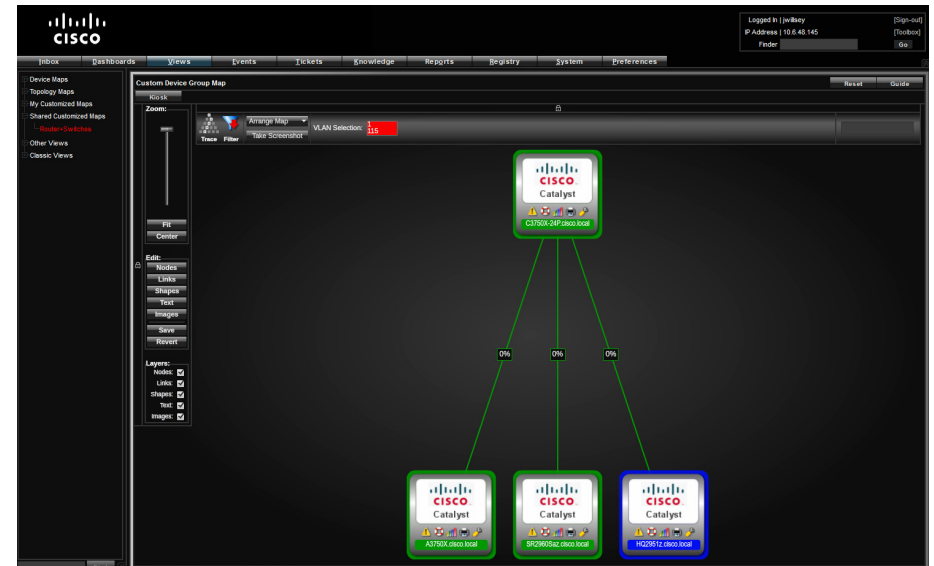


Step 1: Go to Views > Topology Maps > CDP.

Step 2: To see the Cisco Discovery Protocol topology map, in the list on the right, choose the subnet you want to view..



Step 3: To see the custom group map you created in the example dashboard in Procedure 4, navigate to Views > Shared Customized Maps > Routers + Switches.



Optimizing and Maintaining the Health of the Network: Day 2+

Over several days after you install and deploy ScienceLogic EM7, the system builds historical data and creates trending information for your data.

As you navigate through the product, remember to use the Guide button in the upper-right corner of most screens for contextual help.

Appendix A: Contact Information

Visit the Cisco Page on the ScienceLogic website for more information:

<http://ww2.sciencelogic.com/cisco-monitoring>

Email: ciscopartner@sciencelogic.com

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For Sales inquiries:

- Email: sales@sciencelogic.com
- Phone: (800) SCI-LOGIC, ext 1

For information on becoming a ScienceLogic Partner:

- Visit: <http://www.sciencelogic.com/resellers>
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Notes



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