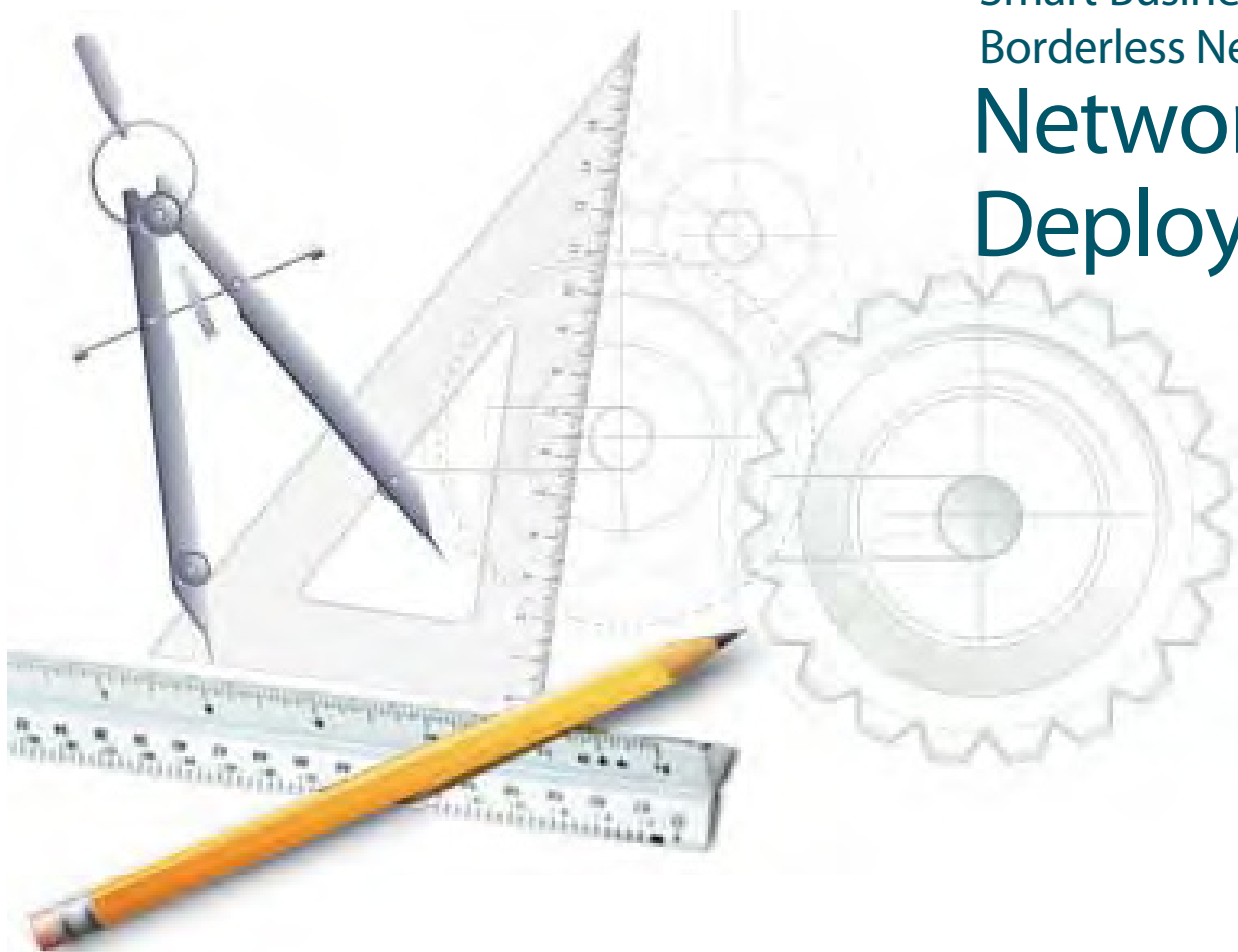




Smart Business Architecture
Borderless Networks for Midsized organizations

Network Management Deployment Guide



Cisco Smart Business Architecture Borderless Networks for Midsized organizations

With the Cisco Smart Business Architecture Borderless Networks for Midsized organizations, you can increase your profits and reduce the time you spend selling to customers in the 250-1,000 user market segment.

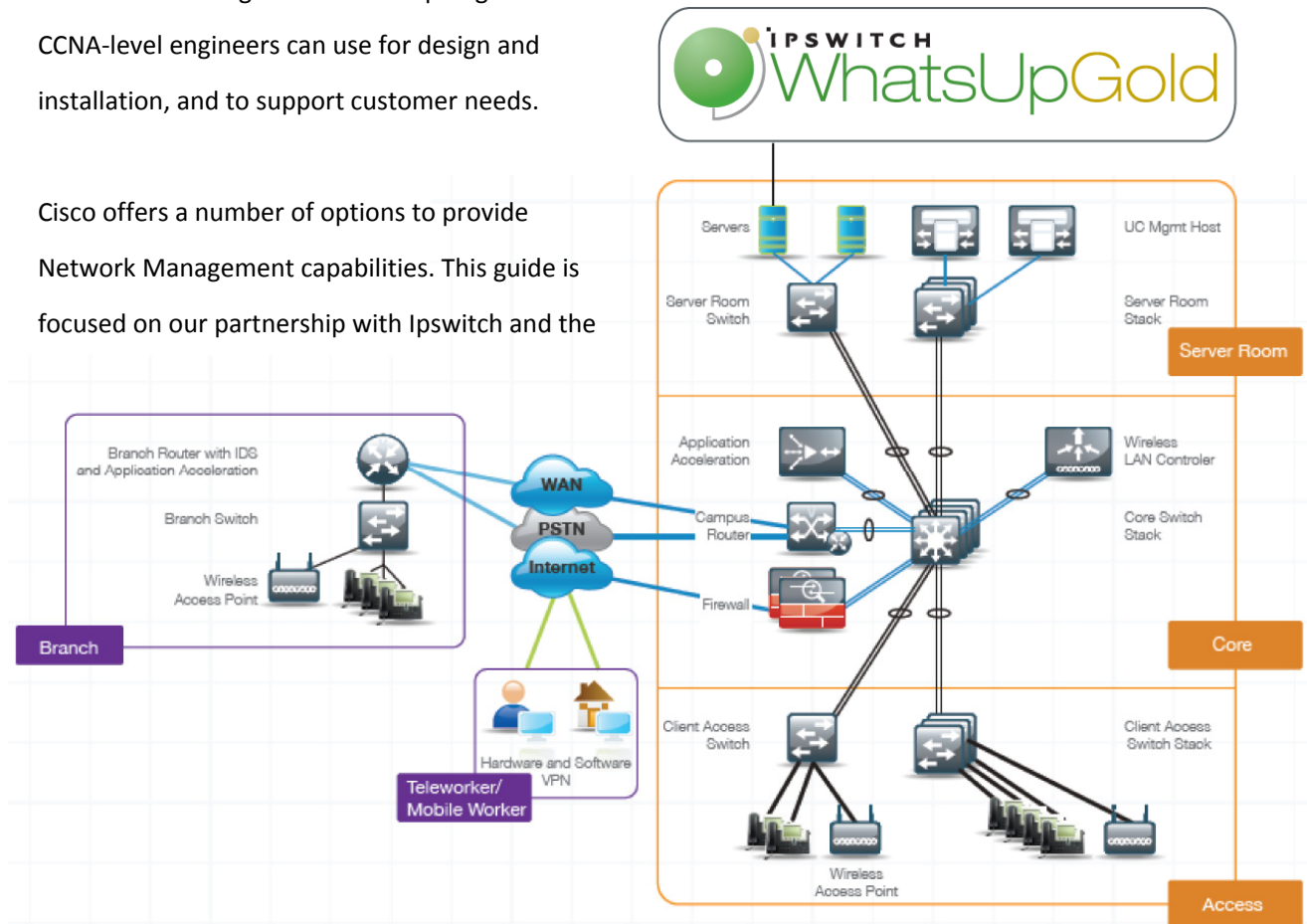
The Cisco Smart Business Architecture Borderless Networks for Midsized organizations offers partners valuable network design and deployment best practices, helping you grow a profitable Cisco practice and deliver a superior end-user experience that includes switching, routing, wireless, WAN optimization, and security technologies, combined with comprehensive management capabilities for the entire system. It also includes modular components that allow you to build in unified communications and data center components for advanced customer requirements.

The modular design of the architecture means that you can add technologies when the customer is ready to deploy them. It also provides

Cisco-tested configurations and topologies which CCNA-level engineers can use for design and installation, and to support customer needs.

Cisco offers a number of options to provide Network Management capabilities. This guide is focused on our partnership with Ipswitch and the

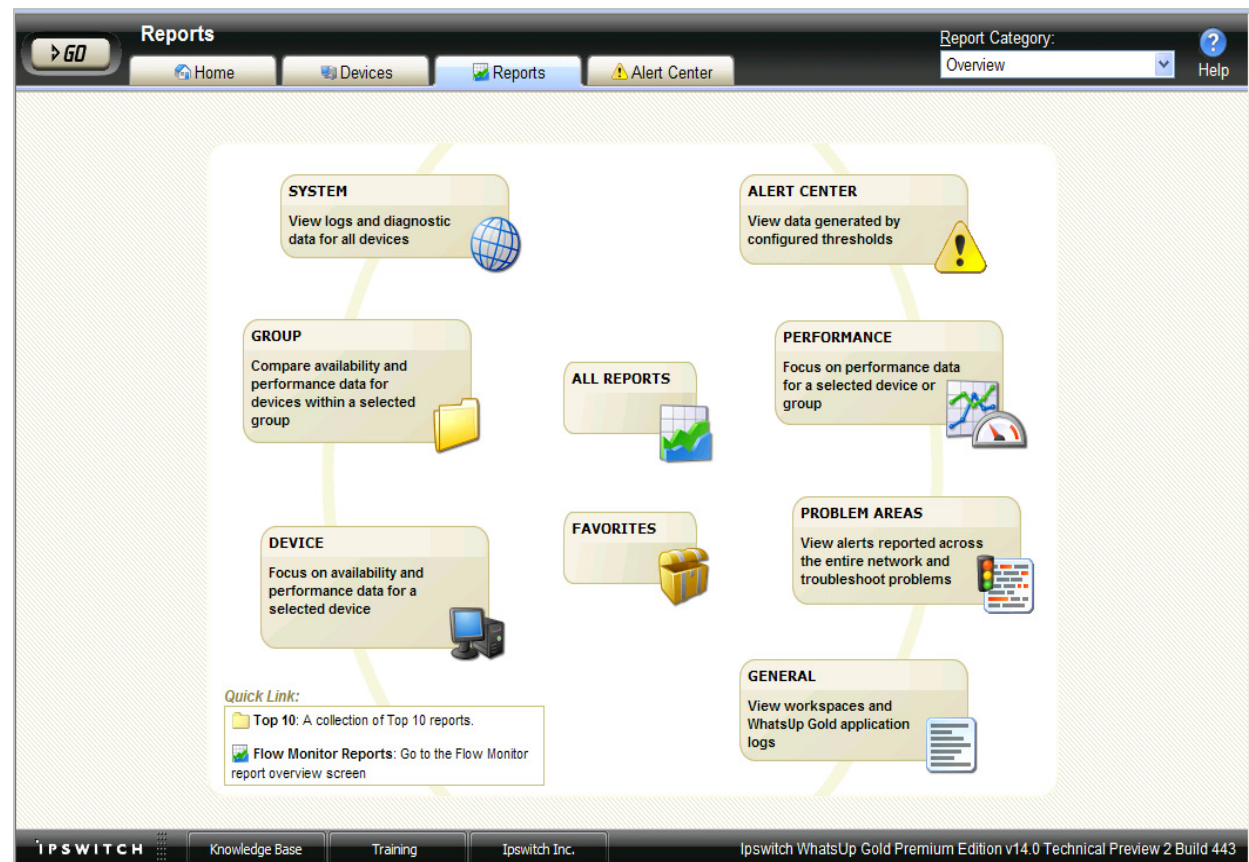
WhatsUp Gold line of products that meet Cisco's goal to deliver affordable, easy-to-use network management.



WhatsUp Gold Product Overview

Network and application infrastructures have become some of the most critical elements in organization strategy. High reliance on network or application availability requires that all organizations—from SMBs to Enterprises—take a proactive approach to preventing or resolving outages with minimal impact to productivity and revenue. The Ipswitch WhatsUp Gold product family leverages a powerful, yet affordable, easy-to-deploy and use, network tools suite that ensures you always know the pulse of the network so you can respond quickly to changes. When combining the reliability of Cisco hardware with the value of WhatsUp Gold, you can be confident that you have the tools to manage your network easily and reliably.

This network management module deploys four primary WhatsUp Gold products—WhatsUp Gold Premium, WhatsUp Flow Monitor, WhatsConnected, and WhatsConfigured—and suggests other network tools to increase



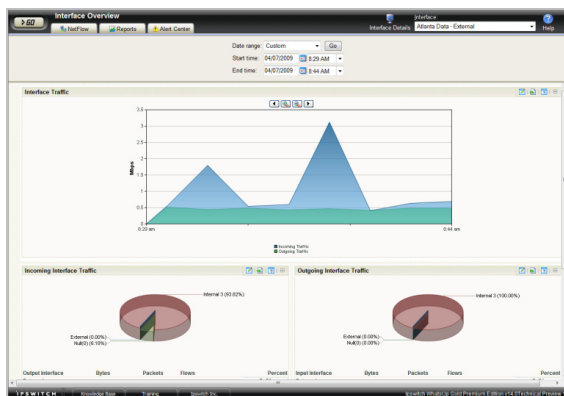
visibility and access to real-time network performance data.

WhatsUp Gold monitors, reports, alerts, and takes action on the status of network devices, the system, and services. WhatsUp Gold installs, discovers, and maps network connected assets in minutes. Leveraging SNMP v1/2/3 and WMI, it

enables predictive monitoring in combination with powerful alerting and notification capabilities to keep you informed when issues arise and to keep the network infrastructure running smoothly. Intuitive web-enabled workspace reports and dashboards provide quick navigation to over 200 reports, documenting all device, bandwidth and application-related activity. WhatsUp Gold

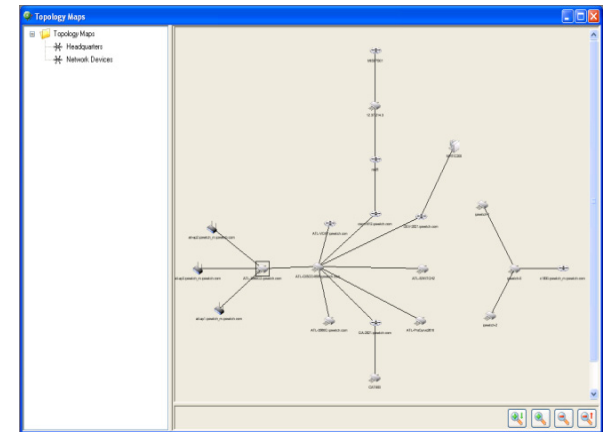
ensures network managers have 360° visibility, actionable intelligence and complete control to make smarter decisions faster.

WhatsUp Flow Monitor plug-in for WhatsUp Gold leverages Cisco NetFlow enabled switches, routers, and Adaptive Security Appliances (ASA), to gather, analyze, report, and alert on LAN/WAN network traffic patterns and bandwidth utilization in real-time. It highlights not only overall utilization for the LAN/WAN, specific devices, or interfaces; it also indicates users, applications, and protocols that are consuming abnormal amounts of bandwidth. WhatsUp Flow Monitor protects network security by detecting virus and worm activity on the network. Comprehensive reporting



takes the raw real-time network traffic data from routers and switches and presents you with useful information to understand trends, utilization, and where network bandwidth is consumed.

WhatsConnected plug-in for WhatsUp Gold provides layer 2/3 network discovery and topology mapping to visually depict device connectivity down to the individual port. It also employs deep device scanning that provides detailed Information about discovered devices in a simple device list view, a device category view, and a detailed topology view. You can publish any of the network maps as a network diagram in Microsoft® Visio™ or export detailed device information to WhatsUp Gold to automate the creation of detailed network topology map views. WhatsConnected also includes Layer 2 Trace and IP/MAC Finder tools to validate connection paths and report real-time availability data on devices.



WhatsConfigured plug-in enables effective management of one of the most critical assets on your network—device configurations. As a fully integrated plug-in for WhatsUp Gold, WhatsConfigured automates the key configuration and change management tasks required to maintain and control configuration files for networking devices, reducing the risk of network outages caused by misconfigured devices. Network managers can leverage automated configuration to reduce the amount of time spent ensuring their network devices are configured correctly, freeing valuable time.

WhatsVirtual plug-in provides additional capabilities to discover, map, monitor, alert, and report on virtual environments in WhatsUp Gold. With WhatsVirtual, one discovery scan can discover both virtual and physical devices. In Device View, virtual devices are displayed alongside physical devices. For each virtual host discovered, a group is created for the virtual host and all of its associated virtual machines. Leveraging the VMWare API, WhatsVirtual enables the same predictive monitoring and powerful alerting and notification capabilities of WhatsUp Gold to keep you informed when issues arise and to keep the network infrastructure running smoothly.

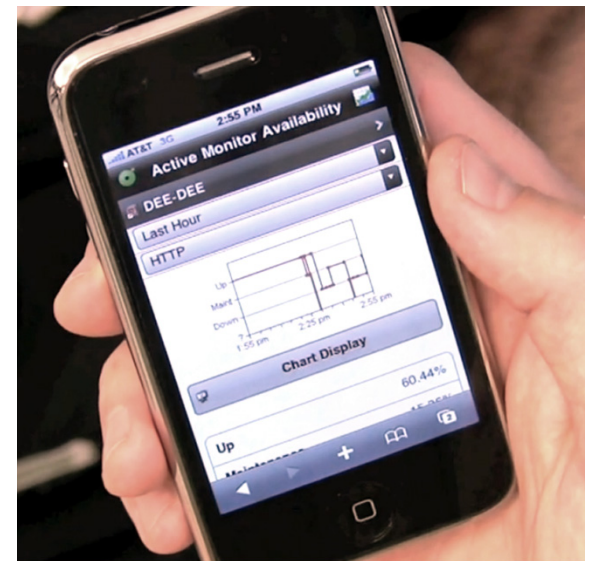
VoIP Monitor plug-in for WhatsUp Gold measures your network's ability to provide the quality of service (QoS) necessary for your VoIP calls on your LAN and WAN links. After a simple setup, the VoIP Monitor accesses Cisco IP SLA (service level agreement) enabled devices to monitor VoIP performance and quality parameters including jitter, packet loss, latency, and other performance

values. The plug-in's full integration with WhatsUp Gold allows you to easily view graphs and metrics for bandwidth and interface utilization and troubleshoot network issues that affect VoIP performance.

Dashboard, included free with WhatsUp Gold Premium, is a stand-alone application designed to complement WhatsUp Gold with increased visibility into network status. Dashboard runs on either single or multiple display panels and cycles through report pages on the WhatsUp Gold web interface. This capability provides network administrators a dynamic, self-updating means with which to display and view their important network information. Additionally, Dashboard provides the capability to display data for multiple networks—allowing administrators to view data for multiple networks simultaneously.

Mobile Interface, included free with WhatsUp Gold Premium and Distributed editions, provides mobile access to the WhatsUp Gold network management application. You can conveniently

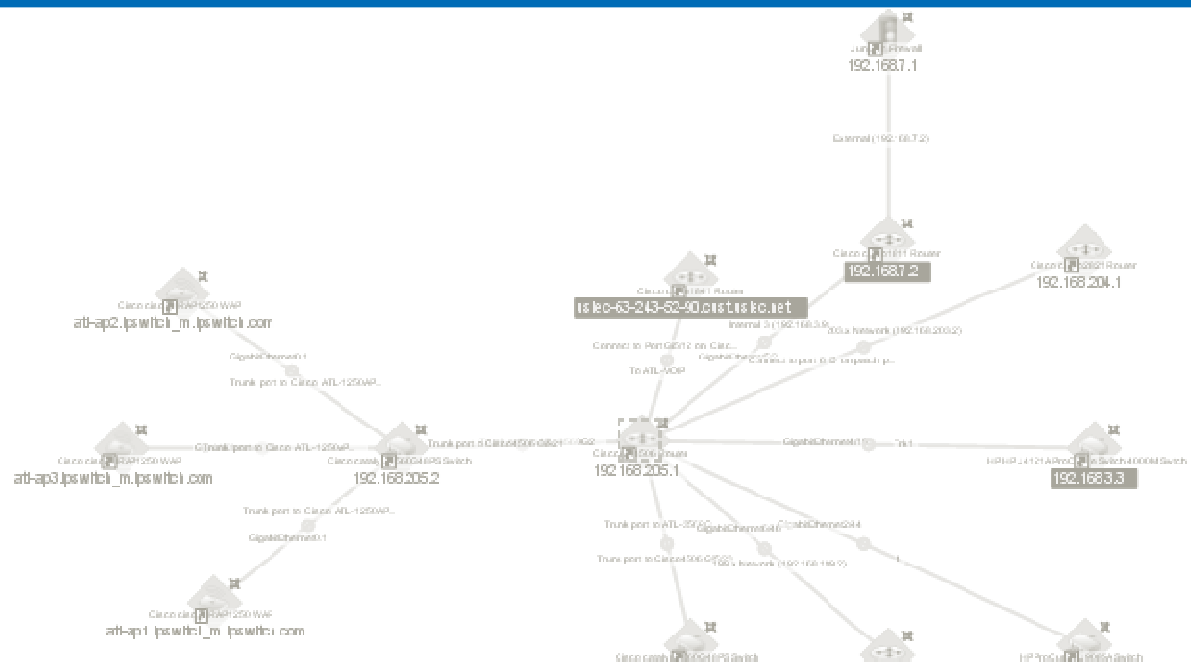
view your network status from a mobile device at anytime. This WhatsUp Gold feature ensures that you are informed about network issues so that you can maintain critical network performance. The Mobile Interface supports mobile devices such as the iPhone, Blackberry, and other popular mobile devices.



Deploying WhatsUp Gold

This document organizes the tasks necessary to deploy WhatsUp Gold to manage Cisco Smart Business Architecture Borderless Networks for Midsized organizations into four stages.

The time required to execute each stage is less than an hour. It is feasible to complete all four stages on a single day.



STEP 1 Prepare the network

Prepare network devices to be discovered and monitored

Install WhatsUp Gold

STEP 2 Discover and map the network

Customize how WhatsUp Gold monitors discovered devices

Run a WhatsUp Gold network discovery. If WhatsVirtual is installed, virtual devices are also discovered.

Use WhatsConnected to add Layer 2 topology maps to WhatsUp Gold

STEP 3 Explore and customize reports

Create customized workspace views

Customize device status reports

Configure custom Alert Center thresholds

STEP 4 Manage the network

Use WhatsConfigured to manage network device configurations

Configure a Network Operations Center view with Ipswitch Dashboard

Access reports from anywhere using the WhatsUp Gold mobile interface

Use real-time tools to evaluate and correct network issues

STEP 1 Prepare the network

Download and install WhatsUp Gold

Download an evaluation copy of WhatsUp Gold and all available plug-ins from WhatsUpGold.com. The installation program includes the evaluation license and activates automatically.

The installation program for WhatsUp Gold bundles and delivers all of the prerequisites of the application, including Microsoft .NET Framework 3.5, Microsoft SQL Server 2005 Express Edition, and Ipswitch Web Server.

TECH TIP: You don't have to use the bundled Microsoft SQL Server 2005 Express Edition or Ipswitch Web Server with WhatsUp Gold. You can also install WhatsUp Gold to use an existing installation of Microsoft SQL Server 2005 or Microsoft SQL Server 2008 as its data store, and you can use Microsoft Internet Information Services (IIS) as its Web server.

For more information on specific installation steps, consult the WhatsUp Gold release notes.

You can view the release notes from the first screen of the installation program.

Enable SNMP on key Cisco devices

WhatsUp Gold uses SNMP to determine the manufacturer and model, components (such as fans, CPUs, and hard disks), operating system, and specific services (such as HTTP or DNS) of each device. We recommend configuring important devices to respond to SNMP requests. For information about how to enable SNMP on Cisco devices, see pages 10-11 of the *Cisco Smart Business Architecture Borderless Networks for Midsized organizations* guide.

Configure NetFlow on key Cisco devices

To monitor network bandwidth utilization, WhatsUp Gold Flow Monitor collects NetFlow data exported from network devices. Flow Monitor accepts NetFlow version 1, 5, and 9. The following example shows the command line interface commands required to enable NetFlow exports for devices on which you want to enable network bandwidth monitoring.

TECHNICAL TIP: Instead of 192.168.28.4, use the IP address of the WhatsUp Gold server.

ip flow-export version 9

ip flow-export destination 192.168.28.4 9999

In addition, configure each interface to export data to WhatsUp Gold Flow Monitor.

ip flow ingress

- OR -

ip flow egress

If the device exporting Flow data is also performing network address translation (NAT), we recommend exporting egress data from the internal interface so that private network addresses are displayed in Flow Monitor reports. Any other configuration results in all private addresses reporting as the public addresses of the device performing the network address translation. WhatsUp Gold Flow Monitor automatically begins tracking network bandwidth utilization when it receives NetFlow data.

STEP 2 Discover and map the network

Run the Quick Setup Assistant

The Quick Setup Assistant guides you through the initial configuration that is necessary for WhatsUp Gold to discover network devices. You can use the Quick Setup Assistant to configure the connection to your mail server and set up the default email address for email notifications.

Most importantly, the Quick Setup Assistant collects information about your SNMP communities and other credential types, such as VMware for the WhatsVirtual plug-in, and TFTP and SSH credentials for the WhatsConfigured plug-in. Enter each community that you configured during the Global Configuration module. The Quick Setup Assistant automatically generates SNMPv1 and SNMPv2 credentials for each community entered.

Configure action policies

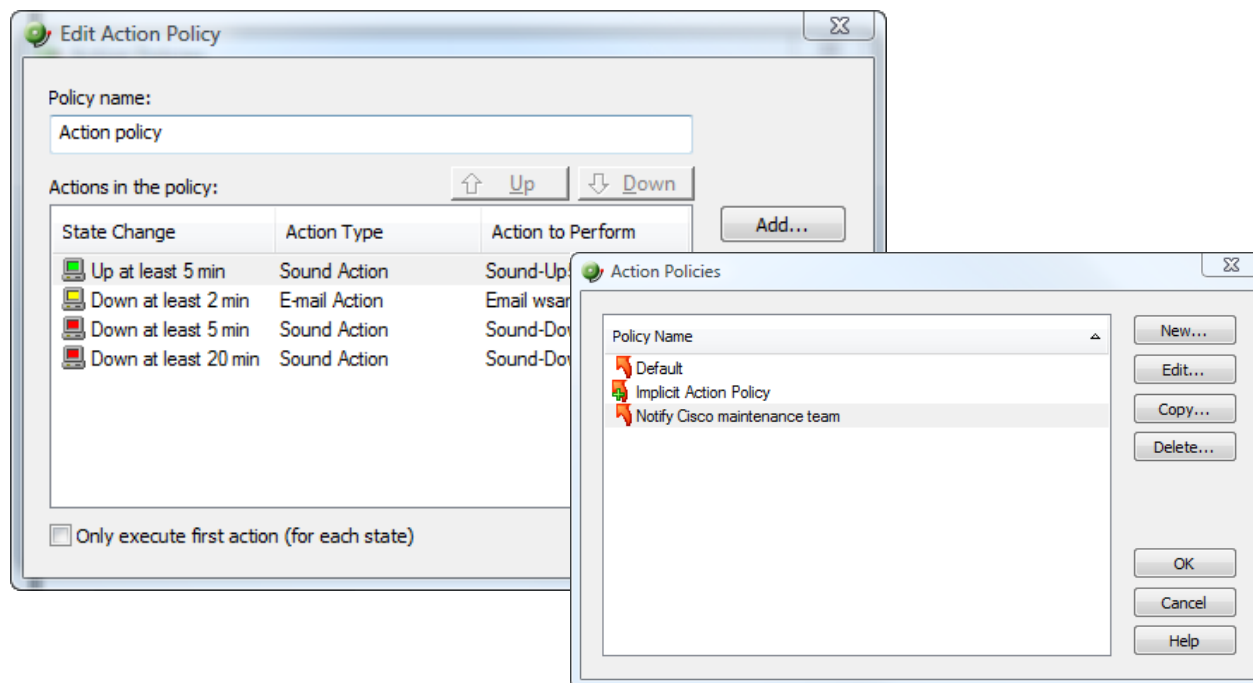
Action policies are sets of rules WhatsUp Gold uses to determine what actions it takes when it

detects network issues. By default, WhatsUp Gold creates an action policy that sends email notifications to the address you specified in the Quick Setup Assistant and applies it to all discovered devices.

If you want WhatsUp Gold to take other actions when issues are detected on devices, you can configure additional action policies. Action policies are primarily used to send notifications via email, SMS, and pager, but actions can also be used to

write events to common logs, restart Windows services, set SNMP values, and run custom programs and scripts.

Action policies can be applied to specific devices automatically assigned to devices that match a device role (such as an action policy that is applied automatically to all routers).



Customize device roles

When WhatsUp Gold discovers devices, it tries to determine the type of device so that it can monitor devices appropriately. To determine the type of device, WhatsUp Gold compares the discovered attributes of the device to a set of criteria called a device role.

Device roles do two things:

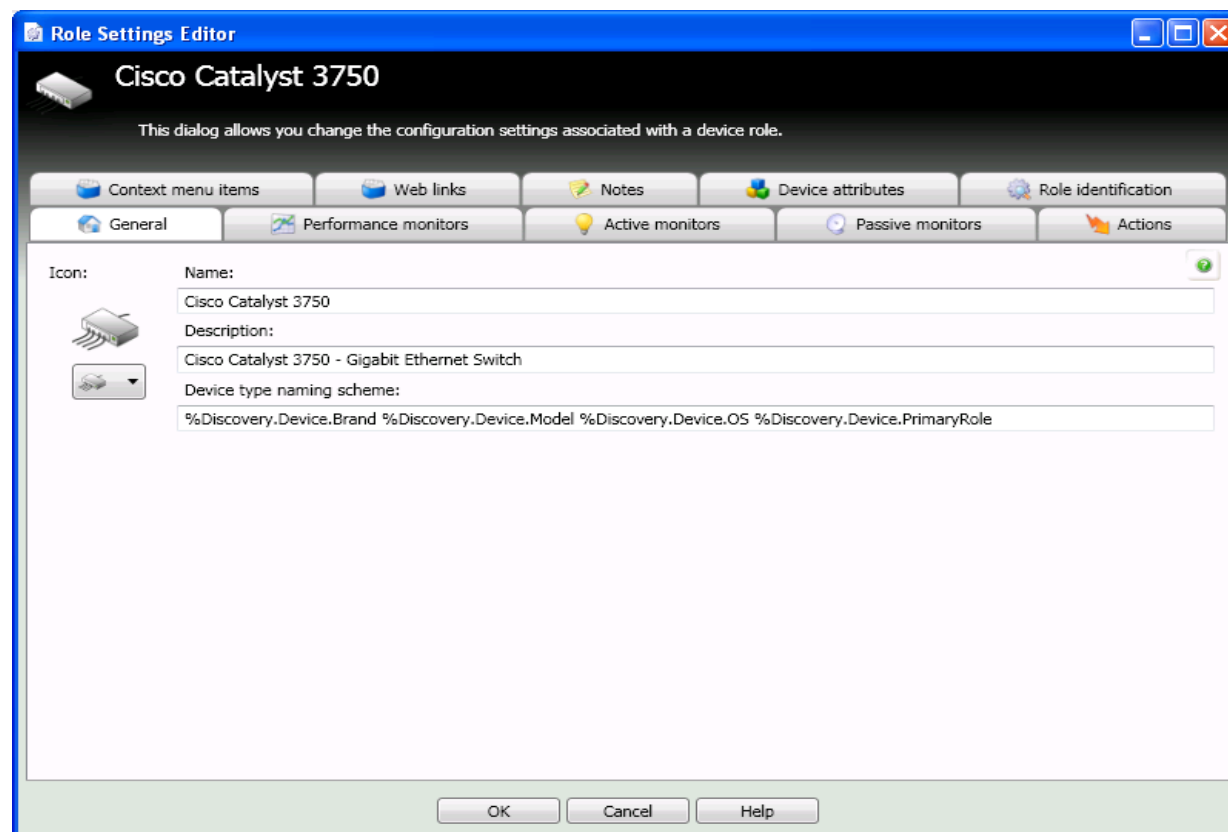
- Specify the criteria that a device must match to be identified as the device role.
- Specify the monitoring configuration that is applied to the device when it is added to WhatsUp Gold.

TECHNICAL TIP: When you create a device role for IP telephony devices, you can automatically assign the VoIP Monitor, which gauges IP telephony performance using Cisco's IP SLA. If you use this option, additional configuration is needed on the IP SLA responder and source devices.

WhatsUp Gold provides several default device roles that are used to identify most common network devices. These default roles correctly identify the majority of the devices in the Cisco Smart Business Architecture Borderless Networks for Midsized organizations, but you can modify the device roles to customize what is monitored on each device and what action policy is applied.

In addition, you can create new device roles to specify how WhatsUp Gold monitors and reports on devices it does not natively recognize.

At a minimum, we recommend creating a device role for any IP telephony devices on your network.



Discover the network

After you have completed the configuration of network devices and the customization of device roles, you can discover the network using WhatsUp Gold.

We recommend using the SNMP Smart Scan option to discover the network. Enter an IP address of the Core router and an IP address of each Branch router as seed addresses, and specify a **Scan Depth** of 2.

When you start the discovery session, WhatsUp Gold begins scanning the network and identifying physical devices and virtual devices (if WhatsVirtual is installed). Discovered devices are added to the list in the Devices Discovered pane. As each device is scanned, additional information about it becomes available, such as the device brand, model, and operating system. Based on what is discovered about each device, WhatsUp Gold designates a device role.

The screenshot shows the 'WhatsUp Gold Discovery Console' window. The 'Progress Summary' pane on the left displays statistics: Device Limit (Unlimited), Existing Devices (211), Discovered Devices (224), Network Traffic (SNMP Bytes: 4630906 / 3736400, PDU: 53493 / 54843), Session Metrics (Scan Start: 6/2/2009 5:59:26 AM, Scan End: 6/2/2009 6:07:20 AM, Elapsed Time: 00:07:53), and Session Settings (Scan Type: Smart, SNMP Credentials: 4 / 4, Windows Credentials: 0 / 0). The 'Devices Discovered' pane shows a table of discovered devices with columns for Host Name, Address, Brand, Model, Operating System, Role, Status, and Progress. The 'Device Information' pane at the bottom shows details for a selected device: Name (ATL-3560G2.ipswitch.com), Location (Atlanta-Server Room), Contact (Shawn Ayton), Description (Cisco IOS Software, C3560 Software (C3560-IPBASE-M), Version 12.2(50)SE, RELEASE SOFTWARE (fc1)), and CPUs (1).

Host Name	Address	Brand	Model	Operating System	Role	Status	Progress
192.168.3.18	192.168.3.18	Cisco	catalyst3560G48PS	IOS	Switch	complete	Saved/Updated
atl-cisco4506.ipswitch_m.i	192.168.3.1	Cisco	cat4506	IOS	Router	complete	Saved/Updated
192.168.203.1	192.168.203.1	Cisco	cat4506	IOS	Router	complete	Saved/Updated
192.168.199.1	192.168.199.1	Cisco	cat4506	IOS	Router	complete	Saved/Updated
192.168.2.1	192.168.2.1	Cisco	cat4506	IOS	Router	complete	Saved/Updated
192.168.205.1	192.168.205.1	Cisco	cat4506	IOS	Router	complete	Saved/Updated
atl-esxi.ipswitch_m.ipswitc	192.168.3.178				Web server	complete	Saved/Updated
192.168.3.176	192.168.3.176			Windows Vista	FTP server	complete	Saved/Updated
atl-wsamsbury.ipswitch_m.	192.168.3.179				Web server	complete	Saved/Updated
DELPHI	192.168.3.182			Windows Vista	Web server	complete	Saved/Updated
BACCHUS	192.168.3.180				Web server	complete	Saved/Updated
192.168.3.177	192.168.3.177			Windows 7	Web server	complete	Saved/Updated
atl-rdp1.ipswitch_m.ipswit	192.168.3.168			Windows XP	Email server	complete	Saved/Updated
JJ-TEST	192.168.3.164			Windows Vista	FTP server	complete	Saved/Updated
atl-rdp2.ipswitch_m.ipswit	192.168.3.169			Windows XP	Email server	complete	Saved/Updated
ATL175	192.168.3.175			Windows XP	Email server	complete	Saved/Updated
ATL-RDP3	192.168.3.173				Email server	complete	Saved/Updated
atl-jslafkosky.ipswitch_m.i	192.168.3.184			Windows Vista	Web server	complete	Saved/Updated

Progress: 100.00 %

Device Information

Name: ATL-3560G2.ipswitch.com
 Location: Atlanta-Server Room
 Contact: Shawn Ayton
 Description: Cisco IOS Software, C3560 Software (C3560-IPBASE-M), Version 12.2(50)SE, RELEASE SOFTWARE (fc1)
 Copyright (c) 1986-2009 by Cisco Systems, Inc.
 Compiled Fri 27-Feb-09 22:41 by weillu
 CPUs: 1

Buttons: Start a new discovery session, Add completed devices to WhatsUp Gold, Device Information, Scheduled Discoveries (0), Saved Results (1)

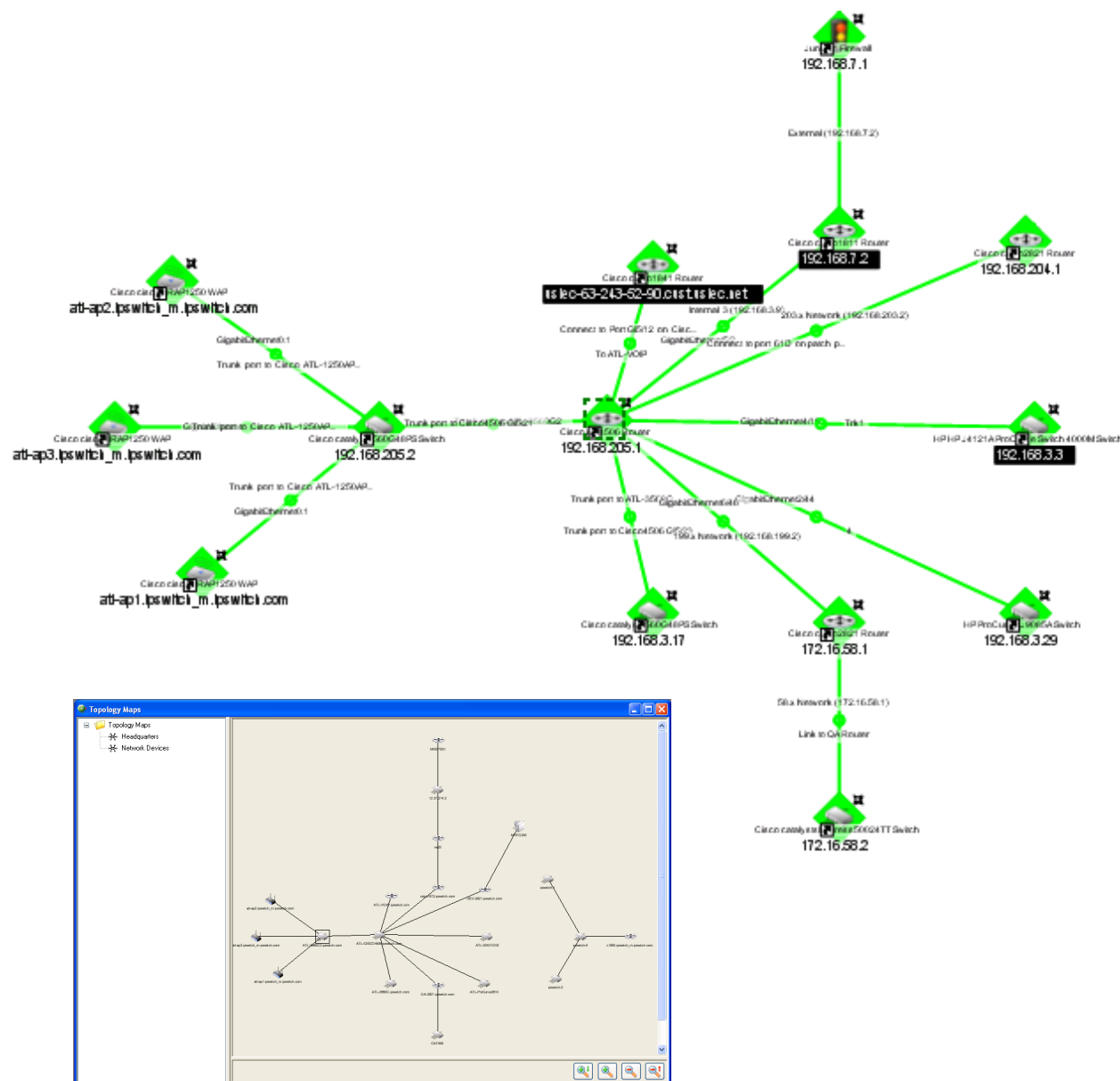
After all devices are discovered, click **Add completed devices to WhatsUp Gold** to add the discovered devices to a device group and map.

TECHNICAL TIP: When VMWare hosts are discovered with the WhatsVirtual plug-in, after you click **Add completed devices to WhatsUp Gold**, the VMWare hosts are listed in the Device View, VMWare Hosts folder in the Dynamic Group Examples. Double-click a VMWare Host to view the associated virtual machines.

Map the network

After devices are added to WhatsUp Gold, you can alternately configure a topology map with WhatsConnected. Network topology maps provide an easy and fast way to browse the network infrastructure and display physical connections between devices, simplifying the day-to-day complexities of managing and quickly resolving network issues.

Unlike other topology mapping solutions that simply overlay devices on a topology bitmap or Visio drawing, WhatsConnected scans your network using industry-standard protocols (such as ICMP, SNMP and LLDP) to automatically create Layer 2 topology maps of your network segments. You can then export these maps from WhatsConnected to WhatsUp Gold, providing a simple solution to actively monitor network devices from a topology map view. You can also export the topology maps to Microsoft Visio, making documenting your network topology nearly effortless.



When combined with WhatsUp Gold, WhatsConnected provides a complete solution for monitoring the devices on your network and their topology, both physical and virtual.

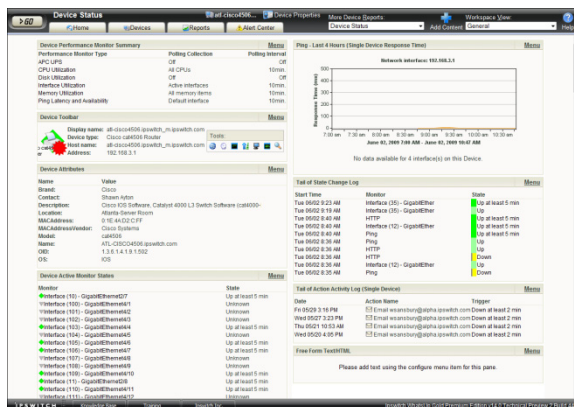
STEP 3 Customize reports

Set up workspace views

You can group collections of reports into pages called Workspace Views. You can create Workspace Views to give you quick and personalized dashboard-style overviews of the health of portions of your network.



We recommend creating Workspace Views to show the health of the Server Room, Core, Access, and Branch portions of the Cisco Smart Architecture for Mid-sized Networks. In addition, you may want to create Workspace Views that show the statuses of different types of devices, such as *Routers, Switches, Virtual Machines*, or *VoIP devices* Workspace View.



Customize device status reports

The Device Status Report gives you a detailed look at the health of a single device by aggregating multiple reports that apply to that device. You can view the Device Status Report for any Cisco or other device you are managing using WhatsUp Gold.

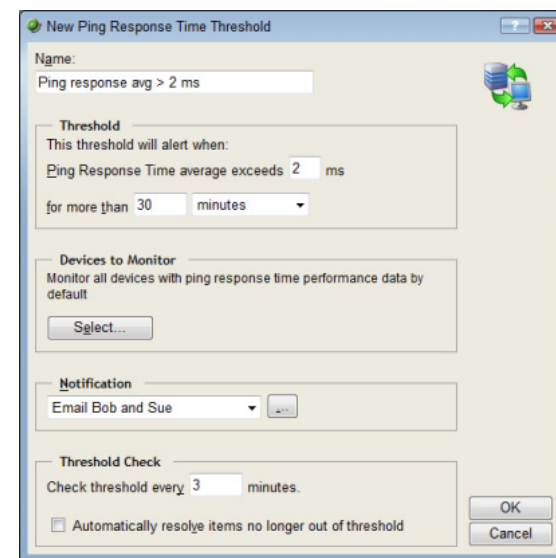
The Device Status Report is automatically configured to display the most commonly viewed information about a device, but you can customize it to your specific requirements.

Configure Alert Center thresholds

As soon as WhatsUp Gold is installed and your network is discovered, Alert Center begins

monitoring and alerting on a variety of thresholds for devices across the network. Disk, CPU, interface, and memory utilization are tracked for all devices and virtual devices (with the optional WhatsVirtual plug-in), as are ping response time and availability. Additional thresholds are keyed to Flow Monitor data, exposing and alerting on network traffic that could indicate a problem.

You can create myriad other thresholds to monitor other types of performance, passive and Flow Monitor data, which can be applied to all devices collecting that type of data or to a select group of devices.



STEP 4 Manage the network

Configure WhatsConfigured to manage devices

If you have deployed the WhatsConfigured configuration management plug-in with WhatsUp Gold, then you can setup the devices you want to manage. First, assign credentials for each device that you plan to manage through WhatsConfigured. Next, configure *Task scripts* that login to devices via SSH or Telnet to run command-line interface (CLI) commands on managed devices. Tasks can use pre-configured task scripts or you can configure your own custom task scripts with the WhatsConfigured Custom Script Language. Task scripts can perform a number of operations, such as restoring or backing up a running or startup configuration, or changing an application password. After tasks are configured and assigned, they either run on the schedule you configure, or can be run as needed from the WhatsConfigured Task Library and the WhatsUp Gold Device Properties Tasks dialog. Task scripts are stored and managed in the Task Script Library and associated to WhatsConfigured in the WhatsConfigured Task dialog.

Configure a NOC display

After you have discovered your network and configured WhatsUp Gold, you can extend the visibility WhatsUp Gold provides to your Network Operations Centers (NOC) using Dashboard.

Dashboard is a standalone utilitarian application included with WhatsUp Gold Premium and Distributed editions. Dashboard cycles through report pages on the WhatsUp Gold web interface, providing network administrators with constant insight and views into network health.

TECHNICAL TIP: If your network contains more than a couple of branch offices, consider using WhatsUp Gold Distributed Edition. WhatsUp Gold Distributed Edition extends the full functionality of WhatsUp Gold Premium Edition to each branch office, sharing network health information between a central NOC and any number of remote sites—no matter where they're located or how they're connected.



View reports on the go

With many network management solutions, the most information you can get from your cell phone is a notification of an issue. With WhatsUp Gold's mobile interface, you don't have to run to the computer every time you get a message about network health. The mobile web interface lets you view thirty-five WhatsUp Gold and Flow Monitor reports from virtually any modern mobile device, so you can troubleshoot issues as soon as you find out about them.

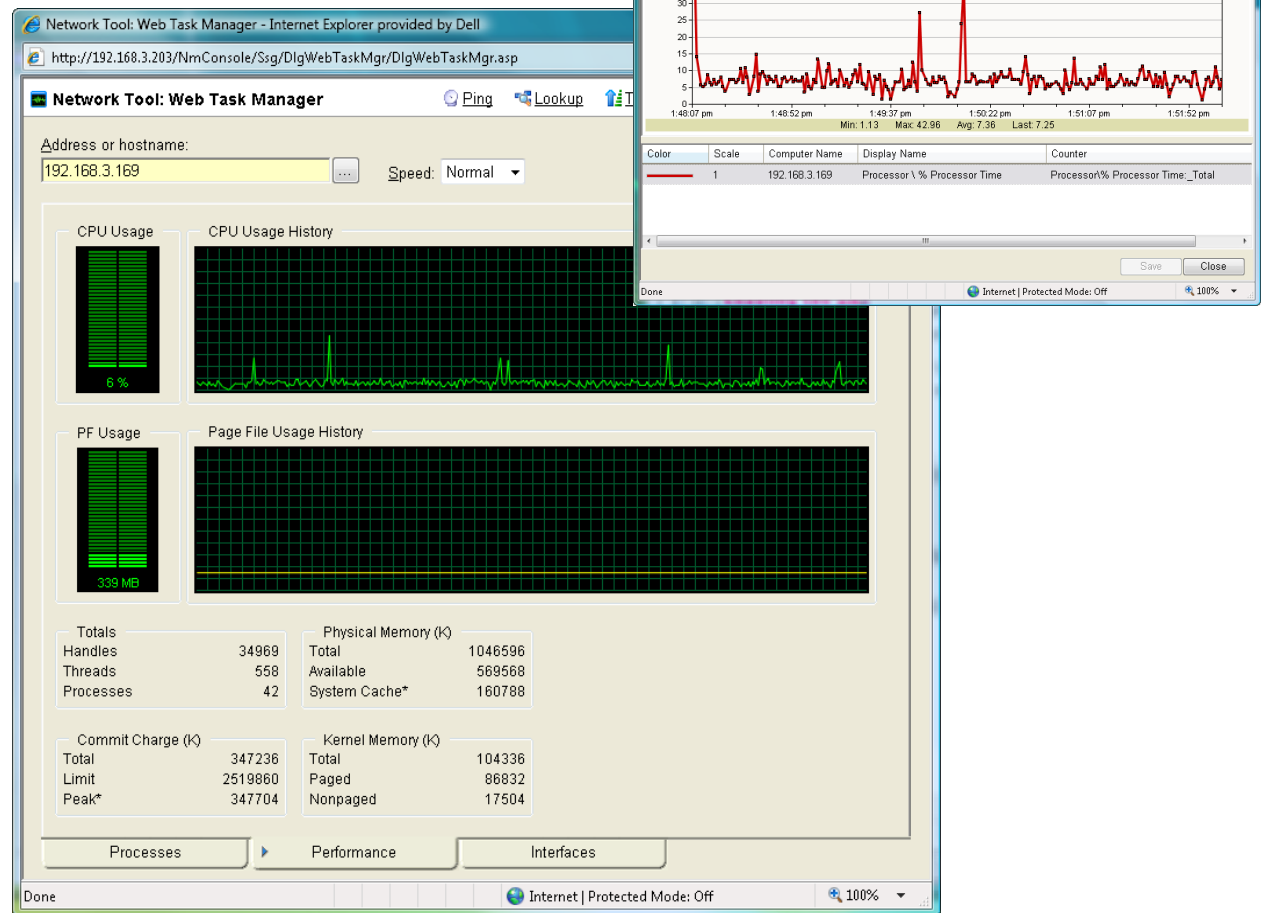
Assess issues with real-time tools

Throughout reports in WhatsUp Gold, you can view InstantInfo popups, which let you see, in real-time, how the metric shown on a report is performing. For example, if you're viewing an interface utilization report for a device, InstantInfo popups allow you to see the real-time interface utilization. This helps you to quickly evaluate the health of the device.

Similarly, you can use two network tools to view real-time data on network devices: the Web Task

Manager and Web Performance Manager.

Bringing the power of the Microsoft Windows Task Manager and Microsoft Windows Performance Monitor tools to the Web, these tools let you view real-time device data directly from the web interface.



Find out more

With the Cisco Smart Business Architecture Borderless Networks for Midsized organizations and the WhatsUp Gold family of network management products, you can profitably deploy end-to-end network solutions to an expanded client base. To find out more about these WhatsUp Gold network management solutions, visit WhatsUpGold.com or [download a 30-day free trial today](#).



WhatsUp Gold Premium Edition

provides comprehensive real-time network management and Windows application monitoring for single networks of all sizes.

WhatsUp Gold Distributed Edition

delivers far-reaching network management and Windows application monitoring for distributed multi-site enterprises.

WhatsUp Gold Standard Edition

presents essential network infrastructure monitoring priced right for small and mid-sized organizations.

WhatsVirtual

provides capabilities to discover, map, monitor, alert, and report on virtual environments in WhatsUp Gold.

WhatsConnected

is a Layer 2/3 network mapping tool that discovers, maps and documents your network down to the individual port, making it simple to visualize the physical topology and understand device interconnections.

WhatsConfigured

manages critical device configurations for your network devices and automates key configuration and change management tasks required to maintain and control network device configuration files.

Flow Monitor

leverages Cisco NetFlow, J-Flow and sFlow data to provide insight into how efficiently your network is performing and how bandwidth is utilized, so that you can monitor network quality of service and quickly resolve traffic bottlenecks.

VoIP Monitoring

integrates Cisco IP SLA technology into WhatsUp Gold to monitor and report on your network's capacity to support and maintain acceptable performance for VoIP call quality.

[Download a 30-day free trial of WhatsUp Gold now »](#)