

# Routed WAN Management Solution

## Introduction

The Cisco Routed WAN Management Solution extends the CiscoWorks2000 product family, providing a collection of powerful management applications to configure, administer, monitor, and troubleshoot a routed wide-area network (WAN).

Each application in this solution offers the deployment flexibility of “standalone” or “stand alongside” existing network management system (NMS) products. The CiscoWorks2000 solutions have no NMS prerequisites and they are ready to be added directly to your network. This solution complies with Internet standards, and supports the Cisco commitment to an end-to-end intranet management model employing Web browser-based accessibility and integration.

## WAN Management Challenge

Today's wide-area enterprise networks continue to grow as more mission-critical applications and services depend on reliable, high performance intranet and Internet connections to remote offices, suppliers, customers, and partners around the world. WAN links are typically the most expensive part of the network, and monitoring their performance, uptime, and bandwidth utilization is critical to maintaining a reliable and cost-effective network.

Bandwidth allocation through proper capacity planning can also be very complex. Overprovisioning bandwidth could mean that the company is paying for more bandwidth than required, and congestion due to underprovisioning could result in revenue loss.

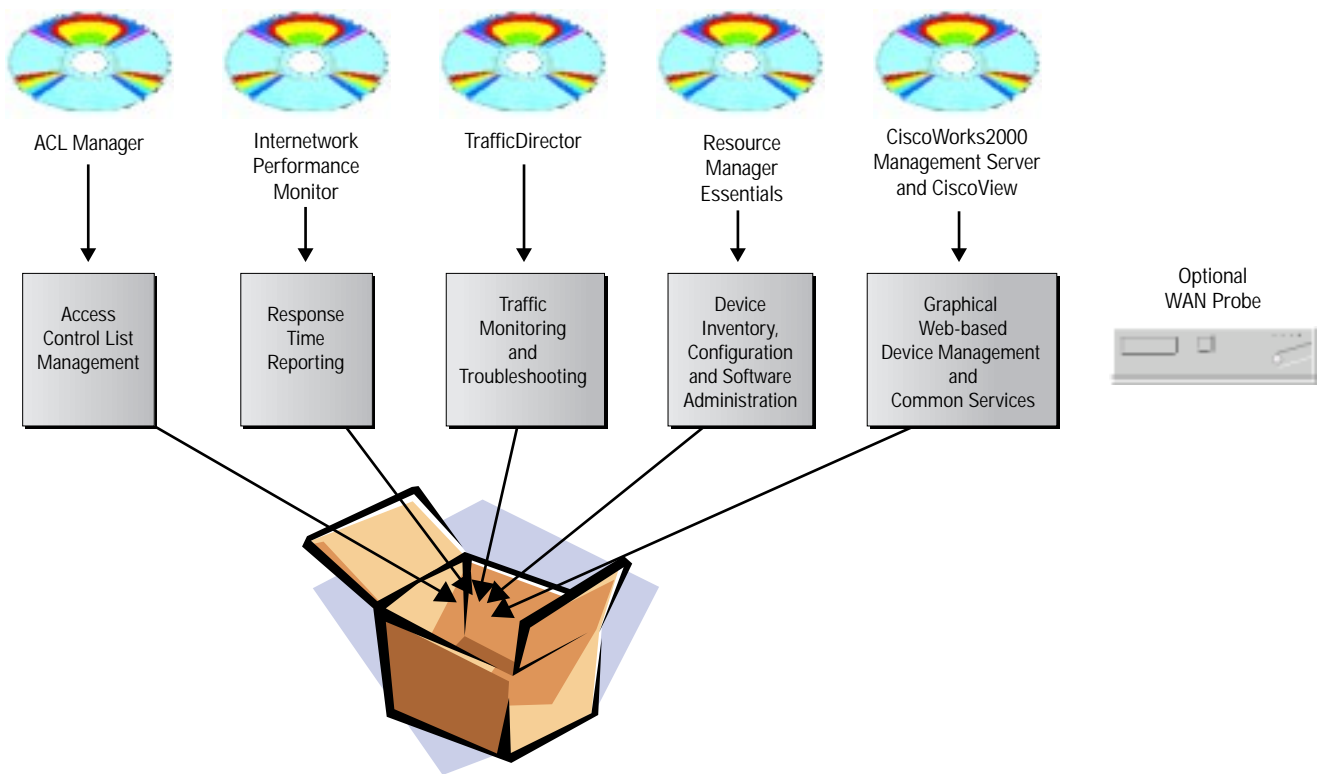
The ability to effectively monitor these links and measure response time between devices, users, and services is key to maintaining the highest levels of service quality. Proper management of WAN edge devices, links, and services becomes critical, and for this reason, Cisco has assembled a comprehensive set of WAN management tools designed to make the WAN manager's life much easier.

## Routed WAN Management Solution

The Routed WAN Management Solution provides increased visibility into network behavior, assists in quickly identifying performance bottlenecks and long-term performance trends, and provides early detection in optimizing bandwidth and utilization across expensive and critical links in the network.

In conjunction with the Routed WAN Management Solution, Cisco offers a complete family of dedicated, enhanced local-area network (LAN), WAN, and Asynchronous Transfer Mode (ATM) Remote Monitoring (RMON) hardware probes for comprehensive, end-to-end, seven-layer monitoring of network infrastructures.

Figure 1 Routed WAN Management Solution Components



## Solution Components

The following applications are included in the Routed WAN Management Solution:

- **Access Control List (ACL) Manager**—ACL Manager significantly reduces the time typically required to manage and administer access control lists using the command-line interface (CLI) of Cisco IOS®. It provides a wizard and policy template-based approach to simplifying the setup, management, and optimization of Cisco IOS software-based IP and Internetwork Packet Exchange (IPX) traffic filtering and device access control. This tool includes an access list editor, policy template manager, network and service class managers for scalability, access list navigation tools for troubleshooting, and automated distribution of access list updates.
- **Internetwork Performance Monitor (IPM)**—Is a network response time and availability troubleshooting application that enables WAN managers to proactively troubleshoot network response times using Cisco IOS embedded technology. The path and hop performance analysis provided by IPM simplifies the identification of devices that are contributing to latency and network delays. IPM is used

to diagnose latency, identify network bottlenecks, analyze response time trends and determine device availability. The application is also valuable for monitoring the effectiveness of quality of service (QoS) features based on IP Precedence and for monitoring network jitter, both of which will be needed to deploy Voice over IP (VoIP).

- **TrafficDirector™**—A comprehensive network traffic monitoring and troubleshooting application that provides WAN and LAN managers with early visibility into network issues and problems before they become critical and potentially cause service degradation. Used in conjunction with Cisco WAN and LAN probes, TrafficDirector software provides all the necessary tools needed to monitor link performance and utilization, troubleshoot and isolate problems in the network, as well as provide real-time and historical statistics, graphs, and reports for network capacity planning purposes. Cisco Catalyst switches natively support mini-RMON and provide TrafficDirector with port-level statistics while dedicated WAN, LAN or switch-based NAM probes can be ordered separately to provide increased levels of troubleshooting and performance monitoring.

- *Resource Manager Essentials (RME)*—WAN managers have the flexibility to access critical network information via their Web browsers anytime and anywhere. This powerful suite of Web-based network management features is for small to large-scale enterprise networks. RME is the basis for building a “management intranet,” and it provides network inventory and device change management, network configuration and software image

management, network availability, and syslog analysis, with powerful integration links to Cisco Connection Online (CCO) and Cisco partners and third parties.

- *CiscoView*—The most widely used Cisco graphical device management application is now Web-based, providing WAN managers with browser access to real-time device status, operational and configuration functions.
- *CiscoWorks2000 Management Server*—Consolidates base management components and security across CiscoWork2000 Management solutions.

Figure 2 CiscoView Graphical Interface



## Key Functions and Applications

Table 1 Routed WAN Management Solution

Key Application/Function	Product	Management Benefit
Access Control List Optimization	ACLM	Improves router performance by organizing access filters to sort by most frequent usage patterns
Access Control List Profiles	ACLM	Allows administrators to quickly and uniformly apply and update template-based access control lists; can reduce WAN costs and enhance security management
Access Control List Distribution	ACLM	Allows administrator to automate the process of updating access list information in multiple devices
Monitor WAN Response Time Characteristics	IPM	Measures the responsiveness of WAN connections to determine latency and jitter, and to determine where traffic bottlenecks exist
Path and Hop Analysis	IPM	Identifies which devices in the network are causing the greatest latency in network traffic
Collect RMON/RMON2 Statistics from WAN Devices and Probes	TrafficDirector	Monitors WAN traffic for protocols, applications, and interfaces to apply appropriate filters to reduce costs and increase performance
Setup Traffic Thresholds and Monitor Current and Historical WAN Traffic Patterns	TrafficDirector	Implements a fundamental watchdog system to inform you when WAN characteristics are not being achieved
Detailed Software and Hardware Inventory Reporting	RME	Provides accurate Cisco inventory baseline information, including memory, slots, software versions, and boot ROMs needed to make decisions about the network
Automated Update Engines for Device Software and Configuration Changes	RME	Allows software and configuration updates to be sent to selected devices on a scheduled basis; reduces time and errors involved in network updates

Table 1 Routed WAN Management Solution

Key Application/Function	Product	Management Benefit
Consolidated Troubleshooting Tools Device Center	RME	A wide collection of switch and router analysis tools accessible from a single location; device center can be linked to by third-party applications
Centralized Change Audit Logging and Application Access Security	RME	Comprehensive change monitoring log records user and application active on the network; CiscoWorks2000 desktop controls user access to applications, ensuring only appropriate classes of user can access tools that change network parameters versus read-only tools
Graphic Device Management	CiscoView	Displays a browser representation of Cisco router and switch devices, color-coded to indicate operations states, with access to configuration and monitoring tools
Third-Party Integration Tools (Integration Utility)	CiscoWorks2000 Server	Simplifies the Web integration of third-party and other Cisco management tools

## Deployment Options

When installing the Routed WAN Management Solution, the following should be considered:

- All applications do not have to be installed initially; applications not installed initially may be installed later
- Most applications require the CiscoWorks2000 server from CD-One, which must be installed first
- The ACL Manager application depends on Resource Manager Essentials that is included as part of the Routed WAN Management Solution
- The Internetwork Performance Monitor (IPM) server is available only on Solaris; IPM is a client/server architecture and the client can run on Windows 95/98 and NT as well as Solaris workstations; the Solaris version of the IPM server is provided in the Routed WAN Management Solution for NT

All solutions, with the exception of the original CWSI Campus bundle, can coexist on the same server. However, network managers may want to consider such factors as the number of applications hosted, system resources, and number of devices to be managed in determining if all or a subset of the solutions are installed on the same server.

CiscoWorks2000 solutions offer deployment flexibility. Installers should use the above guidelines when planning the deployment of the various solution bundles. Some components within a solution require the CiscoWorks2000

management server and must be installed on that machine. IPM, TrafficDirector and CiscoView software can be set up on an independent server if so desired. The placement of components is a function of performance requirements and the size of the network.

The CiscoWorks2000 desktop interface is largely browser based. For improved performance, applications such as ACL Manager require a one-time client installation of Java components to Microsoft or Netscape browsers. Some applications, such as TrafficDirector software, IPM, and many found in the Campus Bundle support only direct console access to applications, but future releases will support browser access.

## Ordering Information

CiscoWorks2000 Routed WAN Management Solution includes all the necessary components needed for an independent installation on a Windows NT or Sun Solaris workstation. The products within this solution can be combined with other CiscoWorks2000 products such as the LAN Management Solution, User Registration Tool, CiscoWorks2000 Voice Manager or a wide variety of network monitoring probes.

## For More Information

See <http://www.cisco.com/warp/customer/cc/cisco/mkt/enm/rwan>.



**Corporate Headquarters**

Cisco Systems, Inc.  
170 West Tasman Drive  
San Jose, CA 95134-1706  
USA  
<http://www.cisco.com>  
Tel: 408 526-4000  
800 553-NETS (6387)  
Fax: 408 526-4100

**European Headquarters**

Cisco Systems Europe  
11, Rue Camille Desmoulins  
92782 Issy Les Moulineaux  
Cedex 9  
France  
<http://www-europe.cisco.com>  
Tel: 33 1 58 04 60 00  
Fax: 33 1 58 04 61 00

**Americas Headquarters**

Cisco Systems, Inc.  
170 West Tasman Drive  
San Jose, CA 95134-1706  
USA  
<http://www.cisco.com>  
Tel: 408 526-7660  
Fax: 408 527-0883

**Asia Headquarters**

Nihon Cisco Systems K.K.  
Fuji Building, 9th Floor  
3-2-3 Marunouchi  
Chiyoda-ku, Tokyo 100  
Japan  
<http://www.cisco.com>  
Tel: 81 3 5219 6250  
Fax: 81 3 5219 6001

**Cisco Systems has more than 200 offices in the following countries. Addresses, phone numbers, and fax numbers are listed on the Cisco Connection Online Web site at <http://www.cisco.com/go/offices>.**

Argentina • Australia • Austria • Belgium • Brazil • Canada • Chile • China • Colombia • Costa Rica • Croatia • Czech Republic • Denmark • Dubai, UAE  
Finland • France • Germany • Greece • Hong Kong • Hungary • India • Indonesia • Ireland • Israel • Italy • Japan • Korea • Luxembourg • Malaysia  
Mexico • The Netherlands • New Zealand • Norway • Peru • Philippines • Poland • Portugal • Puerto Rico • Romania • Russia • Saudi Arabia • Singapore  
Slovakia • Slovenia • South Africa • Spain • Sweden • Switzerland • Taiwan • Thailand • Turkey • Ukraine • United Kingdom • United States • Venezuela

Copyright © 2000, Cisco Systems, Inc. All rights reserved. Printed in the USA. TrafficDirector is a trademark; Cisco, Cisco IOS, Cisco Systems, and the Cisco Systems logo are registered trademarks of Cisco Systems, Inc. or its affiliates in the U.S. and certain other countries. All other trademarks mentioned in this document are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any of its resellers. (9912R) 03/00 BW6000