BLACK BOX NETWORK SERVICES

Ciscoworks 2000

Resource Manager Essentials

Resource Manager Essentials is a powerful suite of Web-based network management solutions for Cisco switches, access servers, and routers. Its browser interface allows easy access to important information critical to network uptime and simplifies network management by handling the time-consuming administrative tasks that often derail network operations in small to large scale enterprise networks. Resource Manager Essentials streamlines the tasks of managing network inventory and device changes, managing change in network configuration, and rapidly deploying new software images. It helps troubleshoot the basic connectivity status of critical network devices and provides information needed for hardware capacity planning.

A Web-Based Application Suite for Building a Management Intranet

Resource Manager Essentials enables the creation of a corporate "management intranet" that links Cisco management applications, customer-developed tools, and third-party applications with the Resource Manager Essentials menu system, creating a seamless central interface for network administration. Built-in links to Cisco Connection Online (CCO) deliver the latest up-to-date management information and Cisco knowledge, tailored to your network's inventory. Resource Manager Essentials is the foundation of the CiscoWorks2000 product family, which also includes CWSI Campus and CiscoView.

Resource Manager Essentials Components

Resource Manager Essentials consists of the following applications:

- Inventory Manager
- Change Audit Service
- Device Configuration Manager
- Software Image Manager
- Availability Manager
- Syslog Analyzer
- Cisco Management Connection
- CCO Service Tools

Inventory Manager

- *Maintains an up-to-date hardware and software inventory*

Inventory Manager keeps an up-to-date inventory database for Cisco devices, from the 700 series ISDN routers to the high-end 8000 series switches. It allows for the creation of reports on key elements of inventory data. The inventory database builds on "seed" information (host name, IP address, and SNMP community string) imported from HP OpenView, IBM NetView, CWSI Campus, CiscoWorks, or a flat file. It polls for additional SNMP information: chassis type, interfaces, software version, memory, and much more. Inventory Manager simplifies the task of baselining device management by providing an accurate report of the hardware and software deployed in the network. Inventory Manager:

- Automatically correlates your inventory of Cisco IOS® and Catalyst® device images with year 2000 certification information on CCO, showing which devices are or are not running year 2000 certified images.
- Provides hardware and software summary information for groups of devices, such as device name, chassis type, memory, Flash memory, software version, and user annotated fields.
- Quickly drills down to specific device information on system, chassis, interface, modules, software, and more.
- Provides capacity planning information by identifying the total number of free and used slots in many Cisco devices.

Change Audit Service

- *Displays comprehensive reports of software, hardware, and configuration changes*

Change Audit is a central point where users can view network changes. Summary information is easily displayed, showing the types of changes made, by whom and when, and whether the changes were made from a Telnet or console command line interface (CLI) or from a CiscoWorks2000 application. Further, the nature of the changes are identified quickly through detailed reports (cards added/removed, memory changes, configuration changes, and so on). In organizations with policies defining when changes should be made to the network, Change Audit provides an Exception Summary, highlighting changes made outside the approved time window. Change Audit:

- Provides a comprehensive audit of network changes reported chronologically.
- Records who changed what, when, and how.
- Offers change report filtering using simple or complex sort criteria.
- Identifies network changes made during critical network operational times.

Device Configuration Manager

- *Maintains an active archive of router and switch configurations*

Device Configuration Manager maintains an "active" archive and provides easy access to configuration information for Cisco file-based switches and routers. Configuration Manager monitors the network for device configuration changes, updates its archive when a change is detected, and passes information about who, when, and what was changed to the Resource Manager Essentials Change Audit application. The archive produces a "shadow" directory containing only the latest configuration changes, which can be exported to Cisco's Netsys Service-Level Management (SLM) product to be used in modeling, integrity checking, and generating service-level management reports. Its powerful Web-based user interface allows you to search the archive for specific configuration attributes and compare the contents of two configuration files to identify differences quickly. Device Configuration Manager:

- Maintains an up-to-date archive by automatically identifying and storing changes to configuration files.
- Supports configuration file searching to simplify locating specific device configurations and configuration attributes.
- Identifies differences between the running and startup configurations.
- Optionally passes active device configurations to the Netsys SLM product for modeling, integrity checking, or generating up-to-date service-level management reports.
- Simplifies configuration maintenance by presenting a side-by-side comparison of configuration files, quickly highlighting differences.

Software Image Manager

- *Simplifies and speeds software image analysis and deployment*

Software Image Manager greatly simplifies the version management and routine deployment of software updates to Cisco routers and switches through wizard-assisted planning, scheduling, downloading, and monitoring of software updates. Software Image Manager automates the steps required to upgrade software images while mitigating the error-prone complexities of the upgrade process. Built-in links to CCO correlate Cisco's online information about software patches with Cisco IOS/Catalyst software deployed in the network, highlighting related tech notes. New planning tools, also linked to CCO, find system requirements and send notification when hardware upgrades (Boot ROM, Flash RAM) are needed to support proposed software image updates.
Before an update is initiated, a new image's prerequisites are validated against the target switch or router's inventory data to help ensure a successful upgrade. When multiple devices are being updated,

Software Image Manager synchronizes download tasks and allows the user to monitor the job's progress. Scheduled jobs are controlled through a signoff process, enabling managers to authorize a technician's activities before initiating each upgrade task. Software Image Manager:

- Provides software update analysis reports showing prerequisites and impacts of proposed updates.
- Reduces from hours to minutes the mean time to deploy router or switch software images.
- Enforces two-level job authorization that allows update jobs to be approved before execution.
- Distributes single or multiple images to devices in a single deployment operation.
- Performs network image software audits and software library synchronization.
- Uses CCO to report on software defects and available patches that affect devices and images in your network.

Availability Manager

- *Highlights critical devices ability to respond*

Availability Manager's "reachability dashboard" quickly determines the operational status of critical routers and switches. From the Availability Monitor, you can drill down on a particular device to view historical details about its response time, availability, reloads, protocols, and interface status. A Stack Decoder analysis tool helps users determine the causes of failures (for example: bus error, address error, memory error) indicated by reload messages. Availability Manager:

- Provides reports summarizing when critical devices went offline or reloaded.
- Displays individual device drill-down views of reachability and availability history.
- Offers graphical reports of device response time trends.
- Features browser-accessible status reports of router and switch availability over time.
- Provides connectivity to CCO's Stack Decoder to simplify reload failure troubleshooting.
- Displays summaries of protocols a device can respond to (UDP, TCP, HTTP, TFTP, TELNET, SNMP) through the Connectivity tool.

Syslog Analyzer

- *Isolates network error conditions and suggests probable causes*

Syslog Analyzer filters syslog messages logged by Cisco switches, routers, access servers, and Cisco IOS firewalls, displaying explanations of probable causes and recommended actions. It leverages

embedded Cisco IOS technology to provide detailed device information. Its reports are based on user-defined filters that highlight specific errors or severity conditions and help identify when specific events occurred (such as a link-down or a device reboot). Syslog Analyzer allows syslog messages to be linked to customized information, such as Web-based administrative tips, or to launch a Common Gateway Interface (CGI) script to take corrective actions. Sislog Analyzer:

- Speeds troubleshooting by displaying critical error patterns over time.
- Summarizes syslog events by severity or user criteria for switches, routers, and Cisco IOS firewalls.
- Supports selective filtering of remote syslog collectors, allowing only wanted messages to be sent to the Resource Manager Essentials server.
- Separates unwanted messages with user-definable filters or scripts through local and remote filtering.
- Launches user-defined scripts or links to a Web page for related information based on specific syslog messages.

Cisco Management Connection

- *Builds Cisco Management Connections to your favorite management applications*

Cisco Management Connection delivers a set of tools for integrating applications using Internet-based standards and technologies. These tools allow users to link Web-based management applications to Resource Manager Essentials and allow application developers to easily link Web-based applications through a certified registration mechanism. Cisco Management Connection has been used by Cisco and over 20 network management vendors, including Hewlett-Packard, Computer Associates, Sun Microsystems, and Tivoli Systems to create certified Cisco Management Connections for their applications. This rapid adoption has created an environment in which users can easily build management intranets that link together their favorite Web-based management applications. Cisco Management Connection:

- Links Resource Manager Essentials with your favorite applications via certified Cisco Management Connections.
- Links Resource Manager Essentials with other Web-based applications from Cisco.
- Enhances integration with leading network management platforms and frameworks.

Look for the following logo on your favorite network management applications - it means this application has a certified Cisco Management Connection.

Integrated Access to Cisco Connections Online (CCO)

Resource Manager Essentials helps keep the network tuned and enables it to deliver the highest level of network service. It provides new applications for directly accessing CCO, simplifying the task of finding the latest product enhancements, diagnostic information, and debugging tools.

When linked to CCO, Resource Manager Essentials takes advantage of CCO connectivity by allowing for the automatic submission of a TAC problem report, checking of SMARTnet contract renewal status, tracking open bugs on Cisco IOS/Catalyst releases, capacity planning based on CCO-based Cisco IOS/Catalyst software prerequisites, and year 2000 status. The Resource Manager Essentials dynamic link between the network and the knowledge base of CCO will strengthen Cisco's customer partnership and open the way for future hyperlinked online services.

Specifications

Server

Hardware

- System: Sun UltraSPARC or higher, HP9000 Series 700 or higher, IBM RS/6000 Series 390 or higher, Wintel PC 200 MHz or higher.
- Memory: 128 MB minimum, 256 MB recommended.
- Available Disk: 300-500 MB minimum, 2 GB recommended.

Software

- Solaris 2.6 or 2.5.1 (with 103738-xx patch installed).
- Microsoft Windows NT 4.0 server or NT 4.0 workstation with Service Pack 3.

Note: Resource Manager Essentials can be run on the same server as HP OpenView, CiscoWorks, CWSI Campus, or Netsys SLM

Client

- Netscape 4.05 with Windows NT 4.0, Windows 95, Solaris 2.6 or 2.5.1, HP-UX 10.20, or AIX 4.2
- Microsoft Internet Explorer 4.0.1 with Windows NT 4.0 or Windows 95
- Java Javascript and Active-X enabled.

Supported Cisco Devices

- Most Cisco IOS routers, access servers, hubs, and switches.

Supported Cisco IOS Versions

- Cisco IOS Versions 10.3 through 11.3
- Catalyst Supervisor code 2.1 through 4.0

Package Contents

- Resource Manager Essentials CD-ROM
- Getting Started with Resource Manager Essentials
- Installing Resource Manager Essentials and Campus

Part Number (for standalone packages)*

CWES-2.0-NT; CWES-2.0-SOL; CWES-2.0-AIX; CWES-2.0-HPX
*Resource Manager Essentials is also available bundled with CWSI Campus

CWSI Campus

CWSI Campus is a comprehensive management soletion within the CiscoWorks2000 family for managing Cisco Catalyst® and LightStream® switches. Offering extensive network discovery and display, configuration, LAN/WAN traffic, and performance management capabilities on a device- and network-wide basis, CWSI Campus provides:

- Comprehensive network discovery and topology mapping at both the physical and logical layers for intelligently displaying up to 500 device.
- Device configuration through a graphical interface for ease of use in device management.
- Performance monitoring and analysis using RMON/RMON2-collected traffic data.
- Configuration and analysis tools for optimizing LAN and WAN performance.
- Virtual LAN (VLAN) configuration capabilities for segmenting the network logically into well-defined broadcast groups.
- ATM and LAN Emulation (LANE) configuration and diagnostic tools.
- End-user station tracking for use in diagnosing connectivity problems and locating users.

CWSI Campus significantly reduces the complexity of managing switched internetworks and is an important management solution for any network comprised of Cisco switches.

CWSI Campus builds on Resource Manager Essentials which provides enterprise-wide configuration, tracking, and archiving software image and inventory management, and device status and availability monitoring capabilities, as well as links to a host of Cisco and third-party Web-based products and services. Resource Manager Essentials provides base-level database services for the entire family of CiscoWorks2000 products, is a prerequisite to CWSI Campus, and is included in the CWSI Campus product offering.

CWSI Campus and the entire line of CiscoWorks2000 products are designed to run either as standalone management applications or to augment enterprise platform products and services such as those provided by HP OpenView, Solaris SunNet Manager, Tivoli, NetView, or CA Unicenter.

CWSI Campus Components

CWSI Campus includes the following tools and applications:

- Network topology discovery and display services.
- VLAN provisioning and logical display representation.
- Traffic monitoring and performance assessment.
- End-station tracking with search utilities.

- ATM and LANE service configuration and performance monitoring.
- CiscoView graphical device management.
- Network topology integrity checking.

Network Topology Discovery and Display

- *Graphical representation of physical and logical switching environment*

The CWSI Campus network topology map provides a view of all Cisco-discovered devices in the Campus network. The topology map is the central starting point for managing the switched network and acts as the launching point for all other CWSI Campus applications. Topology services include:

- Autodiscovery and display of Cisco switches and routers using the Cisco Discovery Protocol (CDP) and SNMP.
- Highlighting tools to identify specific classes of devices or links such as switches, route switch modules (RSMs), Fast Ethernet and ATM links.
- Display of the physical and logical network.
- Display of multilayer switches (MLS) and components (switching entities and route processing entities) with the ability to highlight logical relationships between devices, such as flow masks and shortcuts.
- Autolayout, zoom and collapse, and bookmark functions.
- Automated discrepancy reports highlight connection problems and link mismatches.

VLAN Management

- *Graphical tools for creating, modifying, or deleting VLANs*

CWSI Campus provides an easy and graphical means for creating, modifying, or deleting VLANs or switch port VLAN membership. As VLANs are created or modified, port and user changes are instantly updated and transmitted to the switches, eliminating the need to update and configure each participating switch individually. As VLANs are selected, the topology map highlights participating devices and links, providing logical views of VLAN connections. Additional map tools allow managers to show Spanning Tree implementation, Virtual Trunking Protocol (VTP) trunks and existing LANE service elements. VLAN management services provide:

- Graphical setu` of VLANs and VLAN membership simplifies administration.
- Drag-and-drop switch ports and trunk links to/from administratively defined VLANs.
- Logical display of VLAN configurations makes it easy to visualize switch connections.

- Automated discrepancy reports highlight connection problems and link mismatches.
- Automated VLAN membership registration reduces administration and configuration requirements.

Traffic Monitoring and Performance

- *RMON-based performance monitoring for Catalyst switches, Network Analysis Modules (NAMs), and LAN/WAN SwitchProbe devices*

Understanding traffic flows across network segments and through switches and switch ports provides managers with important information on the health and performance of their network. The traffic management function provides managers with the ability to gather vital RMON information directly from the Catalyst switch or through RMON2-capable monitoring devices such as SwitchProbe devices and NAMs. Traffic management functions enable managers to identify bottlenecks, troubleshoot connectivity and response time issues, and monitor service-level agreements (SLA) and policies. Traffic management functions include:

- Integrated support for Catalyst switches and Cisco routers with Cisco IOS®-embedded RMON agents, NAMs, and SwitchProbe devices.
- Real-time and long-term traffic performance statistics and information including threshold alarms assist in monitoring SLA and network response times.
- Application and protocol monitoring support, including full packet decode using SwitchProbe devices, aids in troubleshooting connectivity and performance issues.
- Inter-Switch Link (ISL) VLAN monitoring for traffic analysis by VLAN.
- SwitchProbe and Catalyst switch RMON agent configuration tools.
- Proxy SNMP polling and response time analysis using SwitchProbes.
- Interpreting NetFlow data.

User Tracking

- *Tracking tools for servers and end-user workstations*

CWSI Campus simplifies the dynamic nature of many business environments by providing a large number of sortable parameters that can be used to locate end-user stations. User Tracking discovers end-stations connected to switchports automatically and provides a means to identify end users, their assigned VLANs and host station connections. User Tracking provides:

- Tabular and sortable listing of all switch-port-attached end-user workstations and servers
- Customized tables for user-defined, detailed reporting
- GUI interface for User Tracking information table configuration to support dynamic/mobile users.
- Scheduling managers for automating address change updates.
- Easy-to-use search utility box locating users by MAC addresses, IP addresses, DNS host names, and switch port labels.

ATM and LANE Service Configuration and Status Monitoring

- *Graphical interface for configuring ATM networks and LANE services*

CWSI Campus offers a graphical tool for managing complex ATM networks which helps simplify configuration and performance monitoring. ATM networks are displayed on the topology map; logical views provide graphical representations of ATM switches and LANE elements. "Drill down" capability enables access to configuration and performance monitoring tools. ATM management functions provide:

- Autodiscovery of ATM switches, including switched virtual circuit (SVC) and permanent virtual circuit (PVC) connections.
- Connectivity checking of SVC and PVC connections.
- End-to-end virtual circuit path tracing and analysis assists in connectivity diagnostics.
- LANE troubleshooting and performance analysis.
- Private Network-Network Interface (PNNI) configuration and display settings.
- Quality of service (QoS) templates for simplifying the configuration of typical traffic such as video or constant-bit-rate (CBR) traffic.
- Simple configuration of soft permanent virtual circuits (SPVCs).
- ATM RMON data collection and analysis.

CiscoView Graphical Device Management

- *Graphical configuration and RMON monitoring at the device*

Managing switched networks requires access to tools for understanding device configurations and making changes when needed. By selecting a device on the CWSI Campus topology map, the manager can launch CiscoView and obtain a graphical representation of that device, including installed modules, configuration status, and a color-coded depiction of device and port status.

- Graphical display of Cisco routers and switches and their installed modules.

- Real-time status polling of device port or interface status and RMON data.
- Pull-down configuration menus enable easy configuration or status verification.

Specifications

Hardware

UNIX

- Ultra Sparc or equivalent, HP 9000 Series 700 or above, IBM RS/6000 Series 390 or above.
- Hard drive: 2 GB (free space).
- System memory: 256 MB minimum.
- 100 MB free in /VAR partition.
- 512 MB swap partition.
- Monitor: large high-resolution monitor (1024x768 recommended).

Wintel PC (workstation or server)

- Pentium 300 MHz or greater.
- Hard drive: 4 GB (free space).
- System memory: 256 MB minimum.
- 512 MB swap partition.
- Monitor: 17-in. SVGA color monitor supporting 800x600 minimum.

Software

Solaris

- Versions 2.5.1 and 2.6, HP OpenView Network Node Manager versions 5.0, 5.01 and 5.03
- SunNet Manager versions 2.2.3 and 2.3
- Solstice version 2.0

HP-UNIX

- Versions 10.2 and 11.0, HP OpenView Network Node Manager versions 5.0, 5.01 and 5.03

IBM-AIX

- Versions 4.2.1 and 4.3, NetView Versions 4.0 and 5.0

Windows NT

- 4.0 (workstation and server)
- Service Pack 3, HP OpenView Network Node Manager version 5.0, 5.01 and 5.03

Supported Cisco Devices

Switches

Catalyst 1200, 1900, 1912, 1924, 2822, 2828, 2908XL, 2916XL, 2924XL, 2901, 2902, 2926, 3000, 3100, 3200, 3900, 3920, 5000, 5002, 5500, 5505, 8510 MSR, and LightStream 1010.

Routers

12000 series, 7500 series, 7200 series, 7000 series, RSMS, 4000 series, 2500 series, 1000 series, Catalyst 8510 CSR, Catalyst 8540 CSR, 3600 series, 2600 series, and 1600 series.

LAN/WAN Probes

SwitchProbe devices, Network Analysis Modules

Package Contents

- CWSI Campus CD-ROM
- Resource Manager Essentials CD-ROM
- CWSI Campus documentation
- Resource Manager Essentials documentation

Part Numbers

Item	Code		
Cisco Works 2000 Software	Solaris	NT	AIX
Resource Manager Essentials 2.0 Standalone	CWES-2.0-SOL	CWES-2.0-NT	CWES-2.0-AIX
Upgrade Cisco Resource Manager 1.0 OR 1.1 to Essentials 2.0	CWES-2.0-SOL-UPG	CWES-2.0-NT-UPG	
CWSI Campus bundled with Resource Manager Essentials	CWE+C-SOL-COMB1	CWE+C-NT-COMB1	CWE+C-AIX-COMB1
CWSI Campus Bundle upgrade from CWSI 2.x, CW4, CWW	CWE+C-SOL-UPG1	CWE+C-NT-UPG1	CWE+C-AIX-UPG1
Campus Bundle Upgrade from CWSI 1.x,ATMDir, VlanD, CV	CWE+C-SOL-UPG2	CWE+C-NT-UPG2	CWE+C-AIX-UPG2
CWSI Campus Add-on to Resource Manager Essentials	CWCA-2.2-SOL-ADD	CWCA-2.2-NT-ADD	CWCA-2.2-AIX-ADD