Data Sheet

Cisco Configuration Assurance Solution Version 1.1

Cisco® Configuration Assurance Solution (CAS) increases network availability and security, helps ensure efficient application delivery, and documents compliance with important regulatory and IT governance requirements. Cisco CAS automatically performs regular, systematic audits of the production network to diagnose device misconfigurations, configuration policy violations, performance inefficiencies, and security gaps.

Product Overview

Organizations need visibility and the ability to avoid costly disruptions in their network and application services. Cisco Configuration Assurance Solution (CAS) is a vital tool for improving network availability as well as application and service continuity. Cisco CAS examines the production IP network for a broad range of configuration problems, including addressing and routing, protocol configurations, route maps and access control lists (ACLs), Simple Network Management Protocol (SNMP), system logging, IP quality of service (QoS), custom policies, and more. Cisco CAS processes and interprets device configurations during audits the same way that production network devices do during operation. The solution's expert knowledge of network devices, protocols, and routing behavior enables networkwide analysis of connectivity and resiliency, unlike other tools that are limited to simple syntax checks on a single device at a time. Actionable information derived from analysis supports automated or guided changes in the network to meet business objectives. With Cisco CAS, network reliability can increase while operating costs decrease. Cisco CAS helps users to:

- *Reduce network outages* – Detect configuration problems before they disrupt network operations. An extensive rules library provides configurable rules to analyze individual devices, groups of devices, topology, and routing information.
- *Ensure network security* – Verify that network security policies are implemented effectively. Cisco CAS tests network security nonintrusively by simulating unauthorized traffic flows in a model of the production network, identifying security gaps and pinpointing misconfigured nodes that block valid connectivity.
- *Verify network resiliency* – Inspect complex backup configurations across the network, diagnosing latent problems. Cisco CAS can simulate network failures to test network resiliency and predict impacts on applications, resources, and security.
- *Demonstrate regulatory compliance* – Document compliance with regulatory requirements such as Sarbanes-Oxley, the Health Insurance Portability and Accountability Act of 1996 (HIPAA), the Federal Information Security Management Act (FISMA), and others. Cisco CAS supports critical processes from popular IT Governance frameworks including ITIL/BS15000 and ISO 17799.

High-Fidelity Network Data Model

Cisco CAS includes a Virtual Network Data Server that automatically maintains a detailed, near-real-time data model of the production network, including topology, configuration, and traffic. It collects and merges detailed network data from a broad range of sources, reconciling conflicts on the basis of user-configurable priorities. Information can be obtained online from network devices including Cisco routers, Cisco Catalyst® switches, the Cisco PIX® Security Appliance, and third-party devices. Data can also be imported from CiscoWorks, Cisco Network Connectivity Center, Cisco NetFlow FlowCollector, and numerous third-party sources. The Virtual Network Data Server can integrate with event-management platforms, including Cisco Info Center, to obtain real-time awareness of configuration changes, helping ensure network data integrity.

Auditing the Network Configuration

Cisco CAS completely automates the end-to-end workflow for network configuration audits. The operation of the core Audit and Analysis engine can be scheduled to run multiple regular audits that vary in terms of network scope, frequency, and target analyses.

Cisco CAS is provided with hundreds of standard checks that reflect industry best practices published by Cisco Systems®, U.S. government agencies, and others. Standard checks encompass:

- IP addressing and routing
- Protocol configurations, including Routing Information Protocol (RIP), Open Shortest Path First (OSPF), Interior Gateway Routing Protocol (IGRP), Enhanced IGRP (EIGRP), and Border Gateway Protocol (BGP)
- Route maps and ACLs
- Hot Standby Router Protocol (HSRP)
- SNMP, system logging, and router administration
- Firewall configurations and security protocols including authentication, authorization, and accounting (AAA), Kerberos Protocol, Network Address Translation (NAT), RADIUS, and TACACS+
- VPNs, tunnels, and VLANs
- QoS and more

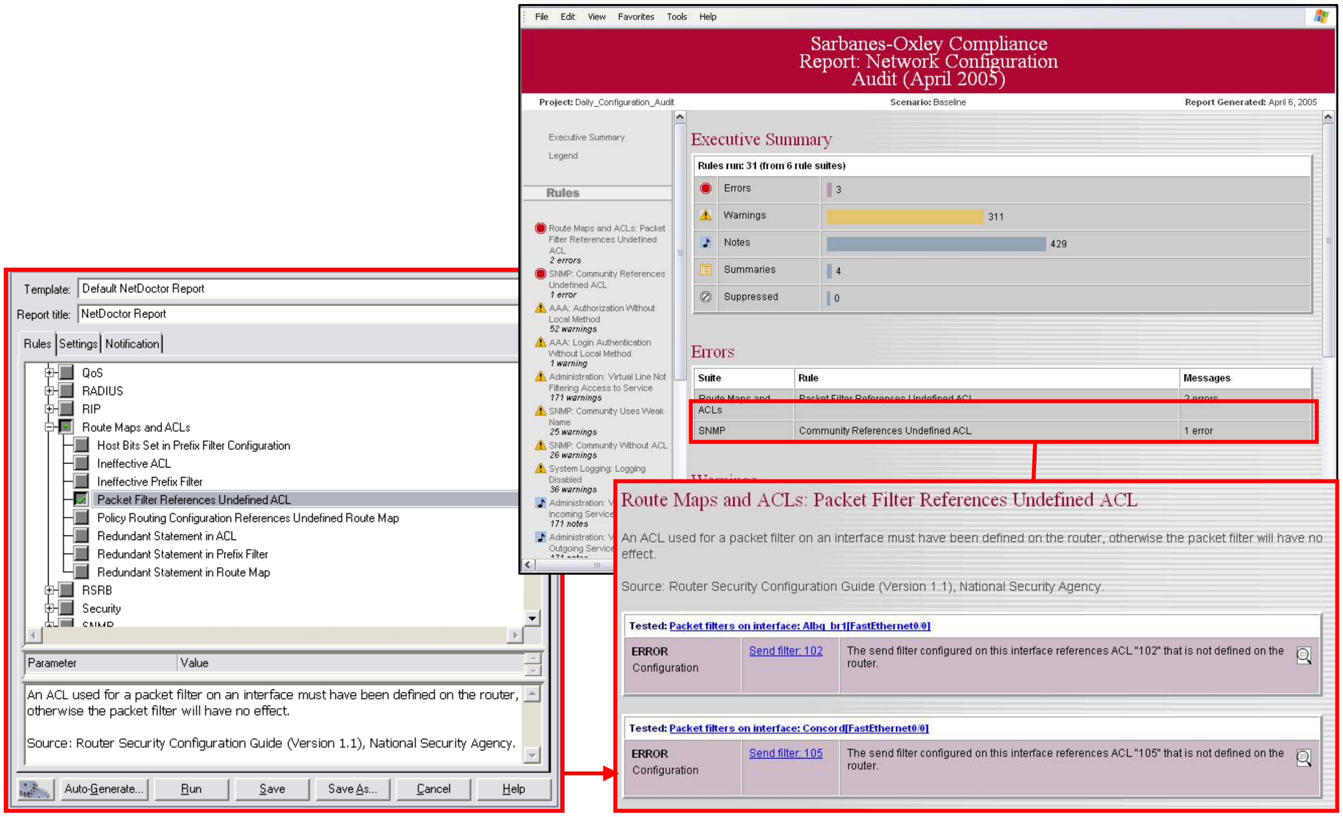
Rules are provided with source code, sample policy templates, and an integrated authoring environment to enable incorporation of your organization's best practices.

Communicating Results

Cisco CAS automatically publishes results to an integrated Web-based Report Server, a central repository for reports encompassing documents, charts, tables, and images (Figure 1). These provide detailed results of the network audit, including informational reports summarizing network configuration characteristics such as deployed software releases and patch levels. Access can be restricted by username and password. Cisco CAS can also be configured to notify users of critical errors through e-mail or pager.

Figure 1

Network Audit Reports Generated by the Cisco CAS Report Server



Template: Default NetDoctor Report

Report title: NetDoctor Report

- QoS
- RADIUS
- RIP
- Route Maps and ACLs
  - Host Bits Set in Prefix Filter Configuration
  - Ineffective ACL
  - Ineffective Prefix Filter
  - ☑ Packet Filter References Undefined ACL
  - Policy Routing Configuration References Undefined Route Map
  - Redundant Statement in ACL
  - Redundant Statement in Prefix Filter
  - Redundant Statement in Route Map
- RSRB
- Security
- SNMP

Parameter	Value

An ACL used for a packet filter on an interface must have been defined on the router, otherwise the packet filter will have no effect.

Source: Router Security Configuration Guide (Version 1.1), National Security Agency.

Sarbanes-Oxley Compliance Report: Network Configuration Audit (April 2005)

Project: Daily_Configuration_Audit **Scenario:** Baseline **Report Generated:** April 6, 2005

Route Maps and ACLs: Packet Filter References Undefined ACL *2 errors*

SNMP: Community References Undefined ACL *1 error*

AAA: Authorization Without Local Method *52 warnings*

AAA: Login Authentication Without Local Method *1 warning*

Administration: Virtual Line Not Filtering Access to Service *171 warnings*

SNMP: Community Uses Weak Name *25 warnings*

SNMP: Community Without ACL *26 warnings*

System Logging: Logging Disabled *36 warnings*

Administration: V Incoming Service *171 notes*

Administration: V Outgoing Service

Executive Summary

Rules run: 31 (from 6 rule suites)	
Errors	3
Warnings	311
Notes	429
Summaries	4
Suppressed	0

Errors

Suite	Rule	Messages
Route Maps and ACLs	Packet Filter References Undefined ACL	2 errors
SNMP	Community References Undefined ACL	1 error

Route Maps and ACLs: Packet Filter References Undefined ACL

An ACL used for a packet filter on an interface must have been defined on the router, otherwise the packet filter will have no effect.

Source: Router Security Configuration Guide (Version 1.1), National Security Agency.

Tested: Packet filters on interface: Albq_br1[FastEthernet0/0]

ERROR Configuration	Send filter: 102	The send filter configured on this interface references ACL "102" that is not defined on the router.

Tested: Packet filters on interface: Concord[FastEthernet0/0]

ERROR Configuration	Send filter: 105	The send filter configured on this interface references ACL "105" that is not defined on the router.

Service Provider Module

The optional Cisco CAS Service Provider Module (CAS-SPM) provides support for service provider-related technologies and protocols, such as MPLS, Intermediate System-to-Intermediate System (IS-IS), and large interconnected BGP networks. Cisco CAS-SPM detects configuration errors that can impair IS-IS routing, MPLS Label Switched Path (LSP) setup, MPLS VPN operations, and more.

System Requirements

Cisco CAS comprises an Audit and Analysis engine, a Virtual Network Data Server that is generally implemented on a dual-processor platform with the prerequisite database environment, and a Web-based Report Server. The Audit and Analysis engine and Report Server can be implemented on the same (dual-processor) platform, or separate platforms as detailed in Table 1.

Table 1. System Requirements

	Audit and Analysis	Virtual Network Data Server	Report Server
Disk space	20 GB	80 GB (or larger depending on network size and data-retention practices)	60 GB (or larger depending on report-retention practices)
Hardware	3.0+ GHz Intel Pentium 4, M, or Xeon with 800-MHz front side bus (FSB)	Dual 3.0+ GHz Intel Pentium 4 or Xeon with 800-MHz FSB	1.5-GHz Intel Pentium 4 or Xeon
Memory	2 GB (minimum)	4 GB (minimum)	1 GB (minimum)

	Audit and Analysis	Virtual Network Data Server	Report Server
Software	Only English-language versions are supported: - Windows Server 2003 - Windows 2000 Server - Windows 2000 Professional	Only English-language versions are supported: - Windows Server 2003 - Windows 2000 Server - Windows XP Professional - Windows 2000 Professional	Only English-language versions are supported: - Windows Server 2003 - Windows 2000 Server - Windows 2000 Professional
Prerequisites (Not included with Cisco CAS 1.1)		Only English-language versions are supported: - Oracle 9i Release 2 Database (9.2.0.1 or higher) - Oracle 9i Application Server TopLink patched to Release 9.0.3.5	

Ordering Information

Cisco Configuration Assurance Solution 1.1 is available for purchase through regular Cisco sales and distribution channels worldwide. To place an order, contact your Cisco representative or visit http://www.cisco.com.

Cisco CAS 1.1 licensing options are described in the Cisco CAS 1.1 product bulletin, available at: http://www.cisco.com/en/US/products/ps6364/prod_bulletins_list.html.

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For More Information

For more information about the Cisco Configuration Assurance Solution, contact your Cisco representative or visit: http://www.cisco.com/en/US/products/ps6364/index.html.

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