



# Simple Network Management Protocol

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This chapter briefly describes Cisco CallManager that is using the Simple Network Management Protocol (SNMP) interface and contains the following topics:

- [Simple Network Management Protocol Support, page 18-1](#)
- [SNMP Agent, page 18-4](#)
- [Cisco Real-Time Information Server Data Collector, page 18-6](#)
- [SNMP Configuration Checklist, page 18-6](#)
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## Simple Network Management Protocol Support

Network management systems (NMS) use SNMP, an industry-standard interface, to exchange management information between network devices. A part of the TCP/IP protocol suite, SNMP enables administrators to remotely manage network performance, find and solve network problems, and plan for network growth.

## SNMP Basics

An SNMP-managed network comprises three key components: managed devices, agents, and network management systems.

- A managed device designates a network node that contains an SNMP agent and resides on a managed network. Managed devices collect and store management information and make it available by using SNMP.
- An agent, as network management software, resides on a managed device. An agent contains local knowledge of management information and translates it into a form that is compatible with SNMP.
- A network management system comprises an SNMP management application together with the computer on which it runs. An NMS executes applications that monitor and control managed devices. An NMS provides the bulk of the processing and memory resources that are required for network management. The following NMSs share compatibility with Cisco CallManager:
  - CiscoWorks2000
  - HP OpenView
  - Third-party applications that support SNMP and Cisco CallManager SNMP interfaces

## SNMP Management Information Base

A MIB designates a collection of information that is organized hierarchically. Access MIBs using the network management protocol, SNMP. MIBs comprise managed objects, which are identified by object identifiers.

A managed object (sometimes called a MIB object or an object) possesses one of any number of specific characteristics of a managed device. Managed objects comprise one or more object instances, which are essentially variables.

Cisco CallManager supports the following MIBs:

- CISCO-CCM-MIB—Use the Cisco CallManager SNMP extension agent to get configured, as well as real-time status information about the local Cisco CallManager and its associated devices, such as phones, gateways, and so on.
- CISCO-CDP-MIB—Use the Cisco CallManager CDP SNMP extension agent to read the Cisco Discovery Protocol MIB, CISCO-CDP-MIB. This MIB enables Cisco CallManager to advertise itself to other Cisco devices on the network.
- SYSAPPL-MIB—Use the SysApp SNMP extension agent to get information from the SYSAPPL-MIB such as installed applications, application components, and processes that are running on the system.

## SNMP Traps

An SNMP agent can send traps that identify important system events to the network manager. The following list specifies Cisco CallManager SNMP trap messages that are sent to an NMS that is specified as a trap receiver:

- Cisco CallManager failed
- Phone failed
- Phones status update
- Gateway failed
- Media resource list exhausted
- Route list exhausted
- Gateway layer 2 change
- Quality report
- Malicious call

When an SNMP agent detects an alarm condition, it generates a trap (a notification message) that is sent to configured IP addresses.

## SNMP Community Strings

SNMP community strings authenticate access to MIB objects and function as embedded passwords. The section, [SNMP Configuration Checklist, page 18-6](#), describes the procedure to configure the community string for Cisco CallManager.

## SNMP Agent

The Microsoft Windows 2000 SNMP service (referred to as the SNMP service) provides a framework for SNMP and provides the SNMP agent that interfaces with SNMP extension agents. Cisco provides SNMP extension agents to support Cisco MIBs. The SNMP service loads the Cisco SNMP extension agents. The SNMP service calls the appropriate extension agent APIs to process each SNMP request. The SNMP service also forwards traps from the SNMP extension agents to the appropriate trap receivers.

After the SNMP community name and traps are configured, the SNMP service will automatically start when the system boots. The administrator can restart or stop the SNMP service if a problem occurs or if it did not start automatically.



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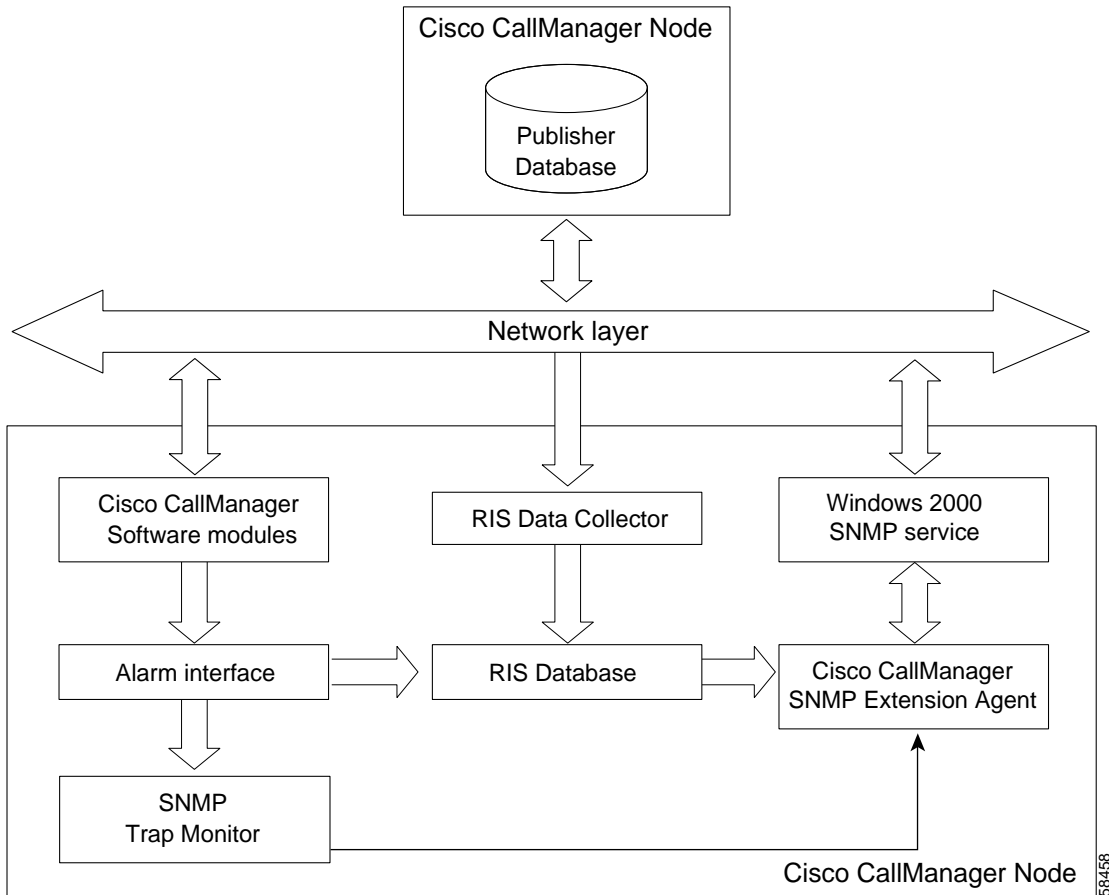
**Note**

Refer to the Microsoft Windows 2000 online help for SNMP details.

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[Figure 18-1](#) illustrates the Cisco CallManager SNMP implementation.

Figure 18-1 Cisco CallManager SNMP Implementation



# Cisco Real-Time Information Server Data Collector

Cisco Real-Time Information Server (RIS) data collector runs on Microsoft Windows 2000 and has responsibility for sending the configured information from the Cisco CallManager database into the RIS database. Cisco CallManager sends all the dynamic information to the RIS database through the alarm interface.


## SNMP Configuration Checklist

[Table 18-1](#) provides an overview of the steps for configuring SNMP.

**Table 18-1** *SNMP Configuration Checklist*

Configuration Steps		Related Procedures and Topics
Step 1	Ensure Microsoft Windows 2000 SNMP service is installed on the Cisco CallManager network.	Refer to Microsoft Windows 2000 online help.
Step 2	Set the SNMP agent security.	<a href="#">Configuring SNMP Security</a> , <i>Cisco CallManager Serviceability Administration Guide</i>
Step 3	Start the SNMP service.	<a href="#">Starting the Cisco CallManager SNMP Extension Agent</a> , <i>Cisco CallManager Serviceability Administration Guide</i>

Table 18-1 SNMP Configuration Checklist (continued)

Configuration Steps	Related Procedures and Topics
<p>Step 4 Configure the traps.</p>	<p><a href="#">Setting the SNMP Trap Receiver</a>, <i>Cisco CallManager Serviceability Administration Guide</i></p> <p><a href="#">Configuring the Cisco CallManager Traps</a>, <i>Cisco CallManager Serviceability Administration Guide</i></p>
<p>Step 5 Configure Cisco Real-Time Information Server (RIS) data collector to send configuration information from the Cisco CallManager database to the RIS database.</p> <p> <b>Note</b> Ensure that the Cisco RIS Data Collector service is activated in order for the Cisco CallManager SNMP agent to get loaded.</p>	<p><a href="#">Starting the Cisco RIS Data Collector</a>, <i>Cisco CallManager Serviceability Administration Guide</i></p>

## Where to Find More Information

### Related Topics

- [Chapter 12, “Microsoft Performance”](#)
- [Appendix A, “Cisco CallManager Performance Counters, RTMT, and CISCO-CCM-MIB”](#)
- [Chapter 23, “Microsoft Performance,”](#) *Cisco CallManager Serviceability Administration Guide*
- [Chapter 31, “Simple Network Management Protocol Configuration,”](#) *Cisco CallManager Serviceability Administration Guide*

■ Where to Find More Information