SNMP: Frequently Asked Questions About IOS Software

Document ID: 26010

Contents

Introduction

This document provides answers to commonly asked questions and guides users to find helpful resources on Simple Network Management Protocol. (SNMP) and SNMP issues as the issues relate to Cisco equipment.

Q. The IP−SNMP CPU process on my router spikes to 90 percent (or more). Is this a bug?

A. No, this is not a bug. IP−SNMP can take up 90 percent of the CPU on the router when the router is lightly loaded with other tasks; this situation is not unusual. IP−SNMP runs at a low priority. A CPU usage of 90 percent or higher means that the router has the bandwidth to spend more time on SNMP.

However, under heavy use, the CPU usage can approach 100 percent and starve low−priority processes. An example of heavy use is the retrieval of large tables (such as autodiscovery retrieval of the ipRouteTable and ipNetToMediaTable) by a network management application.

Under certain circumstances, the IP−SNMP process can consume almost all the CPU resources. The process can starve other processes and cause erratic behavior in the device. The most obvious symptom is the loss of TCP connections to the device. The most likely cause of the problem is the send of a flurry of SNMP requests to the device in a short period of time, which causes the retrieval of large amounts of data. This behavior is usually associated with network auto discovery mechanisms that retrieve the entire Address Resolution Protocol (ARP) cache of the device and IP routing table on a periodic basis.

Some network management applications can exacerbate the problem. Some of these applications, by default, perform auto discovery as often as every 5 minutes.

A partial workaround is to identify the devices that perform auto discovery and modify the default behavior.

Another workaround is to force the router to prematurely end the queries for the IP route table and ARP cache from the network management system server. Configure the router to respond with a **complete** message as soon as the router receives the start of a request for the IP route table or ARP cache. Refer to the document IP Simple Network Management Protocol

(SNMP) Causes High CPU Utilization for an example of how to do this configuration on a Cisco router.

Q. Does Cisco IOS Software support subinterfaces in the ifTable?

A. RFC 1573 IF–MIB implements support for subinterfaces. (RFC 2233 and RFC 2863 obsolete RFC 1573 .) It allows the use of VLANs, Frame Relay data–link connection identifiers (DLCIs), and X.25 virtual circuits (VCs) as subinterfaces to appear in the ifTable. RFC 1213 introduced the ifTable, and RFC 1573 enhanced the ifTable. One of the enhancements is to allow nonphysical interfaces to exist in the ifTable.

Generic support for sublayers in the ifTable has been present since Cisco IOS Software Release 11.1(1). The groups that support any given media type must determine (with direction from the Internet Engineering Task Force [IETF]) whether sublayers are appropriate for that media type. The groups must also determine how to support those sublayers.

Subinterface	Supported Since...
ATM	Cisco IOS Software Release 12.0(1)T
Frame Relay	Cisco IOS Software Release 11.1
LANE[1]	Cisco IOS Software Release 11.1
♦ FE[2] ♦ GE[3]	♦ Cisco IOS Software Release 12.0(21)S (IEEE 802.1Q encapsulation) ♦ Cisco IOS Software Release 12.1(3)T Cisco bug ID CSCdk25367 (registered customers only) (Cisco Inter–Switch Link Protocol [ISL] encapsulation support) ♦ Cisco IOS Software Release 12.1(7)E Cisco bug ID CSCds76462 (registered customers only) (Cisco ISL encapsulation support) ♦ Cisco IOS Software Release 12.2(6.8) Cisco bug ID CSCds00250 (registered customers only) (IEEE 802.1Q encapsulation)

[1] LAN Emulation

[2] Fast Ethernet

[3] Gigabit Ethernet

Q. How can I reload a router with use of SNMP?

A. Follow this procedure:

```
tsMsgSend = .1.3.6.1.4.1.9.2.9.9 from the OLD-CISCO-TS-MIB
tsMsgSend OBJECT-TYPE
```

```
           -- FROM OLD-CISCO-TS-MIB
           SYNTAX      Integer { nothing(1), reload(2), messagedone(3), abort(4) }
           MAX-ACCESS  read-write
           STATUS      Mandatory
           DESCRIPTION     "Sends the message. The value determines what
                            to do after the message has completed."
    ::= { iso(1) org(3) dod(6) internet(1) private(4) enterprises(1) cisco(9)
          local(2) lts(9) 9 }
```

On the Cisco router, you must set these commands to support the **reload** command:

```
snmp-server community private RW
snmp-server system-shutdown
```

This example reloads the router with IP address 10.16.99.55:

```
# ./snmpset 10.16.99.55 private .1.3.6.1.4.1.9.2.9.9.0 i 2

!--- This is an explanation of the variables that this command uses.

        10.16.99.55 = ip address of your router
              private = R/W SNMP Community string of your router
.1.3.6.1.4.1.9.2.9.9.0 = tsMsgSend SNMP MIB OID
                    i = Integer as defined SYNTAX in the MIB
                    2 = reload command as defined in the MIB
```

Related Information

- **Simple Network Management Protocol Technical Tips**
- **Technical Support & Documentation – Cisco Systems**

Updated: Oct 26, 2005   Document ID: 26010