

Monitoring Voice over IP Quality of Service

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Introduction

Tools Available for Monitoring VoIP

Related Information

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If you provide Voice over IP (VoIP) services and sometimes encounter voice quality problems, then you need a good software tool to show the quality of service (QoS). Cisco currently offers several options for monitoring QoS in networks using VoIP solutions.

Tools Available for Monitoring VoIP

The following Cisco solutions do not measure voice quality using Perceptual Speech Quality Measurement (PSQM) or some of the new proposed algorithms for voice quality measurement. Tools from Agilent Technologies and NetIQ are available for this purpose. Cisco does offer tools that provide some idea of the voice quality you are experiencing by measuring delay, jitter, and packet loss.

When implementing service policies using the modular QoS command line interface (CLI), start with the Cisco Class-Based QoS Configuration and Statistics Management Information Base (MIB). This MIB provides read access to QoS configuration and statistics information for Cisco platforms that support the Modular QoS CLI. Statistics available through this MIB include summary counts/rates by traffic class before and after any configured QoS policies are enforced. In addition, detailed feature-specific statistics are available for select PolicyMap features. See Cisco MIBs for the object IDs.

In addition, Cisco offers the following software tools for monitoring QoS:

- **Quality of Service Device Manager (QDM)** – This tool is a free download from www.cisco.com. It loads onto your Cisco device and is accessed through a browser. All versions of QDM allow users to monitor real-time performance of QoS functionality through the router and switch with the use of graphs and tables. With QDM graphs, users can monitor QoS data by class, policy, or interface. QDM has the ability to display up to four graphs in one frame, and users can open multiple frames simultaneously. Each graph can monitor various statistics, including packet rates, bit rates, byte counts, packet counts, and protocol discovery. The monitoring table functionality of QDM allows users to monitor QoS functionality statistics on a real-time basis.
- **Network Monitoring Using Cisco Service Assurance Agent (CSSA)** – Both a new name for and an enhancement to the Response Time Reporter (RTR) feature introduced in Cisco IOS® Release 11.2. The response time and availability monitoring capabilities of RTR have been extended to include support for VoIP, QoS, and the World Wide Web, and thus RTR has evolved into the CSSA. The CSSA is an application-aware synthetic operation agent that monitors network performance by measuring key metrics such as response time, availability, jitter (interpacket delay variance), connect time, throughput, and packet loss. These metrics can be used for troubleshooting, for analysis before problems occur, and for designing future network topologies. This tool is designed more for trending, rather than real-time monitoring. See *Using Cisco Service Assurance Agent and Internetwork Performance Monitor to Manage Quality of Service in Voice over IP Networks* for more information.

- **CiscoWorks Voice Health Monitor** – A bundled suite of management applications that works with the entire family of CiscoWorks products. VoIP–HM provides real–time, detailed fault analysis and health monitoring of Cisco CallManager applications and platforms, the router gateways, and in–line power switches. For each of the supported devices, VoIP–HM automatically looks for a range of predefined problems at the device and network levels, all without requiring users to write rules or set polling or threshold values.
- **Data Sheet Network Analysis Module (NAM) for Cisco Catalyst 6500 and 6000 Series** – Occupies one full slot on any Cisco Catalyst 6000 series chassis. The NAM is based on a running and dedicated RMON/RMON2 high–performance engine. This module measures real traffic across a Catalyst 6000 using a Diff Serve Monitoring (DSMON) MIB to measure network traffic based on Differentiated Services Code Point (DSCP), Application Response Time MIB (ART MIB) to track TCP conversation times and responses, and others. This module measures real traffic and is designed for real–time monitoring, while CSAA generates synthetic traffic and is designed for trending. The NAM gathers multilayer information about data and voice flows that goes all the way to the application layer, including the complete H.323 family and Skinny Gateway Protocol.
- **Cisco Gateway Management Agent (CGMA)** – The only real–time management Cisco IOS software agent and protocol for VoIP. The CGMA is a new gateway Cisco IOS agent that provides real–time call–state information for all VoIP calls. CGMA supports a push protocol, in which certain call–state changes result in a message being sent out of CGMA by the gateways. The interface from the CGMA is the Real Time Management Protocol (RTMP). RTMP is a lightweight XML–based protocol that uses TCP as the transport protocol. This solution allows Service Providers to monitor their calls (session initiation protocol (SIP) and H.323 networks), viewing call detail records (CDRs) and trunk utilization in real time. The validated gateways for the CGMA include the Cisco 2600 series, the 3600 series, and the 5000 series. The Cisco IOS that has been validated on all gateways is the 12.2(2)Xb mainline release.

Note: Cisco QoS Policy Manager Version 3.0 will introduce VoIP monitoring capabilities.

Related Information

- [QoS Support Page](#)
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