

Cisco Unified Service Monitor 2.0.1

Cisco® Unified Communications is a comprehensive IP communications system of voice, video, data, and mobility products and applications. It enables more effective, more secure, more personal communications that directly affect both sales and profitability. It brings people together by enabling a new way of communicating—where your business moves with you, security is everywhere, and information is always available...whenever and wherever it is needed. Cisco Unified Communications is part of an integrated solution that includes network infrastructure, security, mobility, network management products, lifecycle services, flexible deployment and outsourced management options, end-user and partner financing packages, and third-party communications applications.

Cisco Unified Service Monitor 2.0.1 is part of the Cisco Unified Communications Management Suite. It provides a reliable, cost-effective method of monitoring and evaluating the quality of voice in Cisco Unified Communications solutions. It continuously monitors active calls supported by the Cisco Unified Communications system and provides near-real-time notification when the voice quality of a call, represented as end-user experience expressed by a mean opinion score (MOS), fails to meet a user-defined quality threshold. Cisco Unified Service Monitor also provides a variety of reports that characterize the user experience as measured by the system and provides a summary of the endpoints that are most frequently affected by voice-quality issues. Cisco Unified Service Monitor 2.0.1 also provides the ability to set different threshold alerts based on device types and codec types. It also incorporates support for Cisco Unified Communications Manager 6.0 and contains reporting data export enhancements.

Product Overview

Cisco Unified Service Monitor 2.0.1 monitors, evaluates, and generates reports on user experience metrics associated with active calls on the Cisco Unified Communications system. It provides a comprehensive list of voice-impairment metrics useful in troubleshooting voice-quality issues. User experience reports generated by the system also provide a listing and details of the endpoints (phones, gateways) that are most frequently affected by voice-quality issues.

Cisco Unified Service Monitor 2.0.1 also provides the ability to set thresholds based on device types and codec types, incorporates support for Cisco Unified Communications Manager 6.0, and includes reporting data export enhancements.

Cisco Unified Service Monitor 2.0.1 includes the following hardware and software components:

- Cisco 1040 Sensors, deployed close to the endpoint (IP phone, gateway, or voicemail system), monitor and evaluate call quality and reports this information for active calls in near real time.
- Cisco Unified Service Monitor software operates on a Windows 2003 server platform and receives voice-quality information from Cisco 1040 Sensors as well as from Cisco Unified CallManager 4.2 or Cisco Unified Communications Manager 5.0 or 6.0 systems. Users can

configure MOS thresholds on a per-codec basis; alerts are sent to an upstream application such as Cisco Unified Operations Manager when an MOS threshold is violated. It allows users to identify the endpoints that are most affected by voice-quality issues and understand the service-quality experience at a system level.

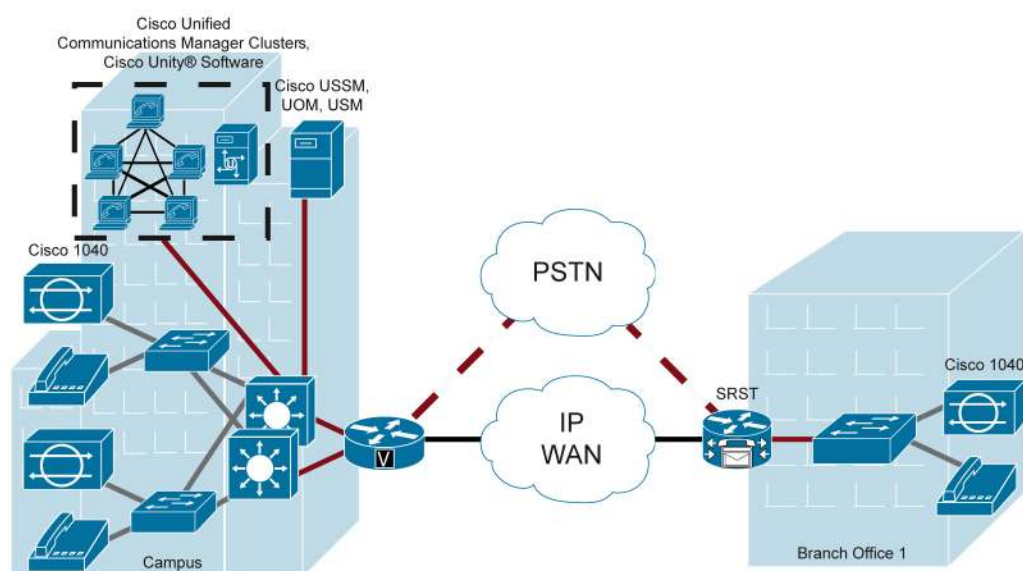
Cisco 1040 Sensor voice-quality measurement capability can be used in Cisco Unified CallManager, 3.3, 4.0, 4.1, and 4.2, and Cisco Unified Communications Manager 4.3, 5.0, 5.1, 6.0 and 6.1 and Cisco Unified Communications Manager Express environments to measure voice quality for active calls made between a Cisco Unified IP phone and another Cisco Unified IP phone or voice gateway or voicemail system. While Cisco 1040 Sensors provide near-real-time voice-quality measurement for active voice calls made from an IP phone to another IP phone or voice gateway or voicemail system, Cisco Voice Transmission Quality (VTQ) support in Cisco Unified CallManager 4.2 and Cisco Unified Communications Manager 4.3, 5.0, 5.1 or higher environments provides continuous voice-quality measurement for calls made from all endpoints (Cisco Unified IP Phones 794x, 796x, or 797x) that support VTQ. VTQ is an endpoint MOS estimation algorithm as described in the ITU P.564 standard. The VTQ score represents weighted estimate of “average user” annoyance caused by effective packet loss. The combination of Cisco 1040 Sensor functionality and VTQ support provides comprehensive voice-quality measurement capability to monitor key Cisco Unified IP phones (for example, for executives or critical users) in real time and to track voice quality for all the calls in the system.

Applications

Deployments of up to 5000 Phones

For deployments of up to 5000 phones (Figure 1), Cisco Unified Service Monitor (Cisco USM) 2.0.1, Cisco Unified Operations Manager (Cisco UOM) 2.0.3, and Cisco Unified Service Statistics Manager (Cisco USSM) 1.0 may be deployed on the same Windows 2003 server. A single installation process installs all the necessary components.

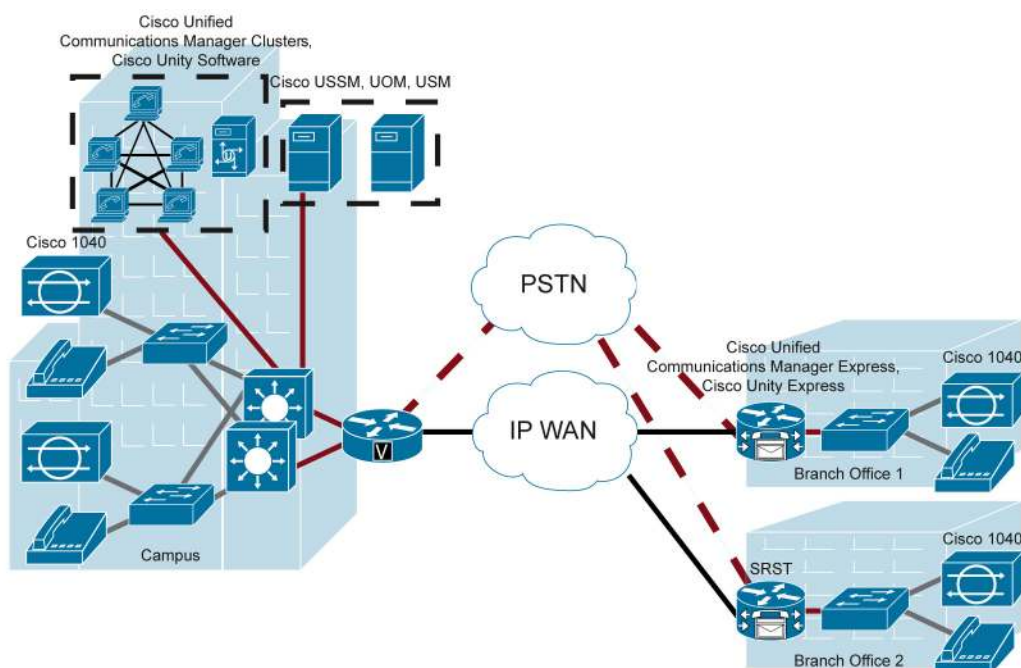
Figure 1. Deployment Model for up to 5000 Phones



Deployments of more than 5000 Phones

For large deployments of more than 5000 phones (Figure 2), it is recommended that Cisco Unified Service Monitor and Cisco Unified Operations Manager be deployed on separate servers. Cisco Unified Service Monitor 2.0.1 can be deployed centrally or in a distributed manner to scale to different deployment sizes. Each instance of Cisco Unified Service Monitor can manage multisite and multicloud Cisco Unified Communications systems. Cisco Unified Operations Manager 2.0.3 and Cisco Unified Service Monitor 2.0.1 may be integrated with a higher-level network monitoring entity (such as a manager of managers) by way of the northbound interface that sends real-time notifications using Simple Network Management Protocol (SNMP) traps, syslog notifications, and e-mail messages that report the status of the network being monitored.

Figure 2. Deployment Model for More than 5000 Phones



Features and Benefits

Table 1 describes the primary features of Cisco Unified Service Monitor 2.0.1.

Table 1. Cisco Unified Service Monitor 2.0.1 Features

Feature	Description
Real-time voice-quality monitoring and alerting	The Cisco 1040 Sensor-based solution provides real-time user experience metrics every 60 seconds for monitored active calls expressed as an MOS. The phone-based Cisco VTQ solution (for Cisco Unified CallManager versions 4.2, Cisco Unified Communications Manager 4.3, 5.0, 5.1, 6.0, 6.1 or higher) provides user experience metrics at the end of all active calls in the network expressed as an MOS.
Real-time voice-quality alerts	With the voice-quality measurement approach of the Cisco 1040 Sensors, the user experience is captured, analyzed, and reported in terms of an MOS every 60 seconds.
Ease of installation and use	Cisco 1040 Sensor deployment is straightforward and very similar to deployment of Cisco Unified IP phones. Cisco 1040 Sensors support IEEE 802.3af Power over Ethernet (industry standard). Cisco 1040 Sensors use DHCP and TFTP standard protocols to load the configuration information. Cisco Unified Service Monitor uses the Skinny Client Control Protocol (SCCP) to help ensure continuous operation.
Most impacted endpoints report	This report helps identify and isolate the endpoints that are experiencing voice-quality issues.
Troubleshooting	Tight integration with Cisco Unified Operations Manager offers the ability to simulate synthetic voice traffic using the Cisco IOS® IP Service-Level Agreements (SLA) feature and perform path analysis between the device where the endpoints are connected.
Scalability	A single instance of Cisco Unified Service Monitor 2.0.1, when licensed to do so, can support up to 30,000 Cisco Unified IP phones or up to 30 Cisco Unified Communications Manager clusters.
Northbound interface	Supports SNMP trap notifications that can be sent to Cisco Unified Operations Manager or "manager of managers" applications.
Customized threshold settings based on location, codecs, and device types	Plug-and-play setup with default threshold values set for each codec. Offers the ability to define customized threshold settings based on endpoints in different locations as well as device types.

Cisco 1040 Sensor Specification

Figure 3 shows a Cisco 1040 Sensor.

Figure 3. Cisco 1040 Sensor



Following are the specifications for the Cisco 1040 Sensor:

- 802.3af PoE (Power over Ethernet) compliant
- Uses ITU G107 R-factor to compute an MOS
- FCC Class B certified
- Supports up to 100 concurrent RTP streams

- Two 10/100 Ethernet interface (one management and one SPAN port)
- Supports Cisco Discovery Protocol
- Supports external power adaptor
- User experience monitored and reported every 60 seconds

Product Architecture

Cisco Unified Service Monitor 2.0.1 provides user experience metrics related to all the active voice calls in the network. It does so at a system level using phone-based VTQ support implemented in Cisco Unified IP phones (and other system elements that support VTQ) and real-time monitoring of active voice calls using the Cisco 1040 Sensor solution. Cisco Unified Service Monitor 2.0.1 can support both VTQ and Cisco 1040 Sensor voice-quality measurement on the same server to provide comprehensive voice-quality measurement. VTQ voice-quality measurement supports a maximum of 30,000 Cisco Unified IP phones or 30 clusters (whichever comes first) per Cisco Unified Service Monitor 2.0.1 license. For near-real-time voice-quality measurement, each instance of Cisco Unified Service Monitor supports up to 50 sensors, and each sensor can monitor 100 concurrent RTP streams.

In the VTQ solution the endpoints (Cisco Unified IP Phones 796x, 794x, 797x) registered with Cisco Unified CallManager release 4.2) and Cisco Unified Communications Manager 4.3, 5.0, 5.1 or higher will report voice impairment metrics at the end of the call through call management records (CMRs). These records, along with call detail records (CDRs), are collected by Service Monitor software for further analysis.

The Cisco 1040 Sensor monitors voice-specific (RTP) data streams and computes the MOS. The sensor is installed on the Cisco switch nearest to the Cisco Unified IP phones, a gateway, and/or a telephony service such as voicemail to monitor and analyze the voice streams. The sensor configures itself in a manner similar to the Cisco Unified IP phone: it uses IEEE 802.3af standard Power over Ethernet, obtains its configuration information and downloads it from a TFTP server (which can be the same server used by other Cisco IP telephony components), and uses SCCP to help ensure continuous communication with the Cisco Unified Service Monitor central software component.

Product Specifications

Table 2 provides the product specifications.

Table 2. Product Specifications (per Cisco Unified Service Monitor Server)

Description	Specification
Product compatibility	Cisco Unified Communications systems consisting of Cisco Unified CallManager (3.x, 4.0, 4.1, 4.2) and Cisco Unified Communications Manager (4.3, 5.0, 5.1, 6.0, 6.1), , Cisco Unified Communications Manager Express, Cisco Unity systems, Cisco Unity Connection, Cisco Unity Express , Cisco Unified Contact Center, Cisco Unified Contact Center Express, Cisco Unified MeetingPlace [®] Express, and Cisco Conference Connection.
Software compatibility	Windows 2003 Server: The user interface can be accessed using Microsoft Internet Explorer 6.0/7.0 on Windows 2003 and Windows XP platforms.
Protocols	Uses SCCP to register Cisco 1040 Sensors with Service Monitor 2.0.1 software and HTTP to correlate the IP address of the endpoint to directory number.
Features and functions	System-level voice-quality measurement using VTQ solution, near-real-time voice-quality measurement using Cisco 1040 Sensors; threshold can be set based on the codec, alerts, and reports voice-quality information.

Ordering Information

To place an order, visit the Cisco Ordering Home Page. To download software, visit the [Cisco Ordering Home Page](#)

For More Information

For more information about Cisco Unified Service Monitor 2.0.1, please visit <http://www.cisco.com/go/cusm>, contact your local account representative, or send e-mail to the Cisco product marketing group at ask-ipc-management@cisco.com.

Cisco Unified Communications Services and Support

Using the Cisco Lifecycle Services approach, Cisco and its partners offer a broad portfolio of end-to-end services to support the Cisco Unified Communications system. These services are based on proven methodologies for deploying, operating, and optimizing IP communications solutions. Initial planning and design services, for example, can help you meet aggressive deployment schedules and minimize network disruption during implementation. Operate services reduce the risk of communications downtime with expert technical support, and optimize services enhance solution performance for operational excellence. Cisco and its partners offer a system-level service and support approach that can help you create and maintain a resilient, converged network that meets your business needs.



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