

Cisco Prime Unified Service Monitor 9.0

Cisco Unified Communications

Cisco® Unified Communications (UC) solutions unify voice, video, data, and mobile applications on fixed and mobile networks, facilitating easy collaboration every time from any workspace. Part of a comprehensive solution that includes network infrastructure, security, wireless, management, or third-party applications and lifecycle services, Cisco Unified Communications management solutions can accelerate deployment, provide cost savings, and enhance productivity.

Cisco Prime

Cisco Prime™ for Enterprise is an innovative strategy and portfolio of management products that empower IT departments to more effectively manage their networks and the services they deliver. Cisco Prime is built upon a network services management foundation and a set of common attributes. It delivers an intuitive workflow-oriented user experience across Cisco architectures, technologies, and networks. Cisco Prime simplifies network management, improves operations efficiency, reduces errors, and makes the delivery of network services more predictable.

Product Overview

Cisco Prime Unified Service Monitor (USM) is part of the Cisco Prime Unified Communications Management Suite, consisting of Cisco Prime Unified Provisioning Manager (UPM), Cisco Prime Unified Operations Manager (UOM), Cisco Prime Unified Service Monitor, and Cisco Unified Service Statistics Manager (USSM). Cisco Prime Unified Service Monitor continuously monitors active calls supported by the Cisco Unified Communications system and provides near real-time notification when the voice quality of a call fails to meet a user-defined quality threshold (refer to Figure 1). In addition to voice-quality monitoring, Cisco Prime Unified Service Monitor allows you to perform call classification based on a local dial plan. The on-demand call detail record (CDR) reports allow you to view the call records for call analysis.

Figure 1. Voice Transmission Quality and Most Affected Endpoints Report



Listener DN	Cluster ID	Caller	Called	Signaling Start Time	Call Duration (s)	MOS	Minimum MOS	Jitter (ms)	Packet Loss	Concealment Seconds	Severely Concealed Seconds	Grade	Caller Termination Cause	Called Termination Cause
1.18009292	COMCLUSTERIDCHANGED18009292	Directory Number: Cisco 7942, Device Type: 0729, Codec: Default, Device Pool: SA-Eastern Cape, Location: 20015	Default, H.323 Gateway	00:15:11 Thu 12-Jan-2012 IST	43	2.0	2.0	10	0	42	41	Poor	Normal call clearing	No error
2.18009292	COMCLUSTERIDCHANGED18009292	Directory Number: Cisco 7942, Device Type: 0729, Codec: Default, Device Pool: SA-Eastern Cape, Location: 20015	Default, H.323 Gateway	00:22:20 Thu 12-Jan-2012 IST	43	2.0	2.0	10	0	38	38	Poor	Normal call clearing	No error
3.18009292	COMCLUSTERIDCHANGED18009292	Directory Number: Cisco 7942, Device Type: 0729, Codec: Default, Device Pool: SA-Eastern Cape, Location: 20015	Default, H.323 Gateway	00:58:04 Thu 12-Jan-2012 IST	43	2.0	2.0	10	0	39	39	Poor	Normal call clearing	No error
4.18009292	COMCLUSTERIDCHANGED18009292	Directory Number: Cisco 7942, Device Type: 0729, Codec: Default, Device Pool: SA-Eastern Cape, Location: 20015	Default, H.323 Gateway	01:05:13 Thu 12-Jan-2012 IST	42	2.0	2.0	11	0	43	42	Poor	Normal call clearing	No error
5.18009292	COMCLUSTERIDCHANGED18009292	Directory Number: Cisco 7942, Device Type: 0729, Codec: Default, Device Pool: SA-Eastern Cape, Location: 20015	Default, H.323 Gateway	01:19:31 Thu 12-Jan-2012 IST	43	2.0	2.0	11	0	39	39	Poor	Normal call clearing	No error

USM monitors, evaluates, and generates reports about 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 problems.

The system generates user-experience reports that provide lists and details of the endpoints (for example, phones and gateways) that are most frequently affected by voice-quality problems. The reports allow you to understand service quality at a system level through call-quality metrics gathered from Cisco Voice Transmission Quality (VTQ) functions. The reports provide information about real-time service quality through Cisco 1040 Sensors and the Cisco Network Analysis Module (NAM) 4.0 and later. The enhanced call-stream correlation report (Figure 2) provides detailed call metrics collected from multiple instances of Cisco 1040 Sensors and the Cisco NAM, which will allow system administrators to identify network segments that have a lower-quality user experience.

Figure 2. Stream Correlation Report

Streams and Call Record

Stream Summary

Speaker (Calling Party)					Listener (Called Party)					TOS	Codec	SSRC
Directory Number	IP Address	UDP Port	Device Type	Device Name	Directory Number	IP Address	UDP Port	Device Type	Device Name			
17001116	172.20.123.179	17588	Cisco 7940	SEP0009E89D14AC(800Cluster)	000104201011	172.20.123.135	25346	Cisco Conference Bridge Software	CFB_2(800Cluster)	EF DSCP (101010)	G711Ulaw 64k	2887032416

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Call Record

Call Disconnect Time	Cluster ID	Caller Signaling IP	Caller B-Channel	Called Signaling IP	Called B-Channel	Call Duration (s)	Caller Termination Cause	Called Termination Cause
17:06:21 Wed 25-Aug-2010 PDT	800Cluster	172.20.123.179	0	172.20.123.135	16780227	17	Call split	Call split

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Stream Details

Sensor Name	Time	MOS	Minimum MOS	Primary Degradation Cause	Jitter (ms)	Packet Loss	Sample Duration (s)	Max Jitter (ms)	Adjusted Packet Loss(%)	Packet Loss (%)
1 Cisco 1040 (FFF66A)	17:06:00 Wed 25-Aug-2010 PDT	4.4	4.4	None	0	0	17	2	0.0	0.0
2 Cisco 1040 (FFF586)	17:06:00 Wed 25-Aug-2010 PDT	4.4	4.4	None	0	0	17	2	0.0	0.0
3 NAM-153 (172.20.123.153)	16:55:00 Wed 25-Aug-2010 PDT	4.4	4.4	None	0	0	10	1	0.0	0.0
4 NAM-153 (172.20.123.153)	16:54:00 Wed 25-Aug-2010 PDT	4.4	4.4	None	0	0	9	2	0.0	0.0

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Features and Benefits

Voice-Quality Measurements and Alerts

USM monitors voice-quality measurements in a voice-over-IP (VoIP) network and produces alerts based on measurements exceeding preset thresholds. Key voice-call characteristics such as codec type, jitter, and packet loss are collected and reported.

The phone-based Cisco VTQ solution provides user-experience metrics at the end of all active calls in the network, expressed as a Mean Opinion Score (MOS) calculated value. Real-time MOS values can be produced every 60 seconds for monitored active calls using Cisco 1040 Sensors and the Cisco NAM. Threshold-based alerts are sent to upstream applications such as Cisco Prime Unified Operations Manager or a manager-of-managers application.

Thresholds

USM allows you to set MOS thresholds based on the phone codec types and includes reporting data export. Alerts are sent to Cisco Prime Unified Operations Manager or any Simple Network Management Protocol (SNMP) manager when a MOS threshold is violated.

Call Classification

USM allows you to classify calls based on dial plan per cluster. Call classification has default system-defined call categories and also allows you to define call categories to suit the deployment. USM can classify calls to multiple categories to help ensure that users can track calls based on call types. The on-demand CDR reports provide a rich set of filters to generate important call information to facilitate detailed analysis.

Integration with Cisco Prime Unified Operations Manager

Cisco Prime Unified Operations Manager receives the MOS threshold exception alerts generated by USM. They are displayed in the Fault Monitor and correlated to the appropriate UC Device Pool in the Diagnostic View.

Another important integration point is the correlation of service quality statistics on the new UC Opsview dashboard that shows the top 5 affected sites due to service quality issues and the top 5 affected due to call failures. For more information, please visit <http://www.cisco.com/go/cuom>.

Integration with Cisco Unified Service Statistics Manager

Integration with Cisco Unified Service Statistics Manager provides 3-month statistics analysis and reports for Cisco Unified Communications networks. Using the data collected by Cisco Prime Unified Operations Manager and Cisco Prime Unified Service Monitor, Cisco Unified Service Statistics Manager provides predefined and customizable reports that give visibility into critical metrics, including call volume, service availability, call quality, resource usage, and capacity across the Cisco Unified Communications system. For more information, please visit <http://www.cisco.com/go/cussm>.

Cisco 1040 Sensors

Cisco 1040 Sensors, deployed close to the endpoint (IP phone, gateway, or voicemail system), monitor and evaluate call quality and report this information for active calls every 60 seconds, providing MOS exception alerts on calls in progress and reducing the sample time to help capture short-term impairment bursts. The Cisco 1040 Sensor, shown in Figure 3, collects RTP streams from a spanning port, obtains Power over Ethernet (PoE) through its connected device, and automatically finds USM in the network for easy field installations.

Figure 3. Cisco 1040 Sensor



Cisco Network Analysis Module

The Cisco Network Analysis Module Family of products offers superior visibility into application and network performance to help ensure consistent and efficient delivery of applications and services to end users. USM 1040 software is available for the NAM, at no charge, and adds a distributed MOS collection capability. The family includes both integrated service modules and self-contained appliances offering deployment flexibility essential for managing application performance and improving operational manageability of the underlying network. For more information, please visit <http://www.cisco.com/go/nam>.

Table 1 lists the differences between the Cisco 1040 Sensor and the Cisco Network Analysis Module.

Table 1. Differences Between Cisco 1040 Sensor and Cisco Network Analysis Module 4.0 and Later

Feature	Cisco 1040	Cisco Network Analysis Module
Function	Instrumentation for monitoring voice quality	Advanced instrumentation that combines application monitoring (including voice), traffic analysis, and troubleshooting
Form factor	Appliance	Blade and appliance
Deployment	Wiring closet	Wiring closet, access, distribution, and campus edge
Scalability	100 Rapid Transport Protocol (RTP) streams per minute	100-4000 RTP streams per minute depending upon the Cisco Network Analysis Module platform
Reports	No built-in user interface	Built-in, real-time views and historical reports
Provisioning and configuration	Access to Trivial File Transfer Protocol (TFTP) server to get configuration file for Cisco Prime Unified Service Monitor registration and call-quality forwarding required	Built-in user interface for configuration; supported by Cisco Prime LAN Management Solution (LMS)
Ports	Two ports: One for monitoring and one for management	Cisco Network Analysis Module blade does not use any ports; Cisco Network Analysis Module Appliance has one management port and multiple monitoring ports based on the form factor

Features and Benefits

Table 2 lists additional features and benefits of Cisco Prime Unified Service Monitor.

Table 2. Additional Features and Benefits

Feature	Benefit
Cisco Prime	<ul style="list-style-type: none"> As a Cisco Prime product, USM features and user experience are standardized with the ability to cross-launch features from one Cisco Prime product to another, expanding device management into service-level management.
Voice metrics	<ul style="list-style-type: none"> MOS, jitter, maximum jitter, packet loss, adjusted packet loss, packet loss percent, codec type, type of service, and several other metrics help identify network problems causing voice-quality degradation.
Correlated reports	<ul style="list-style-type: none"> Enhanced call-quality reports can track calls that pass through one or more instances of the Cisco 1040 Sensor and the Cisco Network Analysis Module. Instrumentation on the Cisco 1040 Sensor and Cisco Network Analysis Module allows Cisco Prime Unified Service Monitor to report on voice quality as the call moves along the unified communications network segments. Reports correlate metrics from the Cisco 1040 Sensor and Cisco Network Analysis Module and CDRs from Cisco Unified Communications Manager for detailed analysis to facilitate troubleshooting of call-quality degradation.
Most-affected endpoints report	<ul style="list-style-type: none"> The application helps to identify and isolate the endpoints that are experiencing voice-quality problems.
Northbound interface	<ul style="list-style-type: none"> It supports SNMP trap notifications that can be sent to Cisco Prime Unified Operations Manager or manager-of-manager applications.
Enhanced reports	<ul style="list-style-type: none"> Enhanced reports and filter-based reports can suit network administrator needs.
Customized threshold settings	<ul style="list-style-type: none"> Settings are based on location, codecs, and device types. Setup is immediately active, with default threshold values set for each codec. The application allows you to define customized threshold settings based on endpoints in different locations as well as device types.
Call classification	<ul style="list-style-type: none"> Per cluster dial-plan configuration is possible. The application includes system- and user-defined call categories. There are multiple categories for each call. You can obtain an on-demand report based on several filters, including call category, device type, and successful and failed calls (grouped by call termination cause code).
Scalability	<ul style="list-style-type: none"> The application supports up to 60,000 Cisco Unified IP Phones.

Feature	Benefit
Cisco 1040 Sensor	<ul style="list-style-type: none"> • Straightforward deployment is similar to that for IP phones. • User experience is monitored and reported every 60 seconds. • The application supports up to 100 concurrent RTP streams. • It is 802.3af PoE compliant. • It uses the ITU G107 R-factor to compute MOS. • There are two 10/100 Ethernet interfaces (one management and one Switched Port Analyzer [SPAN] port). • The application supports Cisco Discovery Protocol.
Cisco Network Analysis Module	<ul style="list-style-type: none"> • The module offers deployment flexibility with a choice of integrated service modules and standalone appliances. • Real-time voice monitoring is combined with advanced troubleshooting. • The solution provides accurate voice-quality characterization with ITU G107 R-factor based MOS values. • It supports varying concurrent RTP streams based on form factor to best fit the deployment. • The solution offers proactive detection of voice-quality degradation, minimizing effect on end users. • It provides historical trend analysis.

System Requirements

Table 3 lists the minimum system requirements for USM. For VMware platform and more detailed specifications please refer to the USM Installation Guide at

http://www.cisco.com/en/US/products/ps6536/prod_installation_guides_list.html.

Table 3. System Requirements

Description	Specification			
Server Requirements (No VMware; Single Instance of Cisco Prime Unified Service Monitor)				
System Parameters	Up to 1000 phones	Up to 10,000 phones	Up to 30,000 phones	Up to 60,000 phones
Call rate (CDRs/min)	Up to 50	Up to 150	Up to 500	Up to 500
NAM/1040 Sensor RTP stream rate (Streams/min)	Up to 100	Up to 1000	Up to 5000	Up to 5000
CDR/RTP stream rate (together)	Up to 50/100	Up to 150/800	Up to 500/1500	Up to 800/1500
Processor	Two processors or dual core, 2 GHz minimum each	Two processors or dual core, 2 GHz minimum each	Four processors, quad core, or 2 dual core, 2 GHz minimum each	Four processors, quad core, or 2 dual core, 2 GHz minimum each
Memory	4 GB	4 GB	4 GB	4 GB
Page file	8 GB	8 GB	8 GB	8 GB
Software	Windows Server 2003 Enterprise Edition (32 bit) with Service Pack 1 or 2 Windows Server 2008 (R1) Standard or Enterprise Edition (32/64 bit) with Service Pack 2 Windows Server 2008 (R2) 64 bit Enterprise/Standard Edition with Service Pack 1 VMware ESXi 4.x or ESXi 5.0			
Disk space	84 GB recommended (up to 45,000 phones) 100 GB recommended (up to 60,000 phones)			
Client Requirements				
Processor	Dual core, 2 GHz minimum (PC or Mac)			
Memory	2 GB RAM minimum			
Adobe Flash Player	Adobe Flash Player 11			
Browser	Microsoft Internet Explorer 8.x or 9.0 Firefox 10.0.5 ESR or 13.0			
Resolution	1440 x 900 minimum; higher is recommended			

Supported Devices

For the specific versions of device and Cisco IP Phone models that have been certified in testing, visit http://www.cisco.com/en/US/products/ps6536/products_device_support_tables_list.html.

Ordering Information

The base part number includes licensing for the indicated number of phones, and licenses are added to increase the number of phones supported (Table 4). You can order Cisco Prime Unified Service Monitor as part of a management suite bundle or as a standalone product. You can order the Cisco 1040 Sensor as a standalone component or as part of the UCMS-MON bundle. The Cisco 1040 Sensor comes in two- and five-pack versions, as shown in Table 4.

USM 9.0 is a minor upgrade from USM 8.0, 8.5, 8.6, or 8.7 and does not require a new license. For the minor upgrade, download the USM 9.0 software image from the Cisco.com software [download site](#). USM 9.0 is a major upgrade from USM 2.x so all existing USM 2.x customers must purchase the upgrade license (L-USM-B-UPG=) to activate the upgrade software image. The upgrade part number is the single part number required to update any USM 2.x, regardless of the number of phones supported.

To place an order, visit the [Cisco Ordering Homepage](#). The Cisco Prime Unified Communications Management Suite Ordering Guide, available to Cisco employees and partners, provides instructions on how to order management product bundles that deliver significant savings over the individual product pricing. Please contact your Cisco account representative for details.

Table 4. Ordering Information

Product Name	Part Number
UOM 9.0, USM 9.0, USSM 9.0, UPM 9.0 Suite Bundle 1000 IP Phone LIC	R-UCMS-STE-B-1K
UOM 9.0, USM 9.0, USSM 9.0, UPM 9.0 Suite Bundle 5000 IP Phone LIC	R-UCMS-STE-B-5K
UOM 9.0, USM 9.0, USSM 9.0, UPM 9.0 Suite Bundle 10,000 IP Phone LIC	R-UCMS-STE-B-10K
UOM 9.0, USM 9.0, USSM 9.0, UPM 9.0 Suite Bundle 20,000 IP Phone LIC	R-UCMS-STE-B-20K
UOM 9.0, USM 9.0, USSM 9.0, UPM 9.0 Suite Bundle 30,000 IP Phone LIC	R-UCMS-STE-B-30K
Unified Communications (UC) Management Suite Mon Bundle 500 LIC for UOM 9.0 and USM 9.0	UCMS-B-MON500
UC Management Suite Mon Bundle 1000 LIC for UOM 9.0 and USM 9.0	UCMS-B-MON1K
UC Management Suite Mon Bundle 2000 LIC for UOM 9.0 and USM 9.0	UCMS-B-MON2K
UC Management Suite Mon Bundle 5000 LIC for UOM 9.0 and USM 9.0	UCMS-B-MON5K
UC Management Suite Mon Bundle 10,000 LIC for UOM 9.0 and USM 9.0	UCMS-B-MON10K
UC Management Suite Mon Bundle 20,000 LIC for UOM 9.0 and USM 9.0	UCMS-B-MON20K
UC Management Suite Mon Bundle 30,000 LIC for UOM 9.0 and USM 9.0	UCMS-B-MON30K
Cisco Unified Service Monitor 9.0 Software Image License - Order One to Get Access to Electronic Software Delivery Download Image	R-USM-9.0-K9=
Unified Service Monitor 9.0 Up to 500 Phone License	L-USM-B-500=
Unified Service Monitor 9.0 Up to 1000 Phone License	L-USM-B-1K=
Unified Service Monitor 9.0 Up to 2000 Phone License	L-USM-B-2K=
Unified Service Monitor 9.0 Up to 5000 Phone License	L-USM-B-5K=
Unified Service Monitor 9.0 Up to 10,000 Phone License	L-USM-B-10K=
Unified Service Monitor 9.0 Up to 20,000 Phone License	L-USM-B-20K=
Unified Service Monitor 9.0 Up to 30,000 Phone License	L-USM-B-30K=

Product Name	Part Number
Cisco 1040 Sensor 2 Pack	CUSM-1040-2PK
Cisco 1040 Sensor 5 Pack	CUSM-1040-5PK

Cisco Unified Communications Services

Cisco Unified Communications Services allows you to accelerate cost savings and productivity gains associated with deploying a secure, resilient Cisco Unified Communications Solution. Delivered by Cisco and our certified partners, our portfolio of services is based on proven methodologies for unifying voice, video, data, and mobile applications on fixed and mobile networks. Our unique lifecycle approach to services enhances your technology experience to accelerate true business advantage. For more information about Cisco services, refer to [Cisco Technical Support Services](#) or [Cisco Advanced Services](#).

For More Information

For more information about USM, please visit <http://www.cisco.com/go/cusm>, contact your local Cisco account representative, or send an email to the Cisco product marketing group at ask-ucms@cisco.com.



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