Cisco Bandwidth Quality Manager Engine 3.1

General

Q. What is Cisco® Bandwidth Quality Manager (BQM) Engine 3.1?

A. Cisco BQM is a network congestion management appliance that provides visibility and analysis of traffic, bandwidth, and quality of service (QoS) on IP access networks. It is used to monitor, troubleshoot, and help assure network performance objectives for converged application traffic.

Q. What are the primary capabilities of Cisco BQM?

A. Its primary capabilities are:

- Troubleshooting network application congestion—Allows the user to quickly identify the root cause of application congestion and associated intermittent performance problems.
- Monitoring access WAN congestion—Measures traffic at microsecond timescales and reports the expected QoS that traffic will receive at remote access links.
- Bandwidth sizing and QoS migration—Baselines how much bandwidth is required to achieve user-specified QoS targets across all classes and provides specific QoS action recommendations.

Q. What are the functional areas of Cisco BQM?

A. Cisco BQM has the following four main functional areas:

- Traffic insight—Cisco BQM measures all packets with nanosecond time-stamp resolution. This information is used to provide microburst detection and Layer 7 application autodiscovery and to report on top talkers, listeners, and conversations.
- Congestion analysis: —Cisco BQM uses its proprietary algorithms to compute the expected service level in remote routers and summarize congestion on an interface or class using the Cisco BQM congestion indicator. Events traces can be captured to perform a detailed analysis of culprits and victims of congestion.
- Bandwidth sizing—Cisco BQM uses Corvil Bandwidth to perform QoS-aware bandwidth requirement measurements.
- Quality alarms—Cisco BQM has user-programmable thresholds for generating triggered event traces and alerting the network manager for performance degradation before it affects the application users.

Q. What is the core technology within BQM?

A. Cisco BQM keeps track of all the traffic at a micro level using its patent-pending Rapid Traffic Sequencing (RTS) technology. RTS provides a framework for processing high volumes of traffic at very fine time resolution and generates bandwidth and QoS analysis results in real time. It enables:

- High-speed packet sampling—A high-speed packet and data processing engine that uses hardware acceleration. This engine can process gigabit rates and provides compact packet descriptors with nanosecond resolution to the subsequent analysis modules.

- High-speed data classification—Matches packets against the network model and identifies applications and hosts.
- Microburst detection—Detects periods of microburst activity with an adjustable duration of 5 milliseconds (ms) to 1 second.
- • Expected service level (delay and loss)—Estimates queuing delay/jitter and loss experienced by packets in local and remote routers. Supports multiclass configurations in Cisco routers.
- Corvil Bandwidth—Estimates bandwidth requirement for the traffic as a function of the desired QoS.
- Event traces—Provides a compact format of packet timelines when events were detected.

Q. What are the primary business benefits of Cisco BQM?

A. Cisco BQM has four main business benefits:

- Increases network application uptime—Helps network managers ensure that network applications are performing optimally by protecting against network congestion in converged WANs. Cisco BQM monitors, analyzes, and recommends corrective actions against network application congestion.
- Reduces operational time and troubleshooting expense—Cisco BQM has the unique ability to monitor and analyze traffic at the micro level, allowing it to diagnose traffic-induced performance problems that many competing tools miss or misdiagnose.
- Mitigates risk of making expensive bandwidth-upgrade decisions—Uses its unique algorithms to determine whether a bandwidth upgrade or QoS/traffic management policy is the preferred action. These algorithms take into account whether an upgrade action may result in no improvement to network quality.
- Protects customer investments in Cisco QoS infrastructure—Models Cisco router QoS mechanisms, enabling network managers to unleash the power of QoS without having to deploy yet another packet-processing application.

Installation and Usage

Q. What if my Cisco BQM device fails?

A. Because Cisco BQM is not in the data path, if it fails, only monitoring and analysis of the network will stop, yet traffic will continue to flow.

Q. Does Cisco BQM require any client configuration?

A. No, there is no client configuration required; Cisco BQM is completely transparent to end users.

Q. Do I need to configure client software for my network management system?

A. No, there is no configuration required; Cisco BQM is accessible through a standard Web browser and does not require client configuration.

Q. What is the Microburst Detection feature?

A. Microburst detection uses a unique algorithm to calculate the microburst traffic activity with an adjustable duration of 5 milliseconds to 1 second. This algorithm measures every packet to report microbursts on links and classes.

Q. What is Expected Service Level?

A. Expected Service Level monitors the analysis and reporting of queuing delay and loss of links and classes. It estimates the router queuing delay and loss for every packet and takes account of the sharing of bandwidth between classes in a multiclass network. This technology can be used to estimate the queuing delay and loss incurred at the service provider router connected to the remote site.

Q. What is Corvil Bandwidth?

A. Corvil Bandwidth is the amount of bandwidth needed for a given interface or class to achieve a user-defined QoS target. It is calculated by measuring the traffic on the interface or class.

Q. What is the Congestion Indicator?

A. The Congestion Indicator is a highly summarized view of congestion available through the GUI that enables network managers to rank links according to congestion status. The Congestion Indicator gives a relative figure of merit for the level of congestion experienced on a link or class. If the Congestion Indicator is less than 1, then the QoS objectives are met.

Q. What is Event Tracing?

A. Event Tracing gives visibility into congestion-related events—what traffic caused the problem, what traffic suffered as a result. If any congestion event is detected, a 10-second section of the trace is isolated and recorded for postprocessing. The user can later analyze the event down to the level of packet granularity.

Q. How long are event traces kept?

A. Event traces are recorded for up to 60 days.

Q. Does Cisco BQM use simulated traffic?

A. No. It monitors all the packets, not just a sample of packets.

Q. Don’t lots of products have analysis algorithms? How is this different?

A. The Cisco BQM starting point is very different. It provides microvisibility at gigabit-per-second rates. This is the level at which congestion events are visible on LAN and WAN boundaries. Rapid Traffic Sequencing (RTS) can be programmed with network-configuration parameters to uniquely compute, in real time, the expected QoS levels and bandwidth requirements for application traffic. The latter is compatible with Cisco router QoS mechanisms.

Q. Will the Cisco BQM algorithms slow down my network and applications?

A. The Cisco BQM algorithms can process a full gigabit of network traffic. In addition, because Cisco BQM is not in the data path, it does not affect the network or applications.

Q. Does Cisco BQM capture packets?

A. Cisco BQM has an optional license to provide full packet capture and export in standard format for analysis in external tools. Packet captures can be triggered or manually started and stopped.

Q. Is Cisco BQM difficult to use?

A. No, Cisco BQM is a next-generation network management system designed for low operational overhead. It delivers the following benefits:

- Easy to use—Cisco BQM includes a Web-based user interface and dashboards for easy access to relevant information. Instant PDF reports with up to 60-day histories allow network managers to easily share information with other departments and management.

Simple Network Management Protocol (SNMP) traps for quality alarms integrate with existing network management and operations systems.

- Easy to deploy—Provides remote site monitoring from a single appliance in the data center. It supports up to four ports to enable easy connectivity in redundant router configurations. It provides the same command-line interface (CLI) and modular QoS CLI (MQC) structure that network managers use in their Cisco routers.

Q. Does Cisco BQM monitor traffic on an IP/Multiprotocol Label Switching (MPLS) network or VLAN?

A. Yes, it can model IP/MPLS and VLAN sites.

Q. Does Cisco BQM monitor custom applications?

A. Yes, it supports definition of custom applications based on IP addressing information, generic class-maps mechanisms, and URLs.

Q. How much data does the recommended Cisco BQM hardware store?

A. The Cisco BQM reference sale hardware is offered with 300-GB hard drives that can hold up to 60 days of monitoring data and up to four billion event-trace records.

Q. Who manufactures Cisco BQM?

A. Cisco BQM is a Cisco product built on OEM technology licensed from Corvil.

Ordering Information

Q. What Cisco BQM products are available?

A. Cisco BQM is available as an appliance. Cisco BQM Engine 3.1 is supported on the Cisco 1180 hardware and has a base software product offering, additional licensing options, and configurable electrical or optical interfaces. The hardware configuration includes an acceleration network interface card (NIC) with four copper or optical Gigabit Ethernet ports for network connectivity. The host hardware has one copper Gigabit Ethernet port for management. Cisco BQM base software provides access to all features with support for up to 100 sites. Additional license packs are need for more than 100 sites and are available in increments of 100 sites.

Q. What part numbers do I need to order for the Cisco BQM?

A. Cisco BQM is available as an appliance. The following are the key part numbers that you would need to purchase for the Cisco BQM Engine.

Part Number	Description
CBQME-1180-K9	Cisco Bandwidth Quality Manager Engine 3.1. Includes support for monitoring up to 100 remote sites.
CBQME-PCI	Provides 4 electrical ports of 10/100/1000 Mbps
CBQME-PCI-M	Provides for 4 modular slots. Requires either GLC-SX-MM or GLC-T
CBQME-3.1-SW-K9	Cisco Bandwidth Quality Manager software license loaded on Cisco 1180
GLC-SX-MM	Gigabit Ethernet SFP with 1000BaseSX (optical)
GLC-T	Gigabit Ethernet SFP with 1000BaseT (electrical)
CBQME-1180-UP-K9	Cisco Bandwidth Quality Manager Engine 3.1 Upgrade from 3.0.
CBQME-3.1-100-LC	Cisco Bandwidth Quality Manager license pack for 100 additional remote sites.
CBQME-3.1-SWUP-K9	Cisco Bandwidth Quality Manager software license upgrade loaded on Cisco 1180

The above part numbers are configurable i.e. you can order CBQME-1180-K9 and you will need to choose between CBQME-PCI and CBQME-PCI-M for the fixed or modular versions respectively.

The modular version of BQM has 4 modular slots and you will need to purchase either GLC-SX-MM or GLC-T based on whether you require optical or electrical connectivity. CBQME-3.1-SW-K9 is the part number for the software and is mandatory. If you plan to use BQM for more than 100 sites, you will need to buy CBQME-3.1-100-LC which is a license pack.

Finally, if you are an existing customer of BQM 3.0 and would like to upgrade to BQM 3.1 you will need to purchase CBQME-1180-UP-K9 and CBQME-3.1-SWUP-K9. As part of this upgrade, you will also need to select the options listed above.

Q. How do I order Cisco BQM?

A. Cisco BQM is available for purchase through regular Cisco sales and distribution channels worldwide.

To place an order, visit the Cisco Ordering Home Page.

For More Information

For more information about Cisco BQM, visit http://www.cisco.com/go/bqm, contact your local Cisco account representative, or send an e-mail to bqm-product-info@external.cisco.com.

Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883

Asia Pacific Headquarters
Cisco Systems, Inc.
168 Robinson Road
#28-01 Capital Tower
Singapore 068912
www.cisco.com
Tel: +65 6317 7777
Fax: +65 6317 7799

Europe Headquarters
Cisco Systems International BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: +31 0 800 020 0791
Fax: +31 0 20 357 1100

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