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BSR 64000

SOFTWARE RELEASE 6.3

As cable subscribers' usage continues to evolve, the number of high-bandwidth voice, video, and data applications is exploding. DOCSIS-based access networks—once used for less bandwidth-intensive applications—now provide a wide array of high-bandwidth services for business and residential customers. Release 6.3 of the BSR 64000 CMTS accelerates performance to meet the heightened requirements for capacity and quality of service.

For cable operators, the CMTS plays a critical role in satisfying changing market demands. Release 6.3 of the BSR 64000 continues the advancement of CMTS access technology with performance improvements for ultra broadband subscribers and new features that create additional revenue opportunities for cable operators.

This enhanced solution maximizes usable bandwidth to support today's bandwidth intensive applications. It also provides for a migration path to IPv6, added bandwidth control for multicast traffic, and flexibility for future growth.

NEW FEATURES IN RELEASE 6.3

Upstream Channel Bonding

Upstream speed, which once gave a competitive edge to FTTH solutions, is now a source of new revenue opportunities for cable operators. The addition of upstream channel bonding on the RX48 upstream module enables new service offerings that meet the upstream speed demands from applications like symmetric business services, BitTorrent, Skype video, multimedia gaming, and more.

With Motorola DOCSIS 3.0 hardware-based upstream channel bonding, speeds of over 100 Mbps for a single cable modem are achievable. Along with speed, users enjoy the reliable service they have come to expect from their broadband access provider. Upstream channel bonding allows a single cable modem to simultaneously transmit data on multiple upstream channels. In a bonding group, upstream channels can include any mix of modulation type, modulation order, symbol rate, or channel access method (TDMA, A-TDMA, S-CDMA) and may or may not be frequency adjacent.

In addition to increased throughput, upstream channel bonding provides real-time load balancing across bonded channels for more efficient bandwidth utilization. It also helps to address ACK starvation, which can contribute to decreased downstream performance.

DOCSIS 1.x and 2.0 cable modems that do not support upstream channel bonding continue to be supported on existing upstream channels.
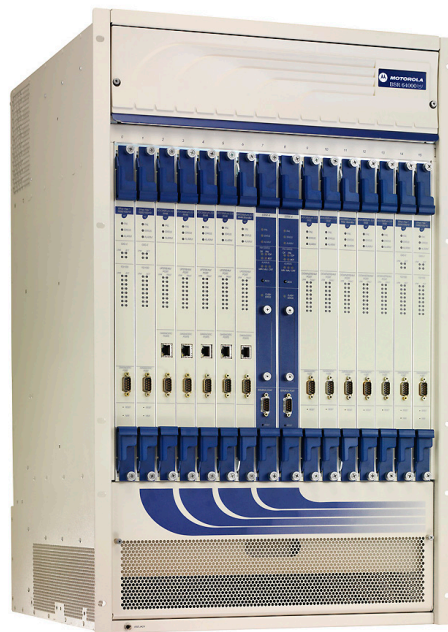
Software Features

Upstream Channel Bonding

Upstream Channel Licensing

IPv6 CPE on 2:8 CMTS Module

Multicast QoS on RX48 and TX32

Cable Modem Steering

5 - 85 MHz RX48 Upstream Frequency Range

RIP in VRF

RX 48 Cable Intercept Enhancements

Upstream Channel Licensing

Investing in the RX48 Decoupled Upstream Module allows you to support higher capacity upstream applications and future services at a lower initial cost, through Upstream Channel Licensing. This "pay-as-you-grow" model allows the investment costs to be metered, so that you pay only for the upstream capacity currently needed, while holding the option to add additional capacity by licensing more channels in the future.

Use only the channels you need today, with confidence that the Motorola solution will scale to meet your service expansion plans in the future.

IPv6 CPE on 2:8 CMTS Modules

Given the scarcity of IPv4 addresses, IPv6 support is essential for future expansion. Release 6.3 of the BSR 64000 implements IPv6 support on 2:8 CMTS modules to ensure that there is plenty of room for subscriber growth.

The BSR 64000 2:8 CMTS module supports IPv6 addressing for cable modems, customer premises routers, and subscriber devices. IPv6 prefix delegation for customer premises routers manages multiple IP-enabled home devices. For routing over the backbone network, IPv6 subscriber traffic uses hardware-based routing and employs IS-IS routing and associated features (IPv6 route summarization, route maps, route distribution).

A CMTS MAC domain supports both IPv4 and IPv6 devices simultaneously.

Multicast QoS on RX48 and TX32

In response to the explosive growth of IP-based video streaming, BSR 64000 enhancements provide controls on multicast traffic bandwidth usage. Configurable multicast QoS enables tighter management of multicast traffic as a percentage of overall downstream bandwidth; thus, critical voice traffic and business services with high priority traffic are not adversely affected.

Cable Modem Steering

It is common to separate services by groups of DOCSIS channels. In this situation, it is desirable to "steer" cable modems (CMs) to channels that best match the CM's capabilities or simply move CMs to adjacent upstream and downstream channels in the same fiber node, based on the services required. Uses of modem steering might include:

- Steering a CM to or from different overlay networks (such as DOCSIS 3.0 or legacy).

- Steering a DOCSIS 2.0/3.0 modem off a TDMA channel and onto an A-TDMA or S-CDMA channel.

- Steering downstream service group (DSG) devices to non-preferred, low frequency S-CDMA upstream channels.

Cable modem steering accomplishes these goals by implementing DOCSIS TLV 43.11 (Service Type Identifier), with values specified by the cable modem during registration.

RX48 Upstream Frequency Range of 5–85 MHz

Demand for total upstream bandwidth and upstream bonding services drives the need for additional upstream channels. The RX48 supports an increased upstream frequency range of 5–85 MHz for mid-split systems designed to extract the greatest value from an existing infrastructure by getting the most out of the return path. Maximizing upstream channels helps facilitate additional service options for business and residential cable subscribers.

RIP in VRF

This release provides additional routing flexibility by extending VPN routing and forwarding support for RIP (Routing Information Protocol). In a Multi-Protocol Label Switching (MPLS) VPN environment, routing information must be exchanged between customer edge routers (CEs). Motorola support for RIP on cable interfaces serves as a lightweight and efficient method to receive CE routes for distribution to the MPLS network via MP-BGP (Multi-Protocol Border Gateway Protocol).

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RX48 Cable Intercept Enhancements
The following enhancements are available on the RX48 upstream module.

- Cable Intercept Source IP Configuration
  To address the issue of modifying access control lists (ACLs) for each instance of cable intercept (CI), the CI source IP address is configurable. Additionally, all intercepted traffic bypasses ACL processing.

- Support for up to Three Cable Intercept Collectors
  This release enables configuration of up to three different destination IP address/port pairs for cable intercept packets.

- Increased MTU to Prevent Fragmentation of Intercepted Packets
  Configuration of IP MTU on Gigabit Ethernet and 10/100 Ethernet interfaces increases to up to 1528 bytes, allowing maximum IP-sized intercepted packets to pass as non-fragmented, thus decreasing complexity for the legal intercept collector.

- Cable Intercept Configuration Security
  Access to cable intercept configuration is now restricted with password verification. Only users with appropriate privilege can enable, disable, and view cable intercepts. For auditing and traceability reasons, login, logout, and all cable-intercept-related commands are logged.

SUPPORTED HARDWARE
Release 6.3 software supports the following BSR 64000 hardware.

495539-001-00	BSR 64000 high-density chassis
530979-001-00	Ether-Flex NIM, 2-SFP-port GigE, and 8-port 10/100
517930-002-00	SRM4 resource module
517932-002-00	SRM4 redundant resource module
508966-001-00	2:8 DOCSIS 2.0 active CMTS set
508968-001-00	2:8 DOCSIS 2.0 redundant CMTS set
508967-002-00	High-density 2:8 EuroDOCSIS 2.0 CMTS module
508969-002-00	Redundant 2:8 EuroDOCSIS 2.0 CMTS module
537806-002-00	TX32 1GHz DOCSIS/EuroDOCSIS 3.0 active I-CMTS module set
537807-002-00	TX32 1GHz DOCSIS/EuroDOCSIS 3.0 active I-CMTS front resource module
537812-001-00	TX32 DOCSIS/EuroDOCSIS 3.0 redundant I-CMTS front resource module
537808-001-00	TX32 DOCSIS/EuroDOCSIS 3.0 active I-CMTS 1-slot rear I/O module
537809-001-00	TX32 DOCSIS/EuroDOCSIS 3.0 active/redun. I-CMTS 3-slot rear I/O module
537811-001-00	TX32 DOCSIS/EuroDOCSIS 3.0 active/redun. I-CMTS 5-slot rear I/O module
537813-002-00	RX48 DOCSIS/EuroDOCSIS 3.0 active module set HW base
537817-002-00	RX48 DOCSIS/EuroDOCSIS 3.0 active I/M-CMTS front resource module
537820-001-00	RX48 DOCSIS/EuroDOCSIS 3.0 active I/M-CMTS rear I/O module
537823-001-00	RX48 DOCSIS/EuroDOCSIS 3.0 redundant I/M-CMTS module set

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BSR DOCUMENTATION

For complete user documentation and additional information on the features described, access the documentation center at http://motorola.com/doccenter.

MOTOROLA SUPPORT

For technical assistance with the BSR 64000, contact the Technical Response Center (TRC).

United States: 1-888-944-HELP
                (1-888-944-4357)
International: +1-215-323-0044

The TRC is on call 24 hours a day, 7 days a week.

MOTOROLA SERVICES

To order the following services, contact your sales representative.

476666-111-00	RF Upstream Plant Characterization
583794-001-00	BSR210: BSR I-CMTS Operations I training course
583796-001-00	BSR310: BSR I-CMTS Operations II training course
536219-001-00	BSR402: BSR Instructor-led Custom training course
486860-001-98	BSR 64000, Gold Support Services Coverage
486859-001-98	BSR 64000, Bronze Support Services Coverage
486868-001-00	BSR 64000 Deployment Service

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