

BSR 64000

Cable Modem Termination System/Edge Router

Based on open systems standards, the BSR 64000 is DOCSIS® and EuroDOCSIS 3.0 compatible, DOCSIS 2.0/1.x qualified, PacketCable™ 1.1 qualified, and PacketCable Multimedia (PCMM) qualified

DOCSIS 3.0 support for channel bonding allows operators to bond multiple physical channels into a single, virtual, high-bandwidth channel

Supports highly scalable addressing via IPv6

Flexible chassis configuration supports traditional CMTS and I-CMTS architectures to enable significant increases in downstream capacity without the need for corresponding increases in upstream capacity

Fully redundant, carrier-class system architected for "five nines" (99.999%) availability

Motorola's Broadband Services Router 64000 (BSR 64000) is a fully redundant carrier-class intelligent edge router with an integrated DOCSIS 3.0 and EuroDOCSIS 3.0 compatible high-density CMTS supporting next-generation ultra-broadband cable services. The BSR 64000 can be configured as a traditional chassis-based CMTS or configured to enable the vast benefits offered with next-generation DOCSIS 3.0 features associated with the Integrated-CMTS (I-CMTS) and Modular-CMTS (M-CMTS) access networks architectures.

The BSR 64000 can be configured for I-CMTS with the addition of the Motorola TX32 decoupled downstream module, while continuing to use the existing BSR Supervisory Resource Module, Network Interface Modules, and 2:8 DOCSIS/EuroDOCSIS 2.0 modules. The deployment of the TX32 provides a significant increase in downstream capacity and an increase in downstream bandwidth. It allows operators to deploy ultra-broadband services with data speeds in excess of 145 Mbps to a single DOCSIS 3.0 cable modem, and over 200 Mbps to a single EuroDOCSIS cable modem, by leveraging DOCSIS 3.0 downstream channel bonding.

In addition to downstream channel bonding, the BSR 64000 will support the full DOCSIS 3.0 feature set via upgrades to the BSR 64000 highly available software. As new IP-based services are delivered to subscribers, cable operators can migrate to DOCSIS 3.0 IPv6 to provide greater scalability and improved addressing via IPv6-capable cable modems and set-tops.

The BSR 64000 supports the full DOCSIS 2.0 implementation of ATDMA and SCDMA and offers the ability to define up to four DOCSIS logical channels within each physical channel, allowing cable operators to optimize the throughput of upstream bandwidth for higher-speed upstream services.

It includes an internal RF switch matrix to provide the CMTS redundancy and resilience necessary for demanding, mission-critical applications delivered over cable infrastructure. This high-performance, intelligent edge router platform performs sophisticated traffic grooming and forwarding in a distributed fashion at the periphery of the broadband access network, to enable end-to-end service delivery across access, metropolitan, and core networks.



Operators can now create a single virtual channel composed of multiple RF channels bonded together to deliver greater peak bandwidth to subscribers. This solution allows cable operators to bond up to four physical channels to deliver over 145 Mbps to a single DOCSIS cable modem and over 200 Mbps to a single EuroDOCSIS cable modem.

Carrier-class reliability and robust QoS control enable real-time VoIP services

SmartFlow™ QoS classification for thousands of flows at wire-speed with guaranteed Service Level Agreements (SLAs)

Carrier-class intradomain, interdomain, and multicast routing with OSPF v2, RIP v1 and v2, BGP4, VRRP, IGMP, IP Tunneling, and PIM-SM

Virtual Private Network (VPN) support with policy-based routing and full-featured MPLS

Virtual LAN (VLAN) support

Advanced Spectrum Management features enabled with RFSentry™, an integrated ninth receiver on each CMTS card that monitors RF performance

It delivers the per-flow packet treatment needed to enable end-to-end SLAs across broadband access networks—including handoffs to metropolitan or core networks using DiffServ and/or Multiprotocol Label Switching (MPLS). It supports important standards for packetized voice services, including Dynamic QoS (DQoS), Common Open Policy Service (COPS), IPsec, and the Communications Law Enforcement Act (CALEA) for legal intercept.

The BSR 64000 allows operators to efficiently manage impairments on the HFC network so they can continuously optimize performance, create bandwidth, and efficiently migrate to DOCSIS 3.0 while leveraging investments in deployed DOCSIS 1.x and 2.0 cable modems. Advanced Spectrum Management features allow operators to optimize throughput and cancel out or avoid impairments. It includes ingress noise cancellation, post-equalization, sophisticated noise measurement, and noise avoidance capabilities. Advanced Spectrum Management features are enabled with Motorola's exclusive RFSentry, an integrated ninth receiver on each CMTS card that unobtrusively monitors RF performance to optimize upstream throughput.

DOCSIS 3.0 Channel Bonding

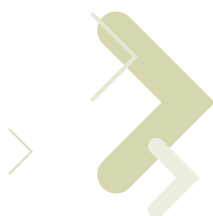
The BSR 64000 platform provides cable operators with a versatile architecture leveraging DOCSIS 3.0 technology to enable ultra-broadband residential and commercial data services. Multiple downstream channels are combined or bonded together to dramatically increase the downstream data rate, allowing for a significant increase in downstream capacity and offering cable operators a cost-effective solution to compete with next-generation xDSL and fiber-based telco services.

Operators can now create a single virtual channel composed of multiple RF channels bonded together to deliver greater peak bandwidth to subscribers. This solution allows cable operators to bond up to four physical channels to deliver over 145 Mbps to a single DOCSIS cable modem and over 200 Mbps to a single EuroDOCSIS cable modem. Motorola's BSR 64000 provides the investment protection cable operators require to easily migrate to DOCSIS/EuroDOCSIS 3.0 while supporting existing populations of DOCSIS 1.x and 2.0 modems on existing infrastructure and introducing high-throughput ultra-broadband residential and commercial services.

High-Performance, Redundant, and Cost-Effective Routing

This high-density platform streamlines operations and management. The system includes flexible interfaces for Gigabit and 10/100 Ethernet, and it eliminates the need for discrete CMTS equipment, upconverters, aggregation switches, and routers. The BSR 64000 offers unified management of routing, QoS, and CMTS functions and it scales economically to meet ever-increasing subscriber demands and the introduction of new services.

The BSR 64000 design is based on centralized routing table calculations and distributed forwarding, and it provides the benefits of simple configuration (single router appearance), scalable performance (each additional line card brings an associated forwarding engine), and low cost of entry (operators only purchase the forwarding power required). It can be deployed to consolidate traffic flows on the broadband access network and provide access to metropolitan and core networks. High-speed interfaces allow connectivity to local servers so operators can efficiently distribute content, services, and applications over the access network.





Carrier-Class VoIP

DOCSIS logical channel support allows operators to define up to four virtual channels within each physical channel

Dynamic Load Balancing allows cable operators to balance cable modem traffic across multiple upstream or downstream ports

Standards-based IPDR support enables simplified billing and usage accounting for a diverse range of IP services

The BSR 64000 is a carrier-class platform architected for the 99.999 percent availability and wire-rate performance required for real-time voice services. It supports continuous operation in a mission-critical, service-oriented environment. The BSR 64000's architecture integrates Central Office features that lower operational and maintenance cost. These features include a Stratum 3 clock, a mid-plane chassis design with field-replaceable modules, "cable once" rear cabling, simple front access, fully redundant control, sophisticated route calculations, and an internal 64 Gbps switching fabric.

The BSR 64000 supports continuous operation regardless of internal and external failures, and it enables hitless software upgrades. SmartFlow provides the QoS control necessary for prioritizing voice calls to enable real-time service delivery. It offers proven interoperability with Motorola's families of multimedia terminal adaptors and voice-enabled cable modems. With the BSR 64000, operators can deliver converged voice and data services over the HFC network using a scalable, cost-effective system that provides carrier-class availability. Operators can also begin a migration path toward offering seamless mobility of voice services that can be delivered over cellular networks and broadband-based Wi-Fi® networks.

Advanced Multimedia Services

The BSR 64000 provides support for the PCMM architecture, which allows cable operators to offer a variety of QoS IP-based revenue-generating services such as VoIP, online gaming, and other multimedia services. The PCMM architecture is comprised of an Application Manager, Policy Server, CMTS, Recorded Keeping Server, and Clients. It defines the requirements needed to support QoS-based multimedia applications, leveraging the existing DOCSIS 1.1 access technology. PCMM enables operators to efficiently and cost-effectively deploy these new revenue-generating IP multimedia services.

An Innovative and Redundant System Architecture

The BSR 64000 architecture optimizes performance and reliability by centralizing routing table calculations while distributing packet-forwarding functions. The BSR 64000 offers a high level of reliability with complete system redundancy, including redundant 1:N CMTS modules with an integrated RF switch matrix, redundant 1:1 Network Interface Modules, redundant 1:1 Supervisory Routing Modules (SRMs) with a redundant switch fabric, and redundant power supplies and fan assemblies.

The next-generation, 16-slot, NEBS-compliant chassis has been designed to deliver advanced services, and the BSR 64000 has a mid-plane architecture that enhances serviceability by decoupling functional hardware modules from the physical I/O and connectivity. The mid-plane provides the physical paths used for interslot communications and includes the switch fabric cross-connect paths used by the data plane and a management bus used by the control plane.

The midplane design simplifies support and reduces Mean-Time-To-Repair (MTTR) by separating the front logic cards from the passive rear I/O cards, thus eliminating the need to change cable connections. The chassis provides dual redundant power connections for -48 VDC power, and the BSR 64000 supports hot-insertion and removal capabilities. The slots can be populated with four types of hardware modules: the 2:8 DOCSIS or EuroDOCSIS modules, the TX32 Decoupled Downstream Module, the SRMs, and the Network Interface Modules.

2:8 DOCSIS and EuroDOCSIS 2.0 Modules

The 2:8 DOCSIS and EuroDOCSIS 2.0 modules provide high density and offer advanced functionality. Each module occupies a single slot in the BSR 64000 and has two downstream and eight upstream ports. While eight receivers per module are available for servicing subscriber traffic, Motorola has architected a ninth receiver—RFSentry—onto each module to enable Advanced Spectrum Management. An RFSentry receiver can monitor performance on any one of the upstream ports without impacting throughput. It can unobtrusively gain access to all of the return nodes connected to one of the receiver ports and test any available modem on any one of the port's supported nodes.



The BSR 64000 supports both ATDMA and SCDMA, including upstream support for QPSK and 16, 32, 64, 128, and 256 QAM. It allows DOCSIS 3.0 cable modems to coexist with legacy DOCSIS 1.x and 2.0 modems. Motorola has leveraged the DOCSIS ATDMA specification and adds value by including advanced noise cancellation techniques that work with legacy DOCSIS cable modems to help operators increase throughput.

Motorola's post-equalization capabilities offer the ability to increase the throughput of DOCSIS 1.0 cable modems by allowing them to operate in 16 QAM mode virtually anywhere that it is possible to operate in QPSK. The BSR 64000 2:8 DOCSIS and EuroDOCSIS 2.0 CMTS modules perform per-burst equalization that enables the receiver to equalize—and thus correct for—the effects of micro-reflections, amplitude distortion, and group delay distortion.

Each module supports Advanced Spectrum Management functionality with integrated upstream spectrum analysis and management and configurable intelligent frequency, modulation, and bandwidth agility. They support the ability to define up to four logical channels within each physical channel, allowing cable operators to optimize the throughput of upstream bandwidth. The modules support Dynamic Load Balancing, which allows operators to balance cable modem traffic across multiple upstream and downstream ports. This enables better bandwidth utilization, which allows cable operators to support more voice customers and higher data speeds. The modems are directed to move through the DOCSIS Dynamic Channel Change (DCC) feature.

TX32 Decoupled Downstream Module

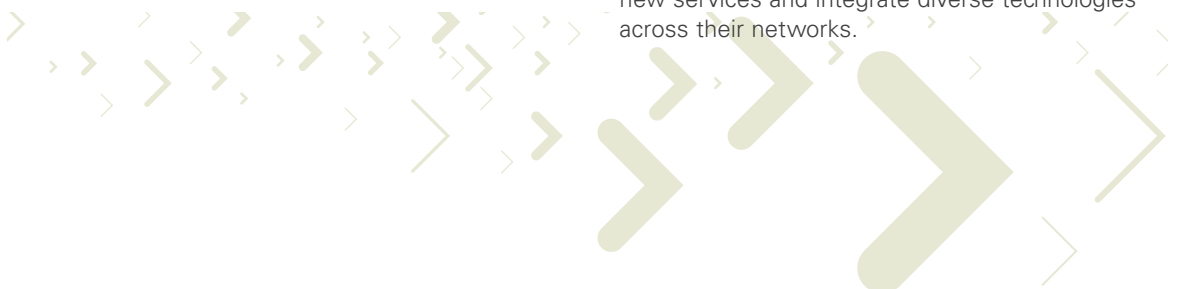
The TX32 allows cable operators to significantly increase protected downstream capacity while fundamentally changing the economics associated with ultra-broadband triple play services. It is an evolutionary step forward and supports a DOCSIS 3.0 I-CMTS architecture that enables flexible scaling of downstream bandwidth to support ultra-broadband services.

With the TX32, cable operators can deliver increased bandwidth for DOCSIS 3.0 as well as legacy DOCSIS 1.0, 1.1, and 2.0 cable modems. The term “decoupled” specifically refers to the separation of the downstream and upstream into different physical modules. This provides cable operators with much higher density and far greater flexibility than current fixed CMTS modules that bound the limits in deploying high-speed ultra-broadband services. The TX32 incorporates DOCSIS 3.0 downstream channel bonding services, IPv6, and Advanced Encryption Services to allow cable operators to deploy cost-effective, scalable, and secure ultra-broadband solutions.

With the industry's leading downstream port density in a highly redundant platform, the TX32 allows cable operators to significantly lower the cost of downstream transmission while deploying proven I-CMTS solutions. To provide 32 downstream channels, the BSR 64000 I-CMTS decoupled TX32 solution requires only one slot, whereas competitive alternatives require three slots to equal the same downstream density. By deploying the TX32 in a BSR 64000 platform, cable operators gain the flexibility to expand downstream offerings without the overhead of increased upstream capacity associated with alternative coupled downstream and upstream DOCSIS modules offered by other vendors. This I-CMTS approach allows cable operators to benefit from a protected module in a protected system that provides the lowest cost of operation for increasing downstream capacity.

Supervisory Routing Module (SRM)

The Supervisory Routing Module Release (SRM) is an integrated control, switching, and route processing module for the BSR 64000. It provides the high performance, advanced routing, and scalability needed to allow cable operators to deploy new high-speed Internet, voice, and video service packages to mid- and high-tier customers. The SRM integrates three distinct subsystems providing control, switching, and route processing to enable advanced routing, high-speed traffic forwarding, and inter-module control for the BSR 64000. Cable operators need carrier-class implementations of major routing protocols so they can efficiently deploy new services and integrate diverse technologies across their networks.





The SRM enables full-featured routing on the BSR 64000 with support for intradomain, interdomain, and multicast routing protocols including IPv4, OSPF v2, BGP4, RIP v1/v2, IGMP, VRRP, PIM-SM, PIM-SSM, and IPv6. With the SRM, support for these major IP routing protocols allows cable operators to easily integrate new services onto existing network environments. The BSR 64000 architecture uses the SRM to perform centralized routing table calculations and distribution of forwarding and control information to optimize system performance and simplify configuration and management. Using this centralized approach, the SRM performance can be optimized and simplified by having all other BSR 64000 modules connect to the primary and secondary SRMs via redundant control buses. This allows the smooth flow of control and management information from the SRM to the other modules.

Network Interface Modules

The Network Interface Modules classify packets, apply QoS policies, and forward traffic flows. They provide the high-speed local, wide area, and metropolitan area interfaces for the BSR 64000. They enable wire-speed flow classification and forwarding in hardware to optimize throughput. Network Interface Modules include the EtherFlex™ card with two ports of Gigabit Ethernet and eight ports of 10/100 Ethernet built with Small Form Factor Pluggable (SFP) optics. The Network Interface Modules support full 1:1 redundancy to enable uninterrupted service for revenue-generating applications such as voice, data, and video.

Integrated RF Switch

Integrated RF switches connect the input and output of each DOCSIS or EuroDOCSIS CMTS module to the RF plant to allow 1:N redundancy. These modules support automatic CMTS module switchover with a single standby DOCSIS or EuroDOCSIS module serving as a backup to all other DOCSIS or EuroDOCSIS modules of the same type in the chassis, containing configuration information for all of the active modules. This allows broadband operators to support hitless failover and offer carrier-grade availability for services such as IP telephony, which are intolerant of the extended cable modem re-registration times that typically occur following CMTS card failures.

Flexible Configuration

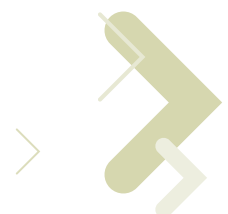
The two central slots in the chassis are reserved for the primary and secondary SRMs to enable 1:1 redundancy. Typical configurations will also include redundant Network Interface Modules for upstream metropolitan or wide area connectivity and up to 11 active DOCSIS or EuroDOCSIS CMTS modules and a spare.

Bi-directional, non-blocking 2.1 Gbps data packet transport is provided between modules in a cross-connect manner via a redundant, 64 Gbps fabric. This distributed architecture can provide the density and performance required to accelerate the mass deployment of new revenue-generating services over HFC infrastructure. It provides the capability to support even higher-density interfaces and new features. In the future, operators can deploy the BSR 64000 safe in the knowledge they can evolve the platform to capitalize on new technologies and business opportunities.

MPLS and Policy-Based Routing

Operators can deploy the BSR 64000 as an MPLS Label Edge Router (LER) at the edge of the network or as an MPLS Label Switch Router (LSR) to provide high-speed Layer 2 transport across the network. Because of the BSR 64000's hardware-based distributed forwarding architecture, MPLS traffic flows can be routed at wire-speed so broadband network operators can deploy additional revenue-generating services.

Treatments for QoS are based on the policies defined for each MPLS Label Switched Path (LSP) to enable end-to-end traffic treatment across access, metropolitan, and core networks. The BSR 64000 offers a carrier-class implementation of policy-based routing with MPLS. Motorola's MPLS implementation supports IETF standards and is fully interoperable with MPLS-enabled routers and switches.





Network Management and Control

Support for BGP/MPLS VPN (RFC 2547) allows cable operators to provide compelling VPN services for enterprise customers that encourage them to migrate from their incumbent carriers. Broadband operators can offer services with the same parameters for QoS, security, and performance at a fraction of the cost of traditional leased line or Frame Relay/ATM services offered by incumbent providers—and operators can provide enhanced value by allowing commercial customers to quickly and easily provision additional bandwidth.

Commercial Services

An alternative to MPLS VPNs for connecting multiple commercial locations in a secure virtual network is to use Virtual LANs (VLANs). VLANs enable Transparent LAN Service (TLS) via DOCSIS cable modems. The BSR 64000 allows operators to bridge Layer 2 packets from TLS subscribers to and from an 802.1q VLAN on the network side of the CMTS.

Cable operators can also develop high-value commercial services by leveraging the BSR 64000 to create transparent, private, and dedicated Layer 2 VPN connections between cable modems at multiple business sites. The BSR 64000 can serve as a Layer 2 VPN gateway solution, allowing cable operators to capture new business from incumbent carriers by offering commercial accounts a flexible and more cost-effective alternative to frame relay. Commercial customers can benefit from Layer 2 VPNs without the need for the cable operator to deploy VPN equipment or software at customer locations.

The BSR 64000 offers several options for efficient administration, management, and control to streamline deployment and operation costs. In headend locations with limited availability of trained staff, troubleshooting on the BSR 64000 is simple, with easy-to-read diagnostic LEDs as well as remote management capability to support provisioning, configuration, monitoring, and problem identification.

The BSR 64000 supports Simple Network Management Protocol (SNMP) v1 and v3. Motorola supports all appropriate standard MIBs and offers custom MIBs to monitor and control the BSR 64000's value-added features. Partitioned management provides users with different administrative access needs customized views according to their access privileges. Because of the importance of network security, the BSR 64000 supports RADIUS, TACACS+, Secure Shell (SSH) login, Syslog authentication, and other security measures. The system supports the File Transfer Protocol (FTP) for bulk data transfer, and management of the BSR 64000 can be seamlessly integrated into the existing network management infrastructure.

It supports IP Detail Records (IPDR), allowing cable operators to centrally capture a wealth of per-subscriber usage statistics to streamline billing, track and monitor service utilization, and simplify accounting for IP service delivery. IPDR support allows cable operators to centralize billing for all IP services, even though services like VoIP rely on different protocols and back-end OSS infrastructure.

The BSR 64000 offers extensive diagnostic capabilities and includes a Cisco®-like Command Line Interface (CLI) for ease of use and interoperability with legacy infrastructure. The CLI supports full scripting capability and ASCII-formatted command files can be uploaded, downloaded, and executed.





BSR 64000 Specifications

Scalable Platform for Growth

CARRIER CLASS CHASSIS

Hot-swappable modules with redundancy

High availability architecture: 1:1 SRM redundancy, 1:N DOCSIS and EuroDOCSIS Module redundancy, 1:1 High-Speed Interface Module redundancy, Redundant power and fan units, Integrated RF switch

Advanced real-time operating systems such as VxWorks and INTEGRITY provide high levels of reliability, availability, and security for the BSR 64000

STANDARDS-BASED INTEROPERABILITY

DOCSIS 1.1/1.0, DOCSIS 2.0 and EuroDOCSIS 2.0 qualified

DOCSIS 3.0 and EuroDOCSIS 3.0 compatible

PacketCable 1.1 and EuroPacket Cable 1.0 qualified

PacketCable Multimedia 1.0 and EuroPacket Cable 1.0 qualified

FLEXIBLE CAPACITY CONFIGURATIONS

Flexible downstream capacity expansion with the TX32 Decoupled Downstream I-CMTS Module

Ether-Flex Card offers 2 ports of Gigabit Ethernet with SFP optics or 8 ports of 10/100 Fast Ethernet

Software Specifications

ROUTING

Internet Protocol version 4 and version 6 (IPv4 and IPv6)

Open Shortest Path First Version 2 (OSPFv2)

Border Gateway Protocol version 4 (BGPv4)

Multiprotocol Label Switching (MPLS)

Routing Information Protocol (RIP) version 1 and 2

Static Routes

Intermediate System-to-Intermediate System (IS-IS)

BGP/MPLS VPNs

Virtual Router Redundancy Protocol (VRRP)

MULTICAST

Internet Group Management Protocol (IGMP) version 1, 2 and 3

Protocol Independent Multicast-Sparse Mode (PIM-SM)

Protocol Independent Multicast-Source Specific Multicast (PIM-SSM)

IP ADDRESS MANAGEMENT

DHCP Relay

TRAFFIC MANAGEMENT

Marking, policing and shaping

Smart-Flow™ Hierarchical per-class per-flow scheduling

Longest Queue Pushout (LQP) congestion management

SECURITY MANAGEMENT

IPSec Tunnels

MD5 Authentication

BPI+

Cable and Lawful Intercept

HIGH-PERFORMANCE IP ROUTING

Hardware-based forwarding and flow classification

Routing policy support

More than 3 million PPS for each High-Speed Interface Module

More than 42 million PPS for each chassis

ADVANCED QoS

Hardware-based wire-speed QoS

IP DiffServ, standards-based MPLS, BGP/MPLS VPNs (RFC 2547), per-SID queuing

PACKETIZED VOICE SUPPORT SERVICE

Dynamic QoS (DQoS)

Common Open Policy Service (COPS)

IPSec

LOGGING AND MONITORING

Syslog

Traceroute and Ping (IPv4 and IPv6)



SYSTEM MANAGEMENT AND PROVISIONING

Management and diagnostic capabilities can be controlled via a Cisco®-like command line interface.

SSH, TACACS/TACACS+, and RADIUS

10/100BASE-T port for management

SNMP v1/v2/v3

Telnet with security extensions

DOCSIS, IETF and Motorola MIBs

Multiple levels of account/password authentication

Open interfaces for provisioning, accounting and billing applications

IPDR reporting

Chassis Specifications

PHYSICAL

Form	16-slot, 17 RU, NEBS-compliant chassis
Dimensions	29.75 in H x 19 in W x 19.75 in D (75.56 cm x 48.26 cm x 50.17 cm)
Fully configured weight	140 lbs (63.5 kgs)

POWER

Input power:	-48 VDC
Optional Tyco NP1200 AC to DC Carrier-Class Power Converter	

ENVIRONMENTAL

Operating temperature	0° C (32° F) to +40° C (104° F)
Storage temperature	-20° C (-4° F) to +60° C (140° F)
Operating humidity	10% – 90% non condensing
Storage humidity	5% – 95% non condensing

REGULATORY COMPLIANCE

Safety	UL 60950-1:2003 1st Ed. CSA C22.2 No. 60950-1-03 1st Ed. IEC 60950-1:2001, 1st Ed. EN 60950-1:2002, 1st Ed. 2006/95/EC
Electromagnetic Emissions	EN 300386 V 1.3.1: 2005, Telecom Centers IEC CISPR 22: 2003 Class A CFR 47 Part 15, Subpart B, Class A VCCI V3: 2005, Class A AS/NZS CISPR 22: 2002 Class A RRL Notice 2006-67, Class A 2004/108/EC

Electromagnetic immunity	EN 300386 V 1.3.1: 2005, Telecom Center RRL Notice 2005-130
Environmental	RoHS/WEEE 2005/95/EC
Physical	Designed for NEBS GR-63-CORE level 3 requirements ETS 300 019 Part 1-1 Class 1.1, Part 1-2 Class 2.2, Part 1-3 Class 3.1

RF Specifications

STANDARDS-BASED INTEROPERABILITY

DOCSIS 3.0 downstream channel bonding capable
DOCSIS 2.0 A-TDMA, S-CDMA and Logical Channel Qualified
Integrated downstream RF upconverters
2:8 Advanced Spectrum Management

DOWNSTREAM RF

Downstream modulation	64 and 256 QAM
Downstream frequency range:	88-860MHz (DOCSIS), 108-862MHz (EuroDOCSIS)
Frequency step	32.0 kHz
Downstream per-channel bit rates	27-38Mbps (DOCSIS), 36-56Mbps (EuroDOCSIS)
RF output level	44 – 60 dBmV
Bandwidth	6 MHz (DOCSIS), Up to 8 MHz (EuroDOCSIS)
Typical Modulation Error Rate (MER)	47
Output load impedance	75 ohms

UPSTREAM RF

Upstream frequency range	5 – 42 MHz (DOCSIS), 5 – 55 MHz (J-DOCSIS), 5 – 65 MHz (EuroDOCSIS)
Upstream modulation	QPSK, 16, 32, 64, 128, and 256 QAM
Upstream per-channel bit rate	0.320 – 40.96 Mbps
Input load impedance:	75 ohms

* Requires BSR 64000 Software Release 4.3 or later

Specifications are subject to change without notice.

Enabling Next-Generation, Multi-Service DOCSIS 3.0 Networks

The BSR 64000 allows operators to swiftly deploy enhanced IP services to generate new revenue streams, capture market share, and accelerate return on investment for network infrastructure. This carrier-class switching and service-provisioning solution can provide cable operators with a competitive edge in defining, deploying, and managing broadband services.

This fully redundant, high-density solution is architected for 99.999 percent availability so broadband providers can offer enhanced IP services as well as IP telephony. SmartFlow sophisticated flow classification and QoS treatment can deliver the intelligence needed to offer guaranteed SLAs, and the tight integration of intelligent edge routing and CMTS features allows broadband providers to maximize the use of headend space and simplify management and operations while delivering robust new services. With support for DOCSIS 3.0 services, cable operators can rely on the BSR 64000 for delivering ultra-broadband services and implementing channel bonding to deliver over 145 Mbps to a single DOCSIS cable modem, and over 200 Mbps to a single EuroDOCSIS cable modem.



MOTOROLA

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