

BigBand BMR1200® Broadband Multimedia-Service Router

The BigBand BMR® (Broadband Multimedia-Service Router) is the recognized benchmark platform for network delivery of video services. It is a highly versatile platform for a broad range of solutions, built on the most powerful media processing and routing engines available in the industry.

Flexible and scalable, the BMR1200 is fully interoperable with sources of a broad range of content and services in headend and hub facilities, enabling a service provider to achieve significantly higher utilization of network capacity and assets. The BMR features programmable hardware for easy upgrading and reconfiguration, maximizing returns on capital investments. The modular design of the BMR facilitates a “grow as you go” capex model.

At the core of the BMR is a protocol-agnostic, content-intelligent architecture that switches and processes MPEG, IP and Ethernet packets. The highly innovative BMR design supports a wide assortment of functional modules for digital television management, deep digital transport, digital simulcast, digital ad insertion, HDTV and switched broadcast. BMR functionality includes RateShaping® dynamic bit rate adaptation for video, and other advanced capabilities such as network edge de-jittering, standards-based splicing, and QAM modulation/RF upconversion.

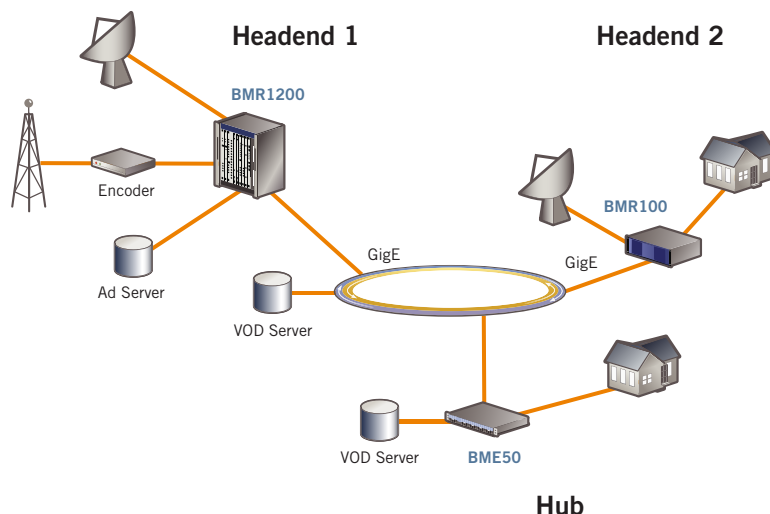
The BigBand Management and Server Suite makes it easy to configure and manage the BMR1200 and co-located platforms, and dynamically provision content and services to be carried over a video network. Intuitive graphical user interfaces assist in provisioning services, and assessing network and element performance. Robust, open protocols including SNMP are used for communicating routing and performance data information. The extensive capabilities of the BigBand Management and Server Suite help minimize operational expenditures.

The BMR1200 is a robust platform designed from the ground up to be carrier-class. Hot-swappable input/output cards and power supplies, a passive backplane, and other features ensure that the BMR meets the highest availability requirements.



BMR1200

- Versatile and modular platform that enables “grow as you go” scalability
- Supports wide range of services including digital TV management, deep digital transport, digital simulcast, digital ad insertion, HDTV and switched broadcast
- Innovative routing and processing engine, fully non-blocking, with 32 Gb/s capacity
- High density chassis, capable of holding up to eight I/O cards, for a total of 96 ASI inputs, 32 ASI or GigE inputs/ outputs, and 64 broadcast QAM outputs
- Gigabit Ethernet, with optional DWDM and CDWM enables cost-effective digital transport
- Robust chassis design ensures the highest performance in even the most arduous conditions
- Carrier-grade platform, with hot-swappable cards, supports 99.999% availability



Versatile platforms provide a broad range of functionality



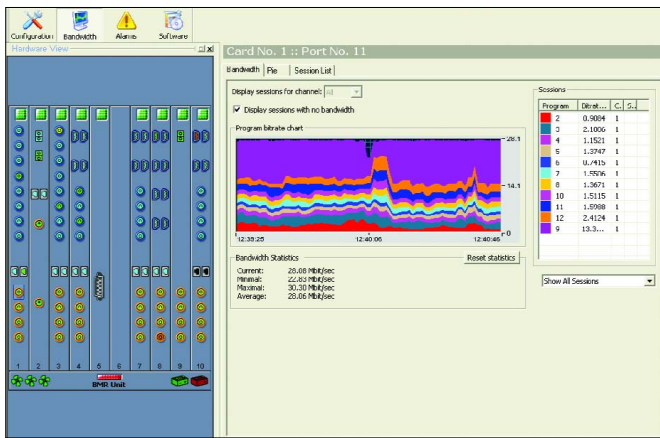
BigBand BMR1200® Broadband Multimedia-Service Router

User-Friendly Management Suite

The BigBand Management Suite makes it easy to manage the BMR and co-located equipment, and provision content and services, by providing a large amount of mission-critical information in easy-to-understand GUI formats.

The Element Manager

The primary function of the Element Manager is configuration, optimization and control of the hardware and software assets of a BigBand BMR. The Element Manager enables an operator to configure multiple parameters, including port bandwidth utilization and feed redundancy. Alarm monitoring is supported by the Element Manager with card status shown on color on the GUI. The Element Manager also supports remote I/O card software upgrades.



Element Manager Graphical User Interface

Broadcast Control Manager

The BCM (Broadcast Control Manager) is the main interface for configuring and managing broadcast sessions, and supports “drag and drop” creation of output multiplexes without service interruption. The BCM enables an operator to browse input programs, viewing program information and bandwidth allocations. Program lineups can be saved and restored as needed.

Global Element Manager

The role of the GEM (Global Element Manager) is to provide network-level management of multiple BigBand platforms. The GEM enables an operator at one network location to have control over equipment at other locations, including the ability to remotely upload new software and troubleshoot alarms. The innovative architecture of the GEM graphical user interface enables a vast array of network detail to be communicated succinctly, and makes navigation between network elements simple.

Configuration Manager

The Configuration Manager allows connections between a BigBand BMR and a third-party network element, such as a VOD server, to be created. The Configuration Manager controls and monitors sessions, and informs the Topology Server (see BigBand Server Suite) when a new network element is added.

Alarm Logger and Viewer

The Alarm Logger and Viewer stores alarm traps and provides an operator with a convenient way of displaying a multitude of information including alarm name, severity of alarm, time of occurrence and current status. Alarms can be sorted and filtered according to a variety of criteria. Alarms from any BMR in a network can be viewed from a single GUI.

A command line interface is also available for basic control and diagnostic, and is part of the embedded operating system of the BMR.

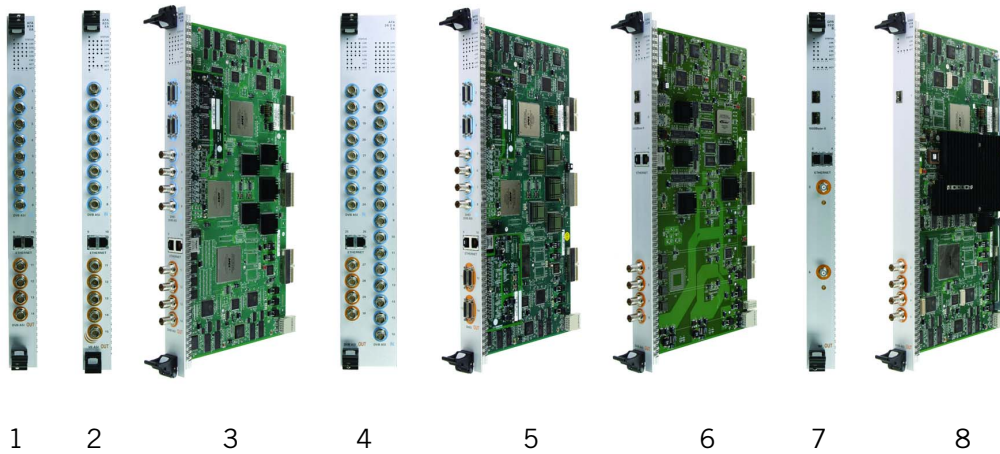
Versatile and Scalable Server Suite

The BigBand Server Suite is a family of software applications that control communications between the BMR and external software managers and clients such as the BMR Management Suite, and includes a Service Manager (talking to the Session Monitor), Broadcast Control Server (talking to the Broadcast Control Manager), Topology Server (talking to the Connection Manager), Alarm Server (talking to the Alarm Logger and Viewer) and SMU Manager Server (talking to the SMU).

The Server Suite resides on the SMU1000, a robust server running Windows 2003.

Modular Hardware Configurations

The BMR chassis holds up to eight I/O cards for a total of up to 96 ASI inputs, 32 ASI or GigE outputs, and 64 broadcast QAM outputs. Many different types of I/O cards are currently available, giving a service provider a broad selection of functionality to choose from:



1. AFA824XA
2. AFA825XA
3. MFA824XA
4. AFA24-2-4XA
5. MFD824XA
6. GFA224
7. GFR222
8. GNA114XA

The XA family includes the AFA, MFA and MFD cards. These cards are used for all video processing functions including RateShaping, muxing, splicing clamping and transport. The XA cards are offered with ASI and DHEI interfaces as well as Fast Ethernet connectors.

The GigE family includes the GFA, GFR and GNA cards. These cards are used for IP transport connectivity with or without video processing functionality.

I/O Board Hardware Configurations		AFA824XA	AFA825XA	MFA824XA	AFA24-2-4XA	MFD824XA	GFA224	GFR222	GNA114XA
INPUTS	DVB-ASI	8	8		24	4			
	DHEI			8		4			
	Fast Ethernet (10/100 BaseT)	2	2	2	2	2	2	2	
	Gigabit Ethernet (SFP)						2	2	1
OUTPUTS	DVB-ASI	4	4	4	4		4		4
	DVB-ASI (up to 160 Mbps)		1						
	DHEI					4			
	Fast Ethernet (10/100 BaseT)	2	2	2	2	2	2	2	
	Gigabit Ethernet (SFP)						2	2	
	Analog Modulation RF (2:1 or 4:1 upconversion)							2	

The BMR chassis supports N+1 redundancy of RF ports, 1+1 redundancy management modules, redundant fans, and load sharing power supplies. Hot-swappable I/O cards and power supplies, a passive backplane and other features ensure that the BMR meets the highest availability requirements.

BigBand BMR1200®

Broadband Multimedia-Service Router

Specifications

System

- MPEG and IP native switching and routing
- 32Gb/s non-blocking switching core
- Statistical multiplexing of different types of data and video sources
- RateShaping for MPEG compressed streams
- Multicast support for IP and MPEG packets
- Service-level input redundancy
- DVB Simulcrypt support
- DVB CSA scrambling

Interfaces

- DVB-ASI inputs (up to 200Mb/s)
- DVB-ASI outputs (up to 160Mb/s)
- DHEI inputs (up to 40Mb/s)
- DHEI outputs (up to 40Mb/s)
- Fast Ethernet inputs/outputs: 10/100BaseT
- Gigabit Ethernet inputs/outputs: 1000BaseSX, 1000BaseLX, WDM (using SFP modules)
- Layer 2 and Layer 3 Ethernet inputs/outputs
- QAM RF outputs (1:1, 2:1 or 4:1 upconversion)

RateShaping

- Bit-rate change from input to output for optimal utilization with minimal quality degradation and low latency
- VBR and CBR outputs
- Supports MPEG SP@ML, MP@ML, MP@HL - SDTV and HDTV
- Supports 1920, 1440, 1280, 1280, 720, 704, 544, 528, 480 and 352 horizontal resolutions
- Supports 1080i, 720p and 480p HDTV profiles
- Multiple QoS priority levels
- SDTV and HDTV splicing

Remultiplexing

- Real-time support for CBR and VBR video stream multiplexing and remultiplexing on every output port
- Support for MPTS and SPTS
- Support of in-the-clear or encrypted MPEG streams
- Ability to pass through all MPEG levels and profiles
- Supports 512 output PIDs for ITV and advanced music services

IP Protocols

- ARP (RFC 826)
- IGMPv2 (RFC 2236)
- SNMPv2 (RFC 3416)
- ICMP (RFC 792)

MPEG Stream Manipulation

- PCR re-stamping
- Support for common input PCR
- Support for common input PMT
- PID filtering, dynamic input tracking and remapping
- Support for PID remapping
- PAT and PMT generation
- Dynamic or static PMT generation
- CAT, NIT, SDT table generation
- Converts off-air PSIP data for cable plant carriage

Physical

Dimensions H x W x D	22.72" x 17.72" x 21.14" (577mm x 450mm x 537mm)
Weight (Fully Loaded)	88lbs (40Kg)

Environmental

Input Voltage	110/220VAC, 50/60Hz -48VDC, -36 to -75VDC
Power Consumption	(per 8 GFR cards & 2 Management card load) 11A Max @ 110VAC 5.2A Max @ 220VAC 33A Max @ -48VDC 925W
Operating Temp.	32 to 122°F (0 to 50°C)
Storage Temp.	-4 to + 185°F (-20 to + 85°C)
Cooling Type	3 fans, hot swappable
Airflow	Front to back
Rel. Humidity (Max)	95% non-condensing

Compliance

Safety	UL/cUL 1950 EN 60950
Electro-Magnetic	FCC Part 15 Class A ETSI 300-386 v1.2.1
NEBS	Level 3



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