

# IVG-7000

- Unparalleled video routing capacity • Joint Transrating with HDTV support
- Multiple output transport streams • IP streaming over Gigabit Ethernet
- BoB™ de-jittering technology • DVB scrambling and Simulcrypt v.3 support
- PSI/SI and PSIP generation / insertion • DVB & ATSC standards supported
- Integrated QAM modulation • Seamless digital ad insertion



## IVG-7000 Series Intelligent Video Gateway

### General



IVN™ YOUR WAY TO VIDEO NETWORKING

The IVG-7000 series is a part of Scopus' 4th generation product line, offering a new and sophisticated video routing and processing platform. It is the cornerstone of Scopus' IVN™ (Intelligent Video Network) headend architecture, which provides a powerful yet cost-effective solution for the delivery of digital TV. It empowers service providers to deploy broadband, broadcast and on demand services over their infrastructure.

The IVG-7000 series features 4 distinct product lines:

- IVG-7100 Intelligent Headend Video Gateway
- IVG-7200 Intelligent Broadcast QAM Gateway
- IVG-7300 Intelligent Video Remultiplexer
- IVG-7400 Intelligent Broadband IP Streamer

### Features

- Multiple inputs and outputs (ASI, GbE, QAM) providing full video routing and grooming to the PID level
- Networking support for the routing of video and data over IP networks
- Seamless clustering of multiple IVG-7100/7200 devices using a standard GBE switch, with single entity management

- Digital-to-digital processing including:
  - Bit Rate shaping (SD & HD)
  - Joint Transrating (JT) - statistical remultiplexing for bandwidth optimization of multiple video services
  - VBR/CBR rate shaping
  - Seamless splicing for digital program/ad insertion
- Full headend integration, including CA integration as well as PSI/SI and PSIP generation, processing and insertion
- Built-in DVB-Scrambling, Simulcrypt 3 and OpenCAS support
- Support for on demand applications - VOD, NVOD, time shifted TV
- Distributed architecture using Scopus BoB™ (Broadcast over Broadband) technology for video routing, networking and packet de-jittering
- IVN™ end-to-end network management, down to service and PID level, fully based on SNMP protocol
- Advanced redundancy solutions eliminating the need of external matrix, using the IVN™ headend architecture
- Slim-line 1RU design with remarkable port density:
  - 12-16 ASI inputs
  - 2-6 ASI outputs
  - Up to 8 upconverted QAM outputs
  - Gigabit Ethernet ports (input/output)
- Aggregate input rate 2.5 Gbps and output rate 2 Gbps
- Broadband IP streaming for IPTV applications

# IVG-7000 SERIES APPLICATIONS

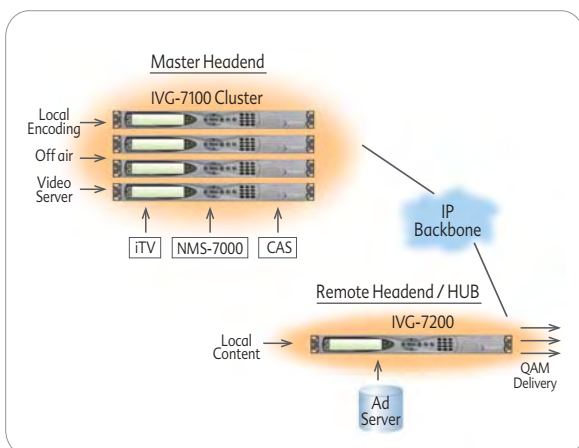
## IVN™ Headend and distributed backbone solution using IVG-7100, IVG-7200

### IVG-7100 Intelligent Headend Video Gateway

The IVG-7100 Video Gateway provides a Scalable Headend-in-a-Box solution for the most advanced headend services. Multiple units may be clustered over a GbE switch and managed as a single entity. It supports hundreds of services, video processing such as joint transrating and digital program insertion, interfacing with essential headend components and enabling advanced personalized services, while optimizing bandwidth utilization and simplifying network management.

### IVG-7200 Intelligent Broadcast QAM Gateway

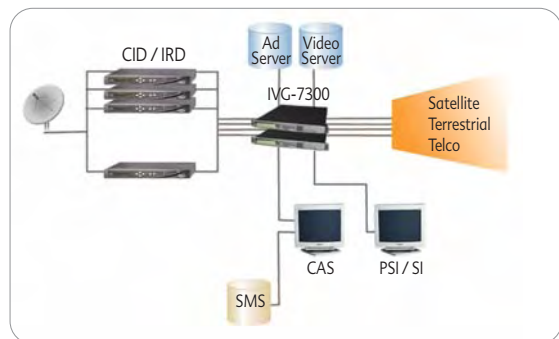
The IVG-7200 Intelligent Broadcast QAM Gateway offers a powerful and unique solution to cable headend processing requirements, including IP networking, video routing and grooming, joint transrating, digital ad insertion and scrambling as well as high density broadcast level QAM modulation and up-conversion. It typically receives multiple IP multicast transport streams, utilizing Scopus' BoB™ (Broadcast over Broadband) de-jittering technology to overcome typical network jitter, grooms and processes them, and outputs up to 8 QAM channels directly to the RF combiner. Located either at the master headend or at remote headends or hubs, the IVG-7200 provides the operator the flexibility of gradually distributing processing over his network, allowing unlimited scalability and future growth.



## Intelligent Digital Turnaround using IVG-7300

### IVG-7300 Intelligent Video Remultiplexer

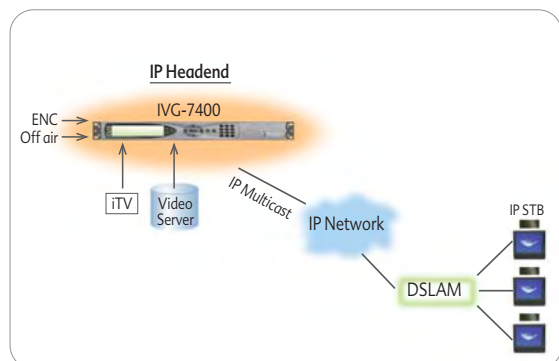
IVG-7300 provides powerful digital processing, bit-rate reduction, flexible grooming, statistical remultiplexing and extensive TS monitoring. The comprehensive DTA solution offered by the IVG-7300 includes PSI/SI and PSIP processing, EPG insertion, CA systems integration and personalized services such as ad insertion, Pay Per View and more.



## Broadband IP streaming for IPTV using IVG-7400

### IVG-7400 Intelligent Broadband IP Streamer

IVG-7400 is a fully featured broadband IP streamer, providing grooming and delivery of Digital TV content over IP networks for TV over DSL or FTTH networks. It supports hundreds of TV services, transported at wire-speed over its Gigabit Ethernet output.



# IVG TECHNOLOGY EDGE

## Video routing and processing

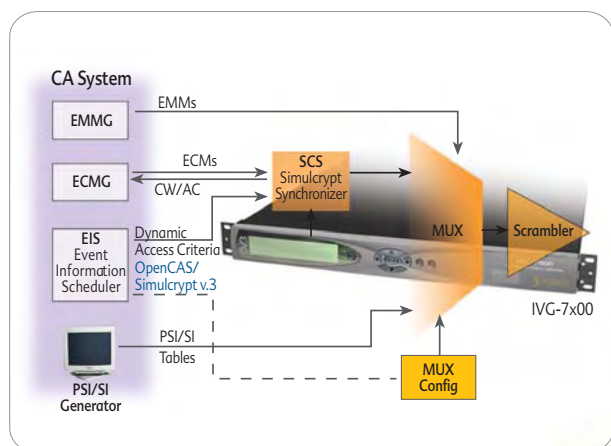
Featuring a breakthrough patent pending network processing technology, the IVG-7000 platform is capable of processing up to 4 Gbps of video and data, all in a 1RU enclosure. IVG- 7100/7200 units can also be clustered over a GBE switch, while maintaining management as a single entity. This allows significant scaling up in processing power, for the aggregation of hundreds of streams and services.

## Transrating and Joint Rate-Allocation (JRA)

Best of breed digital video processing such as transrating and statistical remultiplexing on any of its outputs is provided by IVG. The JRA (Joint Rate Allocation) capability enables combining closed loop rate controlled local encoders with transrated off-air services in the same statistical multiplexing group. These capabilities can also be brought down to the edge of the network, offering the most flexible and efficient bandwidth allocation and management.

## Conditional access and headend interfacing

The IVG-7000 features built-in DVB scramblers per each output and seamless integration with conditional access systems using Simulcrypt open system architecture. The IVG provides full Simulcrypt v.3 functionality for interfaces with ECM and EMM generators, as well as OpenCAS EIS (Event Information Scheduler) and PSI/SI generators. Adding its flexible PSI/SI generation and insertion capabilities, the IVG-7000 forms the ultimate headend unit for today's and tomorrow's digital video applications.

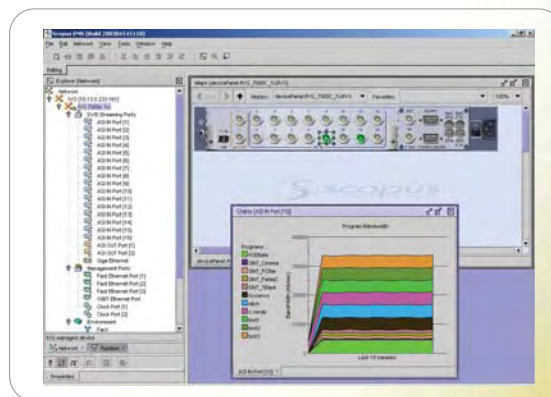


## IP networking

Broadband IP networks are becoming the common choice for transporting video in several applications. The IVG platform features powerful integrated networking capabilities using its BoB (Broadcast over Broadband) technologies, including full capacity Gigabit Ethernet ports for IP unicast and multicast streams input and output, powerful de-jittering mechanism to remove typical IP network jitter, and support for quality of service and redundant applications, and future support of IP FEC. The IVG networking supports applications such as headend clustering, IVN distributed architecture over IP backbones, telco contribution and distribution over IP, as well as dense IP streaming for IPTV headends.

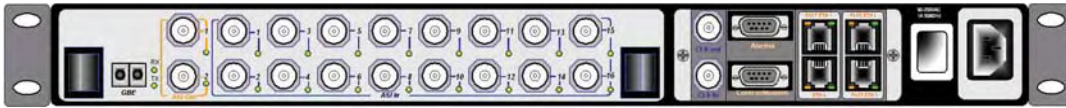
## IVG-7000 Element Management

IVG provides best of breed management in both element and network levels. It is fully SNMP manageable, and together with the NMS-7000 Network Management System, provides an end-to-end management solution in both element and service levels. IVG-7000 offers ease of use, providing the user with a friendly hierarchical representation of content and network resources, and making configuration, control and monitoring easy to operate yet powerful and feature rich.



## Digital Program Insertion

Seamless splicing as well as support of DPI standards SCTE 30 and SCTE 35 enable the IVG-7000 series compatibility with major ad server providers, for an integrated ad insertion solution.



## Product Specifications

### ASI Inputs

- 12-16 ASI inputs (MPTS/SPTS) - DVB or ATSC
- Up to 170 Mbps data rate per ASI input

### ASI Outputs

- 2-6 independent ASI outputs - DVB or ATSC
- Up to 170 Mbps data rate per ASI output
- Output mirroring on any free ASI output

### QAM Outputs (IVG-7200)

- Up to 8 Upconverted QAM channels
- F-type, 75Ω Connector
- Single or dual (adjacent) channel upconversion modes
- 64, 256 QAM constellations
- 6 or 8 MHz channel bandwidth
- ITU J.83 Annex A(DVB), B(US), and C(Japan)
- Frequency Range 88 - 876 MHz
- Power level 50-60 dBmV (45-56 in dual mode)
- MER > 41 dB (Equalized)
- BER < 1e-10
- Return Loss 14 dB
- RF monitoring output per each port (-30dB level)

### Network Interfaces

- Gigabit Ethernet (GbE) port, 1000BaseSX (SFP-LC)
- Full rate, full duplex input and output
- IP streaming UDP/RTP unicast/multicast
- IGMP v2 multicast support

### Management Interfaces

- 3 independent 100BaseT (NMS, Telnet, CAS)
- One 10BaseT interface
- RS-232 / Modem for Command Line Interface
- Dry contact alarms (GPI) - 2 inputs, 2 outputs
- Clock reference input & output - 27MHz

### Video Routing / Remultiplexing

- Stream, Service and Component level grooming from any input to any output (VBR, CBR)
- PID level filtering and remapping
- High accuracy PCR restamping
- PSI/SI and PSIP static/dynamic processing
- Routing capacity of up to 400 services per unit

### Transrating

- Transrating resource bank allowing flexible allocation
- Up to 96 services transrated (rate dependent)
- VBR, CBR inputs and outputs

### Statistical Remultiplexing

- Joint transrating (JT) based on advanced rate shaping and resource allocation algorithms
- Priority assigned per service
- Pass-through services (VBR, CBR) support

### Conditional Access

- Built in DVB scrambler (up to 90Mbps per output)
- Simulcrypt interface with all leading CA vendors
- Simulcrypt 3 and OpenCAS support for iPPV application
- Multi Channel BISS Scrambling

### Digital Ad Insertion

- Seamless splicing in the digital domain
- DPI standards SCTE30/35 for cueing and API

### Device Management

- SNMP-based Element Manager System (EMS)
- Graphical front panel control and monitoring
- Powerful command line interface (Telnet/RS232)

### Physical / Power

- 1RU unit, 19" rack mountable
- Dimensions (HxWxD): 44 x 482 x 597 mm
- Weight: 9 Kg
- Voltage: 90-260 VAC, 50/60 Hz, -48 VDC (Optional)
- Power consumption: 120 W max

### Compliance

EMC: CE, FCC part 15 (class A)

Safety: CE, CB (TUV), cTUVus, UL60950

### Environmental Conditions

- **Operation:** Temp: 0°C - 50°C; Humidity: 5% - 85%
- **Storage:** Temp: -40°C - 70°C; Humidity: 0% - 95%

### Ordering Information

#### Hardware Configurations:

##### IVG-71xx:

- IVG-7102: 16 ASI inputs, 2 ASI outputs, GbE port
- IVG-7106: 12 ASI inputs, 6 ASI outputs, GbE port

##### IVG-72xx:

- IVG-7204: 4 ASI inputs, 4 QAM outputs, dual GbE port
- IVG-7208: 4 ASI inputs, 8 QAM outputs, dual GbE port

##### IVG-73xx:

- IVG-7304: 16 ASI inputs, 4 ASI outputs

##### IVG-74xx:

- IVG-7402: 16 ASI inputs, 2 ASI outputs, GbE output

#### Hardware Options:

- Transrating modules (up to 4 per unit)

#### Software License Options:

- DVB Scrambling and Simulcrypt (per output stream)
- Number of ASI/QAM output streams
- Number of ASI inputs: 4, 8, 12 or 16
- Number of services over GbE port
- Transrating license

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