### Overview

A great many communications satellites now beam DVB based video transport streams all over the earth. An encapsulator is a device specifically created to inject IP content or other types of data into generic streams, which are used frequently in these communications satellites. When used in such a way a single "Rocket" can be dedicated to deliver Internet Services to an unlimited number of users.

The Internet service provided in this way typically exceeds the speed of land based Internet services. In order to select the "Content Pages" the end user of the service communicates with his ISP via a regular phone line. Two types of receivers can be used for reception: set top boxes with IP outputs that are designed to filter out IP packets to an IP port, or PC based solutions with S2 tuners and PCI interfaces that route the IP traffic to the computer just like a network interface. All Internet browsers can be configured to work in this manner.

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The DVB Rocket IP: GSE™ is a simple yet elegant design for an encapsulator. It is based on a SuperMicro 1 RU server, running Linux®. It is fully compliant with all international standards that govern multi protocol and GSE encapsulation, such as EN 302 307. Not only does the Rocket function as a router where it forwards packets based via easily managed routing tables, but it also acts as a switch whereby it creates virtual connections that remain open until closed.

The Rocket typically is located at the premises of a teleport. The DVB Rocket IP: GSE receives multiple IP transport streams and muxes them into up to 16 elementary transport streams, then converts them into one generic transport stream. Thereafter the stream is sent across great distances to satellite and down to a network of dishes where a personal computer with a satellite receiver card can enjoy first class Internet or data service.

Sixteen priorities are available for the order in which the elementary streams are muxed and transmitted via IP. Each priority can have one or many transport streams.

### Highlights

- A low cost, high performance IP to generic stream converter
- Full control of configuration parameters and routing tables
- Provides a smooth system flow for IP protocol based multimedia systems
- Low latency due to Linux® operating system

### Applications

- Satellite and Internet Service Providers (ISPs)
- Data service providers
- Large retail organizations
- Financial institutions
- Supports MPE ULE packing
- IP service via Satellite
- Secure Cinema Package Distribution

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**DVB Rocket IP: GSE™**

Linux® Based, Cost Effective, Ultra High Speed IP to DVB Multiprotocol Encapsulator for Seamless Delivery of IP or Private Data and Video Over Satellite or Terrestrial Networks – Complies with MPE 302-307. Utilizes all Null Packets and Bits. Optimized for DVB-S-S2.

### Features

- **Unlimited** number of remote IP addresses (clients), depending on server memory
- Inputs and Outputs: GigE
- Supports TS and GSE formats
- Linux® based architecture for 24/7 operation with N+1 option
- Implements Unicast, Multicast, and QoS routing
- Fully complies with all IEC standards for generic stream encapsulation
- Typical forwarding delay is 1/10th of others – latency of 6 milliseconds
- Supports C, Ku, and Ka bands
- Tested with major brands of multiplexers and modulators – Tandberg, Radyne, Harmonic, Newtec, Motorola, EF Data, and Sencore
- Field proven on major satellites and one hundred plus teleports
- Aggregate throughput up to 400 Mbps
- QoS for guaranteed services
- Easy to use remote monitoring and control via secure shell access and web interface
- Low jitter
- Supports opportunistic data insertion (SMPTE 325M)
- Optimized for DVB-S/S-2
- Currently Deployed at sites in UK, France, Germany, US, Russia, China, Japan, etc...
- Price and Performance Leader in its class
- Support for Redundancy with NMS, etc.
- Redundant pair can share a virtual IP address
- Optional IP Multicast File Delivery Client Software/Hardware for transmitting to Mobile and Handheld devices – Instacast 4.0
- Price and Performance Leader in its class
- Recent option: Supports File Delivery

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**Computer Modules, Inc.**

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Routing Capabilities

DVB Rocket IP: GSE uses IETF standard routing policies. Static routes are configured for IP-unicast packets (e.g., TCP and UDP user traffic) and for IP multicast (UDP) traffic.

The IP/DVB switch completes the routing information with the MPEG-2 transport stream packet identifier (PID) and receiver's Ethernet MAC address information.

Support for Newer Applications

- **Fast (broadband) mobile Internet access**
  - High-speed Internet delivery to handhelds
  - Combine GSM/GPSR (mobile telephony) with DVB-T/ATSC

- **Embed multimedia services in DTV**
  - Multimedia Home Platform (MHP)
  - Multimedia Car Platform (MCP)

- **Stream IP multicast**
  - MPEG-4 video over IP multicast
  - Deliver content (Webcasting, VOD, Ticker)

The DVB Rocket IP: GSE can insert IP multicast and unicast in MPE (multi protocol encapsulators), addressable sections, data piping, and object carousels. For example, DVB Rocket IP: GSE runs with S & T's (www.s-and-t.com) Object Carousel generator/ transmitter.

Reliability

- Embedded Linux® is a very stable, enterprise oriented environment with very high uptime
- Typical empirical MTBF (mean time between failures): 30,000 hours
- Easy remote login via secure environment for remote maintenance (SSH and web browser)
- Optional dual redundant power supplies and dual channel hot swappable disk drives
- N+1 redundancy is option

Compatibility & Interoperability

Tested compatible with:
- Motorola Cherry Picker™ – Mux
- Newtec Modulator
- Radyne Modulators
- EF Data Modulators
- Work-Microwave Modulators
- Harmonic Data Multiplexers

Compliance

- DVB-S2
- EN 302-307
- Supports Generic Stream Encapsulation at more than 200 Mbps (TS 102 771)

Specifications

**Input & Output Ports**
- Two Fast Ethernet input ports/output ports
- IP in and out

**Virtual Channels**
- Up to 16
- Simultaneous and independent
- Transmission rate can be set to any rate between 2 Kbps and 60 Mbps
- One PID per channel

**Data Piping**
- Sourced from 1 GB port

**SI Tables**
- None

**Protocols**
- TCP/IP, Unicast, Multicast

QoS Function

- Fully implements industry standard QoS for guaranteed levels of service in QoS oriented router environments
- Each route can be assigned as bandwidth limit
- QoS can be turned on or off by management

Application Diagram
Inputs/Outputs

[Image of GUI]

WAN  LAN
(Either can be Used for IP Input or Output)

Sample of GUI’s

Instacast Client/Server Option

High Speed Scalable Overlay From 256 KBPS to 20 MBPS, Based on DVB Technology – Ideal for Transmitting to Mobile and Handheld Devices

Instacast provides a turnkey hardware and software solution for connecting multi-continental based LANS and/or users into a seamless single whole LAN via our DVB encapsulators and receivers. Instacast is a satellite overlay solution for terrestrial intranets and Internet connections. It combines a broadband receive-only satellite link with a terrestrial IP network infrastructure.

- Implements a platform for delivery of value-added, IP-multicast channels and multimedia, such as live webcasting and real-time news delivery
- Improves performance through higher bandwidth return channel
- Provides an asymmetric overlay that does not disrupt existing network infrastructures

File Delivery Option

- Provides ability to Deliver Files such as CAD files, movies, etc.
- Supports encryption and will encrypt streams on the go

Ordering Information

- DVB Rocket IP: GSE Ultra High Speed IP to DVB Encapsulator
  - Standard DVB Rocket IP: GSE in 1 RU Dell R620 server, non-redundant box
- DVB Rocket IP: GSE/HA IP to DVB Encapsulator
  - High-end DVB Rocket IP: GSE, standard industrial PC (IPC) with:
    - Redundant power supply
    - Hot swappable disk drives
- FD File Delivery Option