

MultiStreamer Brutus™ I IP/IP: TELCO

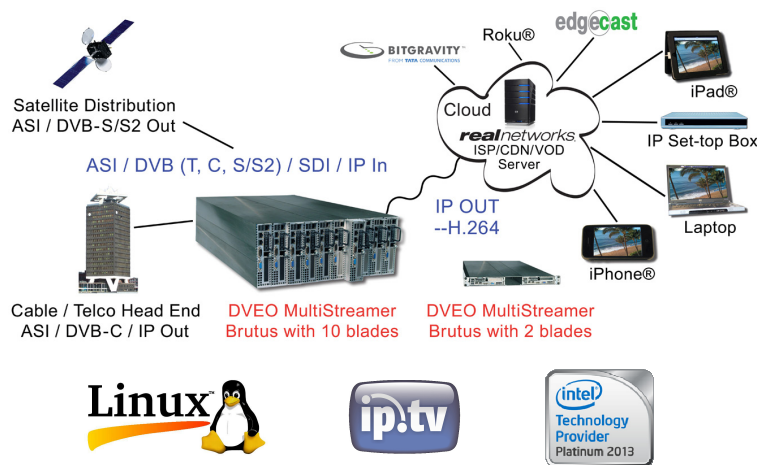
Broadcast Quality, Highly Reliable, 4 RU, 19 Inch Wide, 1-10 Dual 8 Core (Intel Xeon E5-2690) CPU Blade Based Real Time, Multi Definition, Multichannel IP Transcoder and or Streamer (up to 1080p/i), with Ability to Transcode 400 SD Streams from MPEG-2 to H.264 or H.264 to MPEG-2. Based on Embedded Linux® Running on 10 Blades with 16 Intel Xeon Cores Each... It Boots Quickly from Flash Drive and Remembers all Settings. Easy to Use GUI Allows Full Config of Each Stream and via SNMP. Can Report its Status to Remote Network Operations. For 10 Blades Typical Real Time Transcodes Benchmarks Include 400 SD Streams, or 200 720p Streams, or 100 1080p/i Streams. Supports Flash, HLS, RTMP, HTTP, Smooth, and Live Streaming and Works Well with Wowza®, Adobe® Flash® and RealNetworks® Servers. A Single Blade System Transcodes 10 HD (1080i/p) Streams. Ideal Device for Replicating Low, Medium, and High Bit Rate Streams Inside ISP's and CDN's. SDK Available for CDN's Who Wish to Offer Transcode Management via "Their" Application.

Features

- Input or output format can be MPEG-2 or H.264 or a mixture of both
- Can sit in the cloud as a Cloud Encoder
- Supports HTTP adaptive Smooth and Live streaming protocol for output to mobile devices
- Input: IP (H.264, MPEG-2, or VC-1)
 - **Supports IP content protection with rotating Key Servers like Verimatrix, Widevine, etc.**
 - Optional inputs: DVB-ASI, DVB-S/S2, QAM, DVB-C, 8VSB, DVB-T, SDI/HD-SDI
- Output: IP (MPEG-2, H.264, HLS, UDP, RTMP, and others)
- Supports M3u8 playlist files (standalone and through HTTP Live)
- Transcoding bit rates: .1 to 15 Mbps
- Resolutions: qHD, H.264up, SQVGA, QCIF, QVGA, CIF, or any custom size up to 1080i/p
- Transcodes up to 20 720p HD streams, or 10 1080i/p HD streams, or 40 SD streams from MPEG-2 to H.264 or vice-versa in each module
- Creates simultaneous High, Medium, and Low bitrate streams
- Able to upconvert incoming SD streams to HD, and scale down
- SNMP, REST, SOAP support
- Tested to work with Wowza®, Adobe® Flash®, and RealNetworks® Helix® servers
- Tested compatible with major brands of IP devices including Amino™, Roku®, DUNE HD™, Telergy, and Apple iPad® and iPhone®
- Audio support: AAC, Embedded pass-through, Ogg Vorbis, MPEG-1 Layer II, optional MP3, and/or optional "SurCode for Dolby Digital" AC-3
- Settings are remembered when power cycled
- Based on embedded Linux® (via flashdisk)

Applications

- IPTV Unicasting, Multicasting, Streaming
- OTT and Mobile
- Replicating single streams into Low, Medium, and High bit rates
- Telco TV
- Hotels, Cruise Lines, Universities, Resorts
- Rendering and Encoding Farms
- Digital Media Distribution



Overview

The MultiStreamer Brutus™ I IP/IP: TELCO is a real time multichannel streamer that is able to transcode streams that are best suited for customers. It is designed to be scalable, easily adaptable, customizable, and field upgradeable to meet the needs of broadband network operators who are now more than comfortable with embedded Linux® based appliances. It relies on a Dual Intel 8 Core CPU for acceleration. We have also optimized the transcode engine to get the best possible efficiency from each core.

The MultiStreamer Brutus I IP/IP: TELCO is an MPEG-2 to H.264, or H.264 to MPEG-2 transcoder or transcaler. It receives transport streams several ways and transcodes them to MPEG-2 or H.264, and outputs them to an IP network. Resulting streams can be viewed with standard IP capable set-top boxes, streaming video, smart phones, or software clients such as VLC or MPlayer. The MultiStreamer Brutus I IP/IP: TELCO receives transport streams, demultiplexes the requested channels and streams these channels using UDP, RTP, RTSP, RTMP, adaptive, or HTTP via IP networks as either IP multicast or IP unicast streams. The system transcodes individual streams into H.264 or MPEG-2 format up to a maximum individual bitrate of 15 Mbps.

Depending on the configuration, it forwards selected programs via IP datacasting; PAT, PMT, video PID, audio PID(s) and PCR information are transmitted. The MultiStreamer Brutus I IP/IP: TELCO selects all required PIDs and multiplexes the demultiplexed transport stream packets into IP packets.

The unit provides PID filtering of all unwanted traffic, increasing system performance and the number of channels which can be transmitted per unit.

Programs typically are forwarded (pushed) as transport stream packets via UDP or as RTP (real time protocol) payload (RFC 2250). Pushing can be either unicast or multicast. In addition to push, programs can be forwarded on request (pulled) using RTSP, HTTP, HTTP Live, HTTP Smooth, or RTMP.

The MultiStreamer Brutus is a very powerful multi-channel transcoder designed for large scale enterprise level deployments.

DVEO
Broadcast Division

Computer Modules, Inc.

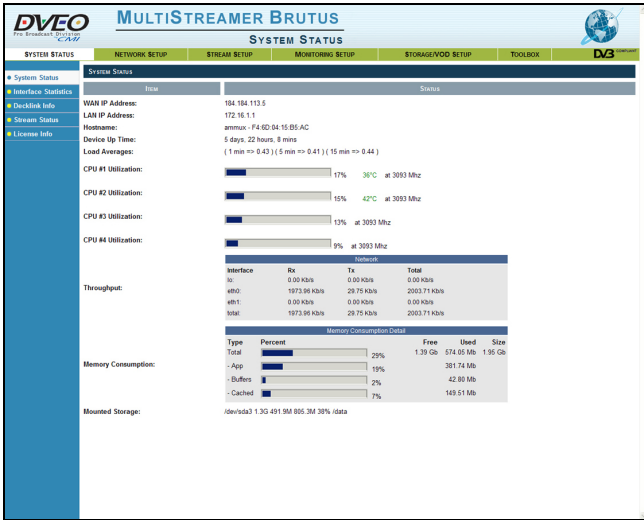
11409 West Bernardo Court

San Diego, CA 92127

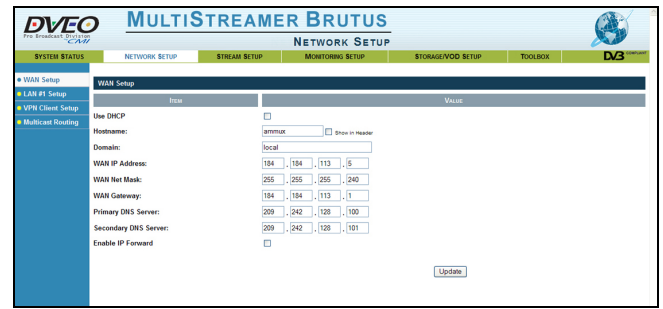
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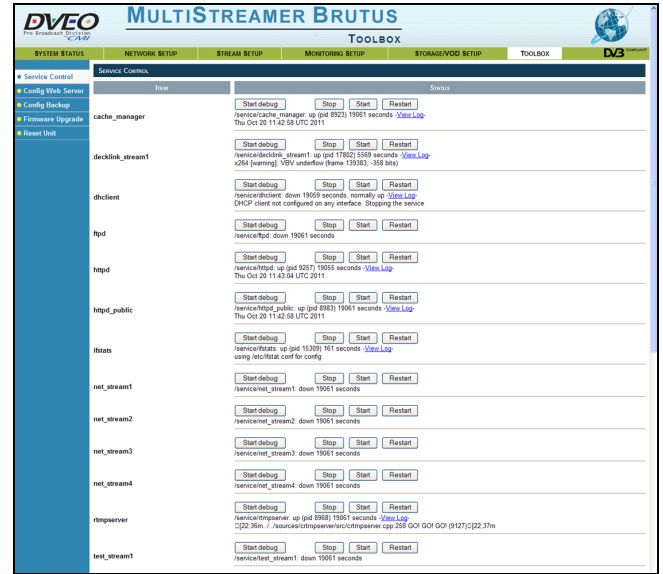
Sample of GUIs



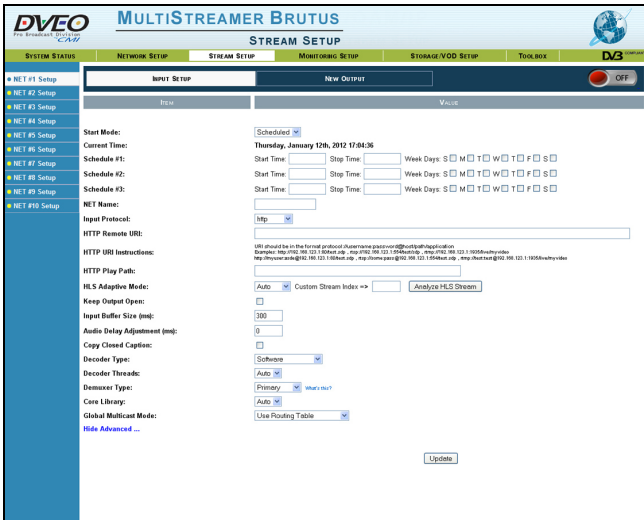
Status Screen



Network Setup

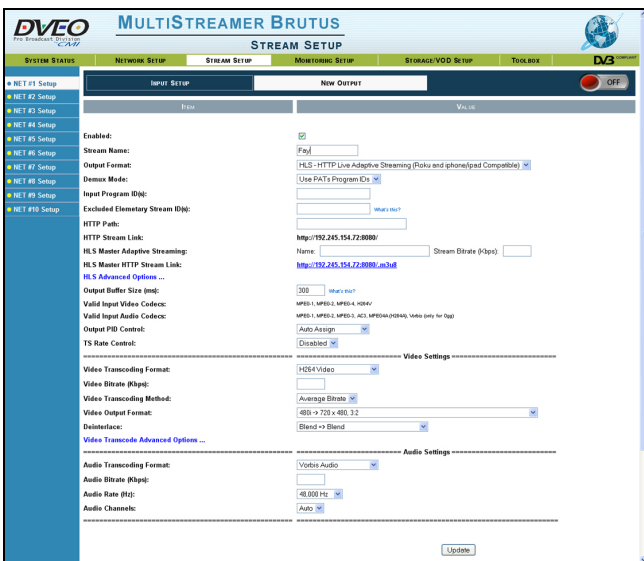
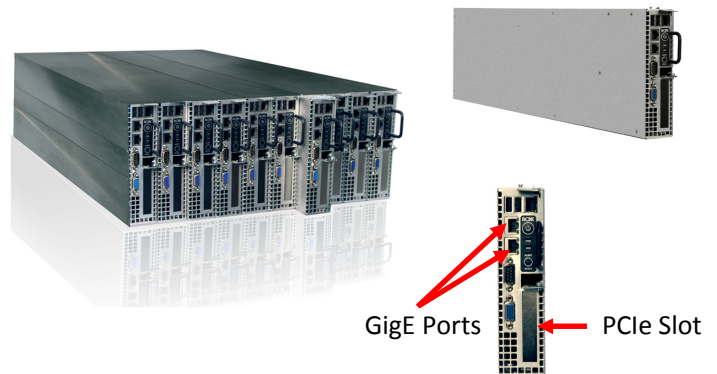


Service Control – Starts and Stops Streaming



Scheduled Input Setup

Product Views



IP Output Setup

IP Input and Output

IP Input

Input protocols:	HTTP Live (HLS), UDP, RTP, RTSP, HTTP, FTP, RTMP (Open Flash), Windows® Media Video 9 with HTTP/ASF
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IP Output

Ethernet:	Up to 2 x 1 Gige
Output protocols:	HTTP Live (HLS), UDP, RTP, RTSP, HTTP, HTTP Smooth, FTP, RTMP (Open Flash), Windows® Media Video 9 with HTTP/ASF
Type:	IP-multicast, IP-unicast

Benchmarks – Per Blade

MPEG-2 In	H.264 Out
<u>SD in at 4 Mbps</u> 480i →	<u>SD out at 2 Mbps</u> 480i – Up to 40 streams
720p inputs at 12 Mbps 720p →	720p outputs at 4 Mbps 720p – Up to 20 streams
1080 inputs at 18 Mbps 1080i →	1080 Outputs 6 Mbps 1080i – Up to 10 streams
1080p →	1080p – Up to 10 streams
H.264 In	MPEG-2 Out
<u>SD input</u> 480i in at 6 Mbps →	<u>SD MPEG-2 out at 6 Mbps</u> Up to 40 streams
<u>HD inputs</u> 720p in at 12 Mbps →	<u>HD outputs</u> 720p at 12 Mbps – Up to 20 streams
1080i in at 15 Mbps →	1080i at 15 Mbps – Up to 10 streams
1080p in at 15 Mbps →	1080p at 15 Mbps – Up to 20 streams

Ports Utilized

Protocol	TCP Ports	UDP Ports
HTTP	80, 8000, 8001, 8080, 1-65535 (out)	
HTTPS	443	
RTSP	554, 7070	6970-7170, 5004 (out) 5005 (in/out)
RTMP		1935
RTP		6970-6999, 16384-32767

Ordering Information

MultiStream Brutus I IP/IP: TELCO: IP-IP
MultiStream Brutus I IP/IP: TELCO/10 channel system with 10 modules
MultiStream ASI/IP (Brutus): IP/ASI
MultiStream DIG/IP (Brutus): SDI/IP
4 RU Chassis Brutus Enclosure (Holds 10 Blades)
1 RU Chassis Brutus Enclosure (Holds 2 Blades)
Tech Support – One year support and updates
Option 1: DVEO GOLD CARE™ – Extended Warranty with Priority Tech Support
Option 2: Anytime IP/IP: TELCO™ application which supports auto-archiving, additional containers and wrappers, and cached output by adding hard drives and memory
Option 3: SPF Fiber Interfaces

Specifications

Supported Resolutions – Input and Output

1920 x 1080	720 x 480	480 x 480	qHD
1280 x 720	704 x 480	480 x 320	H.264up
720 x 576	640 x 480	320 x 240	

Also supports any custom resolution not listed here.

Note: Lower resolution results in higher transcodes.

Note: Supports closed captions.

Optional SDI, HD-SDI Input – Per Blade

Input:	Single SDI (SMPTE 279M), HD-SDI (SMPTE 292M) stream
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Optional DVB-ASI Input – Per Blade

Input/Output:	Up to 40 DVB-ASI SD streams, 200 Mbps per port
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Output Bit Rates

Bit Rates:	Multiple H.264 and/or MPEG-2 video streams at different bit rates (.1 to 15 mbps)
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Administration

Access:	Web interface, ssh interface
SNMP:	Monitoring and alerts, MIBS available

Physical & Power

Size:	7.0” h x 1.7” w x 29.1 d” (178 x 43 x 739 mm)
Voltage:	400 Watt Power Supply (80 Plus Rated)
Temperature:	0°C to 50°C
Humidity:	5% to 95% non-condensing
Conformities:	UL, CSA, CE, RoHS
Weight:	15 lbs.
Warranty:	3 years

CDNs Tested With:

- | | | |
|---------------|--------------|------------------|
| 1. Akamai | 4. Octoshape | 7. Ustream |
| 2. Limelight | 5. Highwinds | 8. Mirror Image |
| 3. BitGravity | 6. Edgecast | 9. More to come! |



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