The Brutus™ VI IP/IP: TELCO is a real time multichannel transcoder designed for large scale enterprise level deployments. 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 4 x 14 Core Intel® Xeon® CPU for acceleration. We have also optimized the transcode engine to get the best possible efficiency from each core.

The Brutus VI IP/IP: TELCO is an MPEG-2 to H.264, or H.264 to MPEG-2 transcoder or transcoder. It receives transport streams several ways and transcodes them to MPEG-2 or H.264 or optional H.265, and outputs them to an IP network. Resulting streams can be viewed with standard transport stream compatible set-top boxes, streaming video, smart phones, or software clients such as VLC or JW Player. The Brutus VI IP/IP: TELCO receives transport streams, demultiplexes the requested channels and streams these channels using UDP, RTP, 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 Brutus VI 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 HTTP, RTMP, RTSP, DASH, etc.

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

- Small To Mid Size Headends for Multiple System Operators
- IPTV Grooming for differentiated services at different rates
- Grooming for OTT and Mobile
- Digital Turnaround for SD and HD combined services
- Perfect for Resizing and Reformating IP camera inputs arriving via RTSP push
- Telco Grooming for 3G and 4G with 3GPP
- Adapting MPEG-2 streams to H.264 for Hotels, Cruise Lines, Universities, Resorts
- Ideal for Cloud based Encoding Farms
- Digital Media Distribution of content in right formats
- Adaptive Multirate Cloud Transcoding
- Will work with audio IP streams for digital music services

Inputs/Outputs

- For Optional 4 Port NIC Card
- IP Management
- For Optional 4 Port NIC Card
- WAN 1
- LAN 1
- PS 1
- PS 2
- WAN 2
- LAN 2
(Either can be used for IP Input or Output)

Reliability Points

- No hard drives
- Lots of spare fans
- Remote MIBS
- Server Class MB
- Quick swap redundant power supply
- Boots up in 40 seconds
- Supermicro IPMI management

Sample of GUIs

Status Screen

Manual IP Input Setup

Scheduled IP Input Setup

IP Output Setup

Provided by: Mega Hertz  800-883-8839  info@go2mhz.com  www.go2mhz.com
### CDNs Tested With:

1. Akamai  
2. Limelight  
3. BitGravity  
4. Octoshape  
5. CDNetworks  
6. Internap  
7. Highwinds  
8. Edgecast  
9. Ustream  
10. Mirror Image  
11. Tulix  
12. More to come!

### Ports Utilized

<table>
<thead>
<tr>
<th>Protocol</th>
<th>TCP Ports</th>
<th>UDP Ports</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTTP</td>
<td>80, 8000, 8001, 8080, 1-65535 (out)</td>
<td></td>
</tr>
<tr>
<td>HTTPS</td>
<td>443</td>
<td></td>
</tr>
<tr>
<td>RTSP</td>
<td>554, 7070</td>
<td>6970-7170, 5004 5005</td>
</tr>
<tr>
<td>RTMP</td>
<td></td>
<td>1935</td>
</tr>
<tr>
<td>RTP</td>
<td></td>
<td>6970-6999, 16384-32767</td>
</tr>
</tbody>
</table>

### Specifications

<table>
<thead>
<tr>
<th>Some Supported Resolutions – Input and Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>1920 x 1080</td>
</tr>
<tr>
<td>1280 x 720</td>
</tr>
<tr>
<td>720 x 576</td>
</tr>
</tbody>
</table>

Also supports any custom resolution not listed here, including computer formats like 1280 x 1024, etc. Note: Lower resolution results in higher transcodes.

Supports PAL TO NTSC conversion but not NTSC to PAL. Supports closed captioning.

H.265 output resolutions supported are 1080, 720, 576, 480.

H.265 576/480 resolutions only have 4:3 aspect ratio.

### Output Bit Rates

| Bit Rates: Multiple H.264 video streams at different bit rates (.1 to 15 mbps), resolutions, and protocols, wrappers, and containers  
Optional H.265: H.265 average bit rate supported. No constant or variable  
Quality: 8 bit encoding with 4:2:0 color sampling; optional 4:2:2 |

### Administration

| Access: Web interface, SSH (Secure command line interface)  
SNMP: Monitoring and alerts, MIBS available  
Scheduling: On, Off support for timeslots |

### CPU and Operating System

| CPU: Quad Intel® CPU server, 56 Core  
OS: DVEO embedded Linux® in Flash™ |

### Physical & Power

| Size: 1.7” h x 17.2” w x 27.75”d (43 x 437 x 705 mm)  
Voltage: 1200W high-efficiency power supply with PMBus (80 Plus Rated)  
Power Consumption: 15 amps maximum  
Operating Temperature: 10° to 35° C (50° to 95°F)  
Non-Operating Temperature: -40° to 70° C (-40° to 158° F)  
Humidity: 8% to 90% (non-condensing)  
Weight: 40 lbs (18.1 kg)  
Conformities: UL, CSA, CE, RoHS |

### Security

| Port scans to MIL requirements prior to shipment |

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**Options**

- Optional transcoding to H.265
- DVEO GOLD CARE™ – Extended Warranty with Priority Tech Support
- Optional DOZER™ Automated UDP Packet Recovery protocol, enabling error-free video delivery over UDP. DOZER ensures smooth MPEG-2 and H.264 delivery through DVEO patented algorithms for automated packet recovery and re-ordering of out-of-sequence packets.
- 4:2:2 10 bit encoding
- Fiber Optic Interface with SFP interfaces
- Optional built-in “Mini Atlas” server supports 1,000+ simultaneous HLS, DASH, and/or RTMP users

**Ordering Information**

Brutus VI IP/IP: TELCO  
Tech Support – One year support and updates, included  
Option 1: H.265 Transcoding  
Option 2: DVEO GOLD CARE™  
Option 3: DOZER™ Automated UDP Packet Recovery  
Option 4: 4:2:2 10 bit encoding  
Option 5: SPF Fiber Interfaces  
Option 6: Built-in “Mini Atlas” server

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