Brutus™ III IP/IP: TELCO

Telco Quality, Highly Reliable, 1 RU, 19 Inch Wide, 2 x 16 Core Intel® Xeon® CPU Based Real Time, Multi Definition, Multichannel IP Transcoder and or Streamer (up to 1080p/i), with Ability to Transcode 104 SD Streams from MPEG-2 to H.264 or H.264 to MPEG-2. With Optional H.265, Transcodes up to 40 SD Streams. Based on Embedded Linux®, 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. Typical Real Time Transcodes Benchmarks Include 104 SD Streams, or 40 Each 720p Streams, or 26 Each 1080i/p Streams. Ships with 2 Onboard Gigabit Ethernet Ports. Supports Flash, HLS, RTMP, HTTP, and Live Streaming and Works Well with Atlas™, Wowza®, and Adobe® Flash® Servers. Ideal Device for Replicating Operations. Typical Real Time Transcodes Benchmarks Include 104 SD Streams, or 40 Each 720p Streams, or 26 Each 1080i/p Streams. 1,000 RTMP, DASH, and/or HLS Users Natively. Simultaneous HLS Users. With Optional Atlas™ Add-on, Supports via “Their” Application. DASH is Now Supported. Supports 50 Wowza®, and Adobe® Flash® Servers. Ideal Device for Replicating Ships with 2 Onboard Gigabit Ethernet Ports. Supports Flash, HLS, 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. It can also multiplex the streams if required.

The Brutus III 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 III IP/IP: TELCO receives transport streams, demultiplexes the requested channels and streams these channels using UDP, 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. It can also multiplex the streams if required.

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 III 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, HTTP Live, RTMP, DASH, etc.

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

Overview

The Brutus™ III IP/IP: TELCO is a real time multichannel streamer that is able to transcode streams into bit rates and protocols that are best suited for the targeted viewing devices. 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 2 x 16 Core Intel® Xeon® CPU for acceleration. We have also optimized the transcode engine to get the best possible efficiency from each core.

The Brutus III IP/IP: TELCO receives transport streams, demultiplexes the requested channels and streams these channels using UDP, 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. It can also multiplex the streams if required.

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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 Reformatting 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

<table>
<thead>
<tr>
<th>PS 1</th>
<th>PS 2</th>
<th>WAN</th>
<th>LAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Two 10 GigE Ports – Either can be used for IP Input or Output)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

CDNs Tested With:

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

*Certified
### IP Input and Output

#### IP Input
- **Input protocols:** HTTP Live (HLS), UDP, RTSP, HTTP, RTMP (pushed from Flash server).
- Supports NewTek™ NDI® input.

#### IP Output
- **Ethernet:** Two 10 GigE ports
- **Output protocols:** UDP, RTP, RTMP (Open Flash), HTTP, with DLNA support
- **Type:** IP-multicast, IP-unicast
- **Video:** NTSC or PAL
- **Latency:** 1.2 seconds (fixed)

### Specifications

#### Some Supported Resolutions – Input and Output

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>1920 x 1080</td>
<td>720 x 480</td>
<td>480 x 480</td>
</tr>
<tr>
<td>1280 x 720</td>
<td>704 x 480</td>
<td>480 x 320</td>
</tr>
<tr>
<td>720 x 576</td>
<td>640 x 480</td>
<td>320 x 240</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.

#### Output Bit Rates

<table>
<thead>
<tr>
<th>Bit Rates</th>
<th>SD out at 6 Mbps, 480i – Up to 6 streams</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 bit encoding with 4:2:0 color sampling; optional 4:2:2</td>
<td></td>
</tr>
</tbody>
</table>

#### Administration

<table>
<thead>
<tr>
<th>Access</th>
<th>Web interface, SSH (Secure command line interface)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNMP</td>
<td>Monitoring and alerts, MIBS available</td>
</tr>
<tr>
<td>Scheduling</td>
<td>On, Off support for timeslots</td>
</tr>
</tbody>
</table>

#### CPU and Operating System

<table>
<thead>
<tr>
<th>CPU</th>
<th>Dual 16 Core Xeon®</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS</td>
<td>DVEO embedded Linux® in SSD</td>
</tr>
</tbody>
</table>

#### Physical & Power

<table>
<thead>
<tr>
<th>Size</th>
<th>1.7&quot; h x 17.2&quot; w x 27.75d&quot; (43 x 437 x 705 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>700W high-efficiency power supply with PMBus (80 Plus Rated)</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>10° to 35° C (50° to 95°F)</td>
</tr>
<tr>
<td>Non-Operating Temperature</td>
<td>-40° to 70°C (-40° to 158°F)</td>
</tr>
<tr>
<td>Humidity</td>
<td>8% to 90% (non-condensing)</td>
</tr>
<tr>
<td>Weight</td>
<td>39 lbs (17.7 kg)</td>
</tr>
<tr>
<td>Conformities</td>
<td>[UL, CSA, CE, RoHS]</td>
</tr>
</tbody>
</table>

#### Security

Ports security scanned to MIL requirements prior to shipment

### Options

- Optional transcoding to H.265
- DVEO SILVER or GOLD CARE™ – Extended Warranty with Priority Tech Support
- Optional DOZER™ Automated UDP Packet Recovery protocol, enabling error-free video delivery over UDP.
- 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
- "Cloud" version available

### Benchmarks

#### MPEG-2 In
- SD in at 4 Mbps, 720p inputs at 12 Mbps, 1080i/p inputs at 15 Mbps
- H.264 In
- SD in at 6 Mbps, 480i, 720p in at 12 Mbps, 1080i/p in at 15 Mbps

#### H.264 In
- SD out at 2 Mbps, 480i – Up to 104 streams
- 720p outputs at 4 Mbps – Up to 40 streams
- 1080i/p outputs at 6 Mbps – Up to 26 streams

#### MPEG-2 Out
- SD out at 6 Mbps, 480i – Up to 104 streams
- 720p at 12 Mbps – Up to 40 streams
- 1080i/p at 15 Mbps – Up to 26 streams

#### H.264 Out
- SD out at 6 Mbps, 480i – Up to 104 streams
- 720p at 12 Mbps – Up to 40 streams
- 1080i/p at 15 Mbps – Up to 26 streams

### Benchmarks – Optional H.265

#### MPEG-2 In
- SD in at 4 Mbps, 720p inputs at 12 Mbps, 1080i/p inputs at 15 Mbps
- H.264 In
- SD in at 6 Mbps, 480i, 720p in at 12 Mbps, 1080i/p in at 15 Mbps

#### H.264 In
- SD out at 1 Mbps, 480i – Up to 40 streams
- 720p outputs at 2 Mbps – Up to 10 streams
- 1080i/p outputs at 3 Mbps – Up to 6 streams

#### MPEG-2 Out
- SD out at 6 Mbps, 480i – Up to 40 streams
- 720p at 12 Mbps – Up to 10 streams
- 1080i/p at 15 Mbps – Up to 26 streams

#### H.264 Out
- SD out at 6 Mbps, 480i – Up to 104 streams
- 720p at 12 Mbps – Up to 40 streams
- 1080i/p at 15 Mbps – Up to 26 streams

### Ordering Information

Brutus III 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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