Features

- Input or output format can be MPEG-2, H.264, optional H.265, or a mixture, with most popular Wrappers and Containers
- Supports Transport Stream Demultiplexing
- Can sit in the cloud as a Cloud reEncoder to generate High, Medium, and Low bit rate streams from inexpensive original encoder
- Supports HLS (adaptive) for output to mobile devices
- Input: IP (H.264, MPEG-2, VC-1, or optional H.265)
- Supports NewTek™ NDI® input
- Supports IP content protection with rotating Key Servers like Verimatrix® VCASTM, Widevine™, etc. via OPT
- IP output protocols: UDP, RTP, RTMP (Open Flash), HTTP, with DLANA support
- Supports logo insertion, text overlay, and SCTE 35 compliant cue tone insertion ("ad markers") on outputs
- 4 built in GIG/E ports for traffic; one for Management – expandable
- Supports 50 simultaneous HLS users. Optional built-in server supports 1,000+ simultaneous HLS, DASH, and/or RTMP users natively (without Media Servers).
- Transcoding bit rates: .1 to 15 Mbps with 4:2:0 or optional 4:2:2
- Creates simultaneous High, Medium, and Low bitrate streams
- Resolutions: qHD, H.264up, SQVGA, QCIF, QVGA, CIF, or any custom size up to 1080i/p. Also supports all computer resolutions.
- Transcodes up to 90 720p60 HD streams, or 60 1080i/p HD streams, or 240 SD streams from MPEG-2 to H.264, or vice-versa
- Optional H.265 transcodes are up to 24 720p HD streams, or 14 1080i/p HD streams, or 96 SD streams from MPEG-2 or H.264 to H.265, or vice-versa
- Able to upconvert incoming SD streams to HD, and scale down
- SNMP, REST, SOAP support for remote management and monitoring
- OPTION: Fiber Optic Interface with SFP interfaces
- Tested to work with Atlas™, Wowza®, and Adobe® Flash® servers
- Down converter ability to convert all HD services to SD
- Tested compatible with major brands of IP devices including Amino™, Roku®, Telergy, Android™, and Apple iPad® and iPhone®
- Audio support: AAC, Embedded pass-through, 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)
- Telco Grade CBR out. Interoperates with well known brands of equipment found at major Telcos.
- Supports Reliable Scrambling via Rotating Key Encryption or classical AES and DES standards
- NEW: Ships with 4 10 Gig E ports
- VOD optional
- Works well with Load Balancers
- Designed for secure 24x7x365 operation
- Supports AES encryption
- NEBS version available with DELL TELCO platform
- Tested to work with most middleware including Beenius™ and Minerva
- Supports 3G mobile network and Internet network, including 3GPP v4, 5, 6 and 3GPP2
- Now! QUALYS certified to Level 2 for Critical Vulnerabilities like Open Ports, Tracking applications with COBIT, FISMA, HIPAA, NERC, PCI DSS, SANS, SCAP compliance

Overview

The Brutus™ VI 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 4 x 20 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.

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, HTTP Live, RTMP, 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 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

- 2 10 GigE Ports
- Redundant Power Supplies
- 2 10 GigE Ports

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**


**IP Output**

Ethernet: Four 10 Gig E 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)

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**Benchmarks**

<table>
<thead>
<tr>
<th>MPEG-2 In</th>
<th>H.264 Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD in at 4 Mbps, 480i 720p inputs at 12 Mbps 1080i/p inputs at 15 Mbps</td>
<td>SD out at 2 Mbps, 480i – Up to 240 streams 720p outputs at 4 Mbps – Up to 90 streams 1080i/p outputs at 6 Mbps – Up to 60 streams</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>H.264 In</th>
<th>MPEG-2 Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD in at 4 Mbps, 480i 720p inputs at 12 Mbps 1080i/p inputs at 15 Mbps</td>
<td>SD out at 6 Mbps, 480i – Up to 240 streams 720p at 12 Mbps – Up to 90 streams 1 1080i/p at 15 Mbps – Up to 60 streams</td>
</tr>
</tbody>
</table>

**Benchmarks – Optional H.265**

<table>
<thead>
<tr>
<th>MPEG-2 In</th>
<th>H.265 Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD in at 4 Mbps, 480i 720p inputs at 12 Mbps 1080i/p inputs at 15 Mbps</td>
<td>SD out at 1 Mbps, 480i – Up to 96 streams 720p outputs at 2 Mbps – Up to 24 streams 1080i/p outputs at 3 Mbps – Up to 14 streams</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>H.264 In</th>
<th>H.265 Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD in at 6 Mbps, 480i 720p in at 12 Mbps 1080i/p in at 15 Mbps</td>
<td>SD out at 1 Mbps, 480i – Up to 96 streams 720p outputs at 2 Mbps – Up to 24 streams 1080i/p outputs at 3 Mbps – Up to 14 streams</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>H.265 In</th>
<th>H.264 Out</th>
</tr>
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<tbody>
<tr>
<td>SD in at 1 Mbps, 480i 720p in at 2 Mbps 1080i/p in at 3 Mbps</td>
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<th>H.264 Out</th>
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<td>SD in at 1 Mbps, 480i 720p in at 2 Mbps 1080i/p in at 3 Mbps</td>
<td>SD out at 6 Mbps, 480i – Up to 240 streams 720p at 12 Mbps – Up to 90 streams 1 1080i/p at 15 Mbps – Up to 60 streams</td>
</tr>
</tbody>
</table>

**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

**Specifications**

**Some Supported Resolutions – Input and Output**

<table>
<thead>
<tr>
<th>Resolution</th>
<th>SD</th>
<th>720p</th>
<th>1080i/p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1920 x 1080</td>
<td>720 x 480</td>
<td>480 x 480</td>
<td>qHD H.264up</td>
</tr>
<tr>
<td>1280 x 720</td>
<td>704 x 480</td>
<td>480 x 320</td>
<td></td>
</tr>
<tr>
<td>720 x 576</td>
<td>640 x 480</td>
<td></td>
<td></td>
</tr>
<tr>
<td>720 x 480</td>
<td>480 x 320</td>
<td></td>
<td></td>
</tr>
<tr>
<td>576 x 480</td>
<td>480 x 320</td>
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<tr>
<td>480 x 480</td>
<td>480 x 320</td>
<td></td>
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<tr>
<td>480 x 320</td>
<td>320 x 240</td>
<td></td>
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</tr>
<tr>
<td>320 x 240</td>
<td>320 x 240</td>
<td></td>
<td></td>
</tr>
<tr>
<td>qHD</td>
<td>240 x 180</td>
<td></td>
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</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.

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, 80 Core

OS: DVEO embedded Linux® in SSD

**Physical & Power**

Size: 1.7h x 17.2w x 28.25d (43 x 437 x 718 mm)

Voltage: 1000W Redundant Power Supplies with PMBus

Total Output Power: 800W/1000W

Operating Temperature: 10°C to 35°C (50°F to 95°F)

Non-Operating Temperature: -40°C to 60°C (-40°F to 140°F)

Humidity: Operating: 8% to 90% (non-condensing)

Non-operating: 5% to 95% (non-condensing)

Weight: 40 lbs (18.1 kg)

Conformities: UL, CSA, CE, RoHS

**Security**

Ports security scanned to MIL requirements prior to shipment

**Ad Insertion**

SCTE Ad Marker insertion via RS232, USB, IP, Contact closures

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**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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