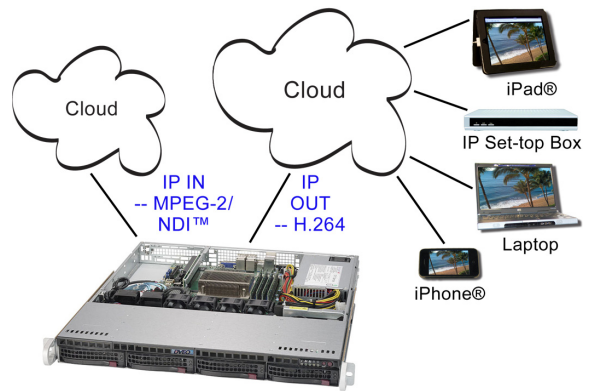


# BRUTUS™ I IP/IP: TELCO

Real Time, 1 RU, Quick Starting, Standards Compliant, Premium Quality, Embedded Linux® Based, Remotely Manageable, IP to IP H.264/AVC or Optional H.265 to MPEG-2 and Vice-versa Multi Stream TS Transcoder with Concurrent Multi Stream, Multi Resolution, Multiprotocol IP Outputs. Audio Support for AAC, MPEG-1 Layer II, Optional MP3, and/or Optional “SurCode for Dolby Digital” AC-3. Transcodes Up to 5 HD 1080i or p, or 7 Each 720p Streams, or 20 SD Streams Simultaneously. Ideal for Simple Transcoding and Adding Wrappers and with Different Protocols. Supports Stream Scheduling and Archiving Option. Supports 50 Simultaneous HLS Users. With Optional Atlas™ Add-on, Supports 1,000 RTMP, DASH, and/or HLS Users Natively. Comes with Power Supply and Port Redundancies.



## Features

- Supports both HD and SD H.264/MPEG-4 AVC or optional H.265/HEVC transcoding with “virtual” stream replication
- Input: One or two GigE IP inputs (H.264, MPEG-2, VC-1, or optional H.265) – UDP, RTP, RTSP, HTTP, HTTP Live, RTMP (pushed from Flash server)
- Supports NewTek™ NDI® input
- Outputs: Multiple simultaneous IP streams through two GigE ports (RJ45) or two 10 Gig ports
- IP output protocols: UDP, RTP, HTTP, HTTP Live (HLS), RTMP (Open Flash)
- Supports HLS (adaptive) for output to mobile devices
- Supports logo insertion, text overlay, and SCTE 35 compliant cue tone insertion (“ad markers”) on outputs
- Able to upconvert incoming SD streams to HD, and scale down
- Tested with leading CDNs (Verizon®, Akamai®, Tulix™, Ustream®, etc.)
- Supports Octoshape™ and Verizon® upLynk natively
- Supports H.264 High Profile @ Level 4.0 (HP@L4)
- Supports 1080i, 1080p, 720p, 576i, 480i, 480p, CIF, QCIF, qHD, H.264up and many others, and custom resolutions
- Supports 50 HLS users natively. Optional built-in server supports 1,000+ simultaneous HLS, DASH, and/or RTMP users.
- Transcodes up to 7 720p60 HD streams, or 5 1080i/p HD streams, or 20 SD streams from MPEG-2 to H.264 or vice-versa
- Optional H.265 transcodes are up to one 720p HD stream or 8 SD streams from MPEG-2 or H.264 to H.265, or vice-versa
- Audio Output: AAC, MPEG-1 Layer II, optional MP3, and/or optional “SurCode for Dolby Digital” AC-3
- Tested to work with Atlas™, Wowza®, and Adobe® Flash® media servers
- Tested compatible with major brands of IP devices including Amino™, Roku®, Telergy, Android™, and Apple iPad® and iPhone®
- Tested compatible with major brands of professional H.265, H.264, and MPEG-2 decoders and video servers
- Remote GUI includes scheduling
- SNMP, REST, SOAP support for remote management and monitoring
- Relies on Intel® Xeon® processor
- 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

Inexpensive high volume hardware platforms combined with highly enhanced open source Linux® based software offer great value to all willing to embrace the future. Furthermore, Intel’s architecture is highly tuned to encoding and transcoding tasks. We offer high quality and high reliability transcode solutions that are based on open source libraries. We enhance the libraries by rewriting critical sections to obtain outstanding reliability and throughput.

The **Brutus™ I IP/IP: TELCO** is a highly affordable Intel® Xeon® processor based multi channel IP to IP groomer and transcoder designed for capturing IP content and streaming appropriately groomed content to iPads, iPhones, content delivery networks, and remote video devices.

The Brutus I IP/IP: TELCO is designed to be an affordable platform to ingest video from multiple IP transport streams, transcode the MPEG-2 to the H.264 or optional H.265 standard, and provide ample choices for resolutions, protocols, wrappers, and containers. This is easy to do since quality and reliability are built into the Linux® environment.

This unit is designed to be affordable, scalable, and extendable. Modifications to video formats and features are easily created. Remote management is via a web GUI and multi level security is newly built in.

## Applications

- Transcode SPTS or MPTS from MPEG-2 to H.264 or optional H.265
- Transcode from H.264 to MPEG-2
- Adding new protocols and wrappers (HLS, RTMP) to transport streams
- Audio transcoding from AC-3 to AAC, MPEG-1 Layer II to AAC, AAC to AC-3

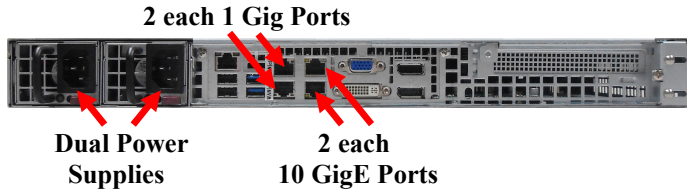


**Computer Modules, Inc.**  
11409 West Bernardo Court  
San Diego, CA 92127

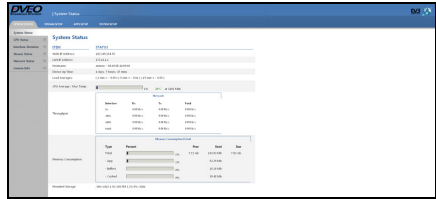
Tel: 858-613-1818 Fax: 858-613-1815

[www.dveo.com](http://www.dveo.com)

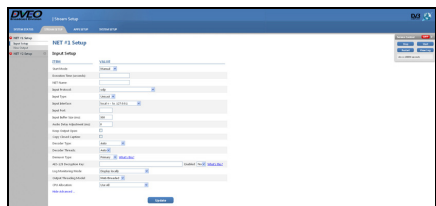
# Inputs/Outputs



# Sample of GUIs



Status Screen



IP Input Setup

# Ports Utilized

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

# 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

# Ordering Information

- Brutus I 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: Built-in “Mini Atlas” server

# CDNs Tested With:

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

# 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, 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.

## IP Input

IP Input protocols,	UDP, RTP, RTSP, HTTP, HTTP Live (HLS), RTMP (pushed “wrappers”:
	from Flash server). Supports NewTek™ NDI® input.

## IP Output

Outputs:	Transcodes up to 5 HD 1080i or p, or 7 each 720p60 streams, or 20 SD streams simultaneously
Audio:	AAC, MPEG-1 Layer II, optional MP3, and/or optional “SurCode for Dolby Digital” AC-3
Output “wrappers”:	UDP, RTP, HTTP, HTTP Live (HLS), RTMP (Open Flash)
Type:	IP-multicast, IP-unicast with “wrappers”
Bit Rates:	Multiple H.264, MPEG-2, and/or optional H.265 video streams at different bit rates (.1 to 15 mbps)
Quality:	8 bit encoding with 4:2:0 color sampling
Video:	NTSC or PAL
Latency:	1.2 seconds (fixed)
IP Ports	2 each 10 GigE, 2 each 1 Gig

## Administration

Access:	Web interface, SSH (Secure command line interface)
SNMP:	Monitoring and alerts
Scheduling:	On, Off support for timeslots
Remote:	REST, SOAP

## CPU and Operating System

CPU:	Intel® Xeon® processor
OS:	DVEO embedded Linux® in SSD

## Physical & Power

Size (W x D x H):	19 x 20.5 x 1.75 inches (483 x 521 x 44 mm)
Voltage:	00V-240Vac, 47-63Hz, 5-2.5A, 300 watts
Operating Temperature:	0°C ~ 40°C (32°F~ 104°F)
Non-operating Temperature:	-40°C ~ 70°C (-40°F~ 158°F)
Operating Humidity:	20% to 90% RH non-condensing
Non-operating Humidity:	5% to 95% RH non-condensing
Weight:	17 lbs. (7.7 kg)
Redundancies:	Dual power supplies, Port redundancies
Memory:	32 GB DDR3
Conformities:	UL, BSMI, CSA, FCC, CE, RoHS 

## Security

Ports security scanned to MIL requirements prior to shipment
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## Ad Insertion

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