**Gearbox II IP/IP**

Broadcast Quality, Multichannel, Real Time, Standard or High Definition (up to 1080p), IP to IP, MPEG-2 to H.264 or Optional H.265 Transcoder, Scaler, and Streamer. 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. Will Transcode and Process Multiple Streams up to CPU Limitations. Typical Dedicated Transcodes are up to 104 SD Streams, or 26 1080i/p Streams, or 40 720p60 Streams. Supports RTMP, HTTP, and Live Streaming and Works with Atlas™, Wowza®, and Adobe® Flash® Servers. Supports 50 Simultaneous HLS Users. With Optional Atlas™ Add-on, Supports 1,000 RTMP, DASH, and/or HLS Users Natively.

### Features
- **Input:** IP (H.264, MPEG-2, or VC-1) – UDP, RTP, RTSP, HTTP, HTTP Live, RTMP (pushed from Flash server)
- **IP output protocols:** UDP, RTP, RTMP (Open Flash), HTTP, with DLNA support
- **Supports HLS (adaptive) for output to mobile devices**
- **Supports logo insertion, text overlay, and SCTE 35 compliant cue tone insertion (“ad markers”) on outputs**
- **Supports rotating key servers like Verimatrix® VCAS™**
- **Performs AES-128 encryption**
- **Supports 50 HLS users natively. Optional built-in server supports 1,000+ simultaneous HLS, DASH, and/or RTMP users.**
- **Supports NTSC or PAL**
- **Transcoding bit rates: .1 to 15 Mbps**
- **Creates simultaneous High, Medium, and Low bitrate streams**
- **Resolutions: qHD, H.264up, SQVGA, QCIF, QVGA, CIF, or any custom size up to 1080p**
- **Simultaneous demultiplexing, transcoding, and encapsulation**
- **Transcodes up to 40 720p60 HD streams, or 26 1080i/p HD streams, or 104 SD streams from MPEG-2 to H.264, or vice-versa**
- **Optional H.265 transcodes are up to 10 720p HD streams, or 5 1080i/p HD streams, or 40 SD streams from MPEG-2 or H.264 to H.265, or vice-versa**
- **SNMP, REST, SOAP support for remote management and monitoring**
- **Support for Variable Bit Rate (VBR) encoding maximizes streaming video quality and bandwidth efficiency**
- **Tested to work with Atlas™, Wowza®, and Adobe® Flash® media servers**
- **Tested to work with Akamai, Tulix, Verizon, etc. CDN’s**
- **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**
- **Audio support: AAC, Embedded pass-through, MPEG-1 Layer II, optional MP3, and/or optional “SurCode for Dolby Digital” AC-3**
- **Supports eight audio pairs if embedded in TS**
- **Settings are remembered when power cycled**
- **Based on embedded Linux®**
- **Remote GUI includes some scheduling**
- **Redundant power supply**

### Overview

The **Gearbox II IP/IP** is a real time multichannel streamer and transcoder designed to receive IP transport streams and transform them into IP streams that are best suited for today’s digital environments. It is designed to be scalable, easily adaptable, and field upgradeable to meet the needs of cable and IP network operators who are very comfortable with embedded Linux® based appliances. It relies on an Intel® Dual 16 Core CPU for encoding. We have optimized the encoder to obtain Telco grade reliability and visual quality.

The Gearbox II IP/IP is an MPEG-2 to H.264 transcoder or transcoder. It receives multiple IP transport streams, transcodes them to 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 Gearbox II IP/IP receives transport streams, demultiplexes the requested services, and streams these services 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 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 Gearbox II IP/IP 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.

### Applications
- **IPTV Unicasting, Multicasting, Streaming**
- **Teleco TV ingest**
- **Hotels, Cruise Lines, Universities, Resorts feeds**
- **Streaming to designated VideoLAN VLC or similar clients, or to Roku®, Amino™, or other set-top boxes**

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**DVEO**

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Input/Outputs

Transcodes up to 104 SD streams, or 40 720p60 streams, or 26 1080i or 1080p HD streams from MPEG-2 to H.264, or vice-versa.

Specifications

Supported Resolutions – Input and Output

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Inputs</th>
<th>Outputs</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>
<tr>
<td>1080p HD</td>
<td>qHD</td>
<td>H.264up</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.

IP Input

- Input protocols: UDP, RTP, RTSP, HTTP, HTTP Live, RTMP (pushed from Flash server).

IP Output

- Output audio: AAC, Embedded pass-through, MPEG-1 Layer II, optional MP3, and/or optional “SurCode for Dolby Digital” AC-3.
- Ethernet: Two 10 GigE ports.
- Output “wrappers”: UDP, RTP, RTMP (Open Flash), HTTP, with DLNA support.
- Type: IP-multicast, IP-unicast with "wrappers".
- 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.
- Video: NTSC or PAL.
- Latency: About 1.2 seconds (fixed).

GUI’s

CDNs Tested With:

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

*Certified

Options

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

Ordering Information

Gearbox II IP/IP

Other versions available: MF (Multifunction), IP/ASI, ASI/ASI, 12 Port ASI/IP, 2-16 Port HD-SDI/IP, 8VSB 16 Tuners/IP 104ch, QAM 16 Tuners/IP 104ch, DVB-S-S2 16 Tuners/IP 104ch, DVB-S2 8 Tuners+DEC/IR/P, T+T2 16 Tuners/IP, ISDB-Tb 16 Tuners/IP.

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