



MPEG Gearbox™ Quick Start Guide



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Introduction:

MPEG Gearbox™ is DVEO's new product line of broadcast quality, multichannel, real time, standard or high definition (up to 1080p), MPEG-2 to H.264 transcoders or MPEG-2 to MPEG-2 scalers. The MPEG Gearbox will transcode and process multiple streams up to CPU limitations. Typical dedicated transcodes are up to 15 SD streams, 3 1080i or 1080p streams, or 4 to 6 720p streams.

Network Setup:

- 1) Unpack your MPEG Gearbox, power it up and connect two network cables from the MPEG Gearbox to a switch.
- 2) Connect your PC to the same switch (alternatively, you could use a crossover cable between your computer and the MPEG Gearbox).
- 3) Configure the network adapter on your PC with a static IP of **192.168.123.55**.
- 4) Using your web browser go to <http://192.168.123.1> and login using **admin** as username and **admin** as password.
- 5) Go to the "Network Setup" tab (the second from right tab) and configure all the network adapters on the MPEG Gearbox. Select **Update**.

Network Setup : /wan_setup.php?topmenu=Network_Setup - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://66.27.62.228/wan_setup.php?topmenu=Network_Setup

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DVEO Pro Broadcast Division CMI **MPEG GEARBOX** NETWORK SETUP **DB3** COMPLIANT

SYSTEM STATUS NETWORK SETUP STREAM SETUP MONITORING SETUP TOOLBOX

WAN Setup LAN #1 Setup VPN Client Setup Multicast Routing

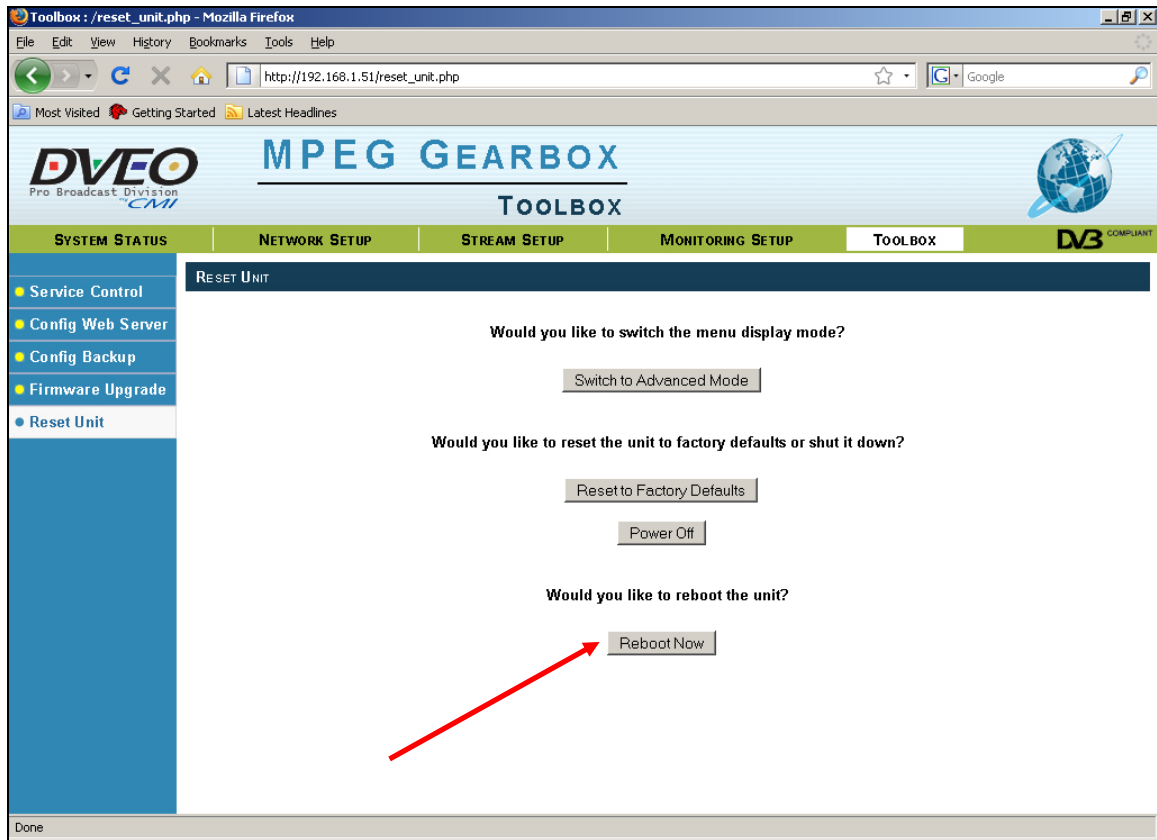
| ITEM | VALUE |
|-----------------------|---|
| Use DHCP | <input type="checkbox"/> |
| Hostname: | ammux <input type="checkbox"/> Show in Header |
| Domain: | local |
| WAN IP Address: | 66 . 27 . 62 . 228 |
| WAN Net Mask: | 255 . 255 . 255 . 248 |
| WAN Gateway: | 66 . 27 . 62 . 225 |
| Primary DNS Server: | 209 . 18 . 47 . 61 |
| Secondary DNS Server: | 209 . 18 . 47 . 62 |
| Enable IP Forward | <input type="checkbox"/> |

Update

Done

- 6) Once you have changed all the settings, go to **Toolbox ->Reset Unit** and click on **Reboot Now**.

NOTE: Always reboot after changing the Network setup.



- 7) Re-configure the network adaptor on your PC to match what you configured on the MPEG Gearbox and connect to the web menus again.
- 8) If you ever lose connectivity with the unit and cannot get back in, you can use a keyboard and monitor to get access to the emergency recovery menu to lookup the current IP address and/or reset the machine to factory defaults.

Stream Setup – IP Input:

(See page 6 for ASI Input)

- 9) Go to the **STREAM SETUP** tab, **INPUT SETUP**, and define an input. The example below shows IP input. (Inputs and outputs will vary depending on which MPEG Gearbox system you have purchased.) Be sure to specify a name, enable the **Autostart**, and select Update.

The screenshot shows the 'STREAM SETUP' web interface for 'MPEG GEARBOX'. The 'STREAM SETUP' tab is active, and the 'INPUT SETUP' sub-tab is selected. The configuration is for a network named 'CMI'. The 'Autostart' checkbox is checked. The 'Input Protocol' is set to 'udp' and the 'Input Type' is 'Unicast'. The 'Input Interface' is 'wan => eth0, 66.27.62.228' and the 'Input Port' is '5000'. The 'RTSP EOF Timeout' is '10' and the 'Input Buffer Size (ms)' is '300'. The 'Multicast Output Interface' is 'lan1 => eth1, 172.16.1.1' and the 'Output TTL' is '32'. The 'Copy Closed Caption' checkbox is unchecked. The 'Decoder Type' is 'Software' and the 'Core Library' is 'Auto'. The 'Keep Output Open' checkbox is unchecked. A red arrow points to the 'Update' button at the bottom right of the form.

| ITEM | VALUE |
|-----------------------------|-------------------------------------|
| Autostart: | <input checked="" type="checkbox"/> |
| NET Name: | CMI |
| Input Protocol: | udp |
| Input Type: | Unicast |
| Input Interface: | wan => eth0, 66.27.62.228 |
| Input Port: | 5000 |
| RTSP EOF Timeout: | 10 |
| Input Buffer Size (ms): | 300 |
| Multicast Output Interface: | lan1 => eth1, 172.16.1.1 |
| Output TTL: | 32 |
| Copy Closed Caption: | <input type="checkbox"/> |
| Decoder Type: | Software |
| Core Library: | Auto |
| Keep Output Open: | <input type="checkbox"/> |

- 10) Go to the **New Output** tab to the right of **Input Setup**. Select **Enabled**. Enter the **Stream Name** of the input you just defined.
- 11) At **Input Program(s)**, input the program number for the program desired. (For single program transport streams, enter the program number.)



- 12) At **Video Transcoding Format**, select the pulldown menu and choose from the following video transcoding methods:
 - No Video Transcoding
 - H.264 Video
 - MPEG-2 Video

- 13) At **Audio Transcoding Format**, select the pulldown menu and choose from the following audio transcoding methods:
 - No Audio Transcoding (Embedded pass-through)
 - Ogg Vorbis Audio
 - AAC Audio
 - MP3 (license required)
- 14) Edit all the remaining parameters of your output stream and select Update.
- 15) You can repeat steps 9 and 10 for all the output streams associated to a particular input.
- 16) Skip to page 10 for further instructions.

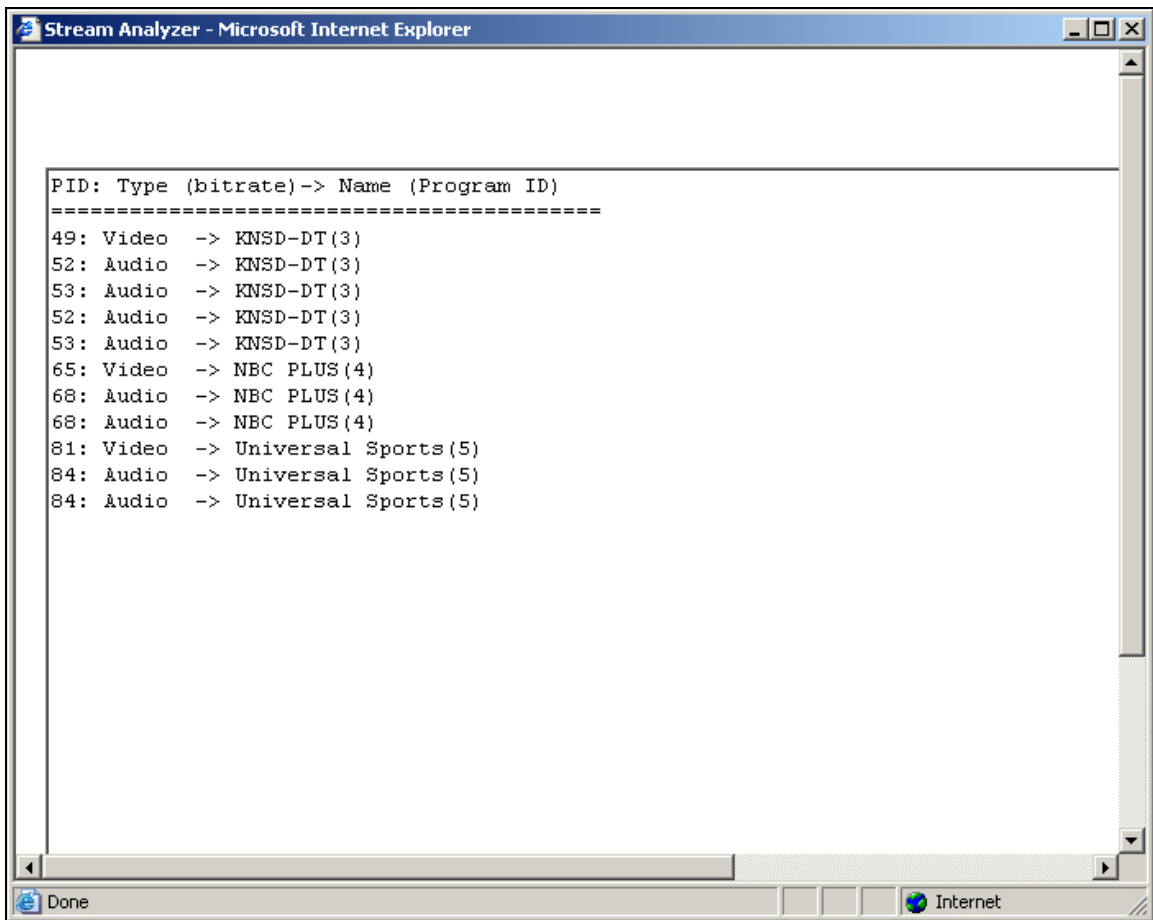
Stream Setup – Tuner/ASI Input:

(See page 3 for IP input)

- 17) Go to **SYSTEM STATUS** and click on **Tuner Status**. Select **Analyze Stream**.

The screenshot displays the 'SYSTEM STATUS' page for MPEG Gearbox. The interface includes a navigation menu on the left with options like 'System Status', 'Interface Statistics', 'ASI Status', 'Stream Status', and 'License Info'. The main content area is divided into four tuner status sections. The first section, '#1: DVB: CHANNEL40', shows a service up for 265 seconds with a signal of 250, SNR of 250, and a quality of 83%. A red arrow points to the 'Analyze Stream' button in this section. The other three sections, '#2: TUNER #2 STATUS', '#3: TUNER #3 STATUS', and '#4: TUNER #4 STATUS', all show a service up for 2231 seconds with a signal of 130, SNR of 130, and a quality of 0%. Each section includes a 'View Log' link, 'Quality' and 'Signal' progress bars, and 'Analyze Stream' and 'Signal Scanner' buttons.

- 18) The **Stream Analyzer** screen will appear. Make a note of the program ID number(s) you wish to transcode, and then close the Stream Analyzer screen.



- 19) Go to **STREAM SETUP**, then **ASI #1 Setup**, **INPUT SETUP**. Define your input parameters. Be sure to specify a name, enable the **Autostart**, and select Update.

Stream_Setup : /stream_setup.php?view=asi_input&asiindex=01 - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://192.168.1.51/stream_setup.php?view=asi_input&asiindex=01

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DVEO Pro Broadcast Division **MPEG GEARBOX** **STREAM SETUP** **DVB** COMPLIANT

SYSTEM STATUS NETWORK SETUP **STREAM SETUP** MONITORING SETUP TOOLBOX

NET: IP one
NET #2 Setup
NET #3 Setup
NET #4 Setup
NET #5 Setup
NET #6 Setup
NET #7 Setup
NET #8 Setup
NET #9 Setup
NET #10 Setup
ASI: ASLin

INPUT SETUP **NEW OUTPUT**

| ITEM | VALUE |
|-----------------------------|-------------------------------------|
| Autostart: | <input checked="" type="checkbox"/> |
| ASI Name: | ASLin |
| ASI Buffer Count: | 54 |
| ASI Buffer Size (bytes): | 38352 |
| Input Buffer Size (ms): | 300 |
| Multicast Output Interface: | wen => eth0, 192.168.1.51 |
| Output TTL: | 32 |
| Copy Closed Caption: | <input type="checkbox"/> |
| Decoder Type: | Software |

Update

Done

20) Next, select **NEW OUTPUT**. Select Enabled. Enter the Stream Name of the input you just defined.

21) At **Input Program(s)**, input the number of the program desired.

The screenshot shows the 'MPEG GEARBOX STREAM SETUP' web interface. The 'NEW OUTPUT' tab is selected. The 'Enabled' checkbox is checked. The 'Stream Name' is 'ASlin'. The 'Output Format' is 'UDP with Transport Stream (TS) envelope'. The 'Demux Mode' is 'Use PATs Program IDs'. The 'Input Program(s)' is '3'. The 'Destination IP' is '224.1.1.5' and the 'Destination Port' is '10000'. The 'Output Buffer Size (ms)' is '300'. The 'Valid Input Video Codecs' are 'MPEG-1, MPEG-2, MPEG-4, H264V'. The 'Valid Input Audio Codecs' are 'MPEG-1, MPEG-2, MPEG-3, AC3, MPEG4A (H264A), Vorbis (only for Ogg)'. The 'Output PID Control' is 'Auto Assign'. The 'Video Transcoding Format' is 'H264 Video' and the 'Audio Transcoding Format' is 'AAC Audio'. Red arrows point to these two dropdown menus and the 'Update' button.

22) Edit all the parameters of your output stream.

23) At **Video Transcoding Format**, select the pulldown menu and choose from the following video transcoding methods:

- No Video Transcoding
- H.264 Video
- MPEG-2 Video

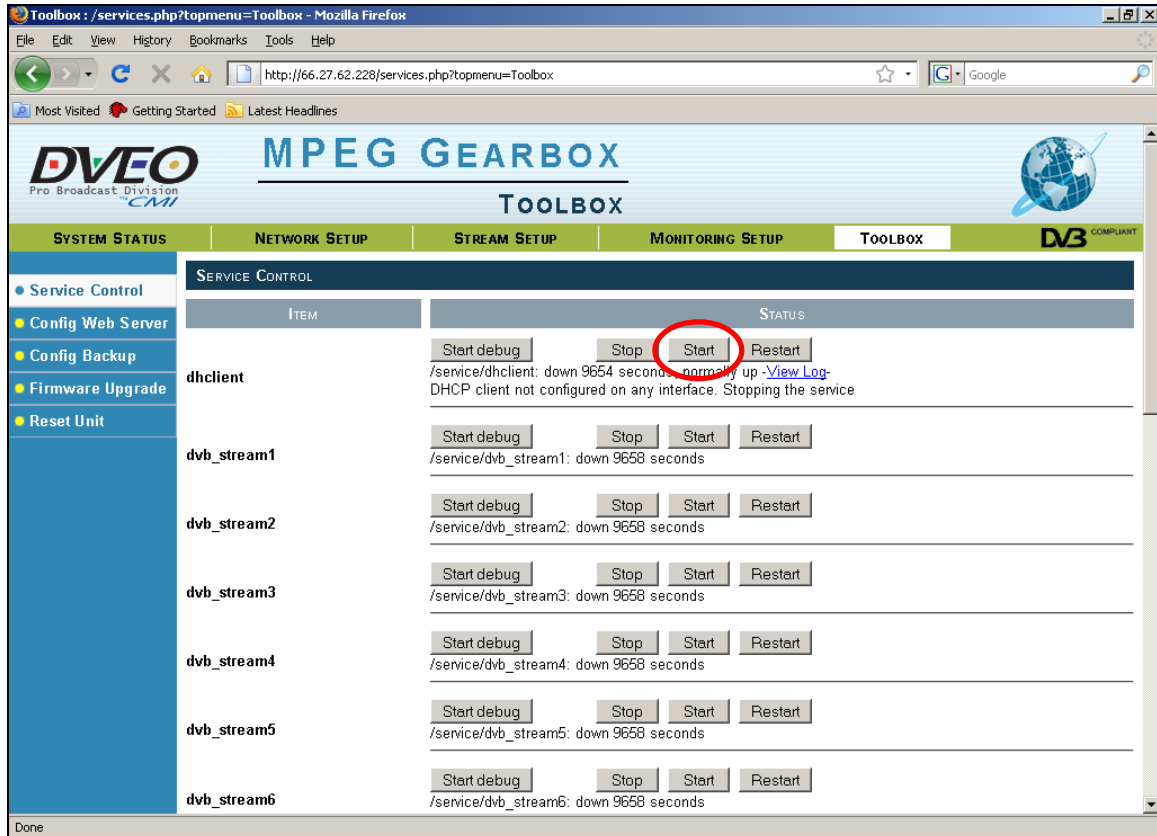
24) At **Audio Transcoding Format**, select the pulldown menu and choose from the following audio transcoding methods:

- No Audio Transcoding (Embedded pass-through)
- Ogg Vorbis Audio
- AAC Audio
- MP3 (license required)

25) Select Update.

Streaming:

- 26) When all the output streams have been defined, go to **TOOLBOX** and click on the **Service Control** icon. Select one or more streams and select **Start**.



The screenshot shows the 'MPEG GEARBOX TOOLBOX' interface. The 'SERVICE CONTROL' section is active, displaying a table of services. The 'Start' button for the first service, 'dhclient', is circled in red.

| ITEM | STATUS |
|-------------|--|
| dhclient | Start debug Stop Start Restart /service/dhclient: down 9654 seconds, normally up -View Log- DHCP client not configured on any interface. Stopping the service |
| dvb_stream1 | Start debug Stop Start Restart /service/dvb_stream1: down 9658 seconds |
| dvb_stream2 | Start debug Stop Start Restart /service/dvb_stream2: down 9658 seconds |
| dvb_stream3 | Start debug Stop Start Restart /service/dvb_stream3: down 9658 seconds |
| dvb_stream4 | Start debug Stop Start Restart /service/dvb_stream4: down 9658 seconds |
| dvb_stream5 | Start debug Stop Start Restart /service/dvb_stream5: down 9658 seconds |
| dvb_stream6 | Start debug Stop Start Restart /service/dvb_stream6: down 9658 seconds |

- 27) You should be able to see all the output streams on the network now.

28) You can check the status of the streams using the **System Status** tab. You should be able to see the throughput in the appropriate network adaptors.

The screenshot displays the 'System Status' page of the MPEG Gearbox interface. The page is organized into several sections:

- System Information:**
 - WAN IP Address: 66.27.62.228
 - LAN IP Address: 172.16.1.1
 - Hostname: ammux - 00:25:90:26:D8:DA
 - Device Up Time: 0 days, 2 hours, 3 mins
 - Load Averages: (1 min => 0.62) (5 min => 0.66) (15 min => 0.37)
- CPU Utilization:** Six horizontal bar charts showing utilization for CPU #1 through #6 at 3466 Mhz.

| CPU | Utilization | Frequency |
|--------|-------------|-----------|
| CPU #1 | 10% | 3466 Mhz |
| CPU #2 | 5% | 3466 Mhz |
| CPU #3 | 3% | 3466 Mhz |
| CPU #4 | 22% | 3466 Mhz |
| CPU #5 | 14% | 3466 Mhz |
| CPU #6 | 21% | 3466 Mhz |
- Throughput:** A table showing network interface statistics.

| Interface | Rx | Tx | Total |
|-----------|---------------|--------------|---------------|
| lo: | 0.00 Kb/s | 0.00 Kb/s | 0.00 Kb/s |
| eth0: | 19503.46 Kb/s | 0.84 Kb/s | 19504.30 Kb/s |
| eth1: | 0.00 Kb/s | 5294.10 Kb/s | 5294.10 Kb/s |
| total: | 19503.46 Kb/s | 5294.94 Kb/s | 24798.40 Kb/s |
- Memory Consumption:** A table showing memory usage details.

| Type | Percent | Free | Used | Size |
|-----------|---------|---------|-----------|---------|
| Total | 15% | 2.52 Gb | 455.07 Mb | 2.96 Gb |
| - App | 12% | | 370.94 Mb | |
| - Buffers | 1% | | 17.19 Mb | |
| - Cached | 2% | | 66.94 Mb | |
- Mounted Storage:** /dev/sda3 1.3G 129.1M 1.1G 10% /data