AWS Elemental Link
1x 1GbE RJ45 PoE, 1x 3G-SDI, 1x HDMI

AWS Elemental Link is an HEVC encoding device that connects a live video source, like a camera or video production equipment, to AWS Elemental MediaLive. Link offers a configuration-free, cost-efficient way to securely and reliably transfer video to MediaLive for delivery to viewers. To use the device, you simply connect it to power, Ethernet, and a video source. Then you can control and monitor your AWS Elemental Link device from anywhere you have access to the AWS Management Console. AWS Elemental Link improves the quality and reliability of your live video streams while reducing the cost and complexity of equipment that you need to operate on-premises.

**BENEFITS**

**Fast and easy setup**
AWS Elemental Link is shipped fully configured for your AWS Account. Simply connect the device to power, an IP network, and a video source (3G-SDI or HDMI). Once connected, Link automatically starts sending thumbnail images and is available as a source for MediaLive in the AWS Management Console, ready for live streaming.

**Manage and monitor devices remotely**
With AWS Elemental Link, you control the entire live event workflow using the AWS Management Console. Because you can manage and monitor multiple devices anywhere in the world from a central point of control, you don’t need to send technical operators to event sites in order to set up and configure your live streams.

**Small and portable**
Link is a small, portable device with minimal power and cooling requirements. Weighing less than 1 lb (450 g), Link can travel wherever you need to connect live video to the cloud. Link is silent, and fanless operation and minimal heat generation make the device practical to use in low-noise environments like studios.

**High video quality**
Link is designed to maximize the quality of video sent to the cloud and account for the unpredictable nature of network conditions. The device uses an advanced video compression system that continuously adjusts to available bandwidth in order to deliver the best possible video under all network conditions.

**Cost efficient**
At a price of $995 USD per device (not including tax, shipping, and MediaLive costs), Link provides a broadcast-grade way to connect your on-premises live video source to MediaLive at a fraction of the cost of traditional approaches. Because setup is easy and management of devices is handled remotely, Link is efficient to own and operate.

**HOW IT WORKS**

[Diagram of the AWS Elemental Link process]

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Document Revision Date - 3/22/2021
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**PHYSICAL**
- **Dimensions (W x H x D)**: 10.80 cm x 3.81 cm x 12.70 cm
  4.25 in x 1.50 in x 5.00 in
- **Weight**: 0.45 kg (Unit)
  1 kg (Gross)
- **ECCN**: EAR99
- **USHTS Code**: 8525.50.3040

**ELECTRICAL**
- **Max Potential Power**: 18 Watts (Max)
- **Heat Dissipation**: 61.42 BTU/hr (Max)
- **Line Frequency**: 50 - 60 Hz
- **Input Voltage**: 100 - 240 VAC

**ENVIRONMENTAL**
- **Operating Conditions**: 0 to 45 °C (32 to 113 °F)
  Up to 85% RH (non-condensing)
- **Storage Conditions**: -40 to 80 °C (-40 to 176 °F)
- **Noise Level**: 0 dBA (Max)
- **Electromagnetic Compliance**: EN55032:2015
  EN55024:2010
- **Safety Compliance**: EN 60950-1-A2:2013
  RoHS 2011/65/EU
  REACH 1907/2006/EU

**SYSTEM**
- **System Management**: AWS Elemental MediaLive Console
- **Interfaces**: 1x 1GbE RJ45 PoE (Type 1)
  1x 3G-SDI
  1x HDMI
  1x USB 2.0
  Momentary Switch Button
INPUT SUPPORT

**MediaLive Transport Formats**
- Video is transported to MediaLive as 8-bit color depth with 4:2:0 color space subsampling
- Interlaced video is deinterlaced and transported as progressive video

**3G-SDI Interface**
- 1920x1080p @ 23.98 fps, 24fps, 25fps, 29.97fps, 30fps, 50fps, 59.94fps, 60fps
- 1280x720p @ 50fps, 59.94fps, 60fps
- 1920x1080i 25fps, 29.97fps, 30fps (field rate is 50, 59.94, 60 respectively)
- 576i 25fps (field rate is 50)
- 480i 29.97fps, 30fps (field rate is 59.94 and 60 respectively)

**HDMI Interface**
- 1920x1080p @ 23.98 fps, 24fps, 25fps, 29.97fps, 30fps, 50fps, 59.94fps, 60fps
- 1280x720p @ 50fps, 59.94fps, 60fps
- 1920x1080i 25fps, 29.97fps, 30fps (field rate is 50, 59.94, 60 respectively)
- 576i 25fps (field rate is 50)
- 480i 29.97fps, 30fps (field rate is 59.94 and 60 respectively)

**Metadata**
- Timecode (SMPTE 12M), closed captioning (SMPTE 334), teletext (OP-47), and ad insertion (SCTE-104)

**Audio Support**
- 8 embedded audio channels
- 32 kHz, 44.1 kHz, and 48 kHz supported

**Codec and Transport**
- HEVC (High Efficiency Video Codec)
- Zixi delivery protocol
- Supported bitrates: 0.5Mbps to 50Mbps
- Bitrate limit can be set in AWS Elemental MediaLive
- Network adaptive bitrate algorithm adjusts bitrate based on available bandwidth

HARDWARE CONFIGURATION

**Network Requirements**
- Port 443: Open for outbound connections to the Internet
- Port 2088: Open for outbound connections to the Internet
- Port 123: Open for outbound connections to the Internet
- No inbound connections ("Port Forwarding") required

**IP Provisioning**
1. DHCP supported (Default Configuration)
2. Static IP Provisioning supported through on-device UI as per instructions below
## AWS Elemental Link

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### BUTTON FUNCTIONALITY

<table>
<thead>
<tr>
<th>Press and hold for...</th>
<th>When LEDs blink...</th>
<th>Release to set as...</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 seconds</td>
<td>Once</td>
<td>DHCP</td>
</tr>
<tr>
<td>10 seconds</td>
<td>Twice</td>
<td>Static IP</td>
</tr>
<tr>
<td>15 seconds</td>
<td>Thrice</td>
<td>Revert to default password</td>
</tr>
</tbody>
</table>

### LED FUNCTIONALITY

<table>
<thead>
<tr>
<th>LED</th>
<th>LED State</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>OFF</td>
<td>The device is not powered ON</td>
</tr>
<tr>
<td>Power</td>
<td>Solid Blue</td>
<td>The device is powered ON</td>
</tr>
<tr>
<td>Online</td>
<td>Flashing Red</td>
<td>The network did not provide an IP Gateway</td>
</tr>
<tr>
<td>Online</td>
<td>Solid Red</td>
<td>The device can't connect to public internet</td>
</tr>
<tr>
<td>Online</td>
<td>Solid Blue</td>
<td>The device has successfully connected to public internet</td>
</tr>
<tr>
<td>Online</td>
<td>Flashing Purple</td>
<td>Connected to public internet but port 123 is closed and limiting functionality</td>
</tr>
<tr>
<td>AWS Link</td>
<td>Solid Red</td>
<td>Device is not able to link with AWS</td>
</tr>
<tr>
<td>AWS Link</td>
<td>Solid Blue</td>
<td>Device has successfully linked to AWS</td>
</tr>
<tr>
<td>Streaming</td>
<td>Solid Red</td>
<td>Video source has not locked</td>
</tr>
<tr>
<td>Streaming</td>
<td>Flashing Purple</td>
<td>No valid video input and the service is live streaming</td>
</tr>
<tr>
<td>Streaming</td>
<td>Solid Purple</td>
<td>Valid video input but not streaming</td>
</tr>
<tr>
<td>Streaming</td>
<td>Solid Blue</td>
<td>Video input is valid and the service is live streaming</td>
</tr>
</tbody>
</table>