

# MAYAH Communications

## Application Note 39

### Livewire

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## 1. General description

Livewire (LW) is a LAN technology for in-facility networking. It provides transportation and switching of uncompressed L24/48khz signals. In a LW system, all studio gear will have LW ports (standard Ethernet PHY/MAC), each connected to a switch using a cat5 cable. An analog mic signal would be connected to an XLR on an Axia LW node. The node will digitize the audio and send it to the LW network in form of a linear RTP stream, to an individually assigned per-source multicast address from the range 239.192.x.x. Any other LW device can issue an IGMP join request for that multicast group, to start receiving audio packets.

## 2. Technical description

Livewire is not N/ACIP compliant. It works on local studio LANs and as such falls outside the scope of that standard.

### 2.1 Livewire formats

There are actually just two formats - one for two-channel 24-bit samples, and the other for eight-channel 24-

bit samples. Livewire uses a fixed payload type mapping convention. Originally it was 96 for 2-channel, and 99 for 8-channel. At one point of history the 96 branched in the IP driver to 97.

## 2.2 Payload type mapping table

### 2.2.1 All Axia devices, excepting the IP driver

96: Live stereo Stereo 0.25 ms 12 samples 72 bytes

96: Medium stereo Stereo 0.5 ms 24 samples 144 bytes

96: Standard stereo Stereo 5 ms 240 samples 1440 bytes

### 2.2.2 Axia IP driver

97: Standard stereo Stereo 5 ms 240 samples 1440 bytes

### 2.2.3 All Axia devices

99: Surround Surround 1.25 ms 60 samples 1440 bytes (8 audio channels)

## 3. How to use on Livewire devices

Please refer also to <http://axiaaudio.com/manuals/files/AxiaLivewireChannelNuMBering.pdf>.

### 3.1 Livewire Audio node configuration

Livewire devices must have installed firmware version 2.6.16a(r2) or higher.

#### 3.1.1 System

IP address, netmask, gateway

#### 3.1.2 QoS

You need a Livewire clock master. Each node can be a master. The default master priority (3) will allow your node to become the master, and it will happen automatically. In other words - any setting will work, excepting the "always slave".

##### 3.1.2.1 *Live audio and clock*

Enable 802.1Q tagging, set the priority to 6 / 48 CS6.

##### 3.1.2.2 *Standard audio*

Should not matter, as long as you do not use the standard streams.

#### 3.1.3 Sources

Disable all but one. Give it a channel number, set the mode to live stereo.

#### 3.1.4 Destinations

You don't need to enter anything here, as long as you only want a source stream from the node.

## 3.2 Livewire IP driver

Livewire IP driver must have version 2.4.9.1 or higher

## 4. How to use on MAYAH devices

MAYAH devices must have installed firmware version 4.3.0.0 or higher.

Access the MAYAH device using the Web remote. For information on how to use the Web remote consult the corresponding manual available at <http://www.mayah.com/support/support-downloads.php>.

### 4.1 Profile

Default (LW...) profiles are provided on MAYAH codecs for using Livewire. These profiles could be created by resetting to default profiles or factory defaults.

Three default profiles are provided with the factory or profile defaults since firmware 4.3.0.0:

- LW Live
- LW Medium
- LW Standard

Apply the corresponding Livewire profile via Web remote or front panel.

### 4.2 Accessing the multicast group

To access a multicast group use the direct dial function via Web remote or front panel.

Settings should be as follows:

- Mode: normal
- Interface: NET
- Protocol: RTP
- Direction: send or receive (not sendrcv)

Type in the correct multicast address and click dial.

A connection to Livewire will be established by dialing the corresponding multicast address for receiving or sending audio.

### 4.3 Phonebook

Phonebook entries can be used to establish bidirectional connections to Livewire nodes.

The first phone line number entry is used for the destination address and the second phone line number is used for the receiving address.

Receiving of TO and FROM streams from Livewire nodes are possible if the second phone line number has a prefix of "2" or "3". TO and FROM streams are available since firmware version 4.9.1.8.

### 4.4 Gateway

MAYAH codecs could be used to convert Livewire streams to all kind of N/ACIP compliant audio streams and formats on a separate network interface (e.g. ISDN, additional ethernet interfaces) via the Gateway mode.

Please refer to the Communication Reference Manual

[http://www.mayah.com/content/download/pdfs/manuals/communication-reference\\_man.pdf](http://www.mayah.com/content/download/pdfs/manuals/communication-reference_man.pdf) how to setup the Gateway mode.

#### 4.4.1 Ethernet interfaces

MAYAH codecs with more than one ethernet interfaces are using the first for controlling and the second for

audio streaming.

The first ethernet interface could be also used for receiving Livewire streams and the second for external (e.g. N/ACIP complaint) streams or vice versa.

Please refer to the Communication Reference Manual

[http://www.mayah.com/content/download/pdfs/manuals/communication-reference\\_man.pdf](http://www.mayah.com/content/download/pdfs/manuals/communication-reference_man.pdf) how to use the first ethernet interface via the connect request.

#### **4.4.2 Restrictions on C11, FM II and Sporty**

The Gateway mode on these products is restricted to uni directional connections.

1. Only one Livewire stream could be received and transmitted as an external stream via the Gateway mode.
2. Only one external stream could be received and transmitted as a Livewire stream via the Gateway mode.