APPLICATION NOTE: 2

Configuring Audio over IP - Instreamer/Extremar
Configuring IP Based Network Devices: Instreamer/Extreamer (Audio) & i.LON 600 (LON)

Part 1: Transmission of Audio over IP

Network Devices:
- i.LON SmartServer (System Control Master)
- i.LON 600 (Connects the LON between locations)
- Instreamer/Extreamer (Transmit Audio over IP Between Locations)

IPV4 Addresses:
- One (1) IPV4 address per network device (i.LON SmartServer, i.LON 600, Instreamer/Extreamer)
- Subnet (Network Mask)
- Default Gateway

Connectivity
- Network Cables (1 for each network device and your laptop)
- Network Hub (See Option 1 below)
- Null Modem Cable** Connect to the i.LON’s console port to discover the IP address
  **DE-9 (AKA DB-9) female null modem. They come as 9-pin and 15-pin. May need a USB to DE-9 converter if the PC does not have a DE-9 port.

Audio:
- Headphones or portable speaker with 3.5mm jack for monitoring encoder/decoder audio
- Audio Source (phone, etc.) for testing encoder audio transmission
- 3.5mm to RCA Cable

Software:
- Web Browser for accessing Encoder/Decoders and i.LON 600’s. **Only use Internet Explorer when working with the i.LON 600 devices.**
- IP-852-Configuration Server App (Provided by Lencore, used for i.LON 600 network pairing)
- Putty/HyperTerminal or other Serial connection application to connect to the i.LON 600

Preparation (Setting IP Addresses) of Network Devices
- **Option 1**-Using a Hub: Create your static IP connection by attaching your computer and all network devices to be programmed to the hub. This will enable IP configuring of each device one at a time without having to plug and unplug, and readies the devices for pairing and testing. Note: Final i.LON 600 pairing is completed live on the client’s network using the Configuration Server application.

- **Option 2**-Laptop to a Single Device: Create a static IP connection to program/set up each network device individually. Note: Final i.LON 600 pairing is completed live on the client’s network using the Configuration Server application.

**Before you begin please turn off your WIFI!**
Part I: Configuring the Instreamer (The “Encoder”)

1. Attach all network cables to the devices, laptop and hub. If not using a hub attach a network cable between the laptop and the Instreamer.
2. Plug headphones/speaker into the “headphone” output on the front of the Instreamer.
3. Power up the Instreamer. While booting the Instreamer will “announce” it’s current IP address. Write that down.
   Create a static IP connection between your Laptop and the Instreamer** (See end of guide for instructions on “How to Make a Static IP Connection”.)
   For example:
   a. Instreamer announces its IP as 192.168.100.55
   b. Set your laptops static IP to 192.168.100.50 apply and close all windows.
4. Using your web browser navigate to the Instreamers IP address. (192.168.100.55)
5. From the home page click the “Configuration” menu option at the top of the window.

![Instreamer Configuration Page]

Configuring IP Based Devices for LON & Audio Transmission: Audio Over IP
**AUD**O: Input Source select “Line mono” (you will use the Left (white) RCA input for a single source located on the rear of the Instreamer)

1. **STREAMING**: select “send always”

2. **STREAMING DESTINATION**: (This is where the audio is being sent, to the Extreamer)
   a. Conn. type select “RTP”
   b. Enter IP Address or Domain Name (ex: 192.168.100.56 (for the Extreamer)
   c. Set Port to 4444

3. Hit “Apply” again the device will countdown, reboot and announce its IP address

The Instreamer is now programmed to transmit audio to the destination IP address of the Extreamer.
If you are streaming to multiple destinations: From the menu select Advanced Settings > Streaming and enter the additional “Streaming Destinations” by repeating Step 10 above for each destination. (Extreamers)
Now that you have set up the Instreamers audio and destination protocols:
Click on the menu option for **Advanced Settings** to update the Instreamers IP address

1. **Updating the Instreamers IP Address:** (IP Addresses are provided by the client/end user)
   a. Below the Menu click “**Advanced**” then **Network** from the Side Menu
   b. **Network Settings:** Enter the IP Address, Netmask (subnet) and Gateway information provided to you by the client for the Instreamer. For example:
      - IP Address 192.168.100.167
      - Subnet 255.255.255.0
      - Gateway 192.168.100.1
   c. Hit “Apply”. Settings will be saved, there is a 4 second countdown and the device will reboot. “Please wait the device is restarting”. The IP address will be announced upon reboot. Listen and verify it is the intended address.

2. **After rebooting, update your Static IP address and connect with the Instreamer.** For example: If the devices IP address is 192.168.100.167, set your IP address to 192.168.100.160 and point your browser at 192.168.100.167 and review.
Verifying Your Audio Source:
You will be transmitting audio over IP from the Instreamer to the Extreamer, let’s make sure you have a working audio source.

- Click on HOME from the Top Menu
- Attach your audio source to the Instreamers Rear Mounted RCA ports. Start the audio source such as a phone, MP3 player, etc.
- Listen for the source playing in your headphones or speaker (Additionally, you can observe the Audio source using the on-screen input level indicators.)
- Confirm you hear the audio and leave the source plugged into to Instreamer
- Move the headphones/speaker to the Extreamer. You will need this for next steps.

Proceed to the next section and learn how to configure the Extreamer to receive audio from the Instreamer.
Part II: Audio over IP: Exstreamer (The “Decoder”)

If you attached all devices using Hub Skip to step 2

1. Plug in all network cables. This could be as simple as the network cable between the Laptop and the Exstreamer. (if not using a Hub)
2. Power up the Exstreamer. While booting the Instreamer will “announce” it’s current IP address. Write that down.
3. Create a static IP connection between your Laptop and the Exstreamer

   For example:
   a. Exstreamer announces its IP as 192.168.100.55
   b. Set your Laptop static IP to 192.168.100.50 apply and close all network windows
4. Using your web browser navigate to the Extreamers IP address. (192.168.100.55)
5. From the Home Screen, click “Configuration” from the Top Menu
STREAMING: URL 1: Enter the IP address of the INSTREAMER

Set the Extreamer to receive from the Instreamer using the following format:

`rtp://0.0.0.0:4444 (where 0.0.0.0 is the IP address of the Instreamer).`

Populate all 3 URL fields with the same rtp://0.0.0.0:4444 address

6. **AUDIO AND PLAYBACK:** Volume 100, Bass 0, Treble 0, Shuffle OFF, USB Auto On.

7. **Apply:** You will see the countdown and the Extreamer will reboot. After a short time it will announce its IP address. (Which has yet to be updated.) *You may need to Reload the browser to get back to the Extreamers home page or point your browser at the Extreamers IP address: (192.168.100.55)*

8. **Updating the Extreamer IP Address:** After navigating back to the Extreamer, (If not already there) click “Home” on the top menu.

9. **Click “Configuration”** on the top Menu, then click “Advanced Settings” from the Side Menu.
10. **NETWORK SETTINGS: Updating the IP address of the Extreamer**
   
   a. **IP Address**: Fill in the 4 fields with the IP address provided by the client. (For exp: 192.168.100.201)
   
   b. Fill in the Netmask (Subnet)
   
   c. Gateway IP Address (Default Gateway)

11. **Apply**: Hit Apply and the countdown/reboot sequence will begin. After a short time you will hear the IP address announced. Make sure it’s what you expected.

12. **After rebooting the Extreamer you will need to update your laptop static IP address. Then point your browser at the updated Extreamers IP address, 192.168.100.201. (Set your laptop IP address accordingly. For ex: 192.168.100.250.)**

**Testing the Connection**: In order to test the connection both Extreamer and Instreamer must be on the same network. This test can take place in two ways:

   a. The devices and your laptop are “networked” together via a HUB and view the devices via web browser
   
   b. At the time of install on the end users network and reached via browser.

   When connected to the client’s network demonstrate you can access them by navigating to their respective IP addresses using your browser.
13. Review the front panel of each unit, a good connection between both units will be indicated by a single green status light on each. They will be blinking, though not at the same rate/time. Play the audio source attached to the Instreamer. If the two units are connected properly and seen by the host network you will hear the audio playing out of the Extreamer. *(Be sure you are monitoring the Extreamer not the Instreamer!)*

**DE-9 (AKA DB-9) female null modem. They come as 9-pin and 15-pin. May need a USB to DE-9 converter if the PC does not have a DE-9 port.**
How to Make a Static IP Connection with the i.LON 600

Windows 7
1. Go to Control Panel
2. Under Network and Internet, click on “View Network Status and Tasks”
3. At next screen, under “active networks”, click “Local Area Connection”
4. At next screen (Local Area Connection Status), click on “Properties”
5. At the next screen in the area where used items are checked, highlight the selection “Internet Protocol Version 4” (NOT VERSION 6!), and click “Properties”.
6. At the next screen (Internet Protocol Version 4 properties), select the option “Use the following IP address” and complete the following:
   a. In the IP address section, enter 192.168.1.200
   b. Press the <Tab> key on the keyboard to jump to Subnet section, leave this area set to 255.255.255.0
   c. Press the <Tab> key on the keyboard to jump to the Gateway section. The computer Gateway must match the Gateway assigned to the i.LON if a specific gateway was entered.
7. Click “OK” to save and exit the screen.
8. Your computer is now ready to talk to the i.LON

Mac OSX
1. Go to System Preferences
2. Select Network
3. On the left menu, select Ethernet.
4. Select the drop down menu of configure IPv4, and select manually
5. Enter the IP Address 192.168.1.200
6. Press Tab to jump to Subnet Mask, this should be set to 255.255.255.0
7. Press Tab to jump to the router section. This is the same as Default Gateway.
8. This must match the gateway assigned to the i.LON if a specific gateway was entered. (Ex. 192.168.1.254)
9. Click apply to save your settings
10. Your computer is now ready to talk to the i.LON

Note: After you are done accessing the i.LON with your laptop, do not forget to go back into TCP/IPv4 Properties and select “obtain IP address automatically”.