Triggering Lighting Cues from QLab using OSC[1]

When playing back lighting and sound cues simultaneously, it is often desirable to have these execute at exactly the same time. This can be done using Open Sound Control (OSC), which allows sound to trigger lighting, or vice versa, using only a network connection between the devices - no additional hardware required (unlike MIDI).

This note shows how to send triggers from QLab to the lighting desk. It is also possible to trigger QLab from the lighting desk[2].

If you are using the Nomad back-up, the set-up will differ from these instructions.

This note covers:

- Setting everything up
- Sending the OSC commands
- It's not working

Setting Everything Up

If you are lucky the connection and configurations will already be in place between the Tower Mac Mini and the lighting desk and you can go straight to the section on sending OSC commands. If not, you will have to follow the instructions below.

There are 3 steps needed to trigger Eos from QLab via OSC:

- Set up a working network connection between both devices
- Configure Eos to receive OSC
- Configure QLab to send OSC to Eos

Setting up the Network Connection

Normally there is a direct ethernet connection between port 2 on the rear of the lighting desk and the Mac Mini and this is the one to use for OSC. Port 1 is used to connect to the LX Wi-Fi network.

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[1] This note is based on https://support.etcconnect.com/ETC/Consoles/Eos_Family/Software_and_Programming/Triggering_Eos_from_QLab_using_OSC

[2] The process is very similar. See: https://support.etcconnect.com/ETC/Consoles/Eos_Family/Software_and_Programming/Triggering_QLab_from_Eos_using_OSC.

A quick note on IP addresses
Each device on a network must have an IP address, which must be unique within that network. An IP address consists of 4 digits between 0 and 254 separated by decimal points. So with two Eos family consoles, one could have the address 10.101.100.20, and the other 10.101.90.101 - so far so simple.

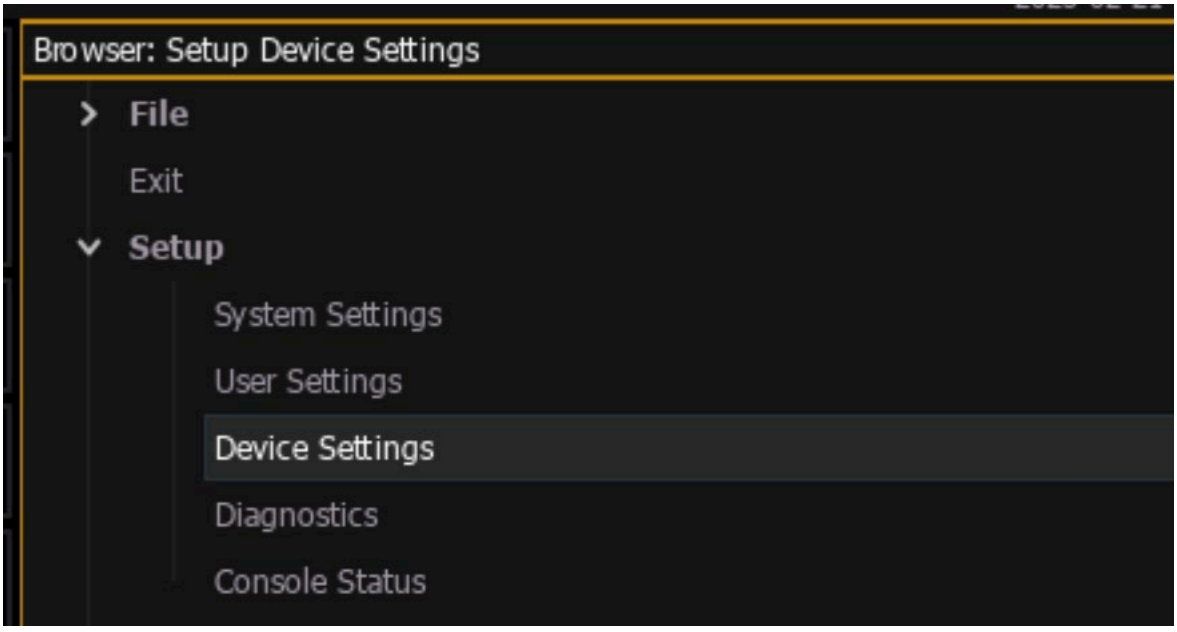
But the IP addresses of two devices must be in the same subnet, if those devices want to talk to each other. Subnets are complex, but we can keep it simple for now:

- Set the Subnet Mask on every device to 255.255.0.0
- Consequently, for 2 devices to be on the same subnet, their first 2 numbers must be the same (10.101...), but the remaining numbers can be different (and at least one of them must be).

In the example above, the two Eos family consoles can talk to each other because they share the 10.101... Another device with the IP address 192.168.1.55 could not talk to them.

This is all you need to know for a basic network setup between Eos and QLab.

Eos Network settings
To edit the network settings on a console, click [displays] to open the file browser and navigate to Setup>Device Settings>Network



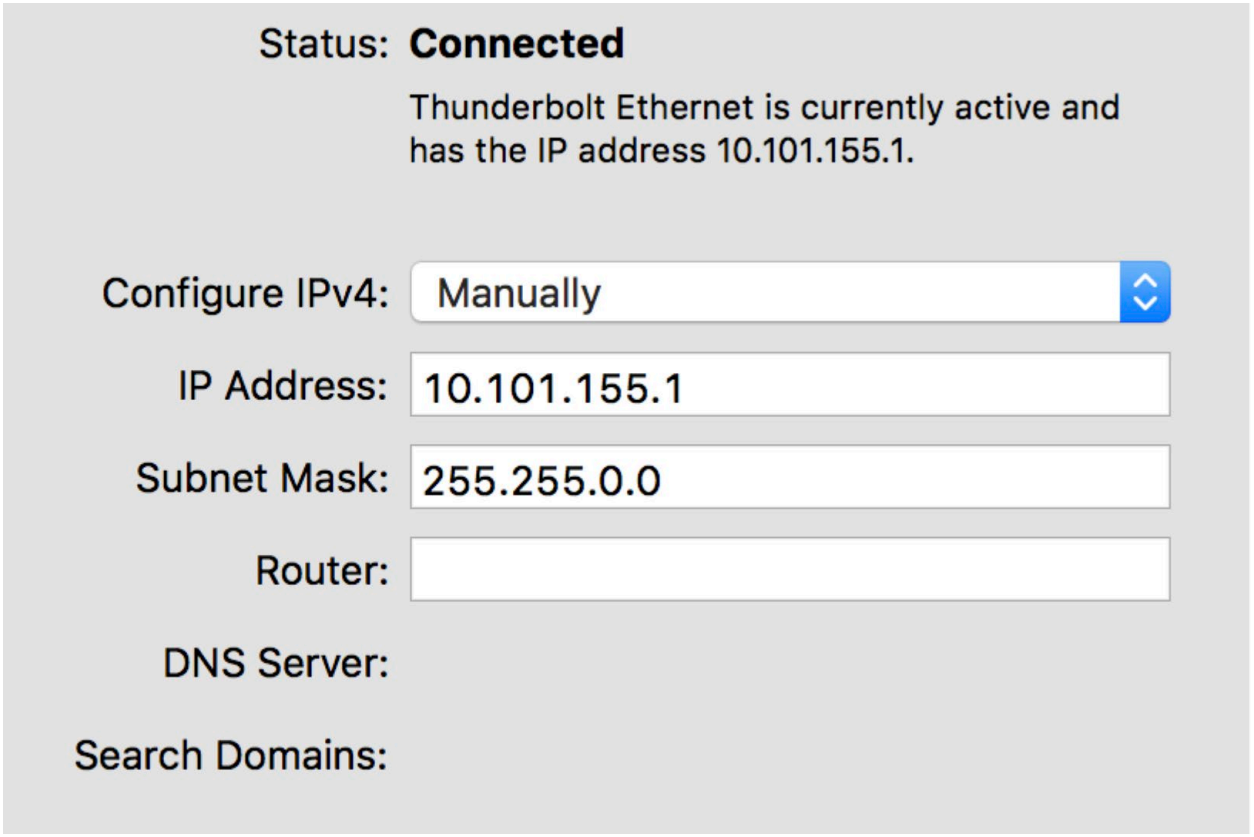
The IP address for each port is set at the top of this window. If you need to change it from the default, do so - a reboot will be required.

Once this is set, scroll down to the Interface Protocols section. Ensure that UDP Strings & OSC is ticked for the port you want to use.

For this article, we'll assume we're using Port 2 with an IP address of 10.101.92.101.

QLab Network Settings
QLab runs on macOS, so head to the Apple menu (top left of the screen) > System Preferences > Network. Choose the relevant network interface from the list (usually either wired Ethernet or a Thunderbolt adapter) and assign and IP address and subnet mask.

These are the settings we're using in this example:



Hit Apply and exit System Preferences

Configuring Eos to Receive OSC

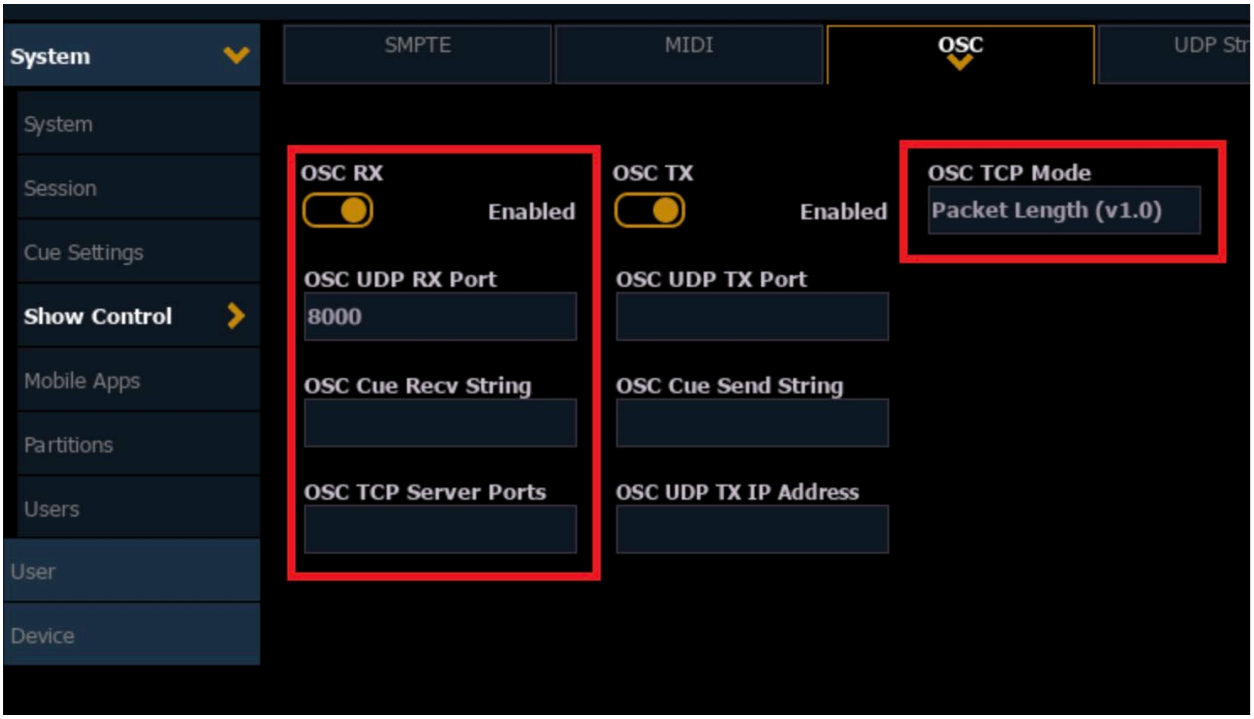
To edit the network settings on a console, click [displays] to open the file browser and navigate to Setup>System Settings>Show Control, then OSC.

The OSC options are divided into RX (receiving) on the left, and TX (transmitting) on the right. We're interested in RX, as Eos will be the receiving device.

Set the following:

- **OSC RX:** Enabled
- **OSC RX Port:** 8000 (this is an arbitrary number, it just needs to match QLab)
- **OSC Cue Recv String:** leave blank
- **OSC TCP Mode:** leave at Packet Length (v1.0) as seen below

Your window should now look something like this:



Eos is now set up to receive OSC on IP address 10.101.92.101, port 8000. Now let's configure QLab.

Configuring QLab to Send OSC

Next, we need to tell QLab where to send its OSC commands.

Open up a QLab workspace, then click on the gear symbol (bottom right) for Workspace Preferences. Choose Network in the left-hand menu.

QLab allows you to create a specific patch for Eos family consoles.

Great! Now both devices have enough information to talk to each other.

Sending the OSC Commands

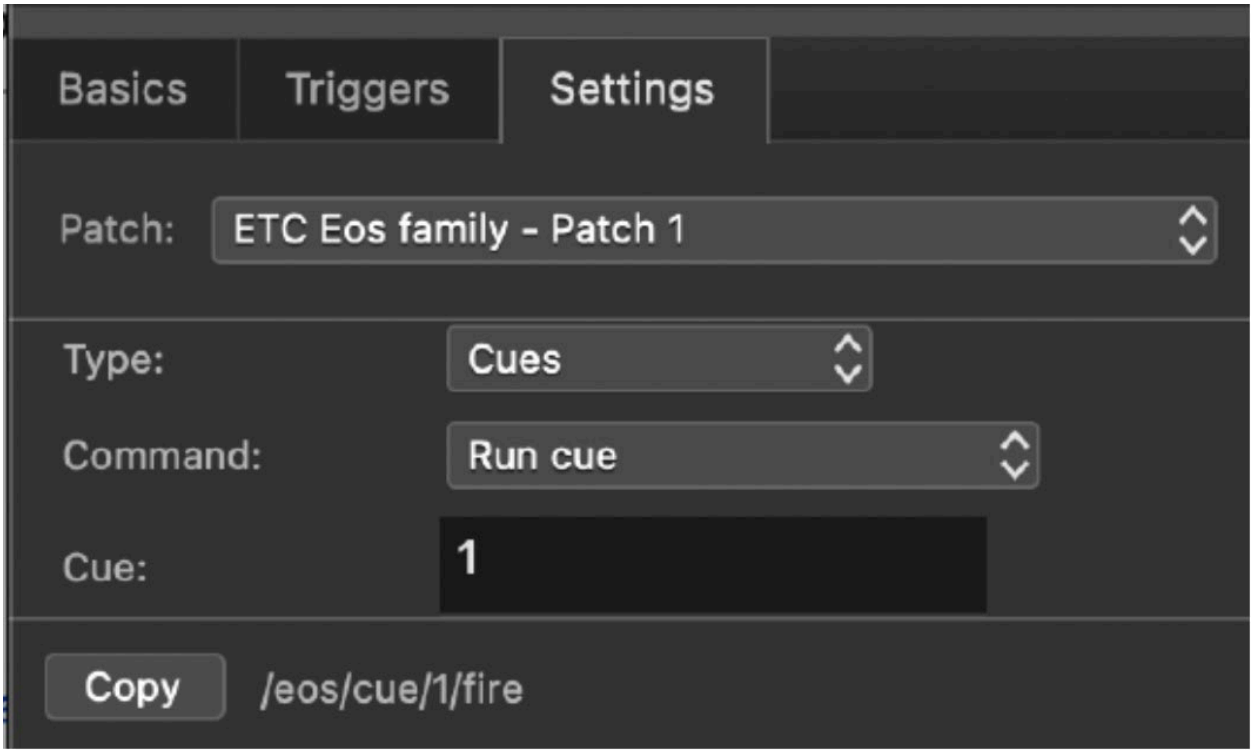
Creating an OSC Cue in QLab

QLab works on the basis of cue elements that are inserted into a list, including sound, video, fade and other types of cue. We need to insert a Network cue, which looks like a little snowflake. - ❀ . Drag one of these into the workspace, and select it.

In the Inspector dock, you will see some options for the cue. Click on the Settings tab. First, we must choose the Eos patch we created earlier in the Destination dropdown.

QLab 5 has specific options relating to Eos family's OSC implementation to send messages via UDP.

Simply select the Type of Eos target; Create the Network Patch to target Eos' Destination IP Address and Port; then choose which Command you want to do , and enter the relevant values. QLab will create the correct OSC syntax for you.



You can test this out by hitting the Send button in the Inspector dock, or by selecting the Cue and hitting GO (or spacebar).

If all went well, your Eos should have fired the cue at this point. If so, congratulations! If not, see below for troubleshooting tips.

What can I send?

The most common scenario is to trigger a specific cue, as above, but there are many other options. Some examples include:

`/eos/cue/3/9/fire` - fires cue 9 from cuelist 3
`/eos/key/go_0` - presses the GO button
`/eos/sub/1/full` - sends Submaster 1 to full

For a full list of supported inputs, see the OSC section of the Eos Manual.

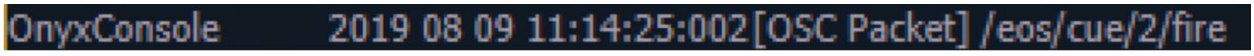
It's Not Working!

If you followed the steps above, but the Eos cue won't fire, don't despair. There are many variables in a network system, and sometimes a little fault finding is required.

The Eos Diagnostics Tab

Eos has a built-in diagnostics tab, which shows you what's happening on the console in real time. To access it, hold down the [Tab] key, and type in 99, then release the [Tab] key. In the window at the top, you will see a live stream of events within Eos.

On the right-hand side, ensure the Incoming OSC option is set to On. Now fire the Network cue from QLab. If the OSC is reaching Eos, you should see the following message.



This confirms that the OSC command made it. If you see this but nothing happens, check that you actually have a Cue 2, and that the cuelist is loaded on the master.

If you don't see this, the OSC message isn't getting through.

First, check a few basics:

- Are the Eos OSC RX port and the QLab network patch port definitely the same?
- Does Eos definitely think that the correct IP address is online? With an empty command line, press [About], and check that the expected IP appears here
- Is this IP address correctly entered in the QLab network patch?

Network Connection Troubleshooting

If all of this is fine, we should confirm that the Mac and Eos can talk to each other at all. To do this, we will Ping the Eos from the Mac.

- Open the Terminal app on the Mac (Finder > Applications > Utilties > Terminal)

- Type in the following and hit Enter (with the IP address of your Eos): ping 10.101.92.101
- You should see the reply "64 bytes from 10.101.92.101"
- If not, you will get the failure message "Request timeout for icmp_seq"

If your ping fails, investigate the cabling between your devices. Ensure both devices think the relevant network interface is online.

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