Converting MIDI Notes to Eos Family OSC Commands using OSCulator

Introduction

While the ETC Eos Family of consoles can respond to incoming commands from a number of show control protocols (UDP, OSC, and others), it does not have the capability to respond to MIDI Notes. This document will describe how to translate MIDI notes to OSC commands using a piece of software called OSCulator running on a Mac computer.

I'll show you how to map a MIDI Note to the Eos master [Go] button, but the full list of OSC key commands that the Eos family can accept is <u>here.</u> You can map any number of MIDI notes to any number of Eos keys (and lots of other Eos stuff too). The sky is the limit.

Here is an overview of the basic setup:



Disclaimers

- 1. While I've tested this setup locally, I can't guarantee anything about its reliability. Also, the Eos and/or OSCulator developers might change how this all works at any time.
- 2. While it might be tempting to set up this connection using a WiFi network, I can't recommend anything other than a wired network. Consumer-grade WiFi networks just aren't robust enough for your show control system.
- 3. Please don't use this to control pyro, automation, or anything else that could possibly be more dangerous than an accidental blackout.
- 4. I don't work for ETC, or for the folks who wrote Qlab or OSCulator. I'm just a lighting designer.
- 5. ETC's tech support is awesome at troubleshooting network issues. If you have trouble setting up your network, give them a ring (during normal business hours).

Things You Will Need

1. Your Eos Family console must be running software version 2.3 or higher. This guide was written using software version 2.3.3.

- You will need to download, purchase and install OSCulator version 2.13.3 or higher, on a Mac running 10.5.8 or higher. You can find OSCulator <u>here.</u> At the time I wrote this, OSCulator cost \$19.99.
- 3. I wrote this guide using Qlab version 3.1.22 (running on the same computer as OSCulator) as my MIDI note source. The process for connecting your specific MIDI note source to OSCulator may vary. If you have trouble, I'd check the OSCulator manual.
- 4. I believe it's best to use static IP addresses on your network because routing OSC commands requires sending them directly to a specific IP address. ETC recommends you set up your system using DHCP. This guide assumes you can set up your network with static IP addresses.

Initial Network Setup

ETC publishes a list of recommended static IP addresses for their consoles, networking gear, and 3rd-party computers running on the same network. You can find that list <u>here.</u>

- 1. Connect your primary console and the Mac to the same wired network.
- Start up your console and click on Settings when the Shell screen appears. Click on "Network" and assign the proper static IP address for your console. It should look something like this (note, this screen shot was taken from the Mac Nomad software, so it looks a little different than the console version):

Г				•	General
	Console	en0			
	Status	Online			Network
	Obtain an IP automatically				Maintenance
	IP address	10.0.1.101	Enter your static IP here		Buttons
	Subnet mask	255.255.255.0	Enter 255.255.0.0 here		Local I/O
	Default gateway		Enter 10.101.0.1 here		

3. While you're in this screen, scroll all the way to the bottom of the screen and check that UDP Strings & OSC are enabled:

Interface Protocols	en0	
MultiConsole	✓	Standard Network 👻 Fast File Transfer 👻
Sensor/FDX3000 Feedback	✓	
RDM	\checkmark	(requires Net3 gateway 5.1 or higher)
FDX2000 Feedback	0	Directed Broadcast
WiFi Remote		
UDP Strings & OSC		
OSC		TCP format for OSC 1.0 (packet length headers)

4. Start up your Mac and enter System Preferences>Network settings. Set your static IP address as follows (or whatever static IP you've decided to use):

$\bullet \bullet \circ \checkmark $		Network	Q Search
	Location:	Static Eos	C
• Ethernet 1 Connected	$\langle \cdot \cdot \rangle$	Status:	Connected
• Ethernet 2 Not Connected	<>		Ethernet 1 is currently active and has the IP address 10.101.1.101.
• FireWire Not Connected	**	Configure IPv4:	Manually
• Wi-Fi	Â	IP Address:	10.101.1.101
Bluetooth PAN		Subnet Mask:	255.255.0.0
Not Connected	2	Router:	10.101.0.1

5. You can test the network connection by opening Terminal on your Mac and entering the command: ping <IP address of your console>. Something is wrong if you see "Request timeout for icmp_seq 0". If you see a series of responses from the console, you've got it set up correctly. For example:

```
    paultoben — -bash — 100×35
Last login: Thu Mar 31 14:17:04 on console
[MacPro:~ paultoben$ ping 10.101.1.101
PING 10.101.1.101 (10.101.1.101): 56 data bytes
64 bytes from 10.101.1.101: icmp_seq=0 ttl=64 time=0.092 ms
```

OSCulator Setup

- 1. Install and launch OSCulator.
- 2. Enter your registration info.
- 3. Seriously, that's all you have to do at this point.

Qlab 3 Setup

I used Qlab 3 as my source of MIDI notes. You can use any MIDI note source, including a MIDI keyboard through a USB/MIDI interface.

- 1. Install and launch Qlab.
- 2. Make a new MIDI cue by choosing from the Cues menu (Command-8). It should look like this:

$\bullet \bullet \bullet$	Untitle	d Workspace 1 - Main Cue List	
G	O 1 · MIDI note on		
			Post Wait
	1 MIDI note on	00:00.00	00:00.00
Basics	Settings		
Number:	1 × • • • • •	MIDI Trigger: Note On 0	0
Name:	MIDI note on 💮	Capture Workspace Channel (1) Note	e velocity
Target:	(not applicable)	Hotkey Trigger:	
Pre Wait:	00:00.000 Post Wait: 00:00.000	Wall Clock Trigger: 24 hour	Every Day
Continue:	Do not continue a Auto-load: Armed:	Timecode Trigger: Timecode *	
Edit Sł	how	1 cue in 1 list	≣ ≎

3. Click on the Settings tab. Set your MIDI Destination to 1 - OSCulator In, and set the command type to Note On. Enter whatever Channel/Note Number/Velocity settings you'd like to use. I left it at the default. You screen should look like this:

• • •	Untitled W	orkspace 1 - Main Cue List	
GO	1 · MIDI note on		
Number			りの文 🗭 🕄
1	MIDI note on	00:00.00	00:00.00
Basics	Settings		
MIDI Destination:	1 - OSCulator In (8000)	Message Type: MIDI Voice Message ("Musical MIDI") 🗧	Send Message
Command:	Note On Image: Channel Image: Good Control of Contro of Control of Contro of Control of Control of Control of C		
Edit Show		1 cue in 1 list	i≣ ¢

- 4. Now, every time you press the Qlab Go button with this cue selected, Qlab will send a MIDI Note to OSCulator.
- 5. Try pressing the Qlab Go button!

Configuring the OSCulator Routing

Now that you've sent a MIDI note to OSCulator, you should see this:

•	•			Untitled					
	8000	Default	٥	Concept of	÷Ö:	Q Search			
Pause	OSC input port	Presets		Quick Look	Parameters	Filter		Wiim	ote
1	lessage	^	Event T	уре	Value		(Chan.	Ļ
	▼/midi/note/1		_		≎ –		0	_ :	0
	0: pitch		-		≎ –		0	- :	0
	1: velocity		_		≎ –		\$	_ :	0
	2: trigger		-		≎ –		0	- :	0
					*		÷		÷

1. On the row that says "/midi/note/1", under the column heading that says "Event Type", click on the pair of arrows and choose "OSC Routing" from the menu:

• • •		Untitled	
8000	Default	•	÷Ô
Pause OSC input port	Presets	-	Parameter
Message		Control	Value
🛃 📃 🔻 /midi/note/1		✓ OSC Routing	(¢)-
0: pitch		- ·	v –
1: velocity		System	≎ –
2: trigger		Console Log	≎ -

2. On that same row, under the column heading that says "Value", click on the pair of arrows and choose "New"

•	•			Untitled					
	8000	Default	٥	a constant		Q Search			
Pause	OSC input port	Presets		Quick Look	Parameters	Filter		Wiin	note
N	Message	^	Event	Туре	Value		~	Chan.	ب
	▼/midi/note/1		OSC	Routing	-		\$)-	\diamond
	0: pitch		-			e i .	V	-	0
	1: velocity		-		No user de	fined routes	\$	_	$\hat{}$
	2: trigger		-		New		0	-	0

- 3. On the resulting screen, under Targets: OSC URL enter "osc.tcp://<IP address of your console>:3032"
 - For example, if the IP address of your console is "10.101.97.101" you would enter "osc.tcp://10.101.97.101:3032" in this box.
 - If you're trying to control an Eos Nomad installation on the same computer as OSCulator, you should enter "osc.tcp://locahost:3032"
- 4. Under Routes: Rewrite address enter "/eos/key/go_0".
 - This will map the MIDI note to the Master Playback Go Button on your Eos console.
 - If you wish to use a different key, replace "go_0" with the OSC key command. Or, replace the whole thing with a different Eos Family OSC command.

Intitled								
(II) 8000 Default 🗘 📰 🚫	Q Search	OSC Routing Edi	itor					
Pause OSC input port Presets Quick Look Parame	ters Filter Wiimote Rev	write address:						
/eos/key/go_0								
Key Combos AppleScript OSC Routing I/O		Tip: the string <address> will be substitute <argn> with the argument at inde <varn> with the variable at inde</varn></argn></address>	ed with the source address, ex N (e.g. <arg0>) x N (e.g. <var0>)</var0></arg0>					
Targets OSC messages are sent to targets. D, the default target is set to the	irst OSC service found on the network. Arg	guments:						
# D OSC URL or choice from gear menu	Memo	<all args=""></all>						
1 • osc.tcp://10.101.1.101:3032								
3 0	- -	To construct the routing arguments, drag the to	okens on the field above.					
OSC routes are used to alter a message's address and arguments. The second arguments are used to alter a message's address and arguments.	e target is chosen from the # column.	All arguments:	<all args=""></all>					
# Rewrite address ^ Arguments	Memo	 This token makes a verbatim copy of even 	ry arguments.					
Đ≎ /eos/key/go_0	-	Argument at index:	arg[0]					
		 This token picks an argument at a specifi Once dropped, click the triangle to change 	c index. Je the type or index.					
		Variable:	var[0]					
		 This token outputs the value of a Variable Once dropped, click on the token's triang 	e previously set as an event. Ile to change the type or index.					
		String and number constants:						
		Type them in the above textfield and valida	te with the Space key.					
		Selection from input value:						
		Inside a pair of parentheses, type tokens so The input argument value will be used to so	eparated by colons, e.g: (on,off) elect one of the typed tokens.					
	Rou	oute when: Any value is processed	\$					
C Search	Close	Only applies to messages which fi	irst argument type is numerical.					
😝 Running								

5. Click "Close". The OSCulator screen should now look like this:

Message	 Event Type 	Value	Chan.	÷
Image: Second state of the second state of	OSC Routing	D → /eos/key/go_0	\$ - \$	
		A	A A	

Configuring the Eos Family Console to Receive OSC Commands

- 1. Launch the Eos application on your Primary console and load the show file you're going to use.
- Press [Displays]{Setup}{Show} and choose "Show Control" from the left hand side of the CIA.
- 3. Click on the "String RX" tile so it says "Enabled". Click on the OSC RX Port Number tile and enter "3032". Your screen should look like this:

	. Colum					
	: Setup :					
Show Settings						
Cuo	SMPTE Time Code Rx	MSC Receive	MSC Transmit	Analog Inputs	String RX	String and OSC TX
Settings	Enabled	Disabled	Disabled	Enabled	Enabled	Disabled
Show	MIDI Time Code Rx	MSC Receive Channel	MSC Transmit Channel	Relay Outputs	String RX Group IDs	String TX Group IDs
Control	Enabled	0	0	Enabled		
Partitions	Resync Frames	ACN MIDI RX ID(s)	ACN MIDI TX ID	OSC TX IP Address	String RX Port	String TX Port
	2	1	2		0	0
			String MIDI TX	OSC TX Port Number		String TX IP Address
			Disabled	0		
			MIDI Cue List	OSC RX Port Number		
				3032		

4. Press [Live] and make sure you've got some cues recorded and assigned to the Master Playback Go Button.

Testing

- 1. Go to your MIDI Note source, and send the MIDI Note to OSCulator.
- 2. In OSCulator, the green "Activity" light should blink.
- 3. In Eos, your next cue should fire.

Troubleshooting

- 1. To see if Eos is receiving your commands, you can open a diagnostics window in Eos by holding down [Tab] and pressing [99] (or under [Displays]{Browser} Setup>Diagnostics).
- 2. Click the "Incoming OSC" button to enable the display of incoming OSC messages. When everything's working, you'll see this:

	2) 3						(untitled)*
Context Context OnyxConsole	2016 04 2016 04 2016 04	03 14:14:47:657 (L)E 03 14:14:47:657 Run (03 14:14:47:657 (OSC	/ENT: U:r≫ Go0 co Cue 1 / 28 0 Packet /eos/key/go_0	mmandTime = 0 , 0.472(f), 0.504(f), 1(f)				
Last Comma Number: 13 Source: Key	and: Shift 6 rboard				Loop Time: High Loop Time: Rig Update Rate:	Ave Loop Time		Clear Network Info
Last Crystal Location: Source:	Event	Type						
Event ID:		Value:					Ir	ncoming OSC (On)
Params: Us	ed 0 System	0 Local 0 Allocated 0					C	Outgoing OSC (Off)

If you have questions:

- 1. Check with ETC and OSCulator first... they're going to be best positioned to help you.
- 2. Try searching, and then posting in the ETC Show Control forum: <u>https://</u> <u>community.etcconnect.com/control_consoles/f/158</u>