muse™

Muse Developer Resources

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Multi-Muse Setup

Want to have 30 Muse going all at the same time? This page describes how to do it.

Instructions for Connecting 5 Muse to a Single Computer

Equipment

The bluetooth dongle is the most important part of this equipment. In our testing, it is not possible to connect more than 3 Muses to a computer unless you use a CSR Bluetooth dongle. With a CSR dongle, you can pair 5 Muses to a single computer. You will need to buy a CSR dongle, everything else is optional.

The computer you use is less important, but when doing large setups with 30+ Muse, we recommend the Zotac Nano PC due to it's very small size, fanless operation(and therefore quiet), and cheap price.

- Zotac CI320 Nano PC
  - Complete system (recommended):
    - http://www.amazon.com/Zotac-ZBOX-CI320NANO-U-W2-nano-Plus-Windows/dp/B00M4OEPLA/ref=sr_1_1?s=electronics&ie=UTF8&qid=1423002083&sr=1-1&keywords=ci320
    - http://www.canadacomputers.com/product_info.php?cPath=7_1203_1157&item_id=076701
  - Barebones (Requires installation of memory and hard disk, use for custom configurations):
    - http://www.zotac.com/ca/products/mini-pcs/zbox-c-series/product/zbox-c-series/detail/zbox-ci540-nano-plus.html
    - http://www.amazon.com/Zotac-Mini-Barebones-System-ZBOX-CI540NANO-U/dp/B00LJEFX4Y
- CSR 8510 chipset Bluetooth dongle
  - http://www.adafruit.com/product/1327

- http://www.amazon.com/Bluetooth-Achieved-CSR8510-High-Software-Compatible-headphones/dp/B00QIVFTCE/
- http://www.amazon.com/gp/product/B00IMALQ94/
- Keyboard
- Mouse
- HDMI monitor
- 4GB USB flash drive (or larger)
- 5 Muse headbands
    - http://store.choosemuse.ca/products/muse?_ga=1.110518853.1960805679.1418676210

1. Install Ubuntu

Download 64-bit Ubuntu image (14.04): http://www.ubuntu.com/download/desktop

Make a bootable USB drive using rufus: https://rufus.akeo.ie/

Plug it into the Zotac and boot with it. You may have to hold down F8 to get the boot menu to show up. Select the Ubuntu disk.

Follow the instructions for setting up Ubuntu.

2. Download the Muse SDK

https://sites.google.com/a/interaxon.ca/muse-developer-site/download

3. Install 32-bit dependencies

```
sudo apt-get install zlib1g:i386
sudo apt-get install libc6-dev-i386
sudo apt-get install lib32stdc++6-4.7-dev
sudo apt-get install libbluetooth-dev:i386
```

4. Plug in CSR bluetooth dongle

5. Pair each of the 5 Muses

You need to know the MAC address of each Muse in order to connect to it. To obtain the MAC address you can pair with each Muse using the Bluetooth manager GUI and it will display it. Once you know the MAC address of each Muse, you should not have to pair again in order to connect. Simply provide the MAC address to MuseIO.

- Open the Bluetooth manager GUI
- Turn all of the Muses on into Pairing Mode
- Click the plus sign in the device list
- Select a Muse
- If you are asked about a passcode, click "Matches"
- Repeat for all five Muses

6. Connect to Muse with MuseIO

- Open five terminal windows.
- In each window, run muse-io --device <XX:XX:XX:XX:XX:XX>
- Where the number in angle braces is the MAC address listed for a given device in the Bluetooth manager GUI
- Do this for all five windows/Muses
- Wait a few seconds
- All five Muses should be connected and streaming data to port 5000 over TCP.

Muse Bluetooth Names

Please note that you can change the Bluetooth name of each Muse. You can do this using muse-io with the "--rename-device" argument.
On each computer, you can run muse-io multiple times, once for each Muse you want to connect.

How to synchronize time for all Muse?

To get this working, you would synchronize the clocks on each computer Muse is connected to. Usually you would use NTP for this, which is made to sync clocks on different computers. This is available on all major operating systems.

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