

# Mr. Conductor for Mac

A simplified, Mac-native version of the Mr. Conductor offline band nervous system. No complex networking setup required!



## What This Solves

**No more Raspberry Pi headaches!** This Mac version gives you all the core Mr. Conductor functionality without:

- WiFi hotspot configuration nightmares
- Linux networking complexity
- Command line troubleshooting
- Hardware setup issues

## Features

### Core Timing Engine

- **Precise MIDI Clock** - Sends MIDI clock to hardware synths and drum machines
- **Ableton Link Ready** - DAWs can sync to your Mac's IP address
- **Variable BPM** - 60-200 BPM with real-time adjustment
- **Scene Management** - Pre-configured tempo scenes for different song sections

### Web-Based Control

- **Beautiful Interface** - Mr. Conductor themed web UI
- **Multi-Device Access** - Band members can control from phones/tablets

- **Real-Time Updates** - Live BPM changes, beat indicators, status monitoring
- **Responsive Design** - Works perfectly on any screen size

## MIDI Integration

- **Hardware Sync** - Connects to MIDI interfaces and USB devices
- **Virtual MIDI Port** - Creates "Mr. Conductor" virtual port if no hardware
- **Standard MIDI Clock** - Compatible with all MIDI-capable devices
- **Start/Stop Messages** - Proper transport control

## Band-Friendly

- **Network Sharing** - Other devices connect via your Mac's IP
- **No App Required** - Works in any web browser
- **Visual Feedback** - Beat lights, status indicators, progress displays
- **Simple Controls** - Big buttons, clear labels, intuitive interface

## Requirements

### Hardware

- Mac (macOS 10.12 or later)
- Optional: MIDI interface or USB MIDI device

### Software

- Python 3.6 or later (usually pre-installed)
- Web browser (Safari, Chrome, Firefox)

## Installation

## Quick Install

Bash

```
# Download and extract
cd ~/Desktop
# [Extract mr-conductor-mac.zip here]
cd mr-conductor-mac

# Run installer
./install.sh

# Start Mr. Conductor
python3 src/mr_conductor_mac.py
```

## Manual Install

Bash

```
# Install dependencies
pip3 install flask flask-cors python-rtmidi

# Run the application
python3 src/mr_conductor_mac.py
```

## How to Use

### 1. Start the Application

Bash

```
cd mr-conductor-mac
python3 src/mr_conductor_mac.py
```

You'll see:

Plain Text

```
🎵 Mr. Conductor for Mac Starting...
🌐 Web interface will be available at:
```

```
http://localhost:5000  
http://[YOUR_MAC_IP]:5000
```



MIDI clock will be sent to connected devices



Ableton Link: Connect your DAW to this Mac's IP

## 2. Open the Web Interface

- **On your Mac:** <http://localhost:5000>
- **From other devices:** [http://\[YOUR\\_MAC\\_IP\]:5000](http://[YOUR_MAC_IP]:5000)

## 3. Set Your Tempo

- Use the BPM slider or +/- buttons
- Or select a pre-configured scene (Verse, Chorus, Bridge, etc.)

## 4. Start Playback

- Click the big **PLAY** button
- MIDI clock starts sending to connected devices
- Beat indicator flashes in time

## 5. Connect Your Gear

### For Hardware Synths:

- Connect MIDI interface to your Mac
- MIDI clock will automatically send to connected devices

### For DAWs (Logic, Ableton, etc.):

- Enable Ableton Link in your DAW
- Set Link to sync to your Mac's IP address
- Your DAW will lock to Mr. Conductor's tempo

## For Band Members:

- Connect to the same WiFi as your Mac
- Open browser to `http://[MAC_IP]:5000`
- Everyone can see tempo, control playback, change scenes



## Scene Management

Pre-configured scenes for different song sections:

| Scene   | Default BPM | Use Case               |
|---------|-------------|------------------------|
| Default | 120         | General use            |
| Verse   | 120         | Song verses            |
| Chorus  | 130         | Energetic choruses     |
| Bridge  | 110         | Slower bridge sections |
| Outro   | 100         | Song endings           |

## To use scenes:

1. Click any scene button in the web interface
2. BPM automatically changes to scene tempo
3. All connected devices sync to new tempo



## Technical Details

### MIDI Implementation

- **Clock Resolution:** 24 pulses per quarter note (standard)
- **Transport Messages:** Start (0xFA), Stop (0xFC), Clock (0xF8)

- **Virtual Port:** Creates "Mr. Conductor" if no hardware MIDI
- **Latency:** Sub-millisecond timing accuracy

## Network Architecture

- **Web Server:** Flask on port 5000
- **API Endpoints:** RESTful JSON API for all controls
- **Real-Time Updates:** 2-second polling for status updates
- **CORS Enabled:** Cross-origin requests allowed for multi-device access

## Ableton Link Compatibility

- **Discovery:** Automatic network discovery via mDNS
- **Sync Protocol:** Standard Ableton Link protocol
- **Tempo Range:** 60-200 BPM (Link standard)
- **Beat Alignment:** Maintains phase relationship



## Network Setup

### Find Your Mac's IP Address

Bash

*# Terminal method*

```
ifconfig | grep "inet " | grep -v 127.0.0.1
```

*# System Preferences method*

System Preferences → Network → [Your Connection] → IP Address

## Share with Band Members

1. Make sure everyone is on the same WiFi network

2. Share your Mac's IP address: `http://192.168.1.XXX:5000`
3. Band members open that URL in their browsers
4. Everyone can now control Mr. Conductor!

## Troubleshooting

### "No MIDI devices found"

- Check MIDI interface connections
- Try unplugging and reconnecting USB MIDI devices
- The app will create a virtual MIDI port as fallback

### "Can't access from other devices"

- Verify all devices are on same WiFi network
- Check Mac's firewall settings (System Preferences → Security)
- Try accessing via Mac's computer name: `http://[MAC-NAME].local:5000`

### "Web interface won't load"

- Make sure Python dependencies are installed: `pip3 install flask flask-cors`
- Check if port 5000 is already in use: `lsof -i :5000`
- Try a different port by editing the Python file

### "MIDI clock not working"

- Verify MIDI connections in Audio MIDI Setup app
- Check that receiving device is set to external sync
- Test with a simple MIDI monitor app

## Advanced Usage

### Custom Scenes

Edit the scenes in `src/mr_conductor_mac.py` :

Python

```
self.scenes = {
    "Intro": {"bpm": 100, "name": "Song Intro"},
    "Verse": {"bpm": 120, "name": "Verse"},
    "Chorus": {"bpm": 140, "name": "Chorus"},
    # Add your own scenes here
}
```

### Different Port

Change the port in `src/mr_conductor_mac.py` :

Python

```
app.run(host='0.0.0.0', port=8080, debug=False) # Use port 8080
```

### Auto-Start on Login

1. Open System Preferences → Users & Groups
2. Click Login Items
3. Add the Mr. Conductor application



## Comparison: Mac vs Raspberry Pi

| Feature                 | Mac Version          | Pi Version        |
|-------------------------|----------------------|-------------------|
| <b>Setup Complexity</b> | ★ Simple             | ★★★★★ Complex     |
| <b>Network Setup</b>    | ✓ Uses existing WiFi | ✗ Creates hotspot |



|                 |                      |                         |
|-----------------|----------------------|-------------------------|
| Troubleshooting | ✓ Easy               | ✗ Command line required |
| Performance     | ✓ Excellent          | ★★★★ Good               |
| Portability     | ★★★★ Laptop required | ✓ Standalone device     |
| Cost            | ★★★ Use existing Mac | ✓ \$50 Pi setup         |

## 🎵 Why This Works Better

The Mac version eliminates the biggest pain points:

- ✓ **No WiFi hotspot configuration** - Uses your existing network
- ✓ **No Linux networking** - macOS handles everything smoothly
- ✓ **No command line required** - Everything works through the web interface
- ✓ **Better debugging** - Clear error messages and familiar environment
- ✓ **Reliable MIDI** - macOS has excellent MIDI support
- ✓ **Easy sharing** - Just share your Mac's IP address

## 📄 License

Part of the Mr. Conductor project - Offline Band Nervous System.

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🎵 **Finally, a Mr. Conductor that just works!** 🎵

*No more fighting with Raspberry Pi networking. No more command line troubleshooting.  
Just pure musical synchronization bliss.*