

# Guysoft's Weblog

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## RealtimePi – out of the box real-time RaspberryPi Raspbian      *October 9, 2017*

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*Posted by GuySoft in [linux](#), [open source](#), [programming](#).*

*Tags: [CustomPiOS](#), [open source](#), [Raspberry Pi](#), [raspbian](#) [trackback](#)*

Hey all,

So it started as a curiosity, and it looks like its working. I made a Raspbian-based distro that ships with a realtime kernel called RealtimePi. You can download the latest here. It's open source, sources are here.

A realtime system means its deterministic, it means you should know how long things take to run. They way to do is is to apply a patch to the linux kernel that makes it non-preemptible. To explain – Preemption is the act of temporarily interrupting a task being carried out by a computer system, without requiring its cooperation, and with the intention of resuming the task later.

This is useful for building hardware and robotics, low latency audio and other gpio because there are no surprises when it comes to timing. It seems like something good to try out with the RaspberryPi, because of the GPIO and IOT capabilities.

Bundled with CustomPiOS you can build your customized realtime-kernel device.



RealtimePi logo

## Features

- Both armv6 and arm v7 are supported! Aka all versions of RaspberryPi to date!
- 4.9.52-rt37-v7 with PREEMPT kernel
- Easy way to set up the network using realtimepi\_wpa\_supplicant.txt in the boot partition

# Steps to install

1. Download the image [here](#)
2. Unzip and [flash it](#) to an SD card (small enough to fit a 2GB card)
3. Open newly flashed image and edit two files, one for the wifi, and one for the bot token:
4. Put in **realtimepi-wpa-supPLICant.txt** your wifi address (skip if using Ethernet cable). Here is how it should look:

```
# 'man -s 5 wpa_supplicant.conf' for advance  
network={  
    ssid="Your Wifi SSID"  
    psk="supersecretwifipassword"  
}
```

You can test the realtime kernel is enabled, by running in the commandline

```
uname -a
```

You should see something like this, note PREEMPT RT which indicates its realtime:

```
Linux realtimepi 4.9.52-rt37 #1 PREEMPT RT Fri Oct 6 22:29:28 UTC 2017 armv7
```

The line should look a little different for armv7

I am not an expert with actually building realtime systems, so input on how it preforms, and examples would be appreciated!

- [RealtimePi on github](#)

## Comments»

### 1. JAM - October 14, 2017

I went to try it out. For me, Gadget USB-Ethernet seems to crash under mild network traffic on the pi zero.

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**GuySoft - October 14, 2017**

Hey, it might be that you got this known issue:

<https://www.osadl.org/Single-View.111+M5c03315dc57.0.html>

I haven't managed to reproduce it, so I didn't apply the patch given there.

They give a workaround, adding this in the cmdline.txt:

```
dwc_otg.fiq_enable=0
```

```
dwc_otg.fiq_fsm_enable=0
```

If you can try that and report its success or failure, I'll know what to fix for the next release.

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**GuySoft - March 7, 2018**

The patch is now part of the release.

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**2. BruceR - October 14, 2017**

Thanks, I'm going to try this with my Pedal-Pi

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**lifeinlowkey - January 8, 2018**

I recently got a Pedal-Pi too, and was thinking of trying this! How did it go for you?

<https://polldaddy.com/js/rating/rating.js>

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**GuySoft - January 8, 2018**

Iv'e been reading and it looks like the Pedal-Pi is just a rewrite of the arduino version. If you already have a Pi you should really try guitarix or rackarack, you can have a full real-time pedal system like that. I'm looking in to building a distro for this.

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**lifeinlowkey - January 8, 2018**

Thank you, I'll take a swing at those. I look forward to the distro!

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**jujudusud - April 10, 2018**

Searching for a solution to use effects on raspberry pi.

you should have a look at : <https://github.com/BlokasLabs/modep-gen>

It uses mod-app (a midi pedalboard for guitar and bass under debian or archlinux) and a midi and analog audio Pi-Hat.

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### **GuySoft - April 10, 2018**

Is there a project page? That is just a fork of the pi-gen buildroot. I really suggest moving to CustomPiOS, its impossible at a glance to understand what that disro does.

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### **3. JAM - October 17, 2017**

I added the above lines. For me, the pi zero was still hanging. I could not get past a 'sudo apt-get update'. It also crashed for me sometimes while ssh-ing into the device. I tried an external power supply thinking the crashes were due to insufficient power on the OTG port, but that did not seem to solve it. To test if it was the hardware, I went back to a stock raspian sd card and it seemed to be OK.

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### **GuySoft - October 17, 2017**

Sounds like this issue:

<https://github.com/guysoft/RealtimePi/issues/3>

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### **GuySoft - October 21, 2017**

Hey, there is an RC of version 0.2 with a patch that might solve your problem now:

<https://github.com/guysoft/RealtimePi/issues/4>

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**4. Yuliya P - February 16, 2018**

I have installed it and now I must enter my login data. But I don't know the default login and password. Can anybody help me?

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Reply.**GuySoft - February 16, 2018**

Same as any raspbian image pi / raspbian

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Reply.**5. G - March 7, 2018**

I am having trouble setting up wifi and having it automatically come up on boot.

I have separately tried editing realtimepi-wpa-supPLICANT.txt and realtimepi-network.txt to have my wifi ssid and key. I have also changed both. From reading the comments in realtimepi-network.txt it seems that only this file needs to be edited for a single ssid setup.

I cannot however get the wlan going – neither automaticall at boot or manually via iwconfig or ifconfig or iw

What i have for the realtimepi-wpa-supPLICANT.txt, I put identical info to what I used with a standard raspbian install:

code:

country=US

ctrl\_interface=DIR=/var/run/wpa\_supplicant GROUP=netdev

update\_config=1

Network={

ssid="myssid"

psk="mypassword"

```
key_mgmt=WPA-PSK
}
```

for realtimepi-network.txt I used:

code:

```
auto wlan0
iface wlan0 inet dhcp
wpa-conf /etc/wpa_supplicant/wpa_supplicant.conf
wpa-ssid myssid
wpa-psk mypassword
```

Some help would be greatly appreciated.

Thank you

G

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**GuySoft - March 7, 2018**

Please open an issue in the github, this a comment section, not a issue tracker.

<https://github.com/guysoft/RealtimePi/issues>

Just paste it so we can go through troubleshooting there.

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**6. G - March 8, 2018**

I have created an issue in github. I also corrected my code there.

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