

# WLAN Pi 2.0

wlanpi.com



# WLAN Pi Overview

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# WLAN Pi Project

- Community driven open source project
- Started in 2016
- Portable and versatile toolset for Wi-Fi Pros
- Built on Armbian
- More info: [wlanpi.com](http://wlanpi.com)



**Community Driven**

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# WLAN Pi 2.0 Dev Team



**Jerry, CWNE# 238**  
*Wi-Fi Engineer*



**Nigel, CWNE# 135**  
*Wi-Fi Engineer*



**Jiri**  
*Wi-Fi Engineer*



**Daniel**  
*Wi-Fi Engineer &  
Linux Guru*



**Josh**  
*Wi-Fi Engineer*



**Colin**  
*Wi-Fi Engineer*



**Adrian**  
*Actual Developer  
& Wi-Fi guru*



**Joel, CWNE# 233**  
*Wi-Fi Engineer +  
3D Printing Guru*



# WLAN Pi 2.0 Objectives

## Objectives:

- Overhaul development process - make it scalable and easier to collaborate
- Improve usability and refocus toolset



## WLAN Pi 2.0 Summary

- ✓ Rebuilt from the ground up
- ✓ Toolset revamped
- ✓ Usability improvements
- ✓ Hardware support expanded



# Development Process



WLAN Pi 1.x



WLAN Pi 2.0



# Development Process

- Old method
  - Hand-rolled image
  - Challenges:
    - Time and labour intensive
    - Difficult to collaborate
    - No way to maintain packages



# Development Process

- New method
  - Completely overhauled
  - Automated build process using Armbian build tools
  - Improved collaboration using GitHub
  - Scalable
    - Ability to support multiple hardware platforms
    - Easier to maintain
  - Using Python3 & “virtual environments”



# Development Process

```
wlanpi@wlanpi:~$ sudo apt upgrade
Reading package lists... Done
Building dependency tree
Reading state information... Done
Calculating upgrade... Done
The following packages will be upgraded:
  fpms wiperf wlanpi-webui
3 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
Need to get 2,408 kB of archives.
After this operation, 261 kB disk space will be freed.
Do you want to continue? [Y/n] y
Get:1 https://apt.fury.io/dfinimundi fpms 2.0.2-armsbian20.11.0-trunk1 [529 kB]
Get:2 https://apt.fury.io/dfinimundi wiperf 2.0.0-beta3-4-armsbian20.08.0-trunk1 [1,752 kB]
Get:3 https://apt.fury.io/dfinimundi wlanpi-webui 1.0.0-beta1-1-armsbian20.11.0-trunk1 [127 kB]
Fetched 2,408 kB in 3s (724 kB/s)
(Reading database ... 83685 files and directories currently installed.)
Preparing to unpack .../fpms_2.0.2-armsbian20.11.0-trunk1_arm64.deb ...
Unpacking fpms (2.0.2-armsbian20.11.0-trunk1) over (0.1-1-armsbian20.08.0-trunk1) ...
Preparing to unpack .../wiperf_2.0.0-beta3-4-armsbian20.08.0-trunk1_all.deb ...
Unpacking wiperf (2.0.0-beta3-4-armsbian20.08.0-trunk1) over (2.0.0-beta2-1-armsbian20.08.0-trunk1) ...
Preparing to unpack .../wlanpi-webui_1.0.0-beta1-1-armsbian20.11.0-trunk1_arm64.deb ...
Unpacking wlanpi-webui (1.0.0-beta1-1-armsbian20.11.0-trunk1) over (1.0.0-beta1-1-armsbian20.08.0-trunk1) ...
Setting up wiperf (2.0.0-beta3-4-armsbian20.08.0-trunk1) ...
Setting up wlanpi-webui (1.0.0-beta1-1-armsbian20.11.0-trunk1) ...
Setting up fpms (2.0.2-armsbian20.11.0-trunk1) ...
```



# Development Process

The screenshot shows the GitHub interface for the repository 'WLAN-Pi/build', which is a fork of 'danielmundi/build'. The repository has 1 Unwatch, 1 Unstar, and 851 Forks. The main branch is 'main', with 27 other branches and 21 tags. A recent merge pull request by 'danielmundi' is highlighted, merging 'danielmundi#17' from 'jiribrejcha/patch-1' (commit 1e03571, 11 days ago) with 7,917 total commits.

File	Commit Message	Time Ago
.github	try json output for future report tracking (armbian#2072)	3 months ago
config	Merge remote-tracking branch 'upstream/master' into dev	17 days ago
lib	Merge remote-tracking branch 'upstream/master' into dev	17 days ago
packages	Update custom packages to main	18 days ago
patch	Switch RockPro64 work led to heartbeat trigger (in legacy too)	19 days ago
userpatches	Merge pull request danielmundi#17 from jiribrejcha/patch-1	11 days ago
.dockerignore	Improve Docker support	3 years ago
.editorconfig	Added .editorconfig, removed obsoleted upgrade.sh and main.sh, launc...	12 months ago
.gitignore	Start building wlanpi-m4v2	4 months ago
.ignore-errors	Compile and check for erros during build	2 months ago
LICENSE	Create LICENSE	6 years ago
README.md	Cosmetical improvements (armbian#2115)	2 months ago
VERSION	Move master to next release trunk	4 months ago
compile.sh	Improve Docker installation support for Linux Mint	last month
wp-compile.sh	Improve compilation wrapper script	2 months ago

**About**  
WLAN Pi build tools - based on Armbian  
[www.wlanpi.com](http://www.wlanpi.com)  
Readme  
GPL-2.0 License

**Releases**  
21 tags  
[Create a new release](#)

**Packages**  
No packages published  
[Publish your first package](#)

**Languages**

Language	Percentage
Shell	76.4%
Batchfile	5.2%
PHP	2.4%
Other	2.5%
Roff	8.6%
HTML	2.7%
Makefile	2.2%



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Do you want to continue? [Y/n]
```



# WLAN Pi 2.0 Toolset

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# Revamped Toolset



WLAN Pi v1.9



WLAN Pi v2.0



# Revamped Toolset

- WebUI - completely overhauled using Flask
- Web Admin Interface - using Cockpit
- New Server Mode - many new use cases
- Profiler - rewritten in python3
- Front Panel Menu System (FPMS) - multiple new utilities and improvements
- Wiperf mode - now supports grafana
- Wi-Fi drivers - updated, full support for MediaTek chipsets



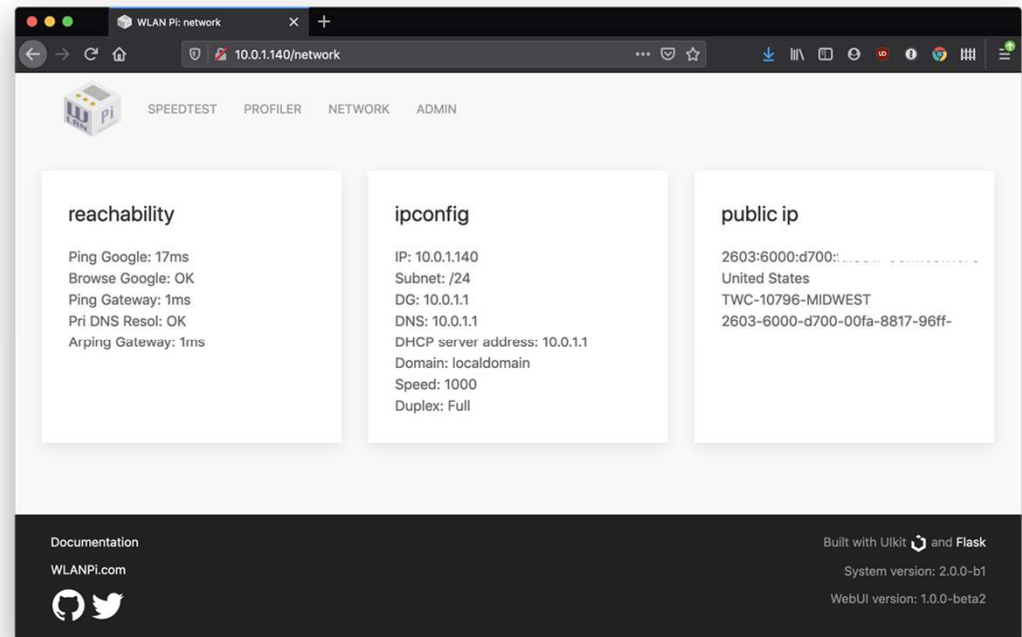


**New WebUI**

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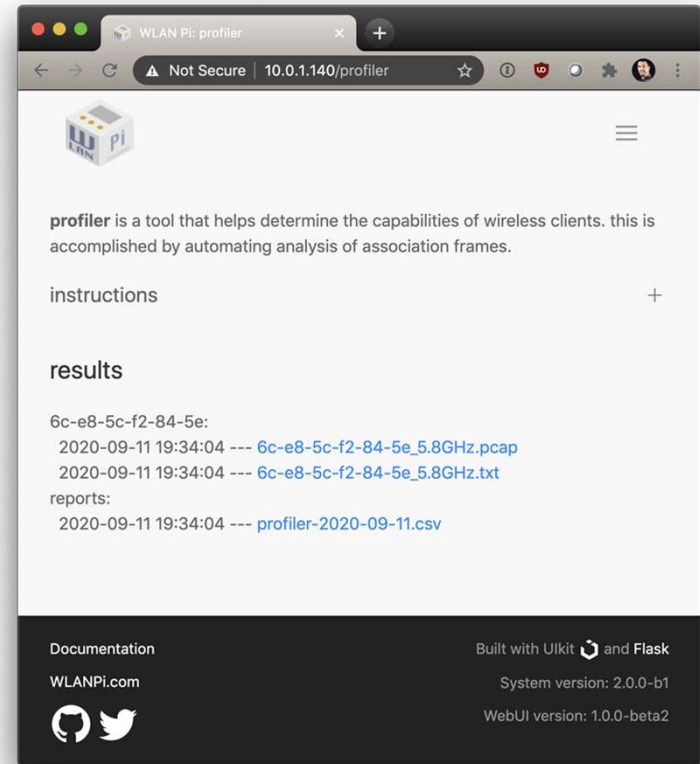
# New WebUI

- Extensible framework built on Flask
- Network information includes:
  - Reachability
  - IP Config
  - Public IP
  - CDP and LLDP neighbor (coming soon)
- Profiler results
- LibreSpeed test improved



# Profiler2

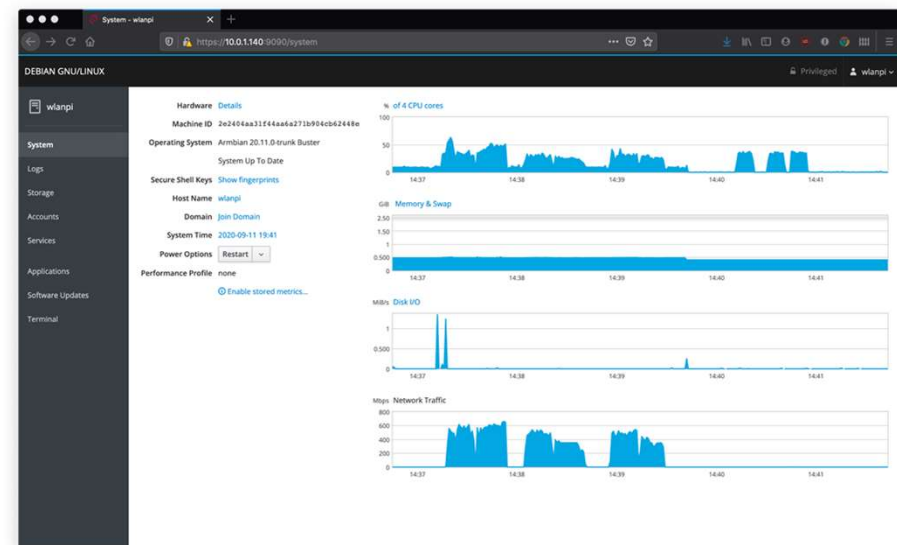
- Profiler got a MAJOR upgrade:
  - Complete rewrite of the codebase
    - Python 2 to 3
    - Integrated and customized fakeap scapy code
    - Improved performance
  - Packaged and isolated in its own Python environment
  - Dozens of minor improvements



# Admin Web Interface



- Cockpit Project
- User friendly
- Set time zone
- Manage services
- Monitor and administer multiple WLAN Pi's at the same time
- Embedded terminal



# Front Panel Menu System (FPMS)

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# FPMS Improvements

- Button clicks are 50% more responsive! No more double pressing buttons :)
- Button layout options - choose your preferred button layout
- CDP neighbour - now also shows software version if advertised
- Port blinker - identify switch port number on the far end of the Ethernet cable by blinking switch port LEDs
- Mist cloud test - verify connectivity to the cloud



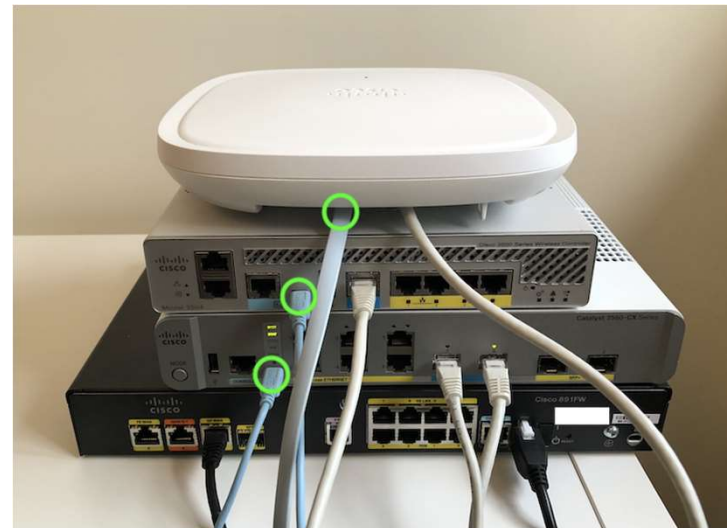
# Server Mode

- Ideal for lab, provisioning, staging and software upgrades of network devices
- Enables all services on the WLAN Pi like DHCP server, TFTP server, Wi-Fi console, wireless access to the WLAN Pi and more coming soon
- Safety first: this mode is non-persistent and WLAN Pi will switch back to its default “Classic” mode after reboot
- Many use cases:
  - Build a lab network, demonstration or a Proof the Concept (PoC) setup
  - Software upgrade of a switch, controller or AP using the TFTP server
  - Point APs to their controller by configuring Option 43 on the WLAN Pi DHCP server <http://bit.ly/wlanpi-option43>
  - Easily convert hundreds of APs from Mobility Express or Embedded Wireless Controller mode to Lightweight mode <https://bit.ly/convert-to-lightweight>



# Wi-Fi Console

Provides wireless or wired console access and now also internet connectivity at the same time so that you can research online or refer to a Configuration Guide while configuring





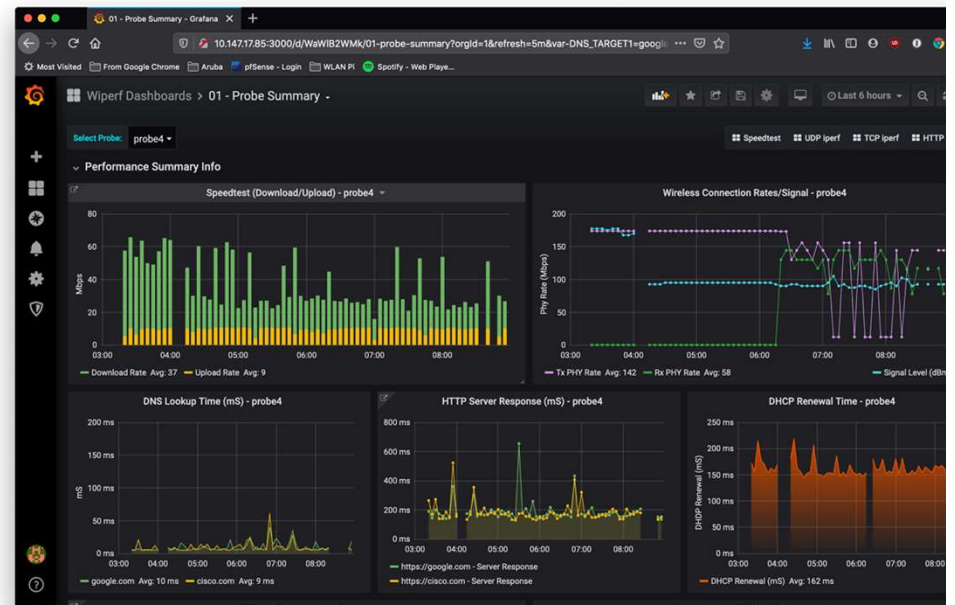
**Wiperf**

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# Wiperf Updated

Tools that got some an all-new shine:

- Wiperf:
  - Support for testing over Ethernet
  - Support for reporting in to Influx/Grafana
  - Canned dashboard report improvements



# Retired tools

- Some tools that had limited take-up or had a high overhead to support have been retired
- Provides a leaner base of code to support as WLAN Pi grows
- (Not necessarily a one-way trip!)
- Package retired:
  - Horst
  - Kismet
  - iperf2 (available but not enabled by default)



# The future of WLAN Pi hardware

- NEO2 no longer being manufactured
- Getting an off the shelf device with feature parity very difficult
- Options:
  - Lower spec off-the shelf hardware
  - Roll our own hardware
- 2 recommended USB Wi-Fi adapters



**What's Next**

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# What's Next

## Hardware

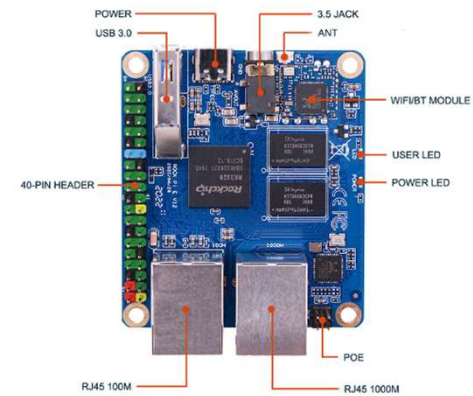
- NEO2 SBC no longer being manufactured
- Expand support for additional SBC's
- Custom built SBC or HAT?

## Documentation

- Improve user documentation – [docs.wlanpi.com](https://docs.wlanpi.com)



NanoPi NEO2



Rock Pi E



# Links

## More info:

- Website: [www.wlanpi.com](http://www.wlanpi.com)
- Documentation: [docs.wlanpi.com](http://docs.wlanpi.com)
- 10 Easy Things To Do With a WLAN Pi: <https://youtu.be/Ua2d4ajR0pk>

## Want to get involved?

- GitHub: <https://github.com/WLAN-Pi>
- Twitter: @WLANPi



Q&A

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