RPi4 - A First Look

A One-Jar Jam With Plenty of Ports

Brian DeLacey, BLU @ MIT, August 21, 2019 from 7:15 pm to 9:00 pm
Raspberry Pi Foundation Positioning

See https://www.raspberrypi.org/blog/raspberry-pi-4-on-sale-now-from-35/
Agenda

1. General Introduction to this thing called RPi - first ever “BLU RPi Jam”
2. History of the RPI
3. A side by side comparison with other RPi models
   a. View [https://youtu.be/pOboAW5RqAg](https://youtu.be/pOboAW5RqAg) - Is the Raspberry Pi 4 really that bad? (It’s great!)
4. A board level review of the main RPi4 components
   a. View [https://youtu.be/eDnLIBhWxYI](https://youtu.be/eDnLIBhWxYI) - RPi 4 vs 3. Benchmarked & Performance (It’s fast!)
5. What’s this thing called Raspbian?
6. Taking a look at a rack of RPis
7. Discussions: Throttling, GPIO, USB attachables and more
8. Test Drive - GUI, Terminal, discussion on performance
9. Audience Participation - What have attendees done with their RPis? What’s the newest RPi4 really good for? What’s missing? What’s it offer?
10. Q&A
RPi4 BLU Jam

## RPi Family History

<table>
<thead>
<tr>
<th>Family</th>
<th>Model</th>
<th>Form Factor</th>
<th>Ethernet</th>
<th>Wireless</th>
<th>GPIO</th>
<th>Released</th>
<th>Discontinued</th>
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<td>B+</td>
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See https://en.wikipedia.org/wiki/Raspberry_Pi#Model_A
4 vs 3B+

RASPBERRY PI 3B+
VS. RASPBERRY PI 4.

Source: https://medium.com/pi-top/raspberrypi4-f38f12633345
Is the Raspberry Pi 4 really that bad? (in response to early “noise in the system”)

“I can tell you with confidence, this thing is an absolute beast. … I am genuinely excited about the Raspberry Pi 4 performance, because it is actually really good.”

Is the Raspberry Pi 4 really that bad?  
https://youtu.be/pOboAW5RqAg, Thomas Sanladerer

Some highlights from the Adafruit Review

- Fast! QuadCore 1.6, BCM2711 SoC, 64-Bit, quad core, ARM Cortex-A72 CPU at 1.5GHz
- Power? 3AMP / 5V (cameras / displays / heat spreader) “you shouldn’t need a heat sink, but..”
- 1GB / 2GB / 4GB LPDDR4 Ram
- USB3 (x2) super fast and USB2 (x2)
- USB-C
- microHDMI (x2) 4K at 60 fps
- Power port is USB-C
- DSI Display (no change)
- Camera Connector (no change)
- Classic Audio / Video NTSC / Pal - 3.5mm stereo audio and composite video
- Gigabit ethernet (first time - better for NAS - processor upgrade)
- WiFi and Bluetooth (802.11b/g/n/ac WiFi and Bluetooth 5.0 - Broadcom chip)
- Rasbpian Buster
- GPIO Backwards Compatible (with a little bit more)
- Need a new case

Adafruit - Raspberry Pi 4 Model B is here!
https://youtu.be/VpG9r7CMTYs, See also https://youtu.be/CXCjpJasvG0
What’s it good for?

According to Lady Ada

“This is basically a full PC. This is two to three times faster than the Pi 3B+. … People will really enjoy being able to do video, audio … it could do a lot of machine learning stuff maybe without an accelerator … doing video machine learning, audio, maybe even computer some models … the dual HDMI is pretty cool.”

Source: Raspberry Pi 4 Model B is here!, https://youtu.be/VpG9r7CMTYs
Hey, Buster! (It’s an OS)

“There are no huge differences between Debian Stretch and Debian Buster. In a sad reflection of the way the world is nowadays, most of the differences are security changes designed to make Buster harder to hack. Any other differences are mostly small incremental changes that most people won’t notice, and this got us thinking…”

Buster gets a new look

The new appearance

There has been a definite trend in the design of most computer graphical user interfaces over recent years to simplify and declutter, to reduce the amount of decoration, so that a button becomes a plain box rather than something that resembles a physical button. You can see this in both desktop OSes like Windows, and in mobile OSes like iOS -- so we decided it was time to do something similar.

https://www.raspberry.org/blog/buster-the-new-version-of-raspbian/
Growing Number of Reviews

https://www.yodeck.com/news/the-raspberry-pi-4-ultimate-review/

Toms Hardware - https://www.tomshardware.com/reviews/raspberry-pi-4-b.6193.html

Learn by Making - https://medium.com/pi-top/raspberrypi4-f38f12633345

TechRepublic - https://www.techrepublic.com/article/raspberry-pi-4-model-b-review-this-board-really-can-replace-your-pc/
Raspberry Pi 4 Model B review: This board really can replace your PC

https://www.techrepublic.com/article/raspberry-pi-4-model-b-review-this-board-really-can-replace-your-pc/
Benchmarks

So around 94MB/s read and 92 MB/s write that’s about what we should expect from USB 3.0 with this drive, and much better than the 30+MB/S one would get with Raspberry Pi 3.
Commercial Pi

“Commercial users make up around 50% of end customers who are purchasing Raspberry Pis.

But what are companies doing with these Pis?

Are they ready to be deployed at a large scale or are the projects mainly pilots?

Is the Raspberry Pi really ready for industrial applications?

Our latest post contains a brief history of the Raspberry Pi, reasons why commercial users are deploying them in their processes and facilities, and some examples of Raspberry Pis being used in commercial projects.”

See https://blog.temboo.com/raspberry-pi-iot
It’s funny ...

“It’s funny how the mouse is bigger then the computer itself”

- Bob Bobbins

According to Explaining Computers, “the Pi has struggled with streaming video in a browser .. we aren’t going to have that problem anymore”

Source:

Explaining Computers, Comment Section
Raspberry Pi 4 Model B
https://youtu.be/CXCjpJasvG0
Boots at 5.1V and 900 milliamp (0.9 A)

From the comments, “My pi 3b+ can’t even boot at 5volt 1amp. The pi 4 can though. That’s impressive.”

NOTE: Other reviews suggest 1.8A as an operating floor

#270 The Raspberry Pi4: The good, the bad & the oops! // Review
https://www.youtube.com/watch?v=AHlld3cjmTM, 9:31
What’s the one thing you can’t get the RPi4 to do?

“I’m really having a hard time trying to get this thing to die. Maybe if I write to the MS DOS boot partition?”

Turning power off, pulling SD Card out during read / write...

“I really can’t get this card to be corrupted in any way. I tried writing to the SD Card Boot partition continuously. I’ve tried writing to the Linux file system - shutting it down, starting it up multiple times … I just cannot get this SD Card to be corrupted. So I think that’s a bit of a winner … they’ve managed to solve the SD Card corruption issue.”

From the comments,

“I'm impressed by your abrasive corruption test, claps, that alone is all I've ever wanted.”

#270 The Raspberry Pi4: The good, the bad & the ooops! // Review
https://www.youtube.com/watch?v=AHIld3cjmTM, 13:18
How hot is it?

63.8 celsius without heat sink

45.3 celsius with heat sink

“The RPI4 was able to cope with getting up to 63 - 64 degrees celsius and still sort of chugging along so that’s pretty good.”

NOTE: Other reviews indicate it gets hotter under heavy, synthetic load conditions but throttles back speed / power to help reduce temperature.

#270 The Raspberry Pi4: The good, the bad & the ooops! // Review
https://www.youtube.com/watch?v=AHIld3cjmTM, 15:30
Installation


Raspbian Buster with desktop and recommended software


Etcher - https://www.balena.io/etcher/
Tron Resources (a momentary flashback)


Miracles in the most preposterous - https://slackersbazaar.wordpress.com/2012/01/19/the-philosophy-of-tron/


The Raspberry Pi Foundation believes that a child, young person, or vulnerable adult should never experience abuse of any kind.

We have a responsibility to promote the welfare of all children, young people, and vulnerable adults, and to keep them safe. We are committed to follow practices that protect them. These practices are laid out in our safeguarding policy.

Safeguarding resources for you
Find practical advice on safeguarding
Complete our free safeguarding e-learning module
Use our best practise guidance for volunteers and staff
Code of behaviour for Raspberry Pi activities
Guidelines for social media and communications
Report safeguarding concerns to us using our safeguarding report form; if you have an urgent safeguarding concern, please call our 24-hour telephone support service
For the whole world: +44 (0) 203 6377 112
For the UK only: +44 (0) 800 1337 112

To reach out to us regarding safeguarding, please email safeguarding@raspberrypi.org.