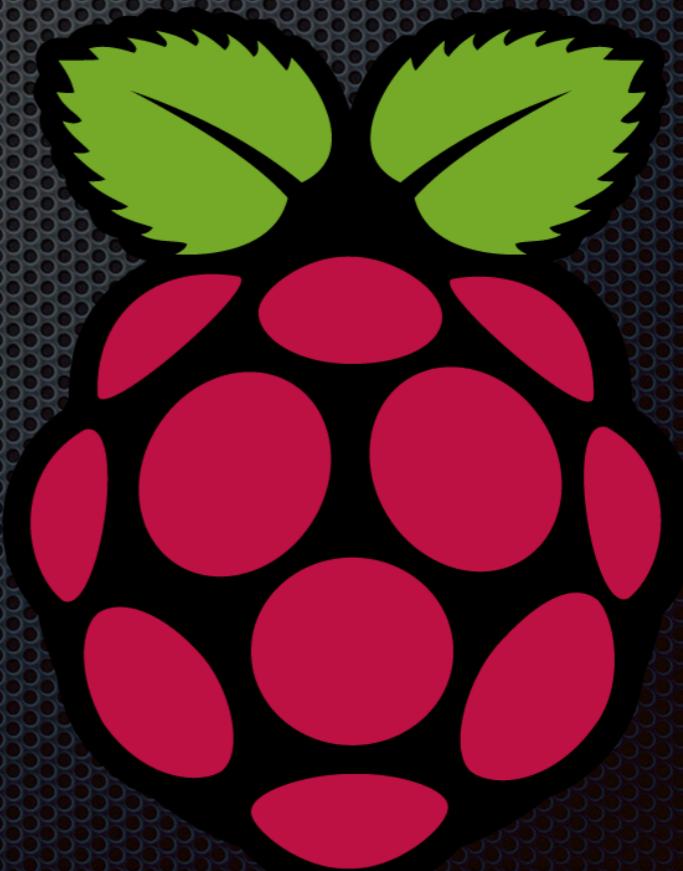


Getting Started with the Raspberry Pi

Bryan Prather-Huff

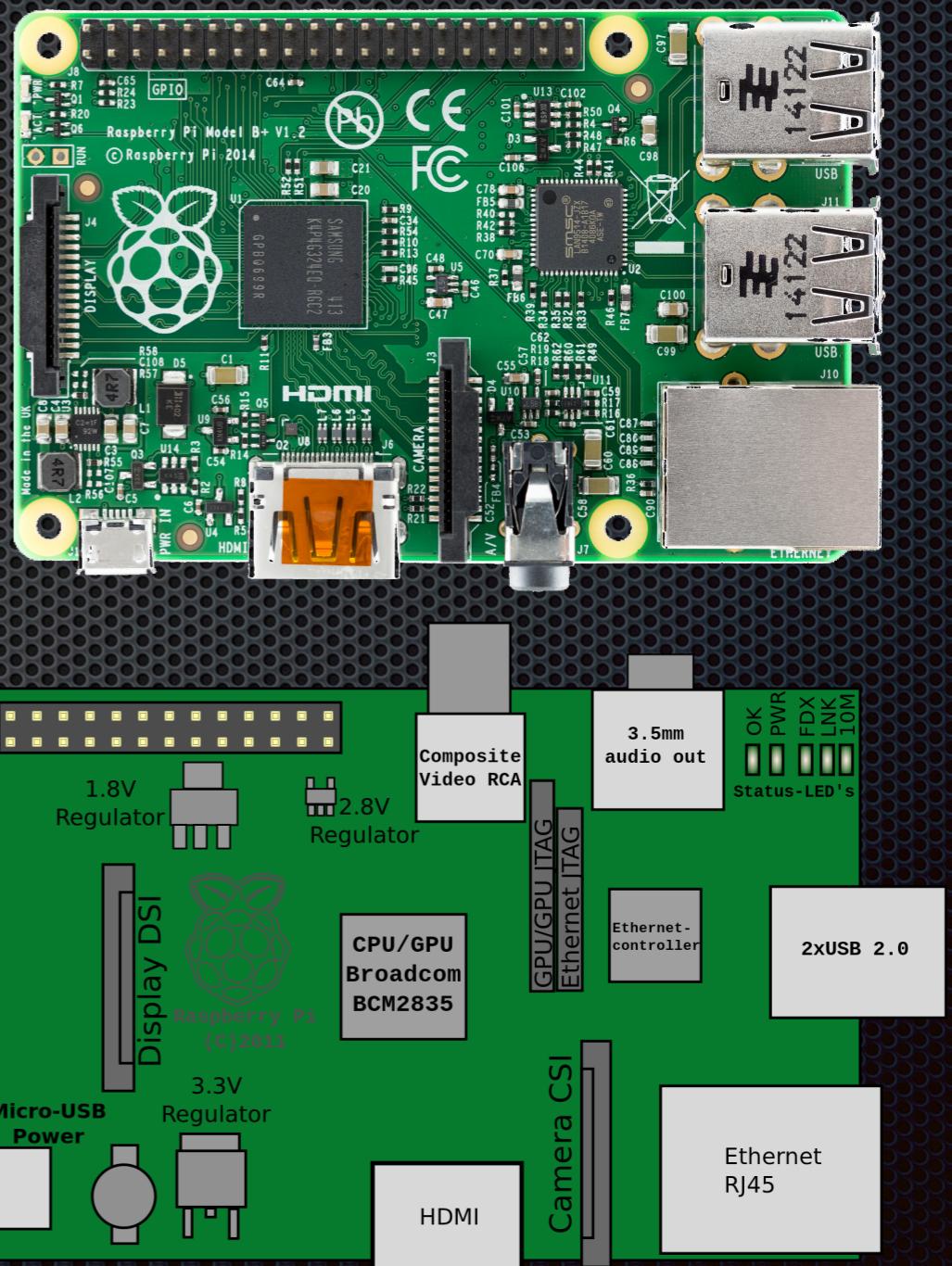
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Intro. to Networks and Their Applications



What is a Raspberry Pi?

- A tiny general purpose computer (credit card sized)
- Comes in Models A, B, B+, 2
- Runs Linux and Windows
- Comes with a bunch of IO
 - 26 GPIO; 4 USB; 1 Ethernet
 - A/V (HDMI, 3.5mm, Composite)
- ARM Processor (1 - 4 core dep. model)
- 1/4 - 1 GB RAM
- Storage provided by MicroSD Flash



Getting Started

- What you need:
 - Raspberry Pi
 - MicroSD w/ >=4GB (Class 10 pref.)
 - A PC with SD card slot to configure and connect with
 - Various cables (HDMI, microUSB)
 - Ethernet or WIFI dongle
 - Keyboard, Mouse, Monitor (Optional)

Flashing Raspbian to the MicroSD

- Download Raspbian from The Raspberry Pi Foundation (raspberrypi.org)
 - Also find tutorials and guides here
- Put your MicroSD into the SD adapter and plug into your computer
- Write to SD (*nix terminal; no GUI)
 - Format SD to FAT using system disk manager (diskutil on OS X and I like fdisk on Linux)
 - Use disk manager to unmount the SD card, but DON'T EJECT
 - Use terminal to figure out what disk your SD card is listed as (/dev/disk*), on my laptop this is 'disk1' because I have one other hard drive
 - Run 'pv /path/to/raspbian.img | sudo dd of=/dev/rdisk1 bs=1m' (or bs=1M on GNU dd)
- For Windows: Download Win32 Disk Imager from SourceForge, install and follow prompts; select Raspbian image when the required step is reached

Running the Raspberry Pi

- Plug the MicroSD into the Raspberry Pi
- With Keyboard, Mouse, and Monitor
 - Plug all the peripherals into the device
 - Plug microUSB to power on the device
 - Wait for boot sequence to be finished and the login prompt to appear (use ‘pi:raspberry’ as credentials)
- Headless
 - Connect the Pi and your computer to a wired network with DHCP
 - Scan the network for the Raspberry Pi (‘sudo nmap -sS 192.168.xxx.1/24’, nmap can be installed on both *nix and Windows platforms)
 - Find the most likely candidate from the output of the scan (it should only have one port open: ‘22/tcp open ssh’ and the MAC address should be from Cisco)
 - Use Putty on Windows and ‘ssh’ on *nix to ssh into the device (‘ssh pi@192.168.xxx.xxx’)

What Next?

- Configure a WIFI dongle
 - Use **WPA-Supplicant**
- Know your text editor
 - Nano, Emacs, Vi
- Learn about network interfaces
 - ifconfig, host, tcpdump, arp, nmap
- Update packages
 - Debian uses the **apt** package manager
- Configure SSH Keys as an alternative to passwords
 - Generate and place your ssh keys on the RPi

“Get comfortable with the terminal.”

—Every developer and sysadmin, ever. Of all time.

Lets Dive Right In!