Human Infrastructure 98: Setting Up A Python Environment: Where To Develop?

PACKETPUSHERS
Human Infrastructure Magazine
A Newsletter About a Life in Networking

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Setting Up A Python Environment: Where To Develop?

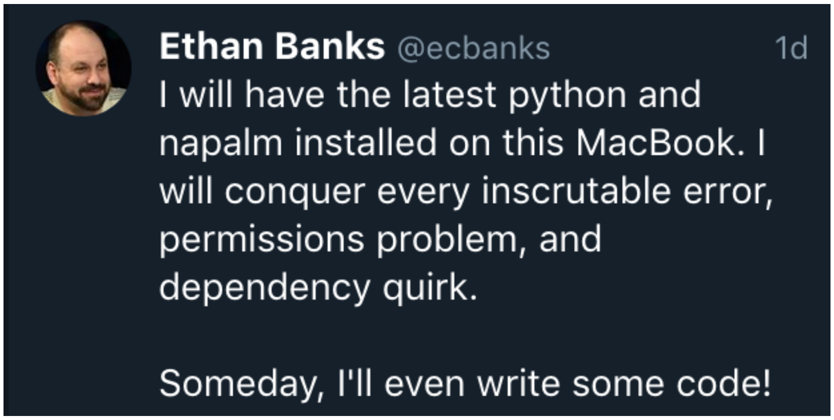
By Ethan Banks

In my previous Python forays, I'd worked mostly with Linux. Now, as an Apple user, I thought I'd develop in Python natively on my Mac, MacOS being also Unix-y?

MacOS is bundled with Python2, but Apple doesn't keep the version especially current. For example, a Mojave 10.14.1 box comes with Python 2.7.10, which dates back to May 23, 2015.

I want to work with a current version of the Python interpreter. And since I am starting on fresh projects, I thought I'd work with Python3 wherever possible.

With visions of network automation and chatbots dancing in my head, I set about updating the Python environment on my MacBook. So began my journey of discovery.



Ethan Banks @ecbanks 1d

I will have the latest python and napalm installed on this MacBook. I will conquer every inscrutable error, permissions problem, and dependency quirk.

Someday, I'll even write some code!

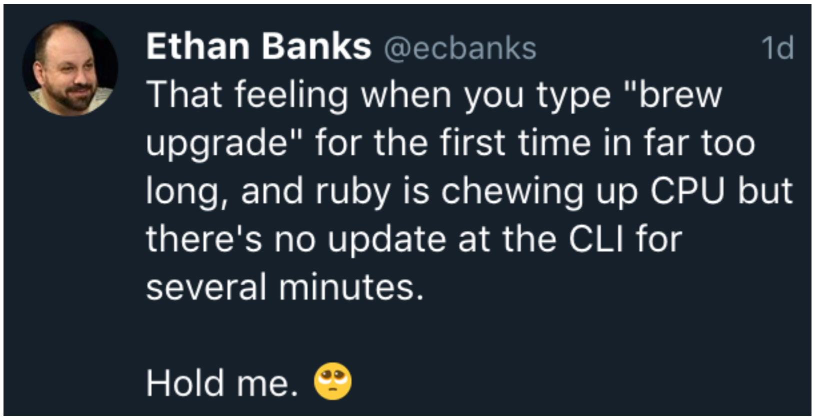
I've dabbled in native Python on this particular MacBook in the past. Brew, the community-driven package manager for Mac, was there. PIP, the Python package manager was there. Old, moldy versions...but they were there.

Oh, right. PIP. I thought I could quickly install napalm without worrying about the rest of the Python environment. But PIP wasn't able to install napalm or any other Python packages I asked for, throwing an error related to certificate security when it attempted to connect to any repository for any package. I couldn't even get PIP to upgrade itself. Hmm.

Some digging later, I found that the certificate issue was known in PIP 1.5.6 and resolved in later versions. Because PIP 1.5.6 was ancient anyway, I didn't try to fix it. The right answer was to upgrade PIP. But how, since PIP couldn't even upgrade itself?

Several searches suggested I uninstall and reinstall PIP, which didn't solve the problem. Several more searches later, I realized that the latest version of PIP is bundled with the latest version of Python. Fantastic. I decided to simply upgrade Python, which I'd wanted to do anyway. I tried to do this with brew, which failed for obscure reasons I don't recall.

I realized brew hadn’t been maintained by yours truly, so once again, no problem. I attempted a “brew upgrade” to bring brew up to date, and would try to upgrade Python again.



Ethan Banks @ecbanks 1d

That feeling when you type "brew upgrade" for the first time in far too long, and ruby is chewing up CPU but there's no update at the CLI for several minutes.

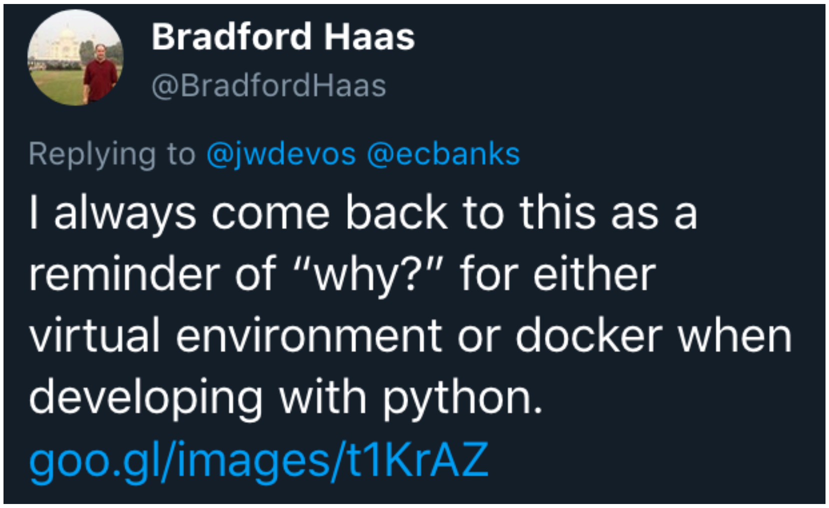
Hold me. 🙄

In CPU years, I lived and died several times while ruby churned away, but eventually, I had several screens full of added, removed, and updated brew recipes. Wonderful. With an upgraded brew installation, I should be able to upgrade Python, which would update PIP. And then I should be able to get napalm and whatever else I wanted.

Brew did install Python3 for me, which put my MacBook in a weird Python situation.

Apple ships MacOS with Python2, as I mentioned earlier. Brew had just installed a parallel Python 3.7.2. Brew also installed a bunch of symlinks pointing to various frameworks all over the file system, some of which I had to hack on with chmod just to get the permissions right so that the brew recipe could complete the Python3 package installation without error. Yikes.

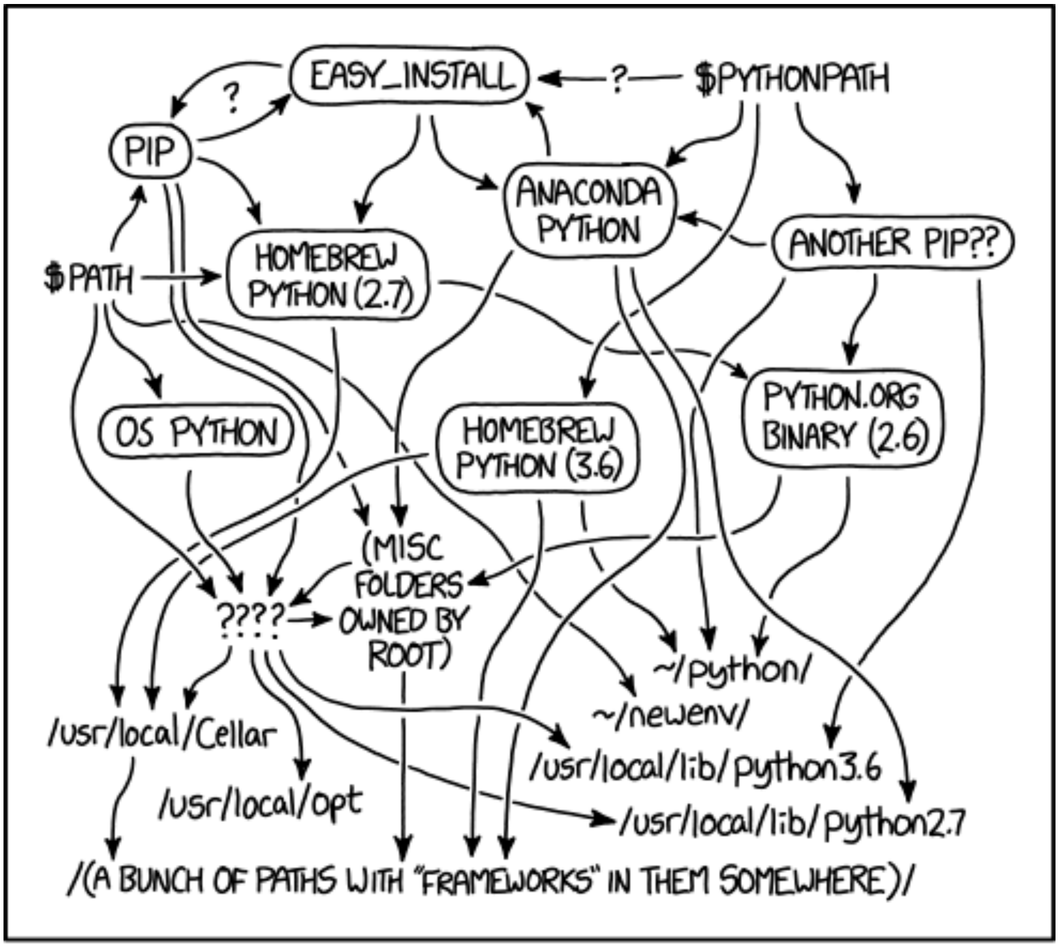
I had run into some of the issues Bradford highlights below.



Bradford Haas
@BradfordHaas

Replying to @jwdevos @ecbanks

I always come back to this as a reminder of “why?” for either virtual environment or docker when developing with python.
goo.gl/images/t1KrAZ



MY PYTHON ENVIRONMENT HAS BECOME SO DEGRADED THAT MY LAPTOP HAS BEEN DECLARED A SUPERFUND SITE.

CREDIT: XKCD #1987

Yes. I got Python3 installed on my MacBook in the end. And…Python3 solved the PIP problem. Solving the PIP problem allowed me to install napalm. However, I don't like the dual-Python symlink-hell environment I've ended up with, RE: XKCD 1987.

The Twitterverse had many comments for me as my Python/Mac journey is hardly a new one. People offered different ways to create a less fragile Python development environment.

1. VirtualEnvWrapper. https://virtualenvwrapper.readthedocs.io/en/latest/. This tool creates a virtual environment that is walled off from your core system or other virtual environments. You can install what you like in here without blowing up anything on your main system. In my case, I could have installed Python3 and whatever modules I wanted without creating XKCD 1987. The learning curve did not look steep to me.

2. Pipenv. https://github.com/pypa/pipenv/blob/master/README.md. Quoting the readme, "Pipenv is a tool that aims to bring the best of all packaging worlds (bundler, composer, npm, cargo, yarn, etc.) to the Python world…It automatically creates and manages a virtualenv for your projects, as well as adds/removes packages from your Pipfile as you install/uninstall packages."

   Sounds promising, although my take from a couple of tweets (not a scientific survey) is that the Python community has mixed opinions about pipenv.

3. Docker. https://www.docker.com/products/docker-engine. Container fans pointed out that using the Docker Engine, which comes with Docker Desktop for Mac, I could build containerized versions of an environment to develop in Python. There's more of a learning curve here, but that would have its advantages as the container form factor is here to stay, although I have my doubts about Docker itself.

Packet Pushers community blogger Jaap de Vos wrote Building A Docker Network Automation Container in September 2018.

4. Vagrant. https://www.vagrantup.com/intro/index.html. My understanding of Vagrant is mostly, “In a demo, I saw someone type vagrant up, and then the stars exploded gloriously while magic happened.” In other words, I haven’t invested the time to figure Vagrant out yet.

   But I get why Vagrant might apply to me, based on the introductory documentation. “Vagrant provides easy to configure, reproducible, and portable work environments. If you are a developer, Vagrant will isolate dependencies and their configuration within a single disposable, consistent environment, without sacrificing any of the tools you are used to working with (editors, browsers, debuggers, etc.). Once you or someone else creates a single Vagrantfile, you just need to vagrant up and everything is installed and configured for you to work.”

5. PyCharm. https://www.jetbrains.com/pycharm/. PyCharm is an integrated development environment (IDE) for Python, and makes it easier to manage Python interpreters. I don’t think PyCharm ships with a Python interpreter (I could be wrong), but managing whatever interpreters you do have installed looks simple and flexible.

6. Local virtual machine. Whether VirtualBox or VMware Fusion, I have the ability to create a virtual machine and run it on my Mac. No problem. The networking is sometimes painful depending on what I’m trying to do, but for the most part VMs run adequately on a workstation.

7. Remote virtual machine. I can stand up a small Linux box in the public cloud easily and cheaply. Off the top of my head, I could do any of these for $5 a month…

   - AWS Lightsail instance with 1GB memory, 1 core, 40GB SSD, and

2TB transfer.

- Vultr Cloud Compute VC2 instance with 1GB memory, 1 core, 25GB SSD, and 1TB transfer.
- DigitalOcean standard droplet with 1GB memory, 1 core, 25GB SSD, and 1TB transfer.

Other charges will pop up for exceeding storage and transfer limits, but in principle I could have a box to hack around with for $5 a month. There are $3.50 a month options if you look.

Vultr even offers a $2.50 a month IPv6-only VC2 instance option, which would be spectacular if my stuck-in-the-past regional ISP offered v6. (I know, I know...tunnelbroker.net to work around v6 poverty. Sigh.)

The remote VM appeals to me. I can access the instance anywhere I have Internet. I can give other people access. I want to work with chatbots, and a remote virtual machine makes it easier to keep the chatbot attached as compared to a laptop or workstation.
Of course, using a remote virtual machine does not exclude VirtualEnvWrapper, Docker, or Vagrant.

We'll see where I go next as I explore Python development in a way that makes sense for how I work and what I'm trying to do.

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How To Save $1.6M In Network Downtime

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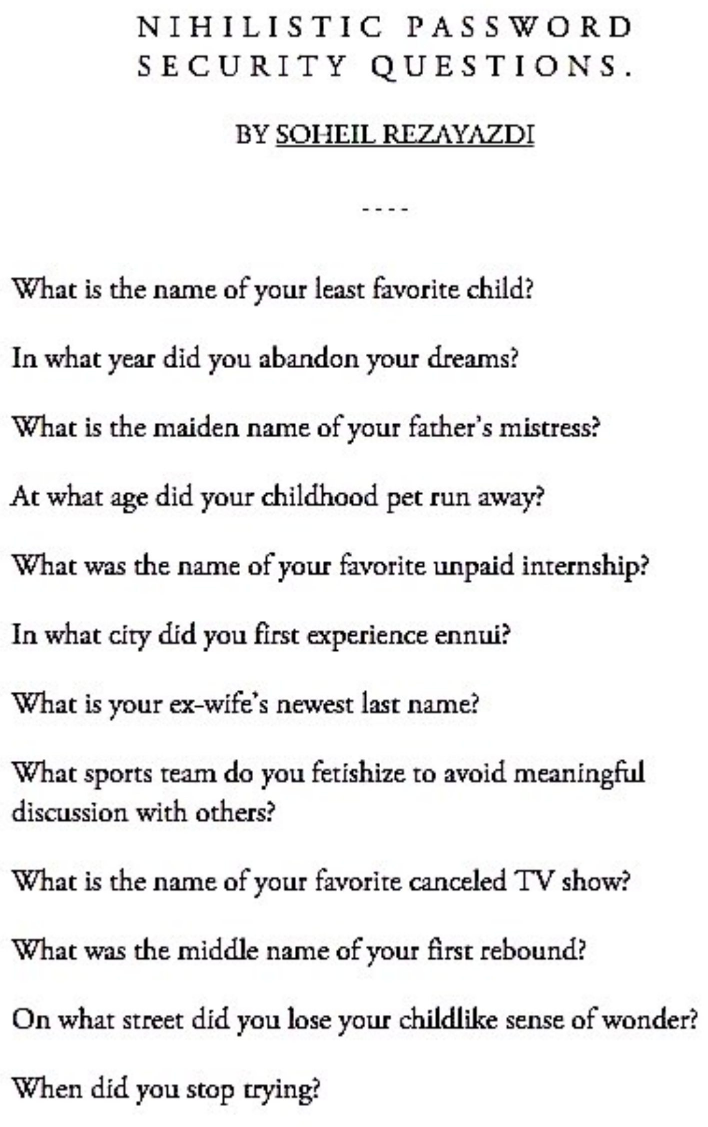
Get more details by reading the full report here.

Listen to our latest Tech Byte recording with Cisco here which covers Cisco’s Smart Net Total Care offering.

The Lulz



NIHILISTIC PASSWORD SECURITY QUESTIONS.

BY SOHEIL REZAYAZDI

- - - -

What is the name of your least favorite child?

In what year did you abandon your dreams?

What is the maiden name of your father’s mistress?

At what age did your childhood pet run away?

What was the name of your favorite unpaid internship?

In what city did you first experience ennui?

What is your ex-wife’s newest last name?

What sports team do you fetishize to avoid meaningful discussion with others?

What is the name of your favorite canceled TV show?

What was the middle name of your first rebound?

On what street did you lose your childlike sense of wonder?

When did you stop trying?

WHEN YOU NEED TO LOG IN TO YOUR EXISTENTIAL DESPAIR BUT NEED A PASSWORD PROMPT.

Internets Of Interest: Blogs

Misconceptions, Battle Scars, & Growth - Tim MalcomVetter

https://medium.com/@malcomvetter/misconceptions-ba...

A look back at 20 years of an infoSec career.

Tim writes: “His example was how eons ago in the physical security realm, banks moved from armed guards (an obvious “prevention” control) to silent alarms (“detection”), as well as especially-prepared bags of money with things like electronic trackers, exploding ink canisters, and dollar bills with known serial numbers in them (each of those are “response” controls which make the theft much less meaningful).” - Greg

Information Technology Principles: A Network Engineer’s Perspective - Brian Jemes

http://networkmade.com/principles.html

Brian Jemes, who was a guest on Weekly Shows 418 & 420, has created a list of maxims gleaned from his 30 years of IT experience. Gems such as the “Change Freeze Principle,” “Continuous Improvement Principle,” “Architecture Debt Principle,” and “Engineering Productivity Principle” made me stand up and cheer. The “Knowledge Sharing Principle” made me want to become an evangelist in the religion of Jemesianism. Read and ponder each point in this sage compilation. Highly recommended. - Ethan

NAE: Automation and Time - David Gee

http://ipengineer.net/2019/01/nae-automation-time/

David Gee points out related to a topic that been on my mind for a while. Automation done well implies a deep knowledge of what's being automated. We can't automation what we don't understand, and we shouldn't be automating crap. David points out the following.

“Let 2019 be the year of sensible actions and an awakening to the fact that engineering takes design, experimentation and solid recording of outcomes and results. Once the methodologies are known and the design style and parlance is adopted, then we can ask for a reduction in task time. If you're not prepared to invest to accumulate, then you're asking for miracles and encouraging guess work.” - Ethan

The Changing Cisco QoS Environment

https://www.netcraftsmen.com/the-changing-cisco-qo...

Pete Welcher does an overview of QoS tooling choices today, raising the question of where QoS is actually useful and in what deployment scenarios. He also offers an overview of Cisco Application Visibility & Control (AVC), the successor to NBAR available on some Cisco platforms. The practical considerations of deploying QoS weigh on Pete's mind as he shares his perspective. - Ethan

Internets Of Interest: Tech News

The internet's 'father' says it was born with two big flaws - Business Insider

https://www.businessinsider.com/google-vint-cerf-e...

Business Insider interviews Vint Cerf on two problems with the Internet's original structure--it didn't have enough IP addresses, and it lacked security. But Vint goes on to argue that perhaps the Internet wouldn't have grown the way it did if it was encumbered by cryptographic protections and security protocols because it would've been harder to use and less open to connectivity. - Drew

Is Intent-Based Networking Real or Just 'Intent Washing'?

https://www.sdxcentral.com/articles/editorial/is-i...

Linda Hardesty at SDxCentral takes a hard swing at the overuse of "intent-based" in IT marketing-speak, networking marketing especially. The piece is a solid overview of intent babbling from the perspectives of Cisco, Gartner, Veriflow, Apstra, and LinkedIn. In the end, was Linda impressed? Not exactly. There is meaningful technology there in her view, but she concludes, "Is the term "intent-based networking" really helpful? I don't think that it is." A worthy read. - Ethan

AI is sending people to jail—and getting it wrong - Technology Review

https://www.technologyreview.com/s/612775/algorith...

We have to be VERY careful in applying AI and ML to social systems. People, especially those who don't work in technology, are inclined to attribute omniscience to computer systems when in fact computers have zero ability to understand human intent, social context, race and power dynamics, or abstract and difficult-to-quantify notions such as justice.

This brief article from Technology Review does an excellent job of identifying the problems with algorithm-driven “criminal risk assessment systems” being sold to courts and law enforcement agencies. - Drew

Wielding Rocks and Knives, Arizonans Attack Self-Driving Cars - NY Times

https://www.nytimes.com/2018/12/31/us/waymo-self-d...

I’m not sure if this article is just about the actions of a few technophobic cranks, or if it represents the first rumblings of Frank Herbert’s Butlerian Jihad from the Dune series, in which “thinking machines” were outlawed. - Drew

Industry & Vendor Announcements

SSID Hopping Included in NetBeez 1.5 Release to Increase WiFi Monitoring Capabilities - NetBeez

http://www.globenewswire.com/news-release/2019/01/22/1703400/0/en/SSID-Hopping-Included-in-NetBeez-1-5-Release-to-Increase-WiFi-Monitoring-Capabilities.html

NetBeez is a network monitoring tool that deploys small form factor hardware probes that send their data to a central console. Highlights of the 1.5 release include the ability of WiFi sensors to check up to 4 SSIDs, several minor improvements to testing capabilities, and bug fixes. - Ethan

CHI-NOG 09 – May 23rd – Save The Date - CHI-NOG

http://chinog.org/chi-nog-09-may-23rd-save-the-dat...

The Chicago Network Operators Group is having their 9th gathering on May 23, 2019. “Registration will open in February. If you have a great idea for a presentation, we will be issuing a call for speakers later in January. We are also looking for sponsors. Please consider supporting the event. For more information see sponsorship page.” I haven’t booked flights yet, but I’m tentatively planning to attend. - Ethan

The Linux Foundation Launches New LF Edge to Establish a Unified Open Source Framework for the Edge - Linux Foundation

https://www.prnewswire.com/news-releases/the-linux...

The Linux Foundation has launched a new group, called LF Edge, within the foundation to promote open source development around edge computing for mobility, end user, and IoT applications. LF Edge launches with software contributions from AT&T, Dell EMC, and Samsung. - Drew

The End Bit

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Human Infrastructure is weekly newsletter with view, perspectives, and opinions. It is edited and published by Greg Ferro and Drew Conry-Murray from PacketPushers.net. If you'd like to contribute, email Drew at drew.conrymurray@packetpushers.net.

We don't give away your email address or personal details because that would suck.

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