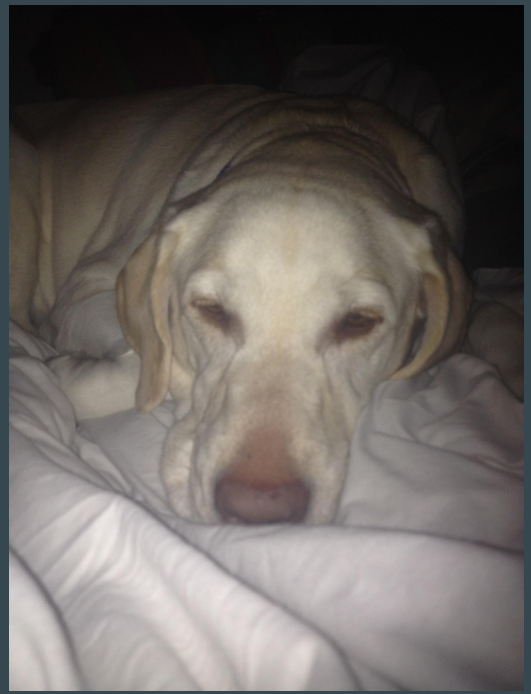
What is Home Lab?

A guide to the activity behind the club

This is not an activity for people who had to leave their Labrador retrievers at home when they came to college

Sorry.



Let’s start with the Dictionary

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There is some stuff missing

- “Home Lab” or “Homelab” refers to a home computing lab.
- Either version is fine but for derivative words the compound version is probably best.
  - Since I work on a “homelab” I am a “homelabber”
  - "I really need to do some homelabbing tonight since something is messing with my uplink speeds.”

“Home”

- Home Labs don’t have to be “at home”
- It’s like the “home” in homework.
- Typically isn’t done at your employers site or on your employers time. (unless you are running some side gig stuff)

“Computer” / “Computing”

- While appliances, like game consoles, smart speakers, or streaming sticks, may live at the periphery of a homelab, generally we are talking about stuff deployed on general purpose computing platforms.
- We are also generally not talking about turn key software services.
- Customization is key here.

“Laboratory”

- Unlike a school computer lab, where the computers are the tools used for investigation or experimentation in a homelab the computing is the experiment
- Most homelabs leave the purely experimental, and homelabbers will often tie computing services that they run at home to the lab. This helps provide consequences and constraints to make the exercise closer to reality

Why do people homelab?

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To get experience with core technologies

- Production sites are often mature, so someone working in one may experience everything just working and not have an opportunity or reason to look behind the curtain
- A lot of the context required to understand other technologies is buried in the core technologies and you want the foundation to learn those technologies and not just rely on guides and cookbooks that you might be mis-applying
- Some people are stuck in a silo they want to escape, but don't have cross training opportunities at work

To become familiar with the bleeding edge

- Computing is always changing it's easy to get left behind.
- Lots of people like to get experience with a thing before deploying it for someone else.
- Decision makers for production sites can be risk averse so being able to talk meaningfully instead of just spouting buzzwords is a way to get to deploy quality of life improvements.
- You aspire to be a consultant who implements platform change for their clients. So you need to know new platforms.

Your home automation has become finicky.

- At a certain scale home automation deployments need some proper infrastructure to be stable and survive router reboots.
- There are technologies like PoE that actually make home automation setups more streamlined.
- You want to make your home automation available when you are away from home
- You want to get data from your home automation to help with decision making

You want to customize.

- Appliances can be great but you can find they just won't quite do something you know is possible
- The don't even make an appliance that does the sort of thing that you want to do.
- You have ethical issues with the people who sell the things you want so you want to build your own
- You think the options out there are ugly and you'd rather put in more work than look at things that make you sad.

It’s a place to get chops in cyber security.

- Employers don’t always like it when you attack their systems especially when instead of getting in through a gap you take something offline.
- You want to practice trying to fix what you know you can break.

Some people just love technology

- The easiest way to get more technology in your life is to get more technology in your life.
- People who are often wondering if something can be done, will often find the fastest path to an answer is doing it themselves.
- There is a reason they made so many episodes of how it's made.

So what are homelabs really?

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Homelabs are living growing things.

- If you stop tinkering with your homelab it stops being a lab
- Most homelabs start with a single computer before expanding to more (often virtualization and/or the cloud come into play too)
- People who do an exercise and then tear it down often miss out on the later stages of system life cycle. Some systems scream that their designers never had to deal with end of life and migration to something else.

Homelabs often evolve into nearly full miniature domains

- This is the steady state a lot of people target.
- Fun edge projects will often require domain services.
- Systems that work together often need things mediated unlike stand alone systems.
- You often don’t need to go beyond your laptop if you’re just toying with standalone stuff.

Good homelabs end up with personal production services

- If your homelab doesn't do anything than your mission is already accomplished. Serving the purpose is the validation.
- Often constraints provide inspiration for what to do next, or motivation to do the next thing.
- Opportunities to see edge cases and to debug, and seek stability come from having things that rely on homelab

What to expect to get from homelabbing

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Linux skills

- Going beyond the turn key often means the command line, and this is an opportunity to build up those skills
- A complicated setup that you have to do a lot get running each time is no good, so it's a reason to dig into linux services and how they start
- When things go wrong and it's all custom, you do need the tools to figure out what is going on, so getting those debugging skills up is great.

Networking Skills

- We need to not contribute to bot-nets so getting host based firewalls set up is important.
- Most services ultimately talk to things on the network, so there is a reason for host based networking.
- Appliances aren't the most secure or securable so your homelab grows you probably need more than just one lan

System design experience / skills

- In production you often only get one chance to set things up. In your homelab you can / should tear it down and put things together all over again. Going through this is iteration is great experience for systems design
- Replacing things often reveals unexpected dependencies. Homelabbing is chance to really hammer home that understanding of how things connect.

Resume Enhancement

- All the skills mentioned are obvious good resume fodder, but really skills that exist only in a list of skills are hollow. Employers will want to see more.
- Certs demonstrate understanding and it's easier to prep for a cert is you have some context to use to building understanding from. Homelabbing helps with that.
- Projects that you do in the home lab give you something to talk about on the resume and in an interview, that demonstrate that those skills you have aren't hollow

Enjoyment.

- This is meant to be a hobby not just a professional development exercise.
- Some people really enjoy the projects that homelabbing let's them build that let them customize and automate their lives
- Some people really just like building things, and get the satisfaction that the thing they built is built.