

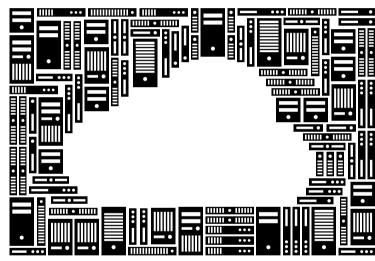
Cloud Computing

Ryan Tolboom

New Jersey Institute of Technology



What is it?



There is NO CLOUD, just other people's computers

"FSFE There is no cloud postcard en.svg" by Markus Meier, FSFE is licensed under CC BY-SA 4.0

- A silly catchphrase with a disheartening origin
- Technically it can be IaaS, SaaS, PaaS
- Is it new?
- Why virtualize? Why not just rent servers?

What's good about it?

Redundancy	Scalability	Co-Location
Lower Bandwidth Costs	Lower Building Costs	Lower Staffing Costs

What's bad about it?

Recurring Costs

Loss of Physical Control

Security Concerns

How does it work?

Virtual Machines

- VirtualBox, QEMU, VMware,
 <u>AWS Nitro</u>, etc.
- What are they?
- How do they work?
- Why use them?

Containers

- Docker, etc.
- What are they?
- How do they work?
- Why use them?

Who does it?

- Amazon Web Services
- Microsoft Azure
- Google Compute Engine
- Most PaaS and SaaS runs on one of these

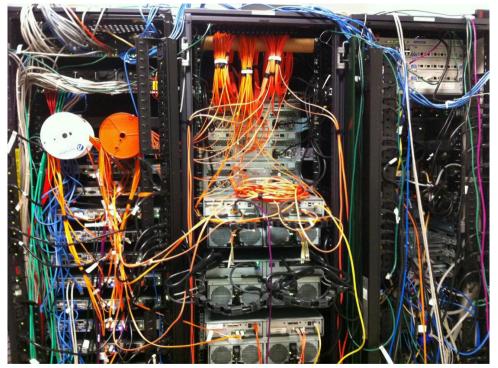




AWS, Azure, and GCE logos are used under fair use

Want to try it at home?

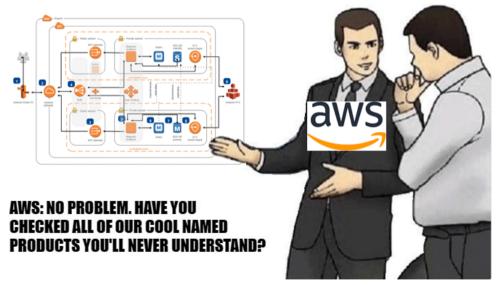
- <u>/r/homelab</u>
- Server hardware is <u>CHEAP</u> (data centers refresh often)
- Virtualization Platforms
 - Proxmox
 - ► ESXi
 - XenServer
- You will learn a lot
- You may also scare your family members and pets with loud noises and heavy computers!
- What is in the "bare metal" of a virtualization server? Memory and processor cores. The more the merrier.



<u>"servers"</u> by <u>hisperati</u> is licensed under <u>CC BY 2.0</u>

What can AWS do for you?

ME: I JUST NEED TO HOST 'HELLO WORLD' ON THE CLOUD.



AWS in a Nutshell is used under fair use

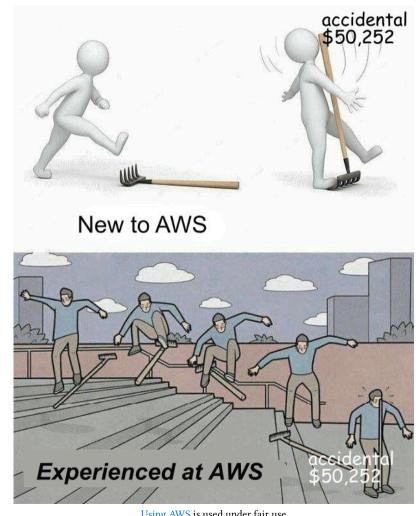
- Network architecture as code (subnets, VPCs, internet gateways, NAT gateways, load balancers, etc).
- Tons of services: S3 storage, RDS database, ECS containers, EC2 compute, IAM identity and access...
- Deploy quickly
- Scale *quickly*
- Unique products: spot instances, AMI sharing, mechanical turk

How do you deploy to AWS?

From least favorite to most favorite:

- 1. AWS Web Console / Instance Management
- 2. AWS Command Line and scripts
- 3. AWS Command Line and Ansible/ Vagrant
- 4. <u>Terraform</u> and Provisioning Scripts
- 5. Terraform and Ansible

<u>Terraform licensing issue?</u>



Using AWS is used under fair use