Selfhosting

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RITlug

contents, Table of

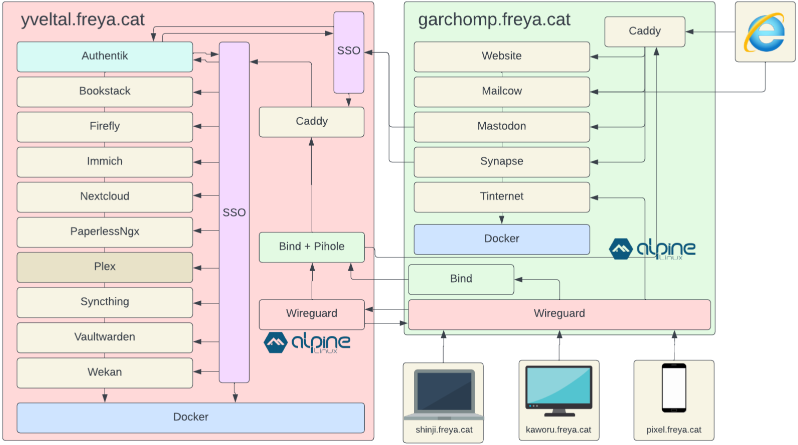
1. Selfhosting?
2. Hardware
3. Operating System
4. Networking
5. Process Management
6. Reverse Proxy
7. Demo!

Selfhosting?

What is it?

1. Hosting servers yourself
2. Opposite of using cloud services
    2.1 Its free as in freedom
3. Your own cloud

My cloud


yveltal.freya.cat
Authentik
Bookstack
Firefly
Immich
Nextcloud
PaperlessNgx
Plex
Syncthing
Vaultwarden
Wekan
SSO
SSO
Caddy
Bind + Pihole
Wireguard
alpine Linux
Docker
garchomp.freya.cat
Caddy
Website
Mailcow
Mastodon
Synapse
Tinternet
Docker
alpine Linux
Bind
Wireguard
shinji.freya.cat
kaworu.freya.cat
pixel.freya.cat

Why should I selfhost?

1. Freedom of choice (for realz)
2. You control everything
   - 2.1 You own your data
   - 2.2 You own your resources
3. Keep your information private
   - 3.1 Private as in private
   - 3.2 Private not as in google/facebook/apple/etc
4. Again... its free!
5. Lots of fun!

Hardware

Servers

1. Big data centers
2. Expensive
3. Out of reach

Servers

Dell Optiplex :)

Prebuilts

1. Prebuilts are a good value
   1.1 $60 – $200
2. Not loud or power hungry
3. Portable
4. Easy to setup

Virtual Private Server (VPS)

1. Less maintenance
2. %99.99 uptime
3. Fast internet
4. Public IPs
5. Subscription based
   5.1 Affordable VPS providers exist

Operating System

Operating System

1. Linux
2. BSD
3. Proxmox

Linux

1. Better driver support
   1.1 Much larger community
2. More flexible
3. Better supportede
4. We like linux (RITlug :3)

BSD

1. Tailord made solutions
    1.1 TrueNAS Core (NAS)
    1.2 OPNsense (Router)
2. More stable
3. Smaller community

Proxmox

1. Linux
2. VM Host
    - 2.1 Pre made tools
    - 2.2 Easy to use
    - 2.3 Clustering
3. Free-ish

Windows

dont.

Networking

Networking

1. Internet and IPs
2. DNS
3. Firewall

Internet

1. You need a Public IP
   - 1.1 Allows connections
   - 1.2 IPv6 is easy
   - 1.3 IPv4 is hard
     - 1.3.1 They be all gone
2. Static IPs are preferred
   - 2.1 Auto DNS

NAT

1. One public IP
2. Multiple devices
3. Server need's to be THE device
    3.1 Port forwarding

DNS

1. Only needed if you have a domain
2. Resolves Domains to IPs
3. *freya.cat* => 5.161.204.43
4. If no static IP...
   4.1 Auto DNS
   4.2 Cron Job
      4.2.1 https://g.freya.cat/freya/cloudflare-autodns

Firewall

1. Allowing everything is bad
2. Spooky packets
   2.1 Im gonna send some unsolicited RFCs >:)
3. Only allow wanted traffic
4. Software
   4.1 iptables
   4.2 ufw
   4.3 VPS firewall

Process Management

Process Management

1. Docker
2. Kubernetes
3. Virtual Machine (Proxmox)
4. Tmux
5. Services

Services

1. Run on base system
   1.1 Have full access
   1.2 Depending on running user
2. Managed by the init system
3. Usually started at boot
4. System services and base architecture
   4.1 Docker
   4.2 NetworkManager

Docker

1. Container system
    1.1 Containers are contained
    1.2 Personal network namespace
    1.3 Separate root file system
    1.4 Cannot access host unless specified
        1.4.1 Granular control

Docker

1. Docker images
   1.1 Built upon layers
   1.2 Multiple images can share layers
2. Can be used on any container
3. Reproducible

Docker

1. Portable
   - 1.1 Specify image for container
   - 1.2 Specify persistent volumes
     - 1.2.1 Parts of host file system

Reverse Proxy

Reverse Proxy

1. One process per port
2. Multiple services may want http (port 80)
3. Proxy connections
   - 3.1 Services listen on internal port
   - 3.2 Reverse proxy, proxies connection

Reverse Proxy

1. Caddy
   1.1 Auto HTTPS
   1.2 Simple config
2. Nginx
   2.1 Fast and simple
   2.2 More control
3. Apache

Demo!