

# Homelab & Stuff

*Folke Johansson*

# Where the hell do I start?

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**Good question!**

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**Good question!**

- **Buy something cheap and old of Blocket or similar**

# My first Homelab



2 Core – Hyperthreaded  
8gb DDR3 RAM  
SSD + HDD Storage



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2 Core – Hyperthreaded  
8gb DDR3 RAM  
SSD + HDD Storage





**Time to Grow!**

# Homelab Grows





# Homelab Grows



# Homelab Grows



**Where are we now?**

# Today's Homelab - Asgard



- 32 Core Epyc 7542 @2.9-3.4GHz
- 128GB DDR4@3200MHz ECC
- 20x SAS3 Connections

# Today's Homelab - Asgard

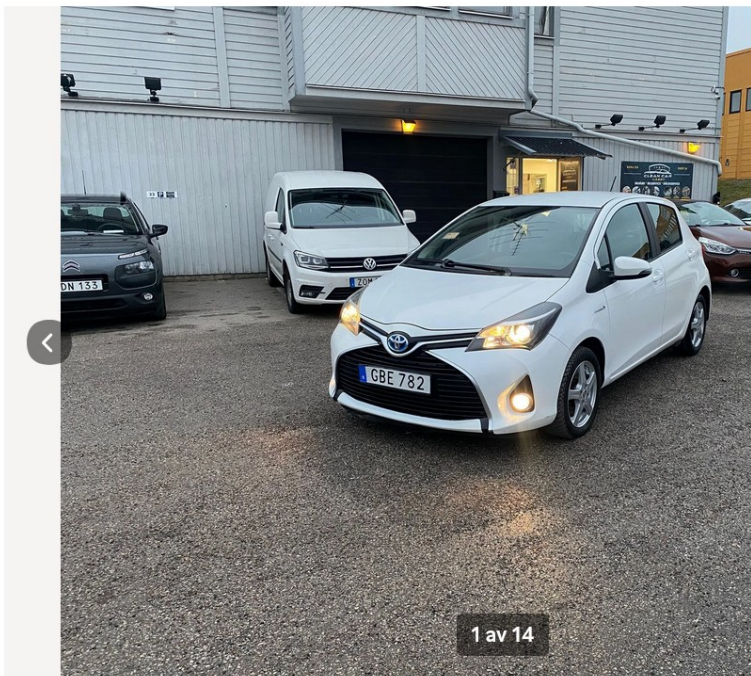


Inlagd: idag 16:07

Upplands Väsby ([hitta.se](https://hitta.se))

Toyota Yaris Hybrid e-CVT Active Eu6

# Today's Homelab - Asgard



Inlagd: idag 16:07

Upplands Väsby ([hitta.se](https://hitta.se))

Toyota Yaris Hybrid e-CVT Active Eu6



3222 kg

# Cornerstones of Homelabbing

- **Storage**
- **Networking**
- **Virtualization**

# Storage

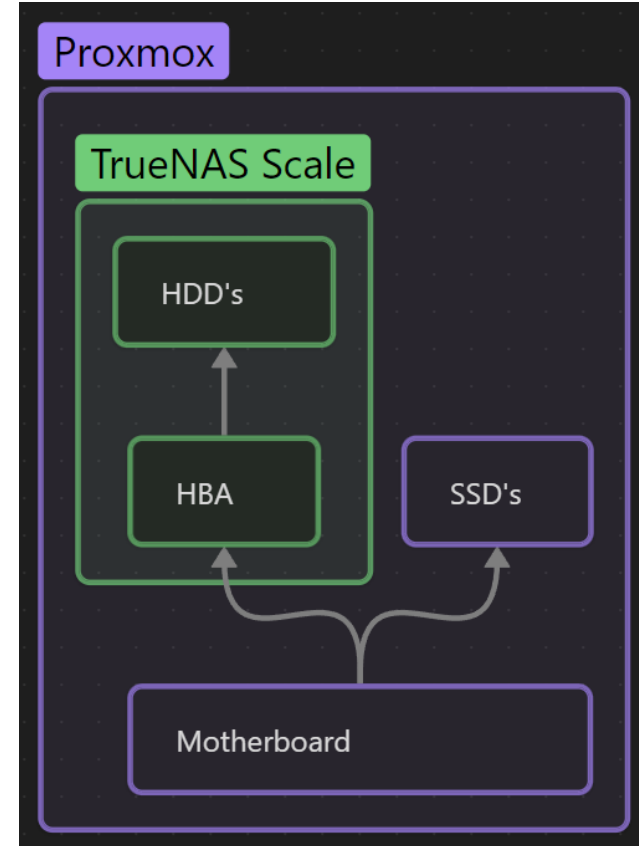


# Storage

*Virtualized network storage*

*Fast local storage*

*HBA (it mode)*



# Storage – ZFS



# Storage – ZFS

ZFS Pool

VDEV

Data  
Disk

Data  
Disk

Parity  
Disk

VDEV

Data  
Disk

Data  
Disk

Parity  
Disk

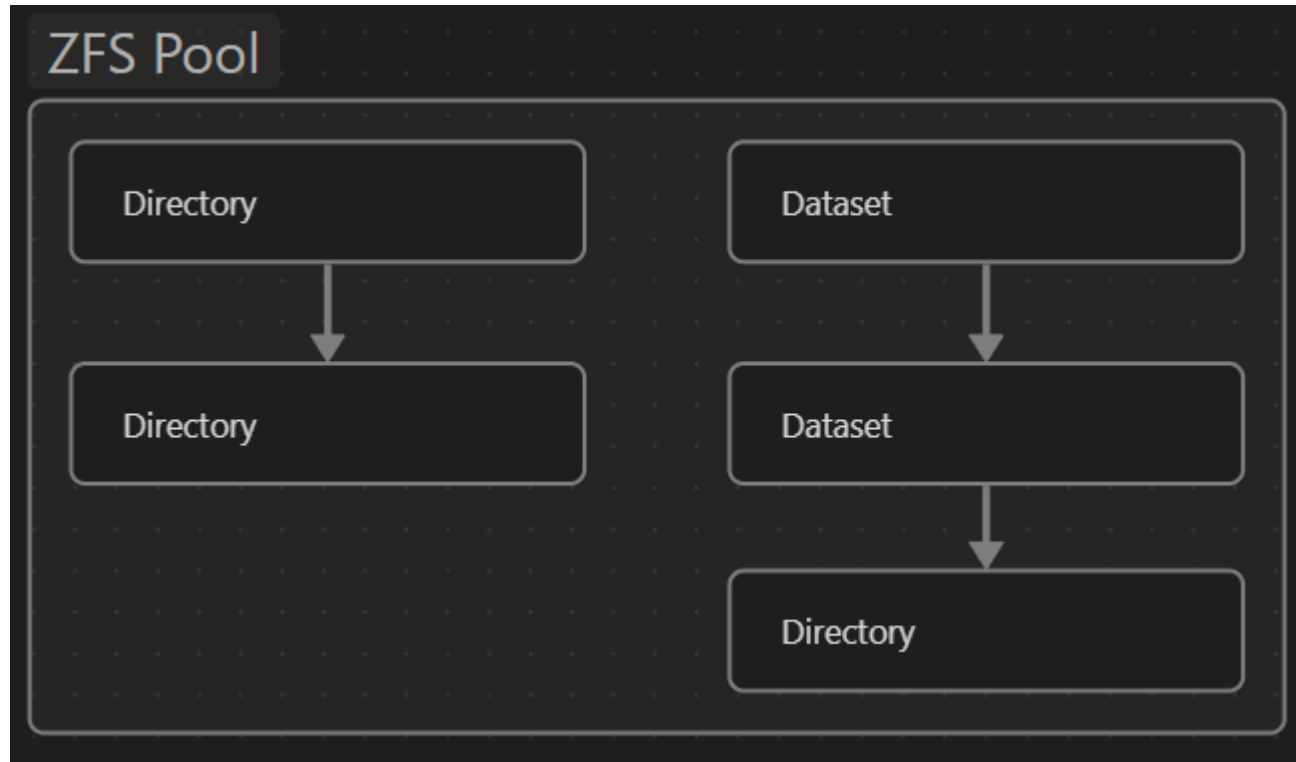
VDEV

Data  
Disk

Data  
Disk

Parity  
Disk

# Storage – ZFS



# Storage – ZFS

To many drives for a single RAIDz group?

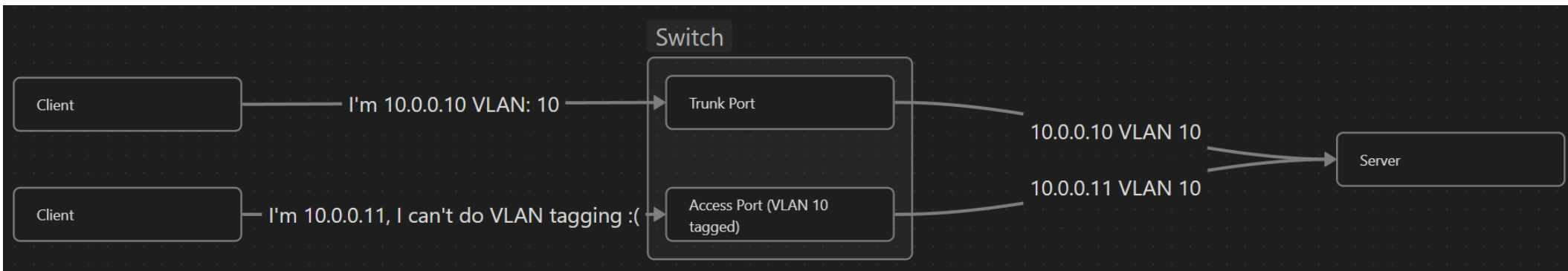
Use dRAID :)

ChatGPT's interpretation:



# Networking

# Networking – VLAN trunk and access ports



# Networking – LAGs

Device 1

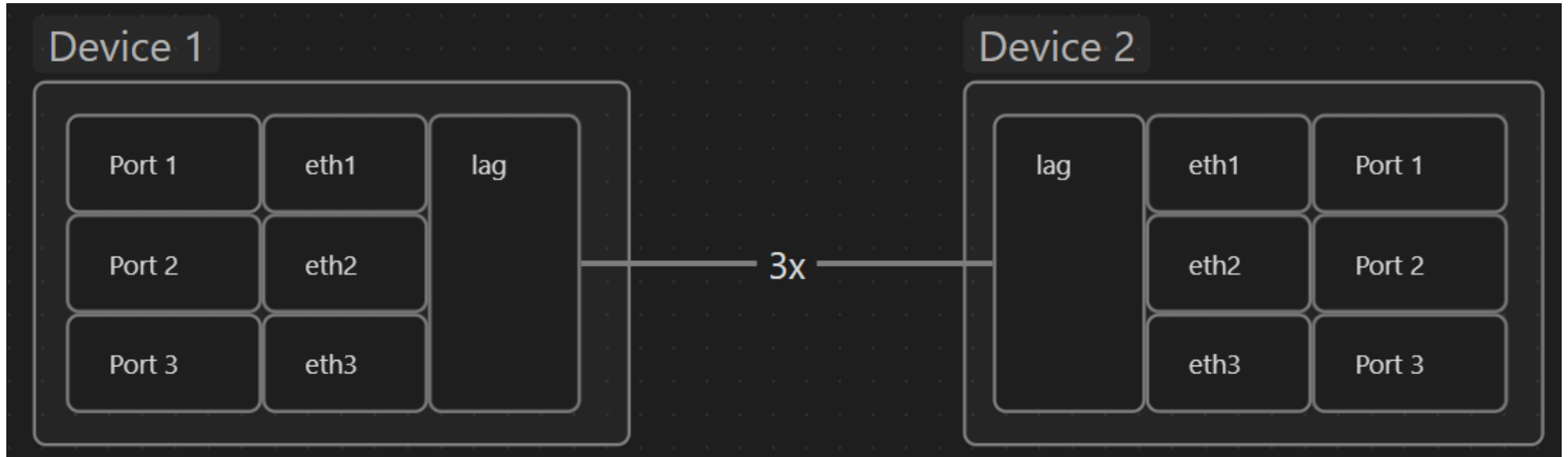


Device 2

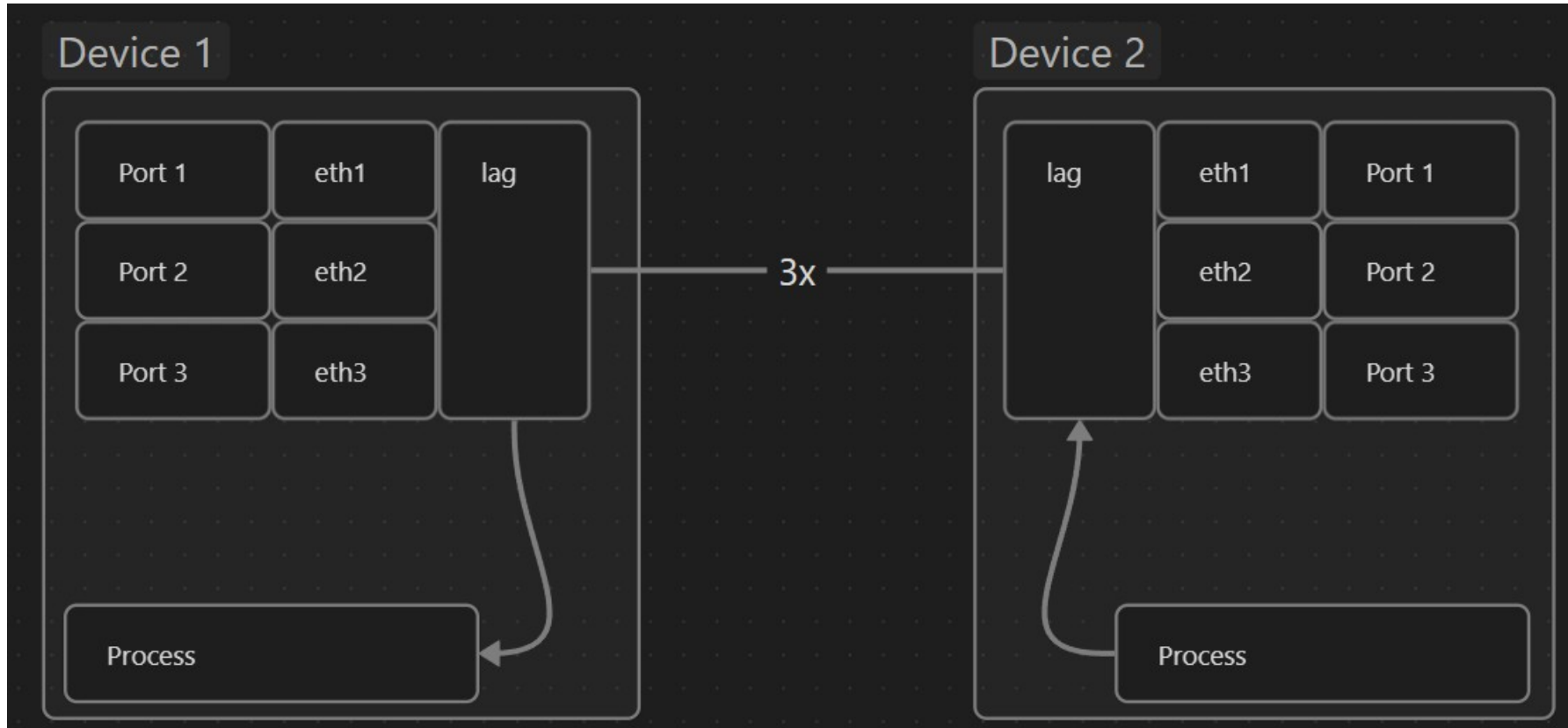




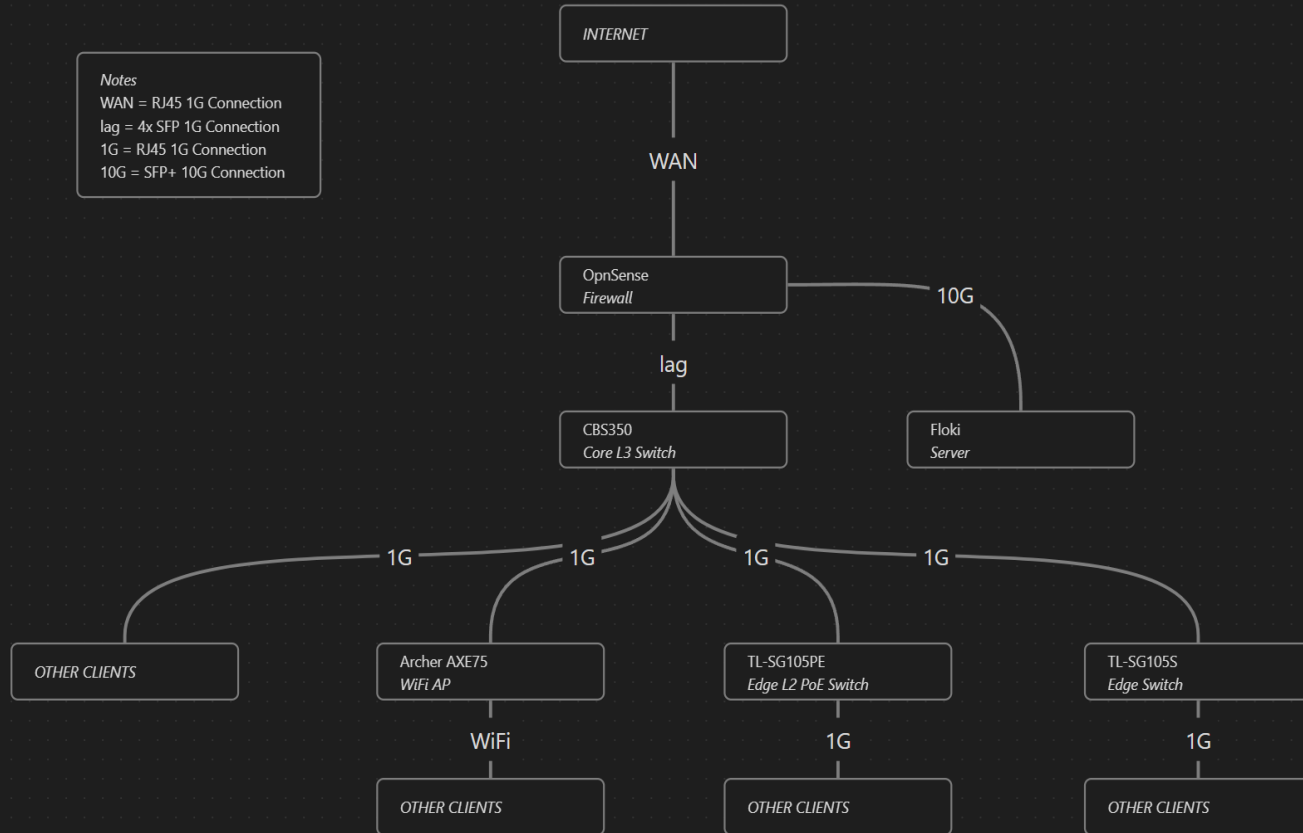
# Networking – LAGs



# Networking – LAGs



# Networking



# Networking

## Local Physical Clients

VLAN 1300 - 10.3.0.1/24

TV  
*DHCP*

Docking Station  
*DHCP*

PC  
*DHCP*

## Management

VLAN 1000 - 10.0.0.1/24

Router Admin Webpage  
*10.0.0.1*

Core Switch Admin Webpage  
*10.0.0.2*

Edge IoT Switch Admin Webpage  
*10.0.0.3*

WiFi AP Admin Webpage  
*10.0.0.4*

Floki IPMI  
*10.0.0.5*

## WiFi Authenticated Clients

VLAN 1510 - 10.5.10.1/24

Quest 3  
*DHCP*

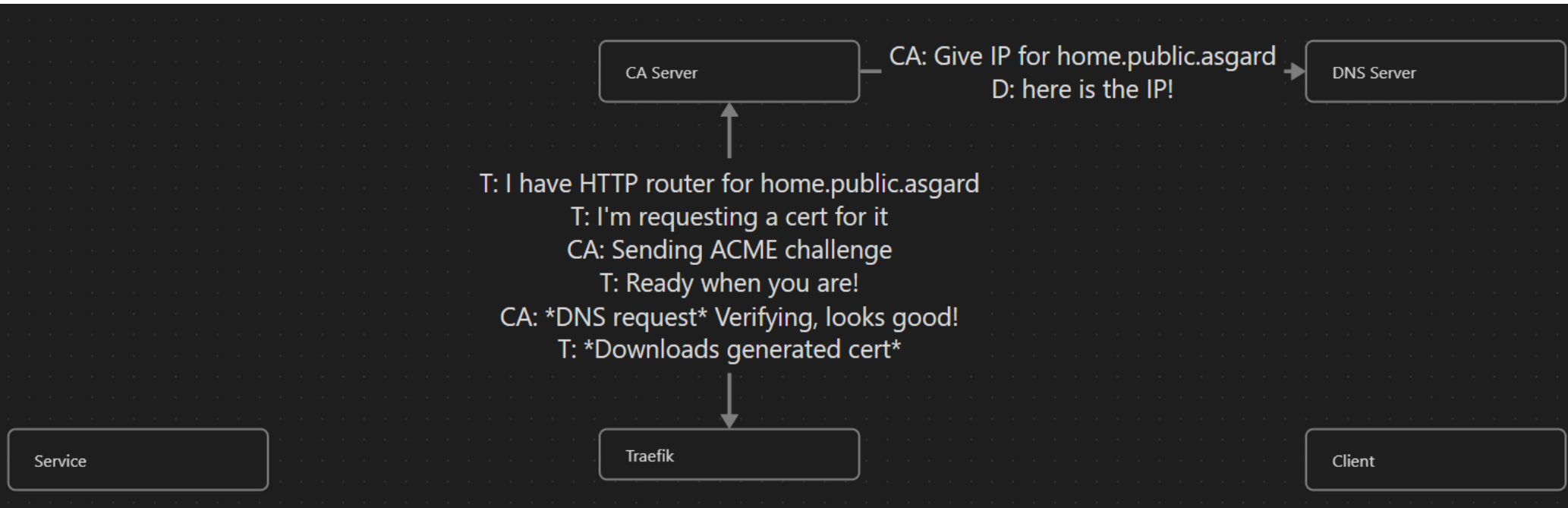
Phone  
*DHCP*

Laptop  
*DHCP*

# Networking – A service perspective



# Networking – A service perspective



**Network Schmetwork**

# IP done Quick! (IPv4)

An IP is 32 bit divided into 4 bytes separated by .

10.0.0.0 → 00001010.00000000.00000000.00000000

/0-32 at the ends specifies how many bits are “locked”

10.0.0.0/24 means the first 24 bits are locked so only the last byte can be changed

10.0.0.0/24 → 10.0.0.0 to 10.0.0.255

The above shows how a network range or “subnet is specified”



# Virtualization

# Virtualization – Hypervisors

## Type 1

- Proxmox
- VMware vSphere
- Microsoft Hyper-V

## Type 2

- VirtualBox
- VMware fusion

# Virtualization – Proxmox

The screenshot displays the Proxmox VE 8.0.4 interface. The top navigation bar includes 'Documentation', 'Create VM', 'Create CT', and the user 'root@pam'. The left sidebar shows a tree view of the server 'morpheus' with various VMs and storage configurations. The main content area shows the configuration for the VM 'morpheus' (Uptime: 1 day 23:14:57). The 'Summary' tab is active, displaying system statistics:

- CPU usage: 3.20% of 6 CPU(s)
- Load average: 1.30, 1.45, 1.86
- IO delay: 0.15%
- RAM usage: 33.35% (20.86 GiB of 62.53 GiB)
- KSM sharing: 0 B
- / HD space: 26.24% (122.76 GiB of 467.89 GiB)
- SWAP usage: N/A

System details include:

- CPU(s): 6 x Intel(R) Core(TM) i5-8500 CPU @ 3.00GHz (1 Socket)
- Kernel Version: Linux 6.2.16-8-pve #1 SMP PREEMPT\_DYNAMIC PMX 6.2.16-8 (2023-08-02T12:17Z)
- PVE Manager Version: pve-manager/8.0.4/d258a813cfa6b390
- Repository Status: Proxmox VE updates (checked), Non production-ready repository enabled! (warning)

Below the summary, there are two charts:

- CPU usage:** A line chart showing CPU usage (green) and IO delay (blue) over time. The y-axis represents percentage from 0 to 60. The x-axis shows timestamps from 11:16:00 to 12:22:00 on 2023-08-19.
- Server load:** A line chart showing the load average (green) over time, with a y-axis from 0 to 60 and the same x-axis as the CPU usage chart.

**There's like 50 Vms!?**

# Virtualization – Terraform



# Virtualization – Ansible and Terraform

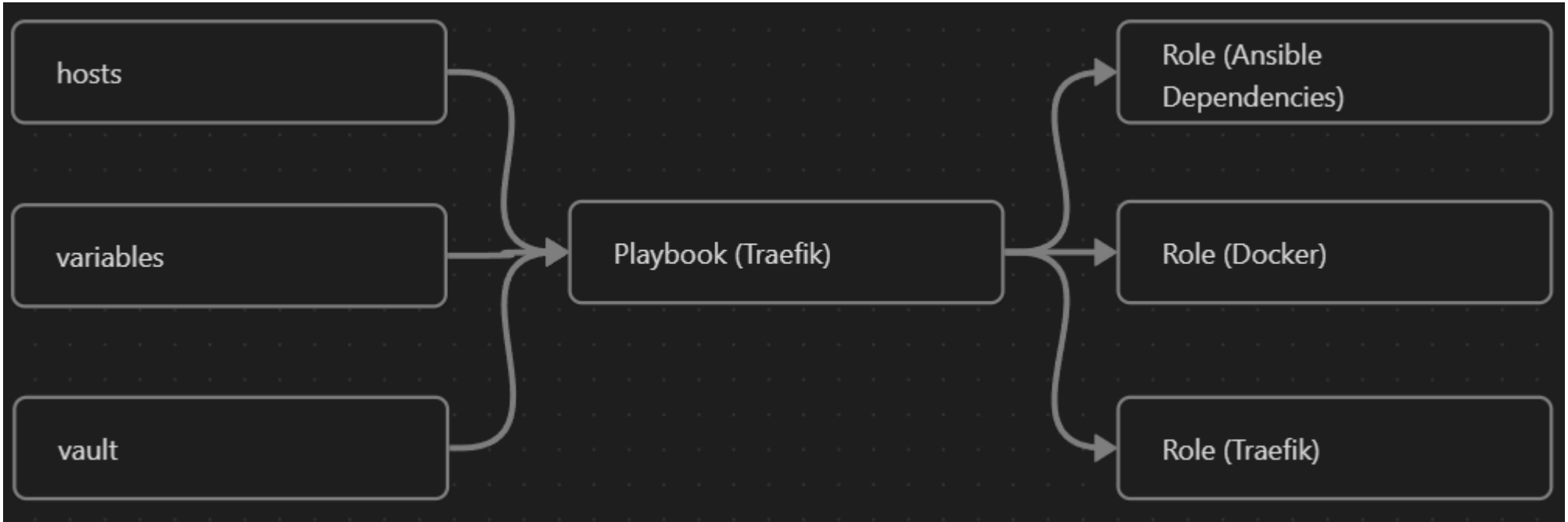
## Terraform

- Used for VM and LXC provisioning
- Desired state driven, Idempotent
- Has a good Proxmox provider
- IaC

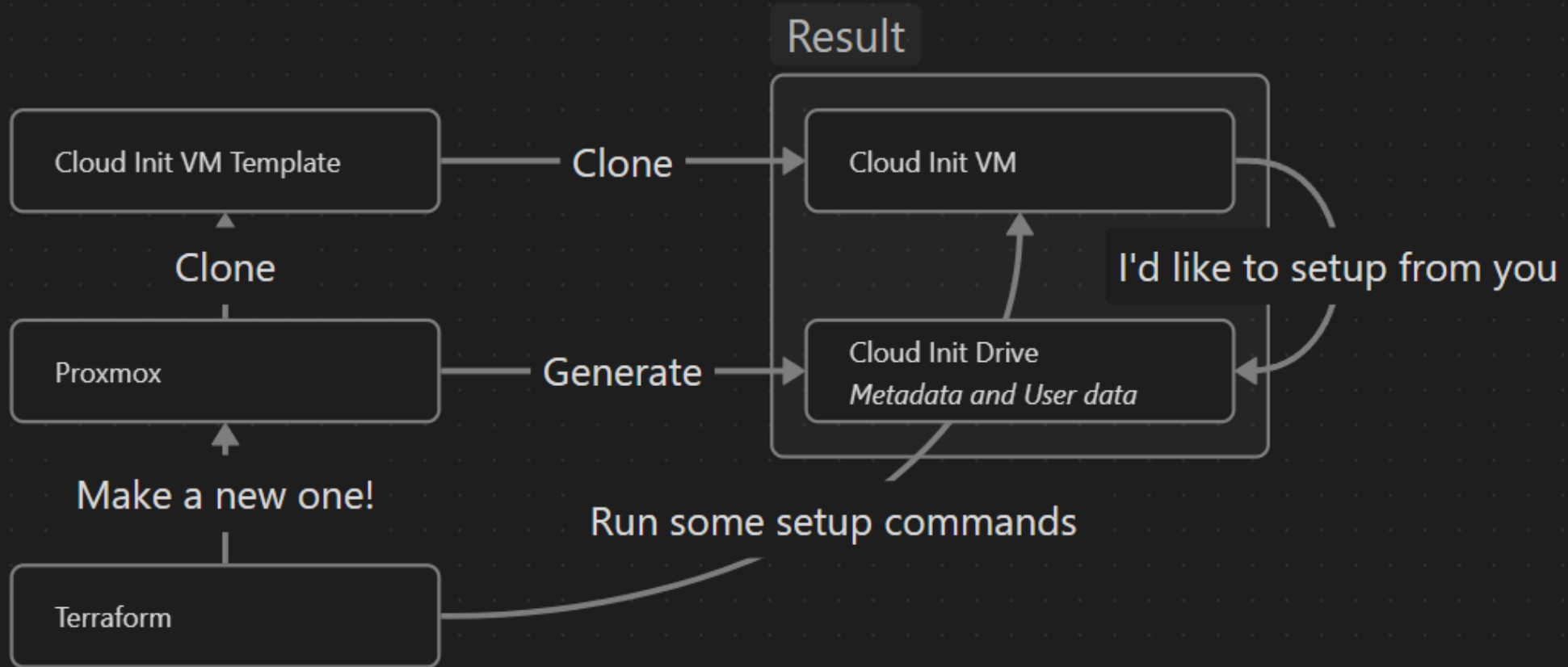
## Ansible

- Used for service setup on Vms and LXCs
- Desired state driven, Idempotent
- Widly adopted and works with docker
- IaC

# Virtualization – Ansible



# Virtualization – Cloud Init in Proxmox







**Demo Time!**

**Thanks for Listening!**

**Questions?**