Infrastructure Specification

Pez Solutions

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Contents

1 Server Technical Specifications

1.1 London-A: Monitoring Server

1.1.1 Hardware

Component	Specification
Processor	Intel Core i7-4790K (4C/8T, 4.0-4.4GHz, Haswell, 88W TDP)
Memory	32GB DDR3-1600 (4×8GB modules)
Storage	1TB SATA III SSD (boot/OS partition)
Network	Gigabit Ethernet (integrated)
Form Factor	4U Rack-mount
Operating System	FreeBSD

1.1.2 Responsibilities

Service	Implementation
Metrics Collection	Prometheus (TSDB, 15s scrape interval)
Visualization	Grafana (dashboards, alerting UI)
Monitoring Targets	London-B, London-C (node_exporter, service health)
Scrape Targets	Pull data from Copenhagen-A
SLO Monitoring	Service uptime (99.9%), response time (¡200ms)
Alert Management	PagerDuty integration (P0/P1 escalation)
Data Retention	365 days
VPN	Tailscale exit node

1.2 London-B: Media and Storage Server

1.2.1 Hardware

Component	Specification
Processor	AMD Threadripper 3970X (32C/64T, 3.7-4.5GHz, Zen2, 280W TDP)
Memory	64GB DDR4-3200 ECC (4×16GB modules)
Boot Storage	500GB NVMe PCIe 4.0 SSD (M.2 slot 1)
Data Storage	96TB ZFS RAID-Z1 (3 VDev,3×4×8TB Seagate BarraCuda, single parity)
GPU	Nvidia GeForce GTX 980 (1 of 2 fans broken)
Network	1GbE
Form Factor	4U Rack-mount
Operating System	FreeBSD

1.2.2 Responsibilities

Service	Implementation
Media Streaming	Plex Media Server, Jellyfin (H.264 transcoding)
File Sharing	Samba (SMB3, multi-user, ACL support)
Download Mgmt	Sonarr, Radarr, Lidarr, Transmission, slskd (napster-like service)
Storage Mgmt	ZFS, scrub weekly
Backup Strategy	Praying to God daily
Performance	4K transcoding (8 concurrent), 1Gbps network throughput
VPN	Tailscale exit node

1.3 London-C: Tor Exit Node

1.3.1 Hardware

Component	Specification
Platform	Raspberry Pi 4 Model B (ARM Cortex-A72 quad-core 1.5GHz)
Memory	8GB LPDDR4-3200 (soldered)
Storage	128GB microSD Class 10 (boot & data)
Network	1GbE
Power	5V/3A USB-C (15W max consumption)
Form Factor	1 of 4 bays in 1U Rack-mount case
Operating System	FreeBSD

1.3.2 Responsibilities

Service	Implementation
Tor Relay	Exit node (non-exit policy: web traffic only)
Hidden Services	Onion v3 addresses for London-A/B web interfaces
Privacy Policy	No logging, automatic log rotation, ephemeral keys
Security	Fail2ban, UFW firewall, automatic security updates
Uptime Target	99.5% (24/7 operation, UPS backup)
VPN	Tailscale exit node

1.4 Nuremberg-A: Mail Server

1.4.1 Hardware

Component	Specification
Processor	Intel Xeon (2 Cores, x86_64)
Memory	4GB
Boot Storage	40GB
Network	1GbE
Cloud Provider	Hetzner Cloud
Monthly Data Cap	2TB
Operating System	Debian 13

1.4.2 Responsibilities

Service	Implementation
Mail	Mailcow (dockerized setup)
VPN	Tailscale exit node

1.5 Helsinki-A: Password Manager

1.5.1 Hardware

Component	Specification
Processor	Unknown (2 Cores, arm64)
Memory	4GB
Boot Storage	40GB
Network	1GbE
Cloud Provider	Hetzner Cloud
Monthly Data Cap	2TB
Operating System	Debian 13

1.5.2 Responsibilities

Service	Implementation
Password Manager	Bitwarden (dockerized setup)
VPN	Tailscale exit node

1.6 Copenhagen-A: Monitoring Server

1.6.1 Hardware

Component	Specification
Processor	Intel Core i5-4570T (2C/4T, 2.9GHz)
Memory	6GB DDR3-1600 (1×4GB, 1×2GB modules)
Storage	500GB SATA III HDD (boot/OS partition)
Network	Gigabit Ethernet (integrated)
Form Factor	Mini PC, on-top a closet
Operating System	FreeBSD

1.6.2 Responsibilities

Service	Implementation
Metrics Collection	Prometheus (TSDB, 15s scrape interval)
Monitoring Targets	Copenhagen-B, Copenhagen-C (node_exporter, service health)
SLO Monitoring	Service uptime (99.9%), response time (¡200ms)
Alert Management	PagerDuty integration (P0/P1 escalation)
Data Retention	365 days
VPN	Tailscale exit node

1.7 Copenhagen-B: Game Servers

1.7.1 Hardware

Component	Specification
Processor	Intel Core i5-4570T (2C/4T, 2.9GHz)
Memory	6GB DDR3-1600 (1×4GB, 1×2GB modules)
Storage	500GB SATA III HDD (boot/OS partition)
Network	Gigabit Ethernet (integrated)
Form Factor	Mini PC, on-top Copenhagen-A
Operating System	FreeBSD

1.7.2 Responsibilities

Service	Implementation
World of Warcraft	MANGOs One (TBC) server
Minecraft	Vanilla server

1.8 Copenhagen-C: Unallocated

1.8.1 Hardware

Component	Specification
Platform	Raspberry Pi 4 Model B (ARM Cortex-A72 quad-core 1.5GHz)
Memory	8GB LPDDR4-3200 (soldered)
Storage	256GB microSD Class 10 (boot & data)
Network	1GbE
Power	5V/3A USB-C (15W max consumption)
Form Factor	Generic Case, on-top Copenhagen-B
Operating System	FreeBSD

1.8.2 Responsibilities

Service	Implementation
Unallocated	N/A

2 Primary Locations

2.1 London

London is the primary location, this is where the biggest servers is operating from.

The servers are all housed in a rack cabinet in my office. Networking is from a consumer BT fiber line.

The fiber terminates in an Openreach modem and the WAN connection is routed through the wall into a Ubiquiti Dream Machine SE in the rack. The integrated switch in the router then connects to all servers.

2.2 Copenhagen

Copenhagen is my second location. I got hold of some spare hardware that I brought home to Denmark. The setup in Copenhagen is... Rough to say the least. The two mini PCs (copenhagen- a and b) are stacked with copenhagen-c topping the stack.

Internet connectivity is excellent in Copenhagen, high speed fiber provides a 1Gbps symmetrical connection.

2.3 Cloud

Latest addition to locations is "the cloud". I attempted to use Amazon Web Services but found it too expensive and full of hidden costs which is not great when I'm paying for these servers out of my own pocket instead of being backed by a huge company with deeper pockets.

I settled on Hetzner Cloud. Hetzner is very stable and is super upfront with costs. They also allow unblocking of port 25 and 443 for e-mail which is very important when running a mail server.

The servers here (nuremberg-a & helsinki-a), each costs about 4 EUR a month which includes the cost of a static IPv4 address.

3 Client Facing Services

Service	URL / Access
Plex	`https://plex.pez.solutions`
Jellyfin	`https://jellyfin.pez.solutions`
Overseerr (Movie/TV Requests)	`https://request.pez.solutions`
Music Requests	`https://music-requests.pez.solutions`
E-Mail	`https://mail.pez.solutions`
Bitwarden	`https://bitwarden.pez.solutions`
Samba	`smb://smb.pez.solutions`
World of Warcraft Server	**Realmlist:** `wow.pez.solutions` **Patchlist:** `wow.pez.solutions`
Minecraft Server	**Address:** `minecraft.pez.solutions` **port:** `25565`