Project Proposal

Project Overview

Project Title:

Secure Multi-Tenant Hosting Platform on Hetzner.

Description:

Small organizations and individual clients often need reliable web hosting without the complexity and cost of large cloud providers. This project designs and implements a secure and scalable hosting environment on a Hetzner dedicated server. Client websites are isolated using Proxmox virtual machines and Docker Compose, while Cloudflare provides DNS management and security features. An external monitoring solution based on a Raspberry Pi ensures independent availability checks using the Hetzner API.

Project Type:

Infrastructure / Cloud Hosting platform.

Project Goal & Value

Goal:

To deploy a secure multi-tenant hosting environment, capable of running multiple websites with isolation and monitoring.

Problem being solved:

Many small projects need a reliable and structured way to host websites. Setting up such an environment from scratch requires knowledge of security, virtualization, and monitoring, which can be difficult for beginners.

Value:

The project demonstrates practical skills in virtualization, containerization, networking, and infrastructure monitoring.

Project Scope

In Scope:

- Host multiple client websites on a Hetzner dedicated server.
- Use proxmox to create VMs for client websites.
- Use docker compose to separate services.
- Integrate Cloudflare for DNS management and DDoS / Security features.
- Implement external monitoring on a Raspberry Pi using the Hetzner API.
- Provide basic documentation for deployment and maintenance.

Out of Scope:

- The project will not rely on personal servers and will instead use HN for all hosting and deployment.

Functional Requirements

- Creation and management of VMs using Proxmox.
- Deployment of web services using docker compose.
- DNS configuration and security rules via Cloudflare.
- External monitoring to check server availability and basic resource usage.
- Secure SSH access and firewall configuration.

Technology Stack

- Virtualization: Proxmox
- Containers: Docker compose
- Web services: Nginx
- DNS & Security: Cloudflare
- Monitoring: Raspberry Pi, Hetzner API, custom scripts
- Infrastructure: Hetzner dedicated server
- Tools: Git, SSH

Justification: These technologies provide strong isolation, flexibility and remain suitable for small-scale infrastructure projects.

Project Plan

- **Phase 1:** Planning and server setup (6 hours)
- **Phase 2:** Proxmox and VM configuration (12 hours)
- **Phase 3:** Dockerized service deployment (8 hours)
- **Phase 4:** Monitoring, testing, and documentation (12 hours)

Risks and Challenges

- Complexity of multi-layer virtualization
- Security misconfiguration risks
- Limited hardware resources

Success Criteria

- Multiple client websites run reliably and independently
- Monitoring system correctly reports availability and resource status
- Secure access and DNS configuration are verified
- Clear documentation enables repeatable deployment and maintenance