

Smart Home Media Server

Project Plan Presentation (PPP)

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CSC 494

1. Problems

- Multiple paid cloud and streaming services
- Data spread across platforms and devices
- Privacy concerns

Why?

- Lower cost over time
- More control
- Private + secure
- Hands-on systems learning

2. Project Focus (Team / Topic)

Software-focused project

Using home server hardware to build:

- Self-hosted applications
- Personal cloud storage
- Media streaming and storage
- Secure remote access
- Monitoring & automation

3. Two Learning Topics (with AI)

Software Topic

Docker & Linux Server Administration

- containers
- networking
- reverse proxy configuration

Hardware Topic

Server Monitoring & IoT Integration

- sensors (temps/health)
- ESP32 → server communication
- system monitoring

AI assists learning & troubleshooting

4. Time Usage Plan

Iteration 1 → Learn

- Ubuntu Server basics
- Docker fundamentals
- networking & proxy concepts
- security practices

Iteration 2 → Build

- Deploy Nextcloud and Jellyfin
- Configure remote access
- Add monitoring tools
- Organize media services

5. Features

Minimum Prototype Requirements

- Ubuntu Server
- Docker services
- Nextcloud / Jellyfin
- Cloudflare secure access

Future

- monitoring dashboards
- logging & alerts
- media ingestion
- IoT sensors

6. Architecture

User Devices



Cloudflare Proxy



Ubuntu Server



Docker Containers

(Nextcloud, Jellyfin, Reverse Proxy)

7. Schedule & Milestones

Sprint 1

Server setup + Docker

Sprint 2

Core services + networking

Sprint 3

Monitoring + security

Sprint 4

Media features + polish

8. Metrics (Progress Tracking)

Each week I measure:

- Features completed
- Requirements completed
- Lines of Code
- Tests added
- Issues/blockers

9. Final Goal

By end of semester:

- Working home server prototype
- Secure remote access
- Monitoring enabled
- Demonstration ready
- Open for future development

Questions?