PROJECT PROPOSAL: NET FUSION

Team Members:

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INTRODUCTION

- This project aims to design and implement an integrated, scalable, and flexible enterprise network using Huawei Datacom technologies. The proposal outlines the project's motivation, objectives, methodology, and expected outcomes.

PROBLEM STATEMENT

- Modern organizations require robust, scalable, and secure network infrastructures that support daily operations, security, and future expansion. Many networks fail due to poor planning, limited scalability, lack of documentation, faulty of devices and cables, and poor security.

OBJECTIVES

➢ Gain comprehensive practical experience

➢ Build a complete, organized, and scalable network

➢ Understand corporate network structure (Access, Aggregation, Core layers)

➢ Enable integration of new technologies after deployment

➢ Develop planning, documentation, and security skills

➢ Implement enterprise-grade services (DHCP and Telnet)

SCOPE OF WORK

- Layer 2: Switching (Core, Aggregation and Access switches, STP protocol, Link Aggregation, VLAN, INTER-VLAN)

- Layer 3: Routing (Routers, OSPF, NAT)

- security techniques: ACLs, AAA

- Network Services: DHCP, Telnet

- LAN, WAN & WLAN implementation

METHODOLOGY

- Planning & Design: Topologies, Devices selection

- Implementation: Configured switches and routers, and implemented necessary protocols, including **VLANs, WLAN, OSPF, Subnetting , AAA, Telnet, Spanning Tree Protocol (STP),** and **Link Aggregation** (Eth-Trunk).

- Testing & Verification: Connectivity, redundancy, security, performance

- Documentation: Configurations, Topologies, guidelines

COMPLETED WORK

✓ **Layer 2:** Implemented VLANs for network segmentation, and configured Link Aggregation (Eth-Trunk) and Spanning Tree Protocol (STP) for redundancy and increased bandwidth.

✓ **Layer 3:** Set up OSPF for dynamic routing.

✓ **Security:** Configured AAA and Telnet for enhanced network security and remote management.

✓ **Services:** Successfully implemented IP address assignment.
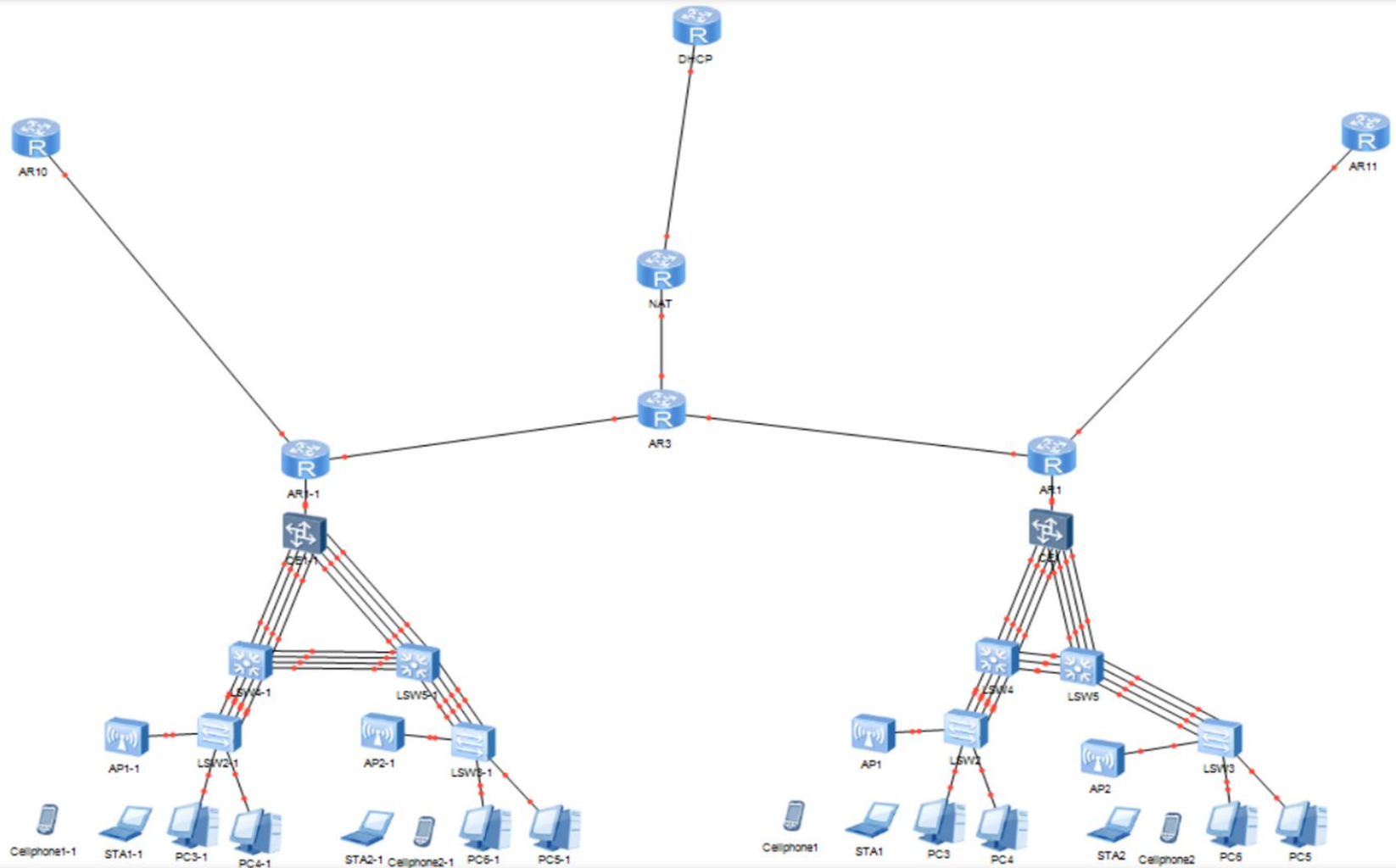
UPDATED TOPOLOGY
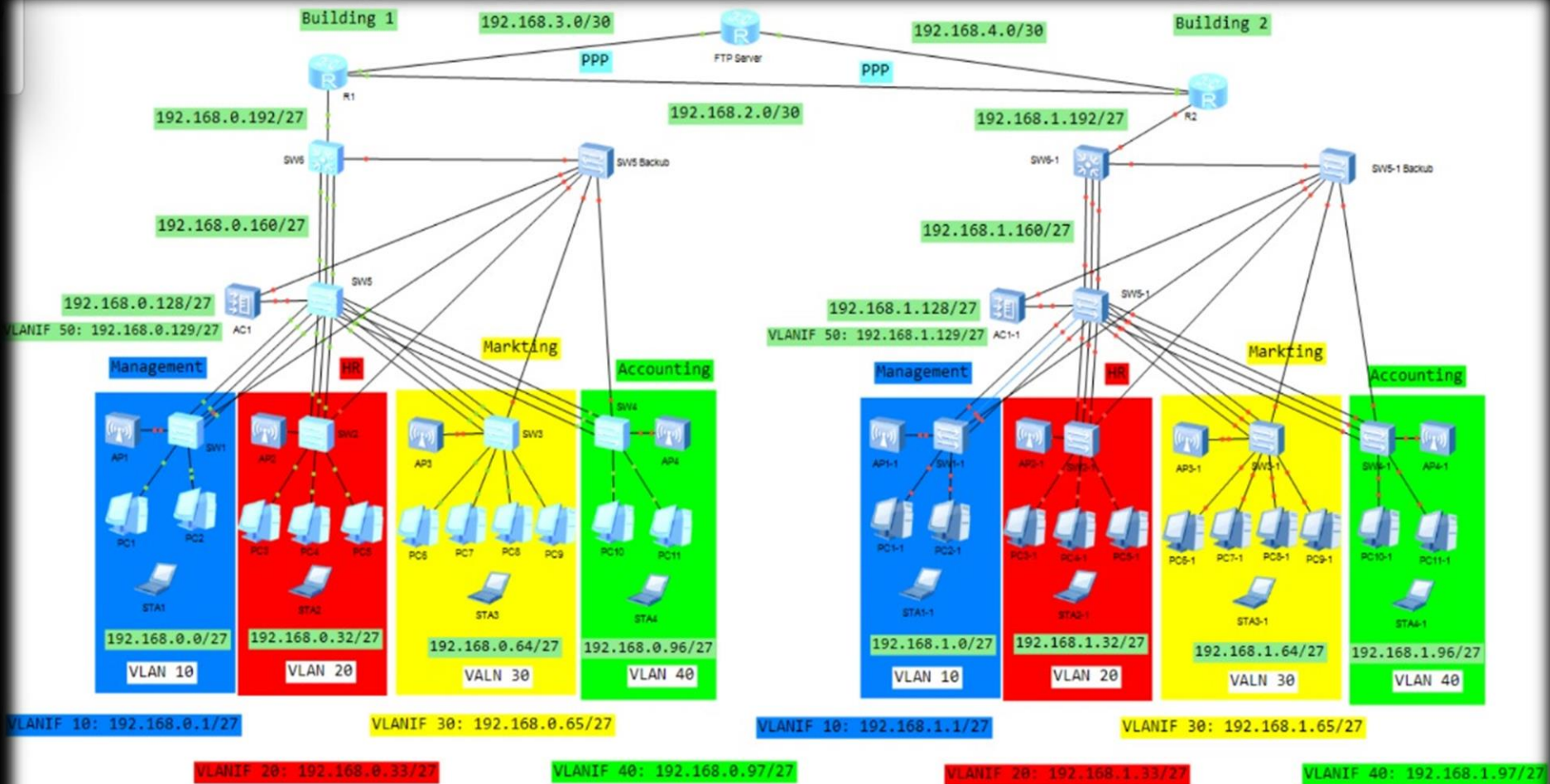
PROJECT ROLES

Marawan:
ACs , OSPF , Static routing

Mohamed:
PPP , DHCP ,NAT

Roba:
VLANs , STP

Zeinab:
AAA ,ACL ,Link Aggregation

EXPECTED OUTCOMES

- Fully functioning enterprise-level network using Huawei Datacom

- Enhanced understanding of network planning and implementation

- Practical experience with security, routing, and switching

- Scalable design that supports future technologies

TIMELINE

- Planning & Design: Week 1 → Network diagrams and Topologies, requirements

- Implementation: Week 2 → Configured network devices

- Testing: Week 3 → Validation reports

- Documentation: Week 4 → Final project report

NEXT STEPS

➢ **Network Redundancy:** Our next step is to enhance the network's resilience by implementing backup switches.

➢ **Purpose:** These switches will serve as temporary replacements for the main switches, ensuring continuous network operation and minimizing downtime in case of a device failure.

➢ **Goal:** This will make the network more robust, supporting our objective of building a scalable and reliable enterprise-level network

RESOURCES REQUIRED

- Huawei Datacom devices and tools (Switches, Routers, PCs, ACs and Cables)
- Network simulation tools (eNSP)
- Documentation software (Word, PowerPoint)

CONCLUSION

- This project will provide hands-on experience in enterprise networking with Huawei Datacom, equipping the team with practical knowledge in planning, implementation, and security while ensuring scalability for future growth.