DESIGN AND IMPLEMENTATION OF A VIRTUAL LOCAL AREA NETWORK WITH USING CISCO OPERATING SYSTEM

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Problem

• The Network organizations of the designs can change frequently.

• Reconfiguring the devices, unplug the devices and carry them is difficult.

• Redesigning or reconfiguring is vulnerable.

• Errors can lead to network interruptions.

Analysis

- LAN technology was a main technology in networks.

- LAN Technology is not enough.

- IEEE developed a new network technology.

Solution

- To solve this problem, we have come to conclusion that we need to use logical grouping of network users and resources on a local area network (LAN).

- That technologs' name is Virtual Local Area Network.

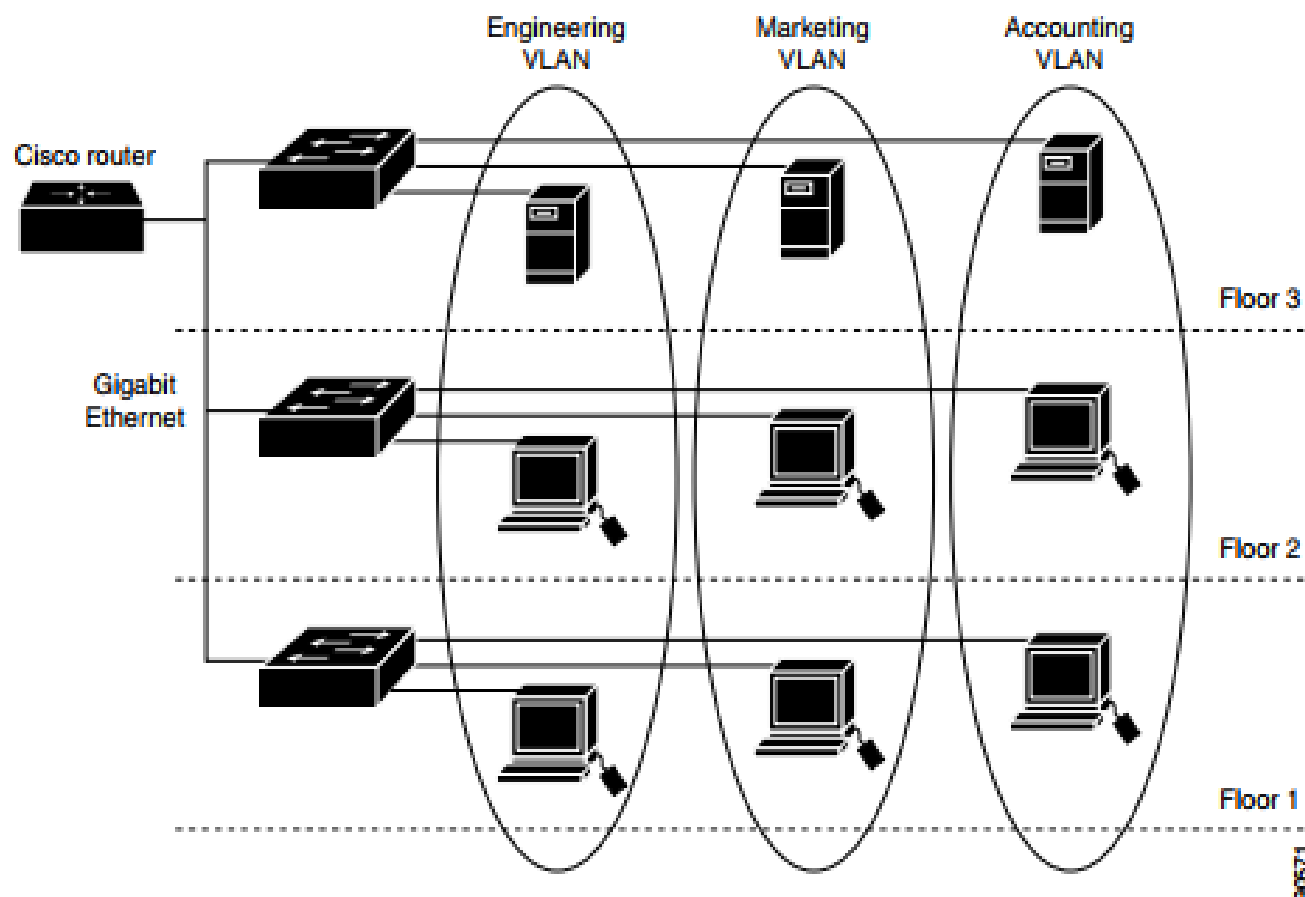- VLANs have better performance than LANs.

Figure 1: shows an example of VLAN as Logically Defined Networks.

Solution

The organization (design) must be

- reduce CPU overhead.

- flexible,

- efficient cost,

- more secure,

- minimize traffic etc.

Results and Conclusions

- In VLANs, Network administration work is less.

- LANs require physical administration as the need for re-cabling, the location of the user changes, reconfiguration of routers, addressing the new station and hubs arises

- VLANs reduce the need for expensive routers.

- Data transmission is more secure on VLANs.

- VLANs reduce latency.

- VLANs can help to minimize traffic.

References

1. Lammle, T. (2013). CCNA Routing and Switching Complete Study Guide. Indianapolis, IN, USA: John Wiley & Sons, pp. 460

2. IEEE Computer Society, "IEEE Standard for Local and metropolitan area networks," Virtual Bridged Local Area Networks. 2006, pp. 2.
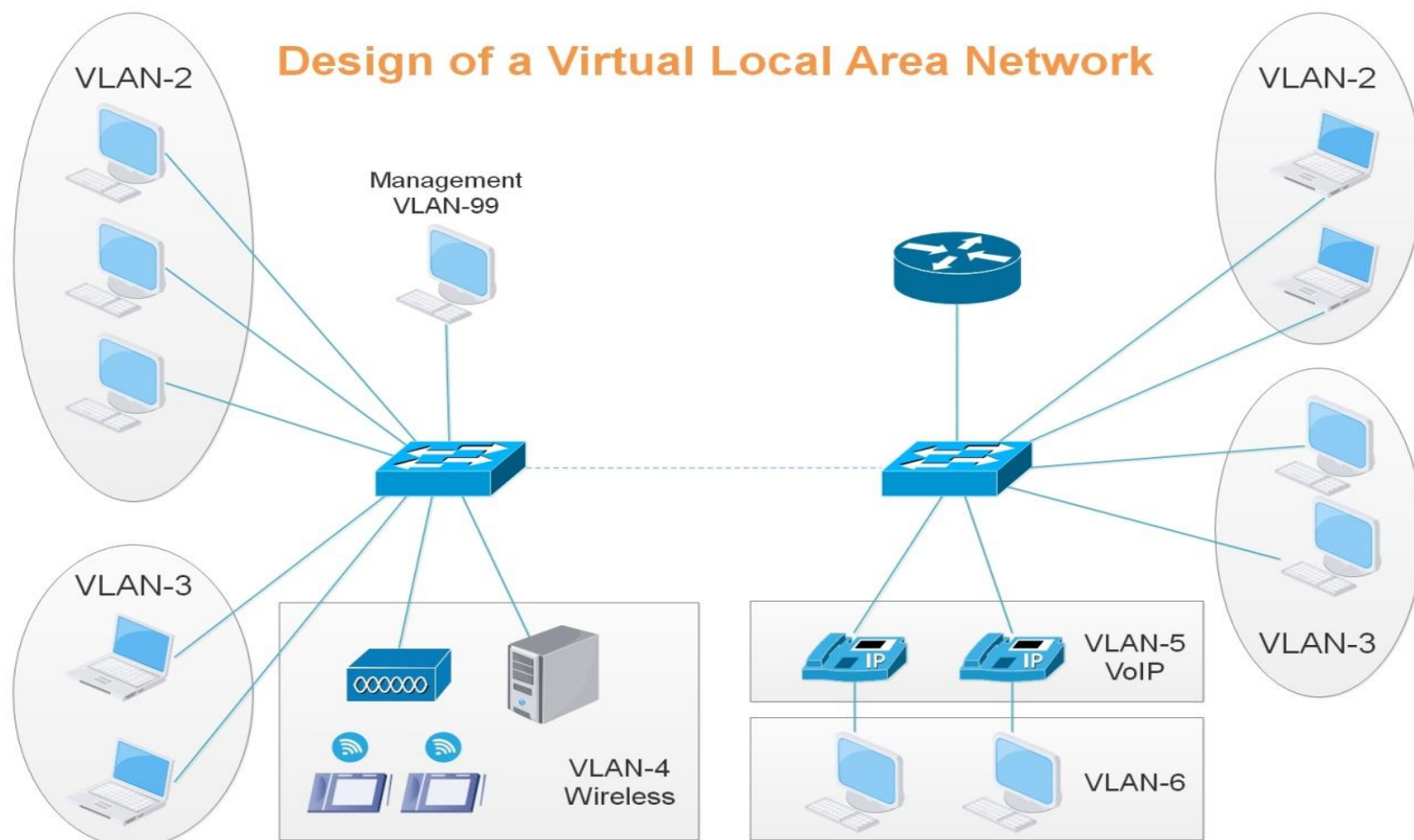
Demo

In our project, we will design a total of 8 virtual local area networks.

VLANs are named:

- Vlan1 is default Vlan.

- Vlan2 & Vlan3 are basic Vlan.

- Vlan4 is a wireless Vlan.

- Vlan5 is a VOIP Vlan.

- Vlan6 is a VOIP data Vlan.

- Vlan90 is a native Vlan.

- Vlan99 is a management Vlan.

Architecture Design of Simulation

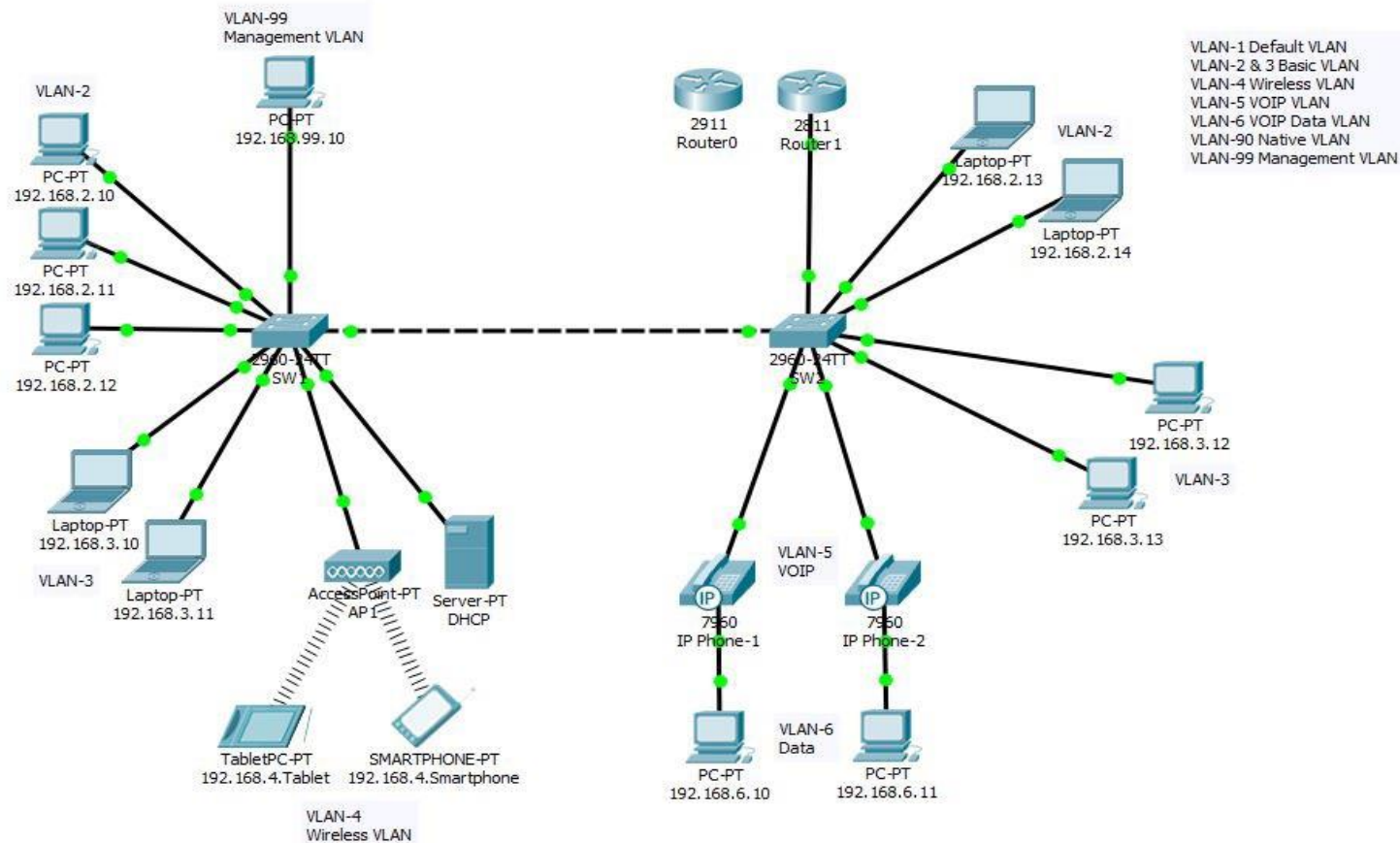Design of a Virtual Local Area Network

PRODUCT OF VLAN PROJECT

Figure 3: Prototype of VLAN Project with using Cisco Operating System