

# 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 technologists' name is Virtual Local Area Network.
- VLANs have better performance than LANs.

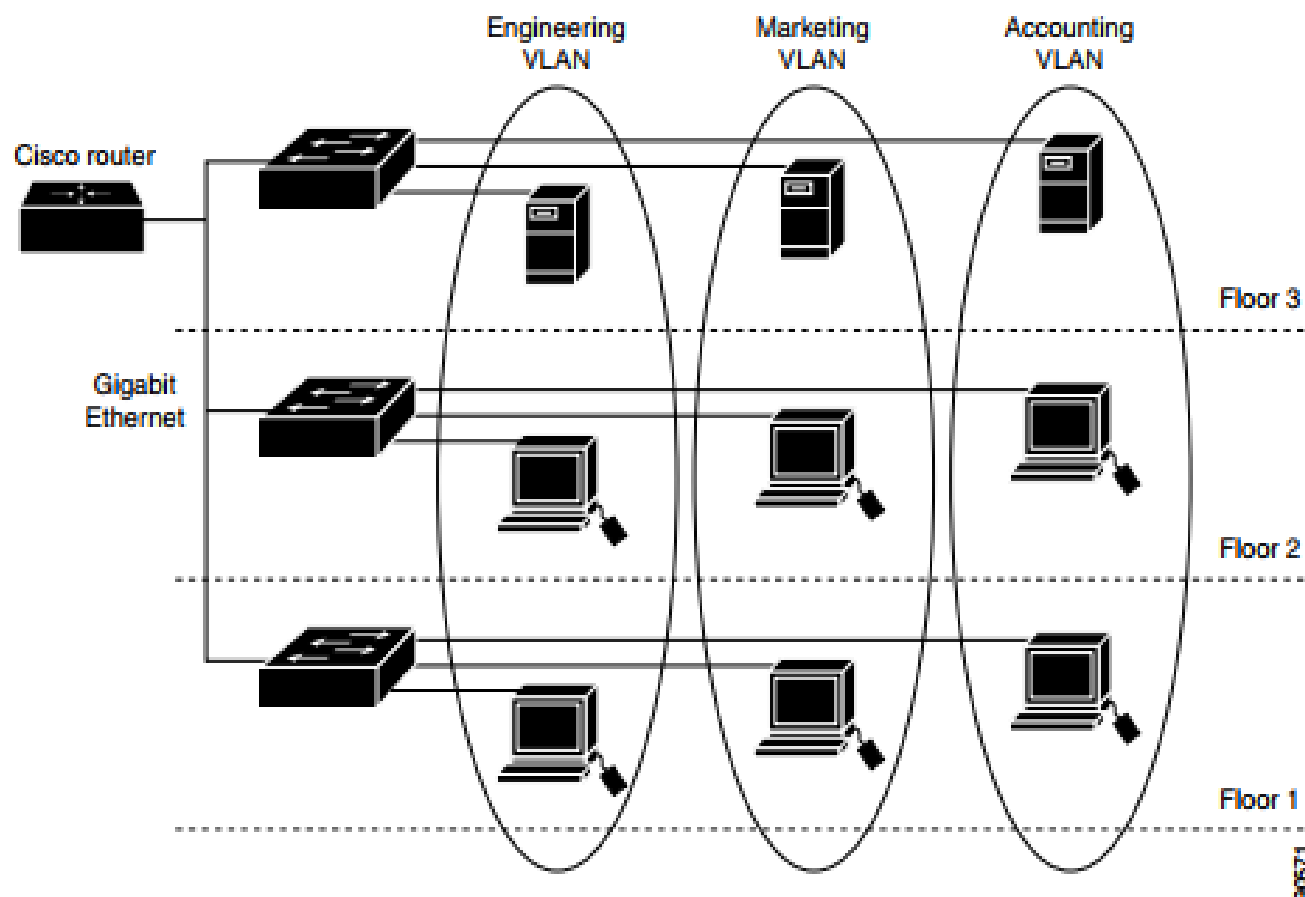


Figure 1: shows an example of VLAN as Logically Defined Networks.

# 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.

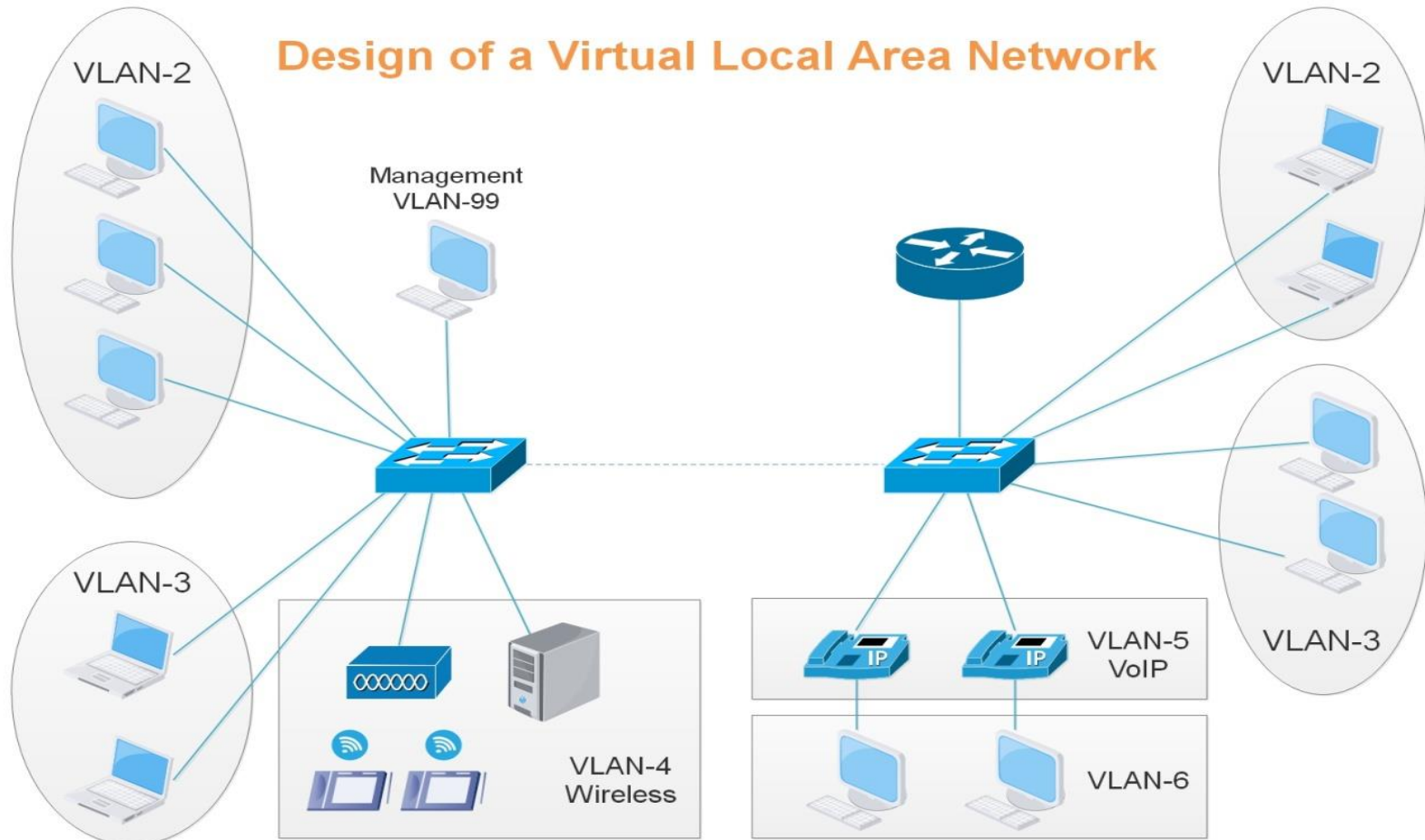
# Demo

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



# PROTOTYPE OF VLAN PROJECT

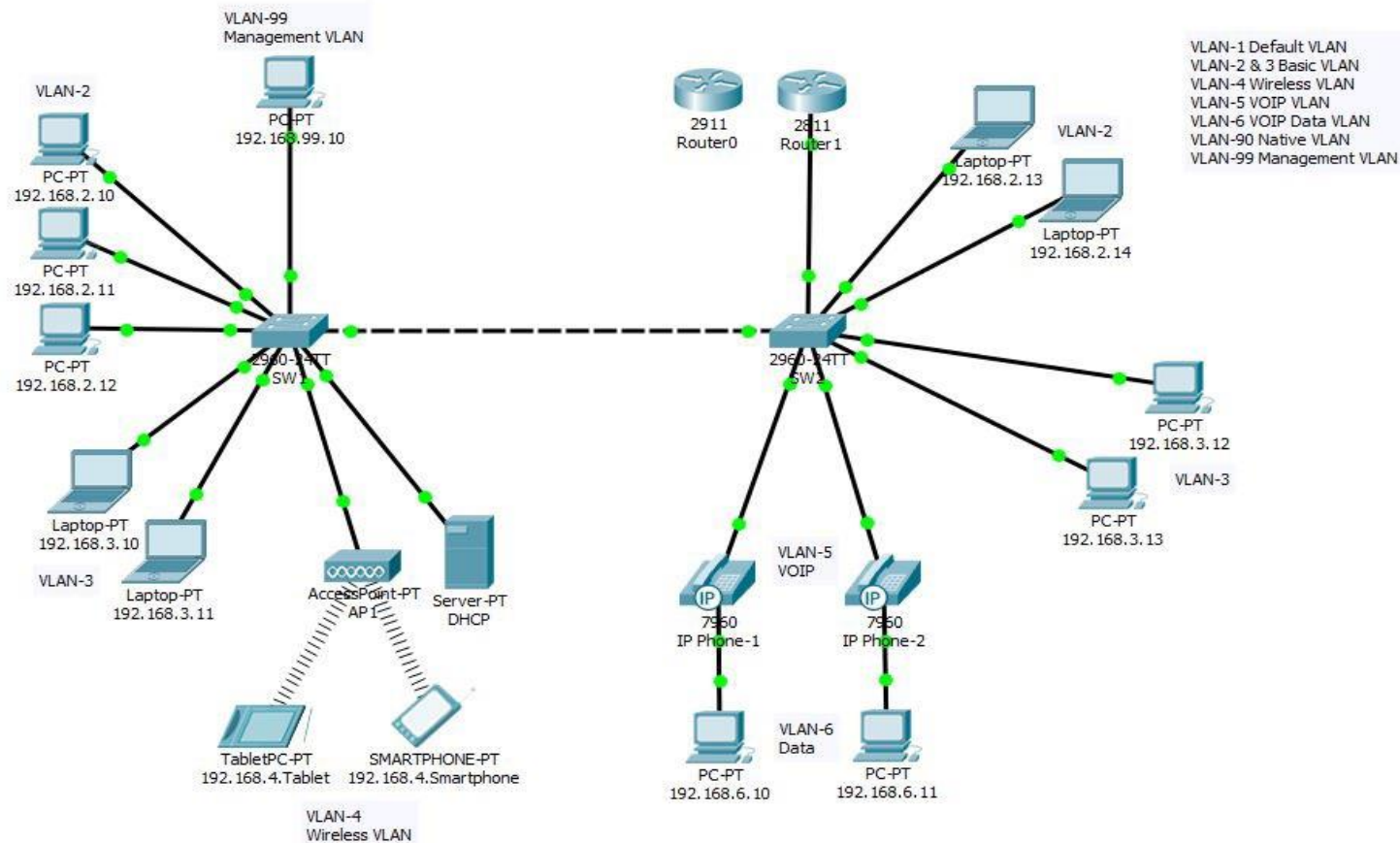


Figure 3: Prototype of VLAN Project with using Cisco Operating System