Creating Logical and Physical Topologies for a Medium-Sized Business

Preston Chapman

NTW275 - Network Infrastructure Design I

University of Advancing Technology

Sarah Bunce

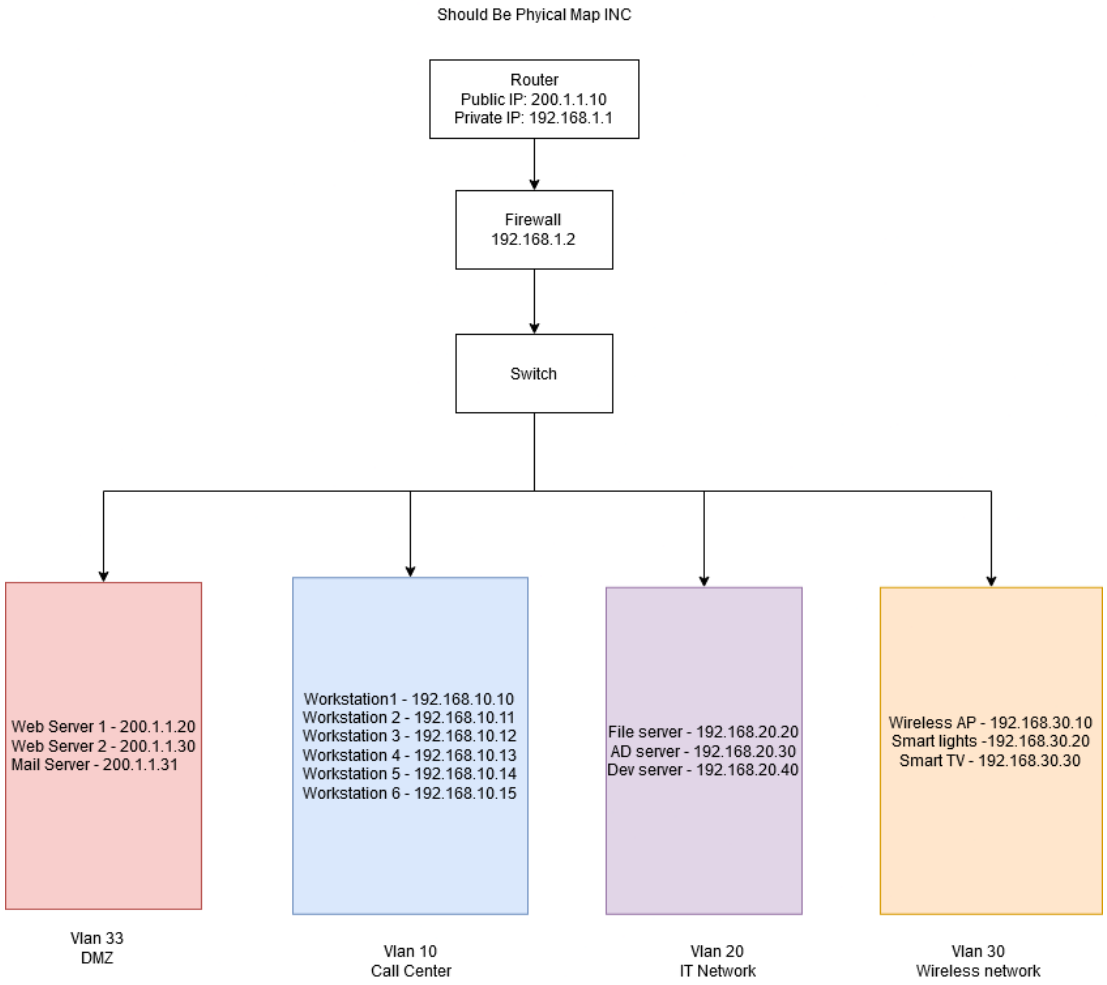
Sunday, November 2, 2025

Overview

In this assignment we were tasked with changing a logical network map to a physical network map, and a physical map to a logical map. For each of these we had to account for different IP addresses, devices, VLANs, subnetting, and room placement.

Logical to Physical

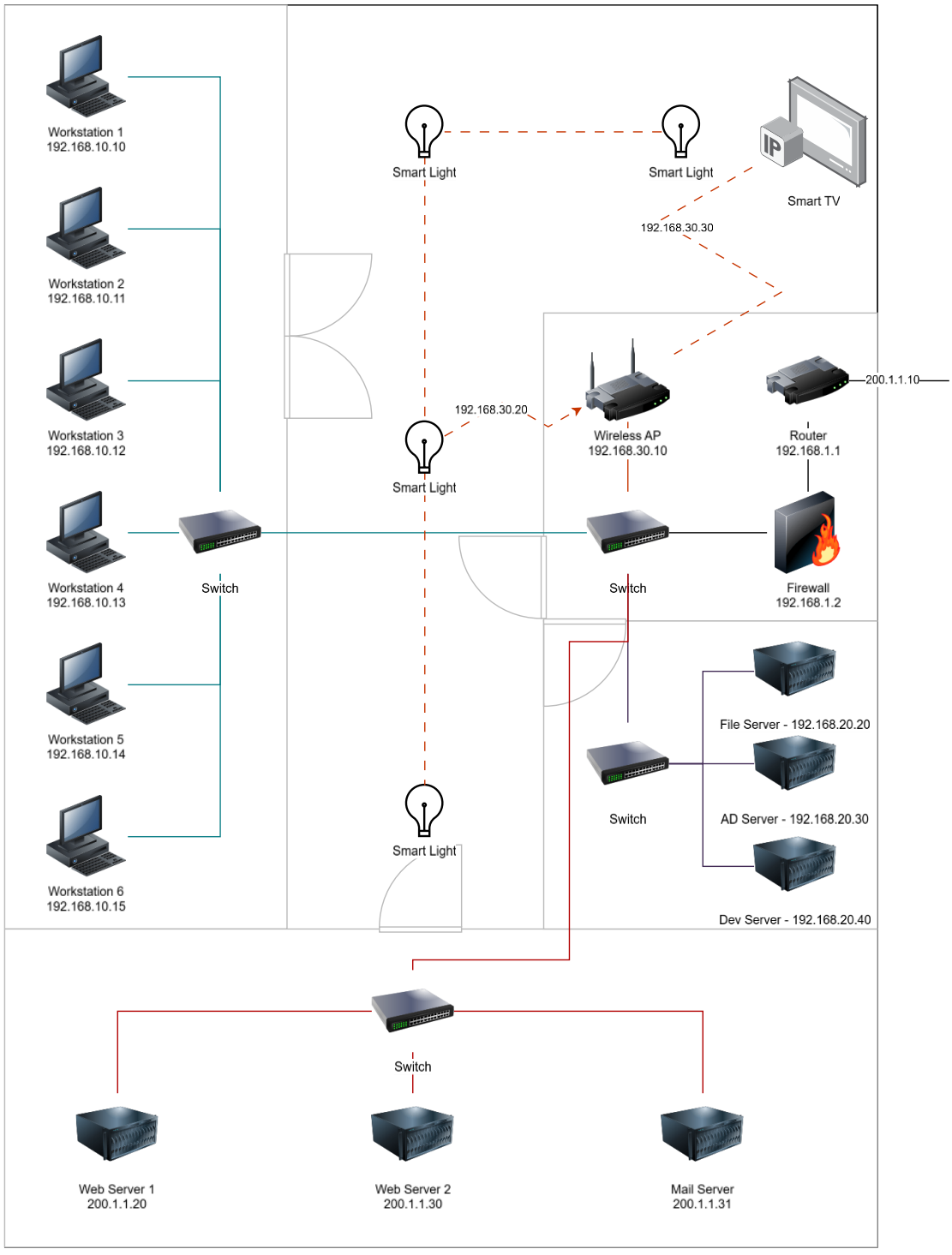
Original



The orginal logical map included a router, firewall, and switch, with 4 VLANs, for the DMZ, Call Center, IT Network, and Wireless Network. Each device was assigned an IP address,

so we had to decvide the rooms and locations for the devieces, and how these cables will connect.

New Physical



This building layout has a communal area, three server rooms, and a call center room. The first server room contains the Router, Firewall, Switch, and Wireless AP for the IoT devices. Below the first server room is the IT Network Room, this includes another switch, with a File Server, AD Server, and Dev server.

At the end of the building is the DMZ, this contains 2 Web servers, and the mail servers, these are public facing, and I would personally recommend using a separate network, rather than building off the existing one.

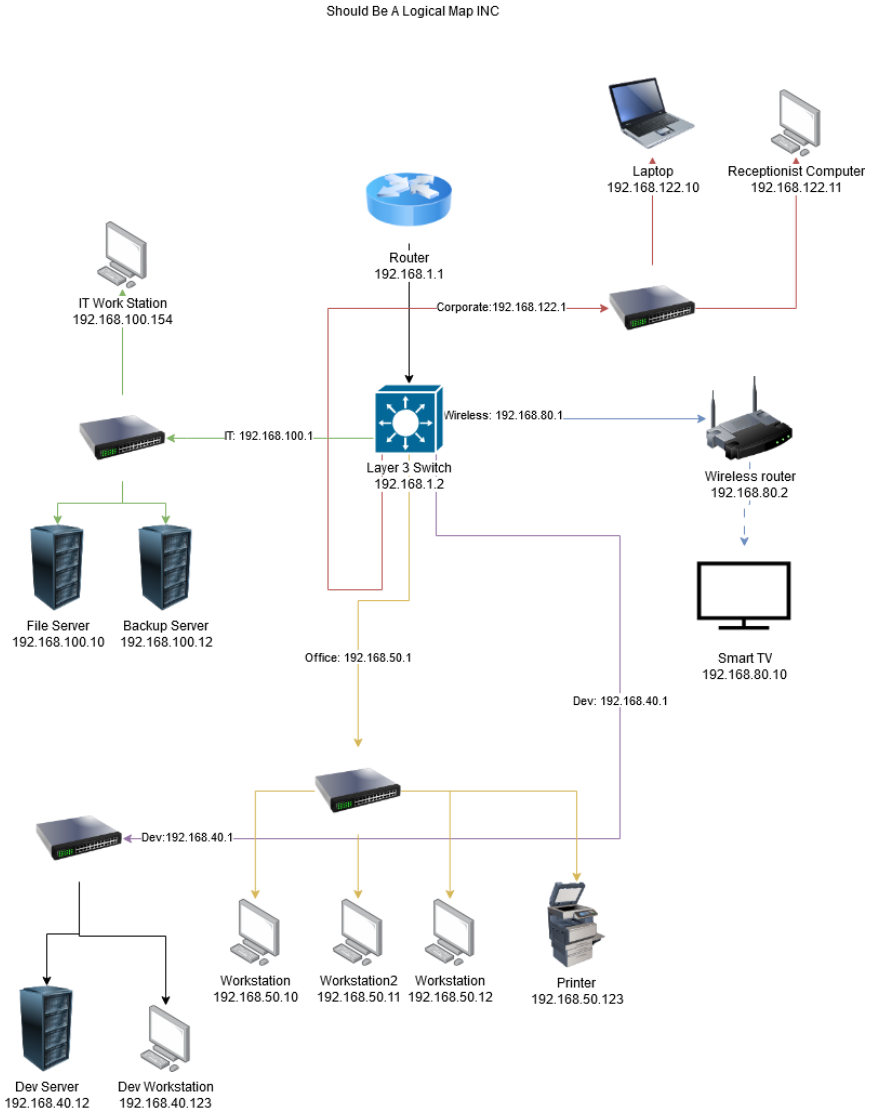
In the Call center there are six workstations, with a switch to manage this VLAN, although not represented, VOIP devices would also be included here for the call center employees, or they will be using software on the computers to manage the calls.

Lastly, the communal area, which has four smart lights, and a smart TV, in this case the smart lights share an IP, however depending on the model and if there is a hub, this may not be the case.

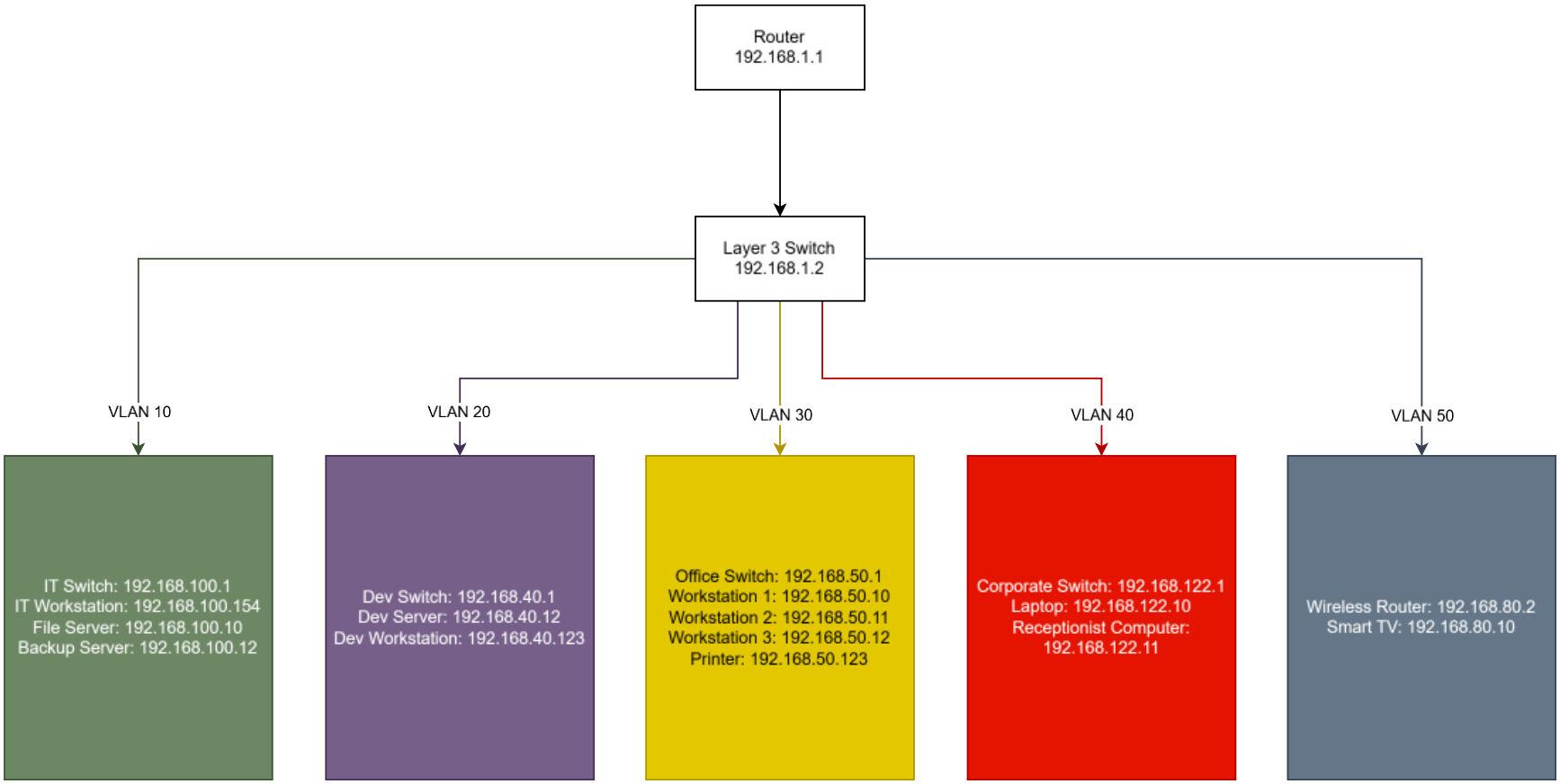
Physical to Logical

Original

The original network shows that we have a router, layer three switch, multiple workstations, switches, servers, IoT devices and multiple VLANs. We are given five distinct colors for different VLANs, each of these will need to be represented on the logical map.



New Logical


Router
192.168.1.1
Layer 3 Switch
192.168.1.2
VLAN 10
VLAN 20
VLAN 30
VLAN 40
VLAN 50
IT Switch: 192.168.100.1
IT Workstation: 192.168.100.154
File Server: 192.168.100.10
Backup Server: 192.168.100.12
Dev Switch: 192.168.40.1
Dev Server: 192.168.40.12
Dev Workstation: 192.168.40.123
Office Switch: 192.168.50.1
Workstation 1: 192.168.50.10
Workstation 2: 192.168.50.11
Workstation 3: 192.168.50.12
Printer: 192.168.50.123
Corporate Switch: 192.168.122.1
Laptop: 192.168.122.10
Receptionist Computer:
192.168.122.11
Wireless Router: 192.168.80.2
Smart TV: 192.168.80.10

This logical map has a router, and a layer three switch, the switch will have five different VLANs, ranging from VLAN 10 to 50. VLAN 10 Is the IT Subnet, this includes the IT Switch, Workstation, File Server, and Backup Server, starting with an IP of 192.168.100.X1. VLAN 20 is the Dev Subnet, these include the Dev Switch, Dev Server, and Dev Workstation this subnet starts with the IP of 192.168.40.1. The Office VLAN is thirty, which includes the devices of a Switch, 3 Workstations, and a printer, their IP starts at 192.168.50.1. The Corporate network is VLAN 40, with a Switch, Laptop, and Computer, where their IP starts at 192.168.122.1. Lastly VLAN 50 is a Wireless network, which only consists of a Router and Smart TV.

I personally would rework their IP assignments, as with the VLANs I gave they do not match the third octet, although it is not required, it makes things a lot easier when managing the network. The following table would be the new network IPs, if changed.

Name	*VLAN*	*Old IP*	*New IP*
IT	10	192.168.100.1	192.168.10.1
Dev	20	192.168.40.1	192.168.20.1
Office	30	192.168.50.1	192.168.30.1
Corporate	40	192.168.122.1	192.168.40.1
Wireless	50	192.168.80.1	192.168.50.1