Technical expectations

In this project, you are to create a working network following a given topology and configuration requirements for switches, routers, PCs, and one server. You are not provided an address table, you will be working with one starting IP address, creating your own subnets and assigning IP addresses according to provided requirements; similar, but more elaborate than exam 2.

This project entails application of material covered this semester such as addressing, basic switch and router configurations, inter-LAN communication, plus research and application of further topics such as:

- inter-VLAN communication (you'll needed it within the Purple network). HINT: Some keywords/phrases to search for are "router on a stick", encapsulation 802.1q, router sub-interfaces, and
- backing up switches' and routers' configurations on to the server using TFTP (expected to back up both routers and switches configurations). – (not required, but 15 pt extra credit, all or nothing type of credit)

IPv4 Addressing

1) Choose a private class B IP address and subnet it into two equal sized subnets of 128 total hosts (each).
    - Use the first of the two subnets is to be used for the orange network.
    - Then, VLSM the second of the two subnets to accommodate the following:
        (1) Point to Point network
        (2) Each of the VLANs in the purple network. Ensure you have enough usable IP addresses to meet future number of usable hosts. You should only waste the least possible amount of host addresses.

Purple Network VLAN information		
VLAN ID/Name	Current # of usable hosts	Expected future # usable hosts
VLAN 10/Admin	4	6
VLAN 12/Faculty	3	8
VLAN 35/Student	14	35
VLAN 88/ ICTMgt	2	4
VLAN 99/Native	N/A	N/A
NOTE: Only need to configure two PCs per switch, per VLAN		

2) Be consistent with addressing.
   - The switches get the last usable address in each subnet, as applicable.
   - The router gets the second to last usable address in the subnet, as applicable. You chose the order desired for the point-to-point network.
   - Other devices get the first few addresses of the subnet.

Configuration

1) You may use the equipment models you think are appropriate.
2) Rename PCs and server to a descriptive name, be consistent.
3) Use given topology diagram to set appropriate hostnames for routers and switches, rename the display name accordingly.
4) Set all enable secrets and vty 0 4 and console passwords as *final<Group#>* (i.e. *final3* for group 3, note that there are no caps, no spaces, no underscores, no brackets).
5) Use RIPv2 protocol or static for routing.
6) Create VLANs with appropriate VLAN IDs and names according to the given table.
   - Assign the appropriate number of switchports to each of the VLANs, according to "Future # of Usable Hosts" on table.
   - Assign the appropriate switchport mode to all switchports assigned to VLANs.
   - Limit the number of VLANs allowed to communicate out of the purple network, only allow those that you have created.
7) Save all configurations from RAM to NVRAM.
8) Shutdown unused ports (those ports that do not have a device connected to them at the time). All required ports will be configured as noted in step 6, but will be shut down until all devices are bought for the labs and offices. Only those with connected devices will be enabled, for testing and troubleshooting purposes.
9) Ensure all configurations on all devices are "clean" meaning that if the command present, but it is not needed to meet requirements (or requirements to work), they should be deleted. For example, extra network command on routing protocols or static routes, etc.
10) Final Project Extra Credit Points (15 pts):
    - configure the server as a TFTP server,
    - back up all switches' and routers' running-config to TFTP server (accept the default name).

    NOTE: this step is not required, and is graded as an all or nothing (either perfect or no points earned)

11) Ensure all devices are completely documented (PlaceNote feature on pkt). Use VLAN "color coding" as shown on the provided diagram (Draw Rectangle feature on pkt).

Final Report

The final project memo report should be a summary of your team work experience during the project and the project's final results. This report must convey your knowledge of that that was asked of you and your understanding of testing each of these requirements. An ideal report should be informative and within 2 pages long and it must include the following:

- discussion of whether you met each of the provided requirements or not,
- description of how you verify that your network did or did not meet the provided requirements (use the sh run command as reference only as last resort, when there is no other way of verifying….only if necessary),
- any troubleshooting you may have done for those requirements you did not meet or struggled plenty with (no struggles? then tell me how great everything was and that you did not have to troubleshoot).

Your report may have bulleted lists, captioned figures, captioned tables, and other items, as applicable. Ensure to discuss/reference all of the requirements. Include a reference page (references need not to be within the two page limit), ensure to include those references that were used for the "new" topics covered in this project.

Grading

For this project you are to submit the following:

- Taks 1 assignment (team submission)
  - know your teammate(s) text entry
- Task 2 assignment (team submission)
  - a completed Cisco Packet Tracer file
  - memo report (formal)
- Task3 assignment (individual submission)
  - self and peer evaluations (highlighted rubric)

Final Project	**Points Worth**	**Points Earned**	**Comments**
Final Project Task 1 (Team)	0		Submission required to get Task 2 assigned.
Final Project Task 2 (Team)			
Memo Experience & Results Report	70		
Simulation	100		
Final Project Task 3 (individual)			
Peer and Self Evaluation Submission	6		Submission of all evaluations required, otherwise no Task 3 points will be earned (none of the 30 total points).
Peer Evaluation Average	24		
Total Points	**200**		

Each student is to submit a complete evaluation sheet for every team member (including self). Provided evaluation rubric must be used. Submit your final project's **Individual portion.**

Topology

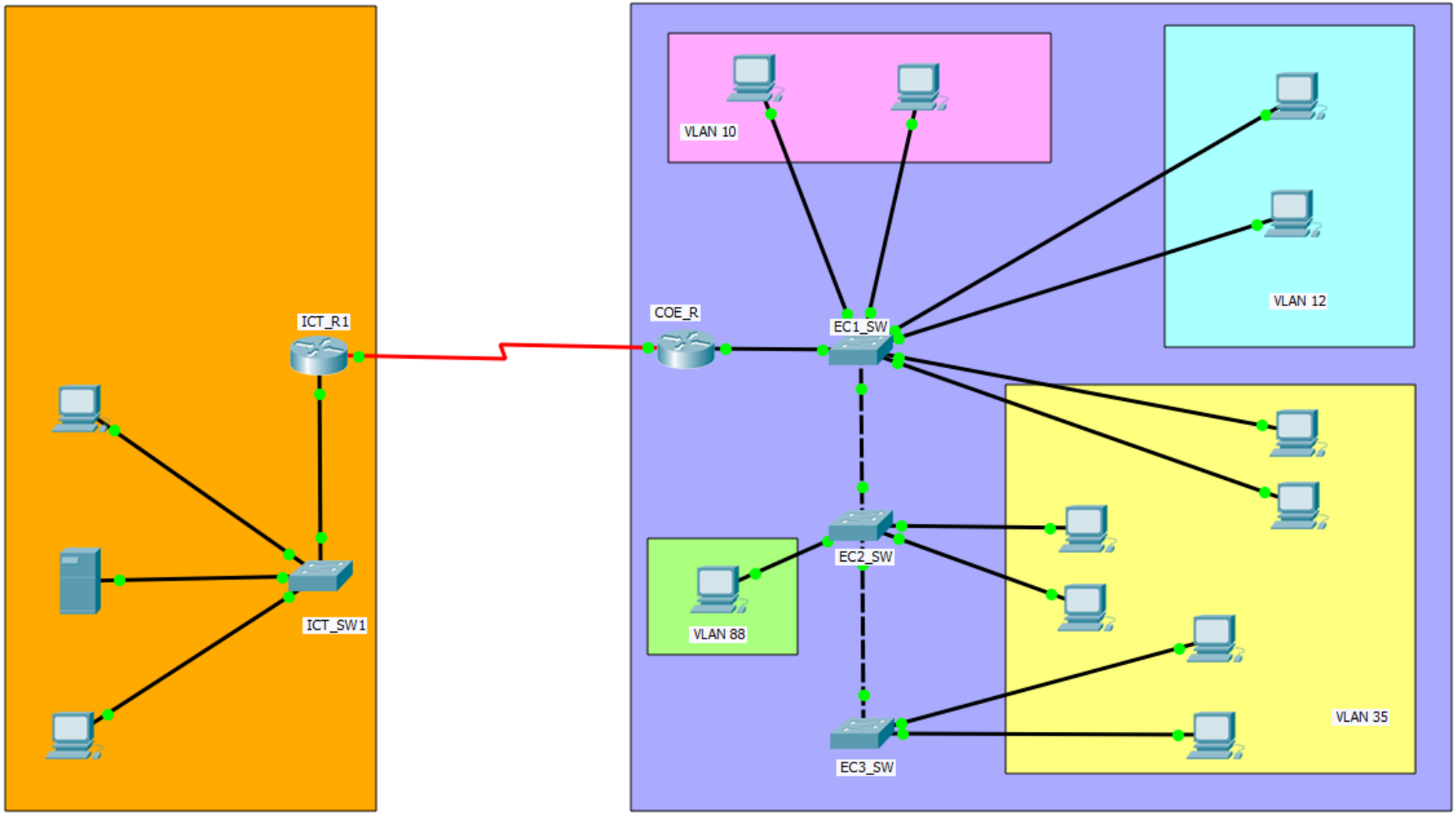

Figure 1: Final Project Topology