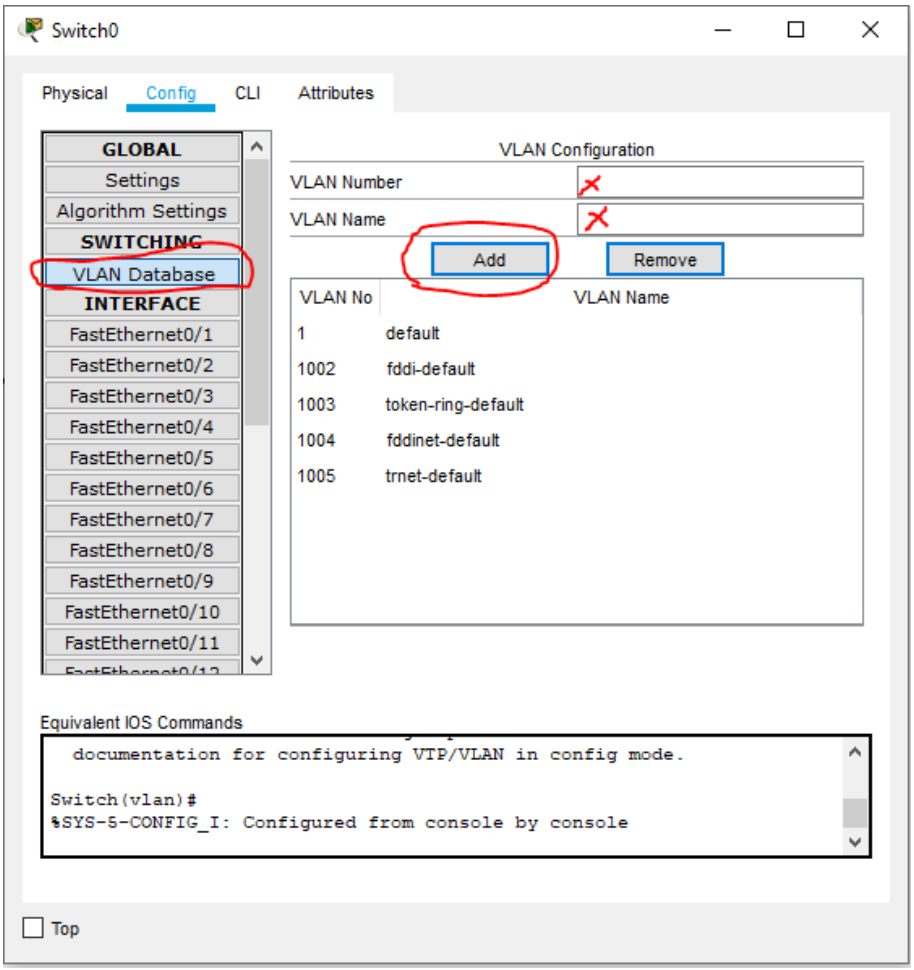
CS 334/CS 534 Lab 4 : Switching Part 1

Introduction to Switching

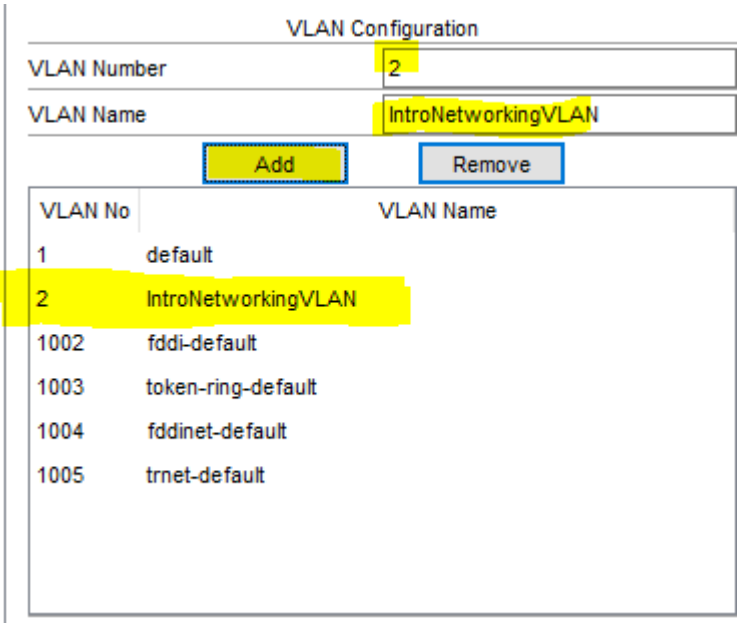
In this lab we will learn about switches, their place in the network, and how to configure basic VLANs. There will be two sections on this lab. The first section will be a learning/walkthrough section that will prepare you for the second section which is the practice section. Only the second section will be graded.

Learning about switches

1. Review the study-CCNA article on layer 2 switching. It can be found here.
2. Open the SAMPLE1 packets file that was included with this lab. If you have not already downloaded it from Canvas, please do so.
3. Your file should have 2 Desktops on the screen. One named Alice, the other Bob.
4. In order to provide a means for A and B to talk to one another, lets add a switch to the environment (env).
5. In the device selection section, find the switch category and add a Cisco 2960 switch to the env.
6. You should cable connect both the machines to the switch using a Copper Straight-Through Wire. Or you can select the lightning bolt option to "Automatically choose connection type" (I would recommend doing the manual option, as choosing automatic in the future might introduce misconfigurations in your network.
7. Once the switch is finished configuring the connections (you should see 2 green triangles per each connection), you should now be able to send a "Simple PDU" from one machine to another. You may want to move into simulation in order to visualize the packet moving and also examine the PDUs.
   Now that we know we have a connection, lets break it!
8. In the switch configuration page, lets add a new VLAN. We do this by selecting "VLAN Database" under the switching category.

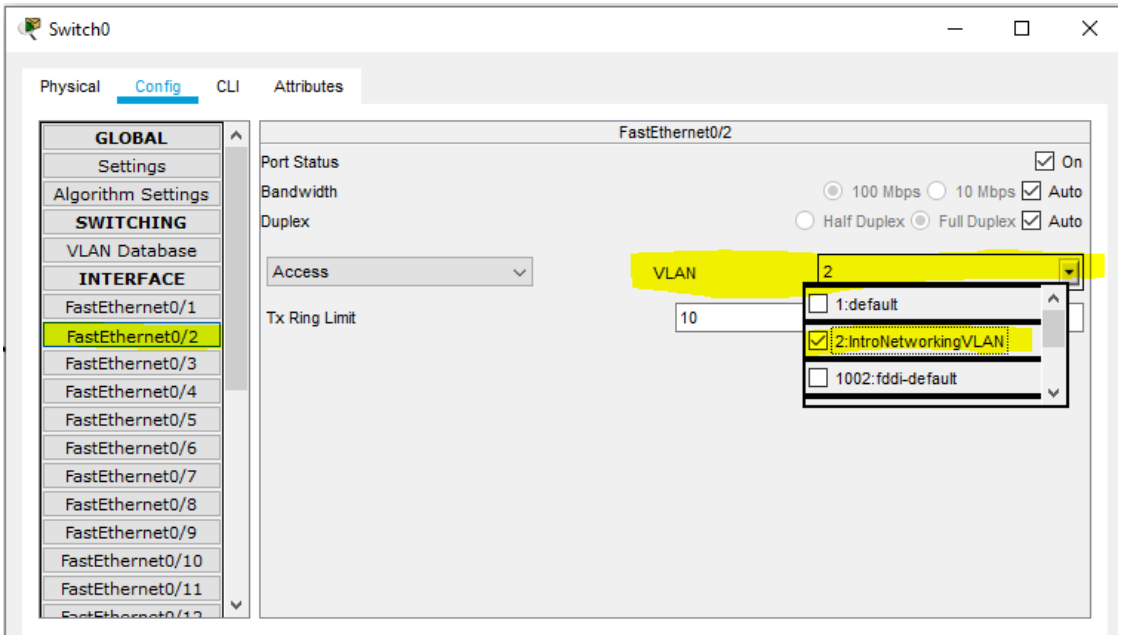


Let's assign the new VLAN the number 2 and name it: IntroNetworkingVLAN



9. Let's read up on VLANs here.

10. Now you should assign ONE of your switch ports that are in use (should be one of the two FastEthernet ports you connected your cable to) to the new VLAN. Do this by selecting the new VLAN in that interface configuration page. Note that I am using FastEthernet0/2.



11. Repeat step 7.

Note that this time it should not complete successfully. Why is this? Because we have now moved one machine into a different Collision Domain. The switch filters the new PDU because it is in a different Virtual LAN creating a network segment.

You have now finished the learning section of the lab. Good Job!

PRACTICE SECTION:

Introduction Statement. You will now create an env that has multiple machines on separate VLANs. You will inspect the PDUs and answer questions about your env. You will turn in a .pkt file, a word file (with your name AND blazerid), and any supporting screenshots. Please refer to the syllabus for any other information about submitting assignments.

Scenario: At home there are 3 children who each have a desktop that they use for gaming and they need to communicate with one another. There are two parents who each have a desktop they use for work. One parent actually has 2. Due to the sensitive information that exists on the work computers, they don't want those computers to be accessible by any other computer on the network except for the parent who has 2, those need to communicate with each other. However, the only technical control they have is a switch.

Your job is to provide an environment that meets all the requirements in the scenario.
IMPORTANT: When adding desktops to the env, you must do the following during configuration:

1. In Desktop → IP Configuration: Create a Static Entry of:
    a. IP Address → 192.168.1.x (where x is some number other than 0 or 1)
    b. Subnet mask → 255.255.255.0
    c. Default Gateway → 192.168.1.1

Questions :

1) Turn in your env (BlazerID.pkt) & (BlazerID.docx/BlazerID.pdf) that meet all the requirements above. (60 points)
2) In the problem statement, though we've manipulated vlans, the issue of monitoring the switch is the big concern, meaning there are no restrictions on the switch.
a) Can you mention a protocol we can use for remote management of the switch? (10 points) **Hint: What protocols do you actually use for remote connections?**
b) What are access control lists? (10 points)
c) Is the default gateway that we've provided actually necessary here in this problem? Explain? (10 points)?
3) What is inter-vlan routing? Is it possible in this case even if we use a router? Explain? (10 points).