

Lab 2: Scaling VLANs with DTP, VTP, and Inter-VLAN Routing

Or: The first pair of dynamic L2 protocols

What you will do:

1. Expand your options for lab work beyond PT: experience a **demo of Algonquin's NetLab**
2. Configure DTP for trunking
3. Configure VTP for dynamic propagation of VLAN info
4. Configure extended VLANs using VTP *transparent* mode
5. Work through a small network configuration and troubleshoot any misconfigurations
6. Demo your working configurations

Things that you will need to know or learn:

1. How to get a booking on Algonquin's NetLab facility
2. What's required for DTP to work
3. What's required for VTP to work
4. Whether or not Cisco switches have helpful error messages for VLAN configuration
5. Working out how to document a network topology and verify it against the configuration

Required Equipment:

- Cisco Lab 2.1 and Lab 2.2 from BrightSpace
- Hard-cover lab notebook, for reference during SBA at the end of the course.
- A laptop or PC: connect to lab equipment, connect to Algonquin's NetLab, or run PT

What you need to submit and when:

1. There is no pre-lab for this lab.
2. Complete the in-lab part of the exercise (see below), **before the end of this lab** period.
3. Complete the post-lab quiz in BrightSpace before next Mon (**Sep 16**) @ **10am**

Marks:

Each of the lab parts identified above (pre-lab, in-lab, post-lab) are (normally) weighted equally, even though they may have a different number of points assigned to them.

[1 mark] Verify and Prove what interVLAN connectivity exists (without any interVLAN routing)

[1 mark] Verify and Prove how Transparent mode does or doesn't work for VTP

[1 mark] Demo a troublefree network with full reachability throughout the network

[0 marks] Clear and reset all network devices to factory defaults

10% of your final mark is for labs done during the course of the semester.

References and Resources:

- Cisco NetAcad portal; <https://www.netacad.com>
- Algonquin LMS for pdf copies of lab instructions: <https://brightspace.algonquincollege.com>
- course notes and Lab notebook from NET1006
- Algonquin NetLab facility: <http://netlab.algonquincollege.com>
and <http://netlab.algonquincollege.com/docs>

Task 1: Demo of NetLab (May need to be later in the lab period)

There will be a live in-class demo of booking and connecting to Algonquin's NetLab facility. You will be required to make a booking and log into NetLab as part of the post-lab exercise/quiz.

Task 2: Complete Cisco Lab 2.1 for regular VLANs

Follow instructions in Lab 2.1 up to the end of Part 3. Make sure you understand the results of all the pings in Step 5.

Have the results of all the pings visible on your screen(s) **before** you sign up for a demo!

CHECK POINT #1: Clearly explain to the lab Prof why each of the pings did or didn't work. In other words, explain the VLAN connectivity!

Task 3: Complete Cisco Lab 2.1 for Extended VLANs

- Step 1. Complete Lab 2.1 to the very end (step 2c) and make sure you have correct results.
- Step 2. Modify the topology: **shutdown** the link between S2 and S3, but ensure S1 is still in the original VTP domain of **CCNA**.
- Step 3. Determine whether Transparent mode relays the VTP info between server & client on different trunks: modify VLANs on S2 and see if the results are propagated to S3. Does waiting a few moments change the result?
- Step 4. Determine whether Transparent mode always relays VTP info: change the VTP domain on S2 to **ccna**, then modify the VLANs on S2. Are VLANs on S3 updated? Does waiting a few moments change the result?

Have the results from different steps visible on your screen(s) **before** you sign up for a demo!

CHECK POINT #2: Be ready to prove what Transparent mode does or doesn't do.

Task 4: Complete Cisco Lab 2.2

Lab 2.2 has quite a few different VLAN IDs, subnets, mask lengths, and host IP addresses. Be sure you type in all values exactly as shown in the lab instructions, or better yet, copy & paste from the supplied files on the course site!

- Step 1. Work through all the steps in lab 2.2. Record every change that is necessary, compiling a master list of all changes and/or additions that are required.
- Step 2. Verify that you really got the list correct by wiping the equipment clean and redoing the lab using your master list. This should take you no more than 5-10 mins if your list is correct!
- Step 3. Verify that you have full connectivity: ensure that you can ping from any device to every other device. If any ping fails, go back to step 2 (or even step 1!)

CHECK POINT #3: Give the number of changes made, and identify the details of any & all problems with the starting configs.

Task 5: Clear & Reset All Network Devices

CHECK POINT #4: Ensure all your equipment is reset back to the factory default state [0 marks]
PENALTY for the first time you forget: deduct 1/2 the marks for the lab;
PENALTY for the second time you forget: deduct all marks for the lab!

Task 6: Assist a Classmate with Troubleshooting [Optional]

Please note the wording: you must not DO the work for your classmate and simply fix their mistakes, you must assist them with the troubleshooting process to identify any mistakes or missing config, then back off and let them fix it.