

Programming Assignment: Programming Assignment 3 Submission

You have not submitted. You must earn 7/10 points to pass.

Deadline Pass this assignment by January 22, 11:59 PM PST

Instructions

[My submission](#)

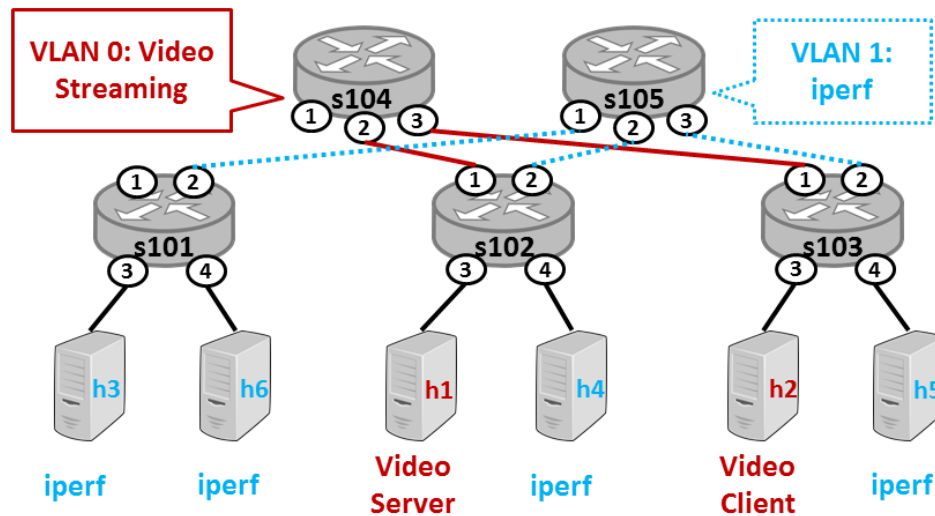
[Discussions](#)

Background

In the previous assignment we learned how much each host contributes to the amount of congestion in the network. Now, you will improve the routing policy to provide better isolation between the tenants.

In Assignments 1 and 2, the routing policy sent all traffic from edge switches through one core switch. You will improve the policy by distributing the traffic from edge switches across all core switches. Each core switch will have a set of one or more tenants assigned to it. Edge switches will then route traffic to the appropriate core switch based on the tenant association of the source and destination.

We will be using the same topology as the previous assignments. Notice in the topology diagram below that each core switch handles traffic for one tenant.



In this assignment, you will add code to the file `~/cloudnetmooc/minidc/controller/policy.py`. Specifically, you will extend the function `build()` in the class `StaticRouting`. Your code should install a rule in each edge switch. If the destination host is a neighbor – that is, if the host is directly connected to the switch via a port – output the packet out that port. If not, send the packet "up" to the core switch that is associated with the destination host's VLAN. You may use the "upward" rules in `DefaultPolicy.build()` as a rough guide. Useful API functions are also detailed in the source file and comments.

If coded correctly, you should see an improvement in the video quality compared to Assignment 1. The video may not play entirely in high quality, but you should notice an improvement from the policy in Assignment 1.

Instructions

To validate your code, open two terminals in the VM and perform the following steps:

1. In terminal 1, cd to `~/cloudnetmooc` and run: `sudo ./mdc --vid`

2. In terminal 2, cd to `~/cloudnetmooc/minidc/controller`.

- Start Ryu: `ryu-manager controller.py`.
- The default (naive) routing policy will be loaded automatically.

3. Now that Ryu has started, press <enter> in **terminal 1**.

- A Chrome window will pop up, press play to start the video.
 - Observe the video quality is poor and plays only in low quality. The video may even pause to buffer
4. Open a new, different instance of Chrome from the menu bar or Desktop.
- Load the improved routing policy by selecting the radio button labeled "Static" and pressing the "Update Policy" button. Observe the video plays almost entirely in high quality.
5. End the experiment:
- In terminal 1, type *exit*<enter> (**do not** Ctrl-c to exit, this will interrupt the teardown process. If you accidentally Ctrl-c and interrupt the process, run *sudo mn -c*).
 - In terminal 2, Ctrl-c to stop Ryu.

Expected Result

If your code is working properly, you should see an improvement in the video quality compared to Assignment 1. Note that the video may not play entirely in high quality but should play in high quality for some portion.

What to Submit

Submit the file *policy.py* containing your changes.

How to submit

When you're ready to submit, you can upload files for each part of the assignment on the "My submission" tab.

